Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibit 14 Volume 2, Tab 14

Additional Information

Respondent: Chris Killenberg

As part of the investigation of the suitability of the proposed site for the Project, the Applicant commissioned additional studies which are summarized below and included as attachments to the Application.

Wetlands Delineation Report

A Wetland Delineation, Stream Assessment, and Open Waters Report of the proposed Project site ("Wetland Delineation") was performed by Wetland Services, 3880 Trigg-Turner Rd., Corydon, KY 42406. The Wetland Delineation is dated February 2021.

An Approved Jurisdictional Determination (AJD) was issued by the US Army Corps of Engineers on May 18, 2021.

The Wetlands Delineation and AJD identified a number of jurisdictional aquatic features on the proposed Project site. The Site Plan for the proposed facility avoids new encroachment on these jurisdictional features. Where existing stream crossings may need to be improved or repaired, the Applicant will seek the necessary permits.

A copy of the Wetlands Determination and AJD is provided as Exhibit 14 Attachment 14.1.

Phase I Environmental Site Assessment Report

A Phase I Environmental Site Assessment ("Phase I ESA") of the proposed Project site was performed by AECOM, 1000 Corporate Centre Drive, Suite 250, Franklin, TN 37067.

A Phase I ESA for the majority of the proposed Project site was completed in June 2020. A Phase I ESA for some additional land that was later added to the proposed Project site was completed in January 2021.

No recognized environmental conditions (RECs), controlled RECs (CRECs), or historical RECs (HRECs) were identified during either Phase I ESA.

Case No. 2020-00391 Application - Exhibit 14 Includes four Attachments (14.1 – 237 pages; 14.2 – 51 pages; 14.3 – 17 pages; 14.4 - 125 pages) A copy of both Phase I Environmental Site Assessment Reports is provided as Exhibit 14 Attachment 14.2.

Cultural Resources

A Cultural Resources Desktop Review and Field Assessment ("Cultural Assessment") was performed by AECOM, 1000 Corporate Centre Drive, Suite 250, Franklin, TN 37067. The related report is dated April 19, 2021.

The Cultural Assessment concludes:

"The Project Site locations display the potential for the presence of both archaeological deposits within the proposed limits of construction and extant aboveground historic-age resources in the surrounding viewshed. While no archaeological sites have been inventoried within either Project Site area, the preliminary field assessment encountered both prehistoric and historic archaeological specimens within the southern extent of the Project, and the characteristics of landforms in the northern portion of the Site appear conducive for the presence of prehistoric archaeological sites."

"Should Section 106 consultation be required for the Project Site, the KY SHPO will likely request some level of field investigations to consider the potential for impacts to both archaeological and aboveground resources."

At the completion of the harvest of the crops that are currently in cultivation on the proposed Project site, when the site is physically accessible for further study, the Applicant intends to conduct more rigorous field investigations. If cultural resources deemed eligible for protection are located on the proposed Project site, the Applicant intends to avoid disturbance of any such resources.

A copy of the Cultural Resources Desktop Review and Field Assessment is provided as Exhibit 14 Attachment 14.3.

Endangered Species Assessment

An Endangered Species Assessment of the proposed Project site was performed by AECOM, 1000 Corporate Centre Drive, Suite 250, Franklin, TN 37067.

An Endangered Species Assessment for the majority of the proposed Project site was completed in July 2020. An Endangered Species Assessment for some additional land that was later added to the proposed Project site was completed in April 2021.

The Endangered Species Assessments identified potential roosting and maternity habitat on the proposed Project site for two species of bat. Potential effects to these species can be mitigated through project-specific conservation and mitigation methods (i.e., tree cutting avoidance or

Case No. 2020-00391 Application - Exhibit 14 Includes four Attachments (14.1 - 237 pages; 14.2 - 51 pages; 14.3 - 17 pages; 14.4 - 125 pages) time-of-year restrictions). The Applicant intends to observe these conservation and mitigation methods.

A copy of the Endangered Species Assessment is provided as Exhibit 14 Attachment 14.4.

Cumulative Environmental Assessment

A Cumulative Environmental Assessment ("CEA") of the proposed Project site was performed by Copperhead Environmental Consulting, Inc., 471 Main St., Paint Lick, KY 40461. The CEA is dated June 17, 2021.

The CEA concludes:

- Air Pollutants
 - Potential impacts to air quality from construction-related activities for the Project will be minor
 - Operation of the Project will result in a net benefit to local and regional air quality
- Water Pollutants
 - The operations and maintenance of the solar facility will have little impact on surface water
 - No direct adverse impacts to groundwater will be anticipated as a result of the Project
- Wastes
 - No adverse effects from waste are anticipated
- Water Withdrawal
 - Operation of solar electricity generating facilities is not water-use intensive

A copy of the Cumulative Environmental Assessment is provided as Exhibit 13 Attachment.

The Cumulative Environmental Assessment was submitted to the Kentucky Energy and Environment Cabinet on June 17, 2021.

EXHIBIT 14 ATTACHMENT 14.1



26FEB21

To: Sam Werner U.S. Army Corps of Engineers 6855 State Road 66 Newburgh, Indiana 47630

From: Keith Michalski Wetland Services, Inc.

Re: Henderson County Solar LLC (HCS), Henderson, KY

Hello Sam:

Please note the enclosed Jurisdictional Determination Report and associated information for Henderson County Solar LLC. I am enclosing the report in pdf format bookmarked for your convenience: 1) JD Narrative, 2) Summary Tables, 3) Assessments, 4) Location and Topo Map, JD Map and, 5) Approved JD form.

We are requesting a site visit and an Approved JD (AJD). Once a Project Manager has been assigned, please let us know if we can assist in expediting the process.

Thank you for your time,

Keith Michalski Biologist <u>km@wetland.services</u> 216-647-1641

CC: Chris Killenberg, Henderson County Solar LLC

Appendix 1 - REQUEST FOR CORPS JURISDICTIONAL DETERMINATION (JD) = 2 of 237 To: Louisville District

•	I am requesting a JD on property located at: (Street Address)
	(Street Address)
	(Street Address) City/Township/Parish: County: State: Acreage of Parcel/Review Area for JD: Section: Township: Range: Latitude (decimal degrees): Longitude (decimal degrees):
	Acreage of Parcel/Review Area for JD:
	Section: Township: Range:
	Latitude (decimal degrees): Longitude (decimal degrees):
	(For linear projects, please include the center point of the proposed alignment.)
•	Please attach a survey/plat map and vicinity map identifying location and review area for the JD.
•	I currently own this property. I plan to purchase this property. I am an agent/consultant acting on behalf of the requestor.
	I am an agent/consultant acting on behalf of the requestor.
	Other (please explain):
•	Reason for request: (check as many as applicable)
	I intend to construct/develop a project or perform activities on this parcel which would be designed to
	avoid all aquatic resources.
	I intend to construct/develop a project or perform activities on this parcel which would be designed to
	avoid all jurisdictional aquatic resources under Corps authority.
	I intend to construct/develop a project or perform activities on this parcel which may require
	authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional
	aquatic resources and as an initial step in a future permitting process.
	I intend to construct/develop a project or perform activities on this parcel which may require authorization from
	the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
	I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is
	included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
	A Corps JD is required in order to obtain my local/state authorization.
	I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that
	jurisdiction does/does not exist over the aquatic resource on the parcel.
	I believe that the site may be comprised entirely of dry land.
	Other:
•	Type of determination being requested:
	I am requesting an approved JD.
	I am requesting a preliminary JD.
	I am requesting a "no permit required" letter as I believe my proposed activity is not regulated.
	I am unclear as to which JD I would like to request and require additional information to inform my decision.

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the site if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property rights to request a JD on the subject property.

-

*Signature:	<u> see original signed </u>	
Typed or printe	ed name:	<u> </u>
Compan	ny name:	_
A	Address:	_
Daytime ph	none no.:	
Email a	address:	—

.

*Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.

Principal Purpose: 1	The information that	you provide will be us	ed in evaluating yo	ur request to determ	ine whether there ar	e any aquatic resources	within the project
area subject to federa	al jurisdiction under t	he regulatory authorit	ies referenced abo	ve.			

Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website. Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

Wetland Delineation, Stream Assessment, and Open Waters Report (JD Report)

Henderson County Solar

February, 2021

Henderson, KY

For:

Henderson County Solar LLC Community Energy, Inc. Three Radnor Corporate Center, Suite 300 Radnor, PA 19087 866-946-3123

By:

Wetland Services 3880 Trigg-Turner RD Corydon, KY 42406 270-860-8141

JD REPORT

Introduction and Location: An Army Corps of Engineers (ACOE) jurisdictional wetland delineation and stream assessment was conducted at the request of Henderson County Solar LLC c/o Community Energy, Inc. A total of 544 acres was assessed from May 1 to October 26, 2020.

The project is located southwest of Henderson, KY in the vicinity of the Hwy 425 bypass. To access the north JD area from Henderson, KY proceed southwest on Hwy 60 (South Green Street), turn left onto ALT 41A and veer right onto Collier Rd. Turn left onto Lovers Lane and access is available after crossing Canoe Creek. N 37.79842, W -87.62613. To access the south JD area from Henderson, KY proceed southwest on Hwy 60 (South Green Street) and turn left onto ALT 41A . Turn right onto Henderson Bypass 425, proceed 1 mile west where the JD area can be accessed at multiple locations off the 425 Bypass. The site can also be accessed off ALT 41A and Wilson Station Road to the south. N 37.78453, W -87.62989.

As the regulating authority of Section 404 of the Clean Water Act, ACOE must make the final determination as to the jurisdictional status of this site. Kentucky Division of Water (KDOW) has jurisdiction over "Waters of the Commonwealth".

Regulatory Definitions :

"Waters of the United States" (WOUS): WOUS are regulated by ACOE based on authority from Section 404 of the Clean Water Act. The Navigable Waters Protection Rule, published in the Federal Register April 21, 2020, re-defined WOUS and became effective June 22, 2020. The final rule recognizes that WOUS are waters within the ordinary meaning of the term, such as oceans, rivers, streams, lakes, ponds, and wetlands. The determinations made for this delineation are based on the new rule.

A "tributary" is defined in the final rule as a river, stream, or similar naturally occurring surface water channel that contributes surface water flow to a territorial sea or traditional navigable water (TNW) in a typical year either directly or indirectly through other tributaries, jurisdictional lakes, ponds, or impoundments, or adjacent wetlands. A tributary must be perennial or intermittent in a typical year.

Lakes, ponds, and impoundments of jurisdictional waters are defined as standing bodies of open water that contribute surface water flow in a typical year to a territorial sea or TNW either directly or through a tributary, another jurisdictional lake, pond, or impoundment, or an adjacent wetland.

The final rule defines "adjacent wetlands" as wetlands that abut a territorial sea or TNW, a tributary, or a lake, pond, or impoundment of a jurisdictional water; are inundated by flooding from a territorial sea or TNW, a tributary, or a lake, pond, or impoundment of a jurisdictional water in a typical year; are physically separated from a territorial sea or TNW, a tributary, or a lake, pond, or impoundment of a jurisdictional water only by a natural berm, bank, dune, or similar natural feature; or are physically separated from a territorial sea or TNW, a tributary, or a lake, pond, or impoundment of a jurisdictional water only by a natural berm, bank, dune, or similar natural feature; or are physically separated from a territorial sea or TNW, a tributary, or a lake, pond, or impoundment of a jurisdictional water only by an artificial dike, barrier, or similar artificial structure so long as that structure allows for a direct hydrological surface connection to the territorial sea or TNW, tributary, or lake, pond, or impoundment of a jurisdictional water in a typical year, such as through a culvert, flood or tide gate, pump, or similar artificial feature.

Waters of the Commonwealth: Waters of the Commonwealth are regulated by KDOW based on authority from Section 401 of the Clean Water Act 33USC 1314 and KRS 224.16-070. They are defined as Section 404 jurisdictional wetlands and solid or dashed blue-line streams on the most recent version of the USGS 1:24,000 topographic map. Activities that include a physical disturbance to "Waters of the Commonwealth" will require a KDOW 401 Water Quality Certification.

Technical Definitions:

Wetlands: Wetlands are defined as 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. They are identified based on the three-parameter approach outlined in the *Corps of Engineers Wetland Delineation Manual (1987)* as amended by the Eastern Mountains and Piedmont Regional Supplement - Piedmont Central Subregion ERDC/EL TR-10-9. The three criteria include hydrophytic vegetation, hydric soils, and wetland hydrology. All three criteria must be present to make a positive wetland determination. The criteria are defined as follows:

Hydrophytic vegetation: Hydrophytic vegetation, due to morphological, physiological, and/or reproductive adaptation(s), has the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Individual species have been assigned indicator status by the United States Fish & Wildlife Service (USFWS) - National Wetland Inventory and the National Plant List Panel. Vegetation is considered hydric when *more than* 50% of the dominant species from all strata are OBL, FACW, or FAC based on the dominance test. A prevalence index of 3.0 or less indicates hydrophytic vegetation. Vegetation is also present if either the dominance test or the prevalence test is passed according to morphological adaptations. If all dominants are FAC, the vegetation criterion is disregarded and the determination is based on soil and hydrology criteria.

Indicator Status	Probability of Occurrence in Wetlands
Obligate Wetland - OBL	> 99%
Facultative Wetland - FACW	67-99%
Facultative- FAC	34-66%
Facultative Upland - FACU	1-33%
Obligate Upland - UPL	<1%

Secondary vegetation rules include observed physiological adaptations, plants growing in saturated soils, and the FAC neutral test.

Hydric soils: Hydric soils are present when they develop anaerobic in the upper part during the growing season. Hydric soils in this report are identified by various combinations of soil colors, depths, organic matter, and redox features.

Hydrology: Hydrology in wetlands occurs in areas inundated permanently or periodically at mean water depths <6.6-feet, or if the soil is saturated to the surface for 14-days consecutively during the growing season of the prevalent vegetation. Wetland hydrology indicators may be present above or below the surface. Primary indicators include surface water, high water table, saturation, water marks, sediment deposits, drift deposits, algal mat or crust, iron deposits, inundation visible from aerial imagery, water stained leaves, aquatic fauna, true aquatic plants, hydrogen sulfide odor, oxidized rhizospheres on living roots, presence of reduced iron, recent iron reduction in tilled soils, and thin muck surface.

Secondary indicators (two or more required) include surface soil cracks, sparsely vegetated concave surface, drainage patterns, moss trim lines, dry-season water table, crayfish burrows, saturation visible on aerial imagery, stunted of stressed plants, geomorphic position, shallow aquitard, microtopographic relief, and FAC neutral test.

Streams: Streams were assessed according to criteria set forth in the new rule. Perennial and intermittent tributaries are identified as contributing surface water flow directly or indirectly to a territorial sea or a TNW water in a typical year. Ephemeral features including ephemeral streams, swales, gullies, rills, and/or pools are excluded waters, but were mapped and illustrated to thoroughly document features on-site. Swales, gullies, rills, etc. are denoted as surface connections, or 'SC', followed by the appropriate Unit ID as outlined below in the Unit ID labeling system.

Methods and Materials

Wetland Delineation

Soils: Soil colors were determined using the standard Munsell Soil Color Charts. Colors were determined with soil moist on an undisturbed ped face. Unless otherwise stated samples were taken using a tile spade and/or an Oakfield 7/8"x10" soil probe.

Vegetation: Vegetation was classified using the USFWS National List of Plant Species that Occur in Wetlands, Region 1, East, Eastern Mountains and Piedmont Regional Supplement. The 50/20 rule was applied to determine the dominant species in applying the dominance test. If the dominance test failed and the site had indicators of hydric soil and wetland hydrology, the prevalence index was applied. If the prevalence index failed, the morphological adaptations rule was applied.

Hydrology: Hydrology was determined by field indicators, and any reliable source of available gage data. Local soil survey data were also considered.

Stream Assessment: Assessments were conducted using the Rosgen stream assessment protocol and EPA RBP physical characterization and habitat parameter forms. Additional information was added to the standard Rosgen data sheet. These data include length, distance, sinuosity, area, vegetation width on both banks, additional Altered Channel descriptors and a check box for Step-Pool Series.

Unit ID Labeling System: For accurate record-keeping purposes a unit specific labeling system has been developed i.e.:

1NS2A1-1=Unit ID 1=watershed (any drain that solely leaves the permit boundary) N=Landuse (<u>Natural, Reclaimed, PreLaw, Ag, Mixed eXcavated, Logged, Urban</u>) S=Unit type (<u>Stream, Wetland, Open Water</u>) 2=Unit number (2nd stream assessed in watershed 1) A=1st branch of stream 2 1=1st branch of stream 2A etc. -1=Subsequent assessment on stream 2A1 **Clarification of Terms:** Watershed size is the area within the project boundary, drainage area is the size of each on-site watershed, and review area is identified as the stream in conjunction with all associated wetlands. Occasionally an on-site unit has connection to a TNW by an off-site unit. In such cases, a visual observation of the unit is made from the project boundary and an "Off-site" assessment is made to facilitate documentation.

Site Description

Background Information: Information on this site was gathered from the USDA/NRCS Web Soil Survey, USGS Quadrangle Map, available statewide NWI/NHD layers, various aerial photos, and LiDAR elevation data. These data sets were studied and utilized to make a formal assessment between May 1 and October 26, 2020. According to the Antecedent Precipitation Tool derived from Henderson County, KY precipitation at the time of asessment during spring and fall was normal.

Physiographic Setting: The area resides in Ecoregion 72a, Wabash-Ohio Bottomlands. The region is composed of nearly level, poorly drained floodplains, undulating terraces, and low ridges. Landuse is dominated by agriculture with forested areas remaining in bottomland and hillslope locations. The Henderson County Solar JD area is dominated by row crop agriculture with forested areas remaining along Wilson and Canoe Creek. The majority of the JD area resides on flat terraces above active floodplains. The Henderson County Solar project is within the Wilson Creek-Canoe Creek watershed and drains north to the Ohio River. HUC 051402020405.

Vegetation: Forested areas along Wilson and Canoe Creek are dominated by a riparian species community. Dominant tree species include, Fraxinus sp., Celtis sp., Acer sp., Ulmus sp., and lesser extents of Quercus bicolor, Q. macrocarpa, Juglans nigra, and Carya sp. Recent selective cut timber removal has decreased hard mast oak and hickory along Wilson Creek (2MS1). Canopy cover has been decreased resulting in a robust herbaceous understory. Forest understory shrubs encountered include; Lindera benzoin, Asimina triloba and Ilex decidua. A high diversity of herbaceous species were observed in the understory with dominant species being Laportea canadense, Elymus sp., and Carex sp. Observed non-native/invasive species included: Lonicera japonica, Achyranthes japonica, and Phalaris arundinacea. Land use in row crop agriculture was planted in corn and soybeans at the time of assessment.

Streams: The primary hydrologic input for streams on site is precipitation and ground water intercept. Wilson and Canoe Creek are perennial waters with tributaries being intermittent and ephemeral. Wilson Creek has incised due to Canoe Creek dredging, but still accesses its floodplain irregularly and will back water with moderate to high Ohio River flooding. Intermittent tributary streams on-site have been extensively channelized and straightened and do not access their historic floodplains. Stream beds have cut down to hard pan clay with fine gravel, sand, and silt substrates being highly mobile during storm events. Erosion potential is high. Rosgen stream channel types recorded included G, E, and B. Historic floodplains and terraces are drained extensively via drain tile and cross contour diversions are in place to control and direct surface water runoff to streams. Where surface water runoff has not been controlled, multiple ephemeral, gully-like streams have formed along Wilson and Canoe Creek.

Wetlands: The observed primary hydrologic input for wetlands on-site was precipitation, overbank flooding, surface ponding, and high-water tables. At the time of assessment,

wetlands displayed surface water, high water tables, and saturation to varying degrees; along with drift deposits, sediment deposits, water stained leaves, sparse vegetated concave surfaces, true aquatic plants, aquatic fauna, saturation visible from aerial imagery, drainage patterns, crayfish burrows, geomorphic position, and FAC neutral test. A depleted matrix was the dominant hydric soil indicator across the site. Soils were loamy to clayey in texture. The majority of mapped wetlands are located in bottomland, or flat terraces above the active floodplain. Headwater, hillside seep wetlands are also present.

Timber harvest activity has disturbed wetland soils and hydrology due to extensive rutting of the surface in some areas, resulting in reduced surface drainage and increased soil compaction. Wetlands on-site can be described as discharge and/or recharge wetlands.

Surface Connections: Surface connections are mapped features that transmit surface water from wetland or streams to downstream waters but do not have stream or wetland characteristics. These features are grassed waterways, diversions, or gullies that have been created or developed in uplands and often incorporate man-made structures for grade stabilization.

Table 1: Itemized Summary of Jurisdictional Waters						
ТҮРЕ	INDIVIDUAL UNIT	S **'	**TOTAL AMOUNT			
Jurisdictional Wetlands	Jurisdictional Wetlands 6 0.75					
Non-Jurisdictional Wetlands	5		0.37-acres			
Jurisdictional Streams	15	(17,387-Lir	near ft) 3.47-acre*			
Non-Jurisdictional Streams	19		5,086-Linear ft			
Jurisdictional Open Waters	0		0.0-acres			
Non-Jurisdictional Open Waters	0		0.0-acres			
	TOTAL J	urisdictional Area	4.22-acres			
	urisdictional Area	0.37-acres				
*Stream area calculated by multiplying stream	**Areas rounded to the	e nearest 0.01				
Stream Bottom". Da channel area calculated t linear footage x "Wfpa"	by multiplying stream	(hundredth) acre.				

Summary Tables

Stream	Latitude	Longitude	Perennial Linear Feet	Intermittent Linear Feet	Excluded Waters ((b)(1) - (b)(12)) Linear Feet	Class of Aquatic Resource
1MS1	37.80201	-87.62741	2,000	0	0	Non-Section 10, non-tidal
1MS1A	37.80330	-87.63178	184	0	0	
1MS1B	37.80176	-87.63108	0	0	378	
1MS1B-1	37.80141	-87.63081	0	0	197	
1MS1C	37.80191	-87.62975	0	0	151	
1MS1C-1	37.80158	-87.62979	0	0	105	
1MS1D	37.80190	-87.62732	0	0	239	
1MS1E	37.80192	-87.62695	0	0	507	
1MS1F	37.80213	-87.62621	0	0	131	
1MS1G	37.80106	-87.62496	0	729	0	
1MS1G1	37.80000	-87.62523	0	0	153	
2AS1F	37.78741	-87.64021	0	770	0	
2AS1F1	37.78876	-87.63840	0	0	35	
2AS1F-1	37.78918	-87.64422	0	2,852	0	
2AS1F2	37.78894	-87.63835	0	17	0	
2AS1L3A	37.77994	-87.62812	0	748	0	
2ASC1F4	37.78978	-87.64062	0	0	1,741	
2ASC1L3B	37.77863	-87.62927	0	0	644	
2MS1	37.78741	-87.62783	1,987	0	0	
2MS1-1	37.78518	-87.63714	780	0	0	
2MS1A	37.78752	-87.62620	0	0	51	
2MS1B	37.78720	-87.62802	0	0	47	
2MS1C	37.78675	-87.62907	0	0	41	
2MS1F3	37.78805	-87.64140	0	412	0	
2MS1I	37.78629	-87.62774	0	0	208	
2MS1L	37.78248	-87.63264	687	0	0	
2MS1L-1	37.77949	-87.63468	0	2,313	0	
2MS1L2	37.78302	-87.63232	0	48	0	
2MS1L-2	37.77345	-87.63566	0	1,439	0	
2MS1L3	37.78131	-87.63165	0	2,421	0	
2MS1L3C	37.77743	-87.62680	0	0	194	
2MS1L4	37.77897	-87.63469	0	0	118	
2MS1L5	37.77918	-87.63500	0	0	124	
2MS106	37.79183	-87.62699	0	0	22	
	Total		5,638	11,749	5,086	

Exhibit 14 Attachment 14.1 Page 10 of 237

Wetland	Latitude	Longitude	Cowardin Class	Adjacent Wetland Acres	Excluded Waters (b)(1)-(b)(12)) Acres	Class of Aquatic Resource
1MW1	38.80247	-87.63102	PFO	0.14	0	Non-Section 10, Non-Tidal
1MW2	37.80309	-87.63149	PFO	0.14	0	
1MW3	37.80167	-87.62983	PFO	0	0.07	
1MW4	37.80200	-87.62681	PFO	0.04	0	
1MW5	37.80187	-87.62629	PFO	0	0.08	
1MW6	37.80175	-87.62544	PFO	0.26	0	
2MW1	37.00000	87.62570	PUBG	0.11	0	
2MW10	37.78871	-87.63366	PSS	0	0.03	
2MW13	37.78765	-87.64251	PEM	0.06	0	
2MW14	37.79076	-87.64378	PFO	0	0.17	
2MW30	37.79211	-87.62700	PEM	0	0.02	
		Total		0.75	0.37	

Exhibit 14 Attachment 14.1 Page 11 of 237

Henderson County Solar Stream Assessment Worksheet

Stream 1MS1 E		Date: 5/4/2020	Inv.: Keith Michalski	Entry:	Keith Michalski
Latitude: Longitude:		37.80201 N -87.62741 W		eam State or Conc ogical Descriptior	
Length:		2000	Primary Riparian Left:	10b 100	Altered Channel Key
Distance: Sinuosity:		1788 1.12	Primary Riparian Right: Secondary Riparian Left:	3b 30	CH = Channelized CV = Culvert DAM = Weir, Dam, or Rock
FlowType: Area In Acres:		Perennial 4.13	Secondary Riparian Right: Stream Flow Regime:	10b 70 P2 5-7	DG = Dredged LWC = Low Water Crossing
Slope %: 1 Level II - Stream			Stream Size: Depositional Features: Meander Patterns:	B-2,B-4	NA = Not applicable OT = Other (See Comments) PI = Pipe
Width at Bottom		20.00	Stream Channel Debris: Stream Bank Erosion:	D3 High	RSC = Road Side Channel
Bankfull Surface Width of Flood F		90.00 200.00	Stream Aggradation: Channel Stability:	Stable Fair	
Bankfull Mean D Entrenchment R	•	15.00 2.22	Altered Channel:	DG,PI	
Width / Depth Ra Stream Type:	atio:	6.00 E6	Percent Riffle: Percent Run:	25 35	
			Percent Pool: Step Pool:	40	

Comments: Canoe Creek back watered by Ohio River at time of assessment.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 1MS1A Date: 5/4/2020		Inv.: Ryan Winka		Entry: Ke	ith Michalski	
Latitude: Longitude:		37.80330 N -87.63178 W	Level III - Stre Morphole	eam State ogical Des		ion
Length:		184	Primary Riparian Left:	10b	40	Altered Channel Key
Distance:		175	Primary Riparian Right:	10b	90	CH = Channelized
Sinuosity:		1.05	Secondary Riparian Left:	4c	60	CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Perennial	Secondary Riparian Right:	4c	10	Checks
Area In Acres:		0.11	Stream Flow Regime:	P2		DG = Dredged LWC = Low Water Crossing
Slope %:		1	Stream Size:	S-4		NA = Not applicable
	vel II - Stre	am	Depositional Features:	B-2,B-4		OT = Other (See Comments)
_	logical De	-	Meander Patterns:	M-1		PI = Pipe RSC = Road Side Channel
Width at Bottom	•	10.00	Stream Channel Debris:	D3		
Bankfull Surface	Width:	25.00	Stream Bank Erosion:	High		
Width of Flood F		35.00	Stream Aggradation:	SI deg		
Bankfull Mean D		3.00	Channel Stability:	Fair		
Entrenchment Ratio:		1.40	Altered Channel:	СН		
			Percent Riffle:	40		
Width / Depth R	atio:	8.33				
Stream Type:		G6c	Percent Run:	20		
			Percent Pool:	40		
			Step Pool:			

Comments: Stream measurements estimated due to Ohio River back water conditions in stream.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

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Henderson County Solar Stream Assessment Worksheet

Stream 1MS1B Date: 5/4/2020		Inv.: Scott Mitchell		Entry: Ke	eith Michalski	
Latitude: Longitude:		37.80275 N -87.63112 W	Level III - Stre Morphole	eam State		ion
Length:		378	Primary Riparian Left:	10b	100	Altered Channel Key
Distance:		275	Primary Riparian Right:	10b	100	CH = Channelized
Sinuosity:		1.37	Secondary Riparian Left:		0	CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Ephemeral	Secondary Riparian Right:		0	Checks
Area In Acres:		0.03	Stream Flow Regime:	E2		DG = Dredged LWC = Low Water Crossing
Slope %:		3	Stream Size:	S-2		NA = Not applicable
	vel II - Stre	am	Depositional Features:	NA		OT = Other (See Comments)
_	logical De	-	Meander Patterns:	M-1		PI = Pipe RSC = Road Side Channel
Width at Bottom	•	1.00	Stream Channel Debris:	D3		
Bankfull Surface	Width	3.50	Stream Bank Erosion:	Low		
Width of Flood P		5.00	Stream Aggradation:	Stable		
Bankfull Mean D		0.30	Channel Stability:	Good		
			Altered Channel:	PI		
Entrenchment R		1.43	Dama ant Diffini	60		
Width / Depth Ratio: 11.67		Percent Riffle:	60			
Stream Type:		B6	Percent Run:	30		
			Percent Pool:	10		
		f stream backwater	Step Pool:			

Comments: Lower portion of stream backwaters from Ohio River.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 1MS1	B-1	Date: 5/4/2020	Inv.: Ryan Harris	Entry: H	Keith Michalski
Latitude: Longitude:		37.80178 N -87.63108 W		eam State or Cond ogical Description	ition
Length:		197	Primary Riparian Left:	10b 10	Altered Channel Key
Distance:		190	Primary Riparian Right:	10b 30	CH = Channelized
Sinuosity:		1.04	Secondary Riparian Left:	RV 1 90	CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Ephemeral	Secondary Riparian Right:	RV 1 70	Checks
Area In Acres:		0.03	Stream Flow Regime:	E2	DG = Dredged LWC = Low Water Crossing
Slope %:		1	Stream Size:	S-3	NA = Not applicable
	vel II - Stre		Depositional Features:	NA	OT = Other (See Comments)
	logical De		Meander Patterns:	M-1	PI = Pipe RSC = Road Side Channel
Width at Bottom	•	2.50	Stream Channel Debris:	D3	
Bankfull Surface	Width	6.20	Stream Bank Erosion:	Low	
Width of Flood P		20.00	Stream Aggradation:	Stable	
Bankfull Mean D		0.30	Channel Stability:	Good	
Entrenchment Ra	•		Altered Channel:	NA	
		3.23	Percent Riffle:	60	
Width / Depth Ra	atio:	20.67			
Stream Type:		C6	Percent Run:	35	
			Percent Pool:	5	
Comments: Stre		t runs parallel to R	Step Pool:		

Stream segment runs parallel to Rail line.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 1MS1C Date: 5/4/2020 Inv.:			Inv.: Ryan Winka		Entry: Ke	eith Michalski
Latitude: Longitude:		37.80191 N 87.62975 W	Level III - Stre Morphole	ion		
Length: Distance:		151 130	Primary Riparian Left: Primary Riparian Right:	10b 10b	100 100	Altered Channel Key
Sinuosity:		1.16	Secondary Riparian Left: Secondary Riparian Right:		0	CV = Culvert DAM = Weir, Dam, or Rock
FlowType: Area In Acres:		Ephemeral 0.01	Stream Flow Regime:	E2		Checks DG = Dredged LWC = Low Water Crossing
Slope %:	vel II - Stre	4	Stream Size: Depositional Features:	S-2 NA		NA = Not applicable OT = Other (See Comments)
Morpho	logical De	scription	Meander Patterns: Stream Channel Debris:	M-1 D4		PI = Pipe RSC = Road Side Channel
Width at Bottom Bankfull Surface		2.00	Stream Bank Erosion:	High		
Width of Flood F	Prone Area:	5.00	Stream Aggradation: Channel Stability:	Deg Poor		
Bankfull Mean D Entrenchment R	•	0.50	Altered Channel:	NA		
Width / Depth Ra	atio:	7.40	Percent Riffle:	60		
Stream Type:		G6	Percent Run: Percent Pool:	20 20		
			Step Pool:			



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 1MS1C-1 Date:		Date: 5/4/2020	Inv.: Ryan Winka		Entry: H	Keith Michalski
Latitude: Longitude:		37.80158 N -87.62979 W	Level III - Stre Morphol	eam State ogical Des		ition
Length:		105	Primary Riparian Left:	10b	100	Altered Channel Key
Distance: Sinuosity:		101	Primary Riparian Right: Secondary Riparian Left:	10b	30	CH = Channelized CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Ephemeral	Secondary Riparian Right:	RV 1	70	DAM – Weir, Dam, of Rock Checks DG = Dredged
Area In Acres: Slope %:		0.01	Stream Flow Regime: Stream Size:	E2 S-2		LWC = Low Water Crossing NA = Not applicable
Level II - Stream Morphological Description		Depositional Features: Meander Patterns:	B-1 M-1		OT = Other (See Comments) PI = Pipe RSC = Road Side Channel	
Width at Bottom	•	1.20	Stream Channel Debris:	D2		
Bankfull Surface	Width:	2.80	Stream Bank Erosion: Stream Aggradation:	Moderate SI deg		
Width of Flood F		4.00	Channel Stability:	Fair		
Bankfull Mean D Entrenchment R		0.40	Altered Channel:	NA		
Width / Depth Ra		7.00	Percent Riffle:	40		
Stream Type:		G6c	Percent Run:	50		
			Percent Pool: Step Pool:	10		



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 1MS1	D	Date: 5/4/2020 Inv.: Ryan Winka Entry: Ke			Keith Michalski	
Latitude: Longitude:		37.80190 N -87.62732 W	Level III - Stre Morphole	eam State ogical De		
Length:		239	Primary Riparian Left:	10b	50	Altered Channel Key
Distance:		224	Primary Riparian Right:	10b	100	CH = Channelized
Sinuosity:		1.07	Secondary Riparian Left:			CV = Culvert DAM = Weir. Dam. or Rock
FlowType:		Ephemeral	Secondary Riparian Right:			Checks
Area In Acres:		0.02	Stream Flow Regime:	E2		DG = Dredged LWC = Low Water Crossing
Slope %:		3	Stream Size:	S-2		NA = Not applicable OT = Other (See
Level II - Stream		Depositional Features:	B-1		Comments)	
_	logical De	-	Meander Patterns:	M-1		PI = Pipe RSC = Road Side Channel
Width at Bottom	•	0.70	Stream Channel Debris:	D2		
Bankfull Surface	Width:	3.20	Stream Bank Erosion:	Moderate		
Width of Flood F	Prone Area:	4.50	Stream Aggradation:	SI deg		
Bankfull Mean D	epth:	0.35	Channel Stability:	Fair		
Entrenchment R	•	1.41	Altered Channel:	DAM		
Width / Depth R		9.14	Percent Riffle:	60		
Stream Type:		G6	Percent Run:	30		
P			Percent Pool:	10		
			Step Pool:			

Comments: Rock/debris weir at edge of crop field to prevent further head cutting.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 1MS1E Date: 5/4/2020		Date: 5/4/2020	Inv.: Ryan Winka		Entry: Ke	ith Michalsk	i
Latitude: 37.80192 N Longitude: -87.62695 W			Level III - Stre Morphole	eam State ogical De		on	-
Length:		507	Primary Riparian Left:	10b	100	Altered	Channel Key
Distance:		480	Primary Riparian Right:	10b	100	CH = Chann	
Sinuosity:		1.06	Secondary Riparian Left:		0	CV = Culver	t . Dam. or Rock
FlowType:		Ephemeral	Secondary Riparian Right:		0	Checks	, ,
Area In Acres:		0.06	Stream Flow Regime:	E2		DG = Dredg LWC = Low	ed Water Crossing
Slope %:		2	Stream Size:	S-3		NA = Not ap OT = Other	
Level II - Stream		Depositional Features:	B-1		Comments)	(066	
-	logical De	-	Meander Patterns:	M-1		PI = Pipe RSC = Road	Side Channel
Width at Bottom	•	1.80	Stream Channel Debris:	D3			-
Bankfull Surface	Width:	5.20	Stream Bank Erosion:	High			
Width of Flood F	Prone Area:	8.10	Stream Aggradation:	SI deg			
Bankfull Mean D	epth:	0.40	Channel Stability:	Poor			
Entrenchment R	atio:	1.56	Altered Channel:	DAM			
Width / Depth R	atio:	13.00	Percent Riffle:	60			
Stream Type:		B6	Percent Run:	20			
P		,	Percent Pool:	20			
			Step Pool:				

Comments: Rock weir at head of stream to prevent headcutting into crop field has failed.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 1MS1F Date: 5/4/2020			Inv.: Ryan Winka		Entry: Kei	ith Michalsk	i
Latitude: 37.80213 N Longitude: -87.62621 W			Level III - Stre Morphole	eam State ogical De		on	-
Length:		131	Primary Riparian Left:	10b	100	Altered	Channel Key
Distance:		131	Primary Riparian Right:	10b	100	CH = Chanr	elized
Sinuosity:		1.00	Secondary Riparian Left:		0	CV = Culver	t , Dam, or Rock
FlowType:		Ephemeral	Secondary Riparian Right:		0	Checks	, ,
Area In Acres:		0.01	Stream Flow Regime:	E2		DG = Dredg LWC = Low	ed Water Crossing
Slope %:		2	Stream Size:	S-2		NA = Not ap OT = Other	plicable
Level II - Stream		Depositional Features:	NA		Comments)	(See	
	logical De		Meander Patterns:	M-1		PI = Pipe RSC = Road	d Side Channel
Width at Bottom	-	0.80	Stream Channel Debris:	D2			
Bankfull Surface	Width:	2.10	Stream Bank Erosion:	Low			
Width of Flood F	Prone Area:	3.00	Stream Aggradation:	SI deg			
Bankfull Mean D	epth:	0.40	Channel Stability:	Good			
Entrenchment R	•	1.43	Altered Channel:	NA			
Width / Depth Ra	atio:	5.25	Percent Riffle:	60			-
Stream Type:		G6	Percent Run:	30			
1			Percent Pool:	10			
			Step Pool:				



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 1MS1G Date: 5/4/2020			Inv.: Ryan Winka		Entry: K	eith Michalsk	i
Latitude: 37.80106 N Longitude: -87.62496 W			Level III - Stre Morphole	am State ogical Des		tion	-
Length: Distance: Sinuosity: FlowType:		729 602 1.21 Intermittent	Primary Riparian Left: Primary Riparian Right: Secondary Riparian Left: Secondary Riparian Right:	10b 10b	100 100 0 0	CH = Chanr CV = Culver	
Area In Acres: Slope %:	vel II - Stre	0.15	Stream Flow Regime: Stream Size: Depositional Features: Meander Patterns:	I2 S-3 B-1,B-4 M-1		DG = Dredg	Water Crossing plicable
Width at Bottom Bankfull Surface Width of Flood F Bankfull Mean D Entrenchment R	Width: Prone Area: Pepth: atio:	2.40 9.00 13.00 0.75 1.44	Stream Channel Debris: Stream Bank Erosion: Stream Aggradation: Channel Stability: Altered Channel:	D3 Moderate SI deg Fair DAM,PI			d Side Channel
Width / Depth R Stream Type:	atio:	12.00 B6c	Percent Riffle: Percent Run: Percent Pool: Step Pool:	40 30 30			



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 1MS1G1 Date:		Date: 5/4/2020	Inv.: Ryan Winka		Entry: Ke	eith Michalski
Latitude: Longitude:		37.80000 N -87.62523 W	Level III - Stream State or Conditior Morphological Description			ion
Length:		153	Primary Riparian Left:	10b	25	Altered Channel Key
Distance:		145	Primary Riparian Right:	10b	25	CH = Channelized
Sinuosity:		1.06	Secondary Riparian Left:	RV 1	75	CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Ephemeral	Secondary Riparian Right:	RV 1	75	Checks
Area In Acres:		0.01	Stream Flow Regime:	E2		DG = Dredged LWC = Low Water Crossing
Slope %:		2	Stream Size:	S-2		NA = Not applicable
Level II - Stream		Depositional Features:	NA		OT = Other (See Comments)	
_	logical De	-	Meander Patterns:	M-1		PI = Pipe RSC = Road Side Channel
Width at Bottom	•	2.00	Stream Channel Debris:	D3		
Bankfull Surface	Width:	4.25	Stream Bank Erosion:	Moderate		
Width of Flood F	Prone Area:	6.35	Stream Aggradation:	SI deg		
Bankfull Mean D		0.30	Channel Stability:	Fair		
Entrenchment R		1.49	Altered Channel:	PI		
Width / Depth Ra		14.17	Percent Riffle:	40		
Stream Type:		B6	Percent Run:	50		
Stream Type.		ВО	Percent Pool:	10		
			Step Pool:]	



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2AS1	F	Date: 5/7/2020	Inv.: Ryan Harris	En	ntry: Scott Mitchell	
Latitude: Longitude:		37.78741 N -87.64021 W	Level III - Stream State or Condition Morphological Description			
Length:		770	Primary Riparian Left:	3b	10 Altered C	hannel Key
Distance:		740	Primary Riparian Right:	3b	10 CH = Channe	lized
Sinuosity:		1.04	Secondary Riparian Left:	RV 1	90 CV = Culvert	Dam, or Rock
FlowType:		Intermittent	Secondary Riparian Right:	RV 1	90 Checks	,
Area In Acres:		0.17	Stream Flow Regime:	12	DG = Dredge	d Vater Crossing
Slope %:		1	Stream Size:	S-3	NA = Not app	licable
Level II - Stream		Depositional Features:	B-3,B-4	OT = Other (S Comments)	See	
-	logical De	-	Meander Patterns:	M-1	PI = Pipe RSC = Road	Side Channel
Width at Bottom	•	4.10	Stream Channel Debris:	D1		
Bankfull Surface	Width:	9.40	Stream Bank Erosion:	High		
Width of Flood F	Prone Area:	14.00	Stream Aggradation:	SI deg		
Bankfull Mean D		3.00	Channel Stability:	Poor		
Entrenchment R	•	1.49	Altered Channel:	CH,DG,PI		
		3.13	Percent Riffle:	20		
Width / Depth R	alio.		Percent Run:	60		
Stream Type:		G6c	Percent Pool:	20		
			Step Pool:			



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2AS1F1		Date: 5/7/2020	Inv.: Keith Michalski	Entry: S	cott Mitchell
Latitude: 37.78872 N Longitude: -87.63843 W				eam State or Condi ogical Description	tion
Length:		35	Primary Riparian Left:	7b 40	Altered Channel Key
Distance:		35	Primary Riparian Right:	7b 20	CH = Channelized
Sinuosity:		1.00	Secondary Riparian Left:	0	CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Ephemeral	Secondary Riparian Right:	RV 1 80	Checks
Area In Acres:		0.00	Stream Flow Regime:	E2	DG = Dredged LWC = Low Water Crossing
Slope %:		2.5	Stream Size:	S-2	NA = Not applicable
Level II - Stream		Depositional Features:	NA	OT = Other (See Comments)	
	logical De		Meander Patterns:	M-1	PI = Pipe RSC = Road Side Channel
Width at Bottom	•	1.50	Stream Channel Debris:	D2	
Bankfull Surface	Width:	2.70	Stream Bank Erosion:	Moderate	
Width of Flood F	Prone Area:	3.60	Stream Aggradation:	SI deg	
Bankfull Mean D		0.40	Channel Stability:	Fair	
Entrenchment R		1.33	Altered Channel:	CH,RSC	
		6.75	Percent Riffle:	20	
Width / Depth Ra	auo.	G6	Percent Run:	70	
Stream Type:		Go	Percent Pool:	10	
			Step Pool:		

Comments: Jursidiction is questionable. Rail/Road side channel.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2AS1F-1 Date: 5/7/2020 Inv.: Ryan			Inv.: Ryan Harris	Entry:	Scott Mitchell
Latitude: Longitude:		37.78918 N -87.64422 W		eam State or Conc ogical Descriptior	
Length:		2852	Primary Riparian Left:	3b 2	Altered Channel Key
Distance:		2828	Primary Riparian Right:	3b 10	CH = Channelized
Sinuosity:		1.01	Secondary Riparian Left:	RV 1 98	CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Intermittent	Secondary Riparian Right:	RV 1 90	Checks
Area In Acres:		0.65	Stream Flow Regime:	12	DG = Dredged LWC = Low Water Crossing
Slope %:		1	Stream Size:	S-3	NA = Not applicable
Level II - Stream		Depositional Features:	B-4	Comments)	
_		-	Meander Patterns:	M-1	PI = Pipe RSC = Road Side Channel
Width at Bottom	•	4.80	Stream Channel Debris:	D1	
Bankfull Surface	Width:	10.00	Stream Bank Erosion:	Very High	
Width of Flood P	rone Area:	14.70	Stream Aggradation:	SI deg	
			Channel Stability:	Fair	
	•		Altered Channel:	CH,DG,PI	
			Percent Piffle:	20	
Stream Type:		GSC			
Lev Morphol Width at Bottom	of Stream: Width: Prone Area: epth: atio:	scription 4.80	Depositional Features: Meander Patterns: Stream Channel Debris: Stream Bank Erosion: Stream Aggradation: Channel Stability:	B-4 M-1 D1 Very High SI deg Fair	OT = Other (See Comments) PI = Pipe



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2AS1F2 Date: 5/7/		Date: 5/7/2020	Inv.: Ryan Harris	Entry: Sc	ott Mitchell
Latitude: Longitude:		37.78884 N -87.63857 W		eam State or Conditi ogical Description	ion
Length:		17	Primary Riparian Left:	3b 10	Altered Channel Key
Distance:		17	Primary Riparian Right:	10b 15	CH = Channelized
Sinuosity:		1.00	Secondary Riparian Left:	RV 1 90	CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Intermittent	Secondary Riparian Right:	RV 1 85	Checks
Area In Acres:		0.00	Stream Flow Regime:	12	DG = Dredged LWC = Low Water Crossing
Slope %:		2	Stream Size:	S-3	NA = Not applicable
Level II - Stream		Depositional Features:	B-4	OT = Other (See Comments)	
	logical De		Meander Patterns:	M-1	PI = Pipe RSC = Road Side Channel
Width at Bottom	•	3.20	Stream Channel Debris:	D2	
Bankfull Surface	Width	8.50	Stream Bank Erosion:	High	
Width of Flood F		13.50	Stream Aggradation:	SI deg	
			Channel Stability:	Fair	
Bankfull Mean D	•	1.80	Altered Channel:	CH,CV,PI,RSC	
Entrenchment R	atio:	1.59			
Width / Depth Ra	atio:	4.72	Percent Riffle:	20	
Stream Type:		G6	Percent Run:	40	
			Percent Pool:	40	
			Step Pool:		
A					

Comments:



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2AS1L3A Date: 5/11/20		Date: 5/11/2020	Inv.: Scott Mitchell	Entry:	Ryan Winka
Latitude: Longitude:		37.77994 N -87.62812 W	Level III - Stream State or Condition Morphological Description		
Length:		748	Primary Riparian Left:	4b 10	Altered Channel Key
Distance:		745	Primary Riparian Right:	7a 10	CH = Channelized
Sinuosity:		1.00	Secondary Riparian Left:	RV 1 90	CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Intermittent	Secondary Riparian Right:	RV 1 90	Checks
Area In Acres:		0.06	Stream Flow Regime:	12	DG = Dredged LWC = Low Water Crossing
Slope %:		1.5	Stream Size:	S-2	NA = Not applicable
Level II - Stream		Depositional Features:	NA	OT = Other (See Comments)	
	logical Des		Meander Patterns:	M-1	PI = Pipe RSC = Road Side Channel
Width at Bottom	•	0.60	Stream Channel Debris:	D1	
Bankfull Surface	Width:	3.50	Stream Bank Erosion:	Moderate	
Width of Flood F	rone Area:	4.50	Stream Aggradation:	Stable	
Bankfull Mean D	epth:	0.80	Channel Stability:	Fair	
Entrenchment R		1.29	Altered Channel:	CH,CV,PI	
Width / Depth Ra	atio:	4.38	Percent Riffle:	40	
Stream Type:		G6c	Percent Run:	55	
1			Percent Pool:	5	
			Step Pool:		



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2ASC1F4		Date: 5/7/2020	Inv.: Keith Michalski	Entry: Scott Mitchell	
Latitude: 37.78978 N Longitude: -87.64062 W		Level III - Stream State or Condition Morphological Description			
Length:		1741	Primary Riparian Left: Primary Riparian Right:		Altered Channel Key
Distance: Sinuosity:		1735 1.00	Secondary Riparian Left:		CH = Channelized CV = Culvert DAM = Weir, Dam, or Rock
FlowType: Area In Acres:	Nor	u Jurisdictional 0.00	Secondary Riparian Right: Stream Flow Regime:		Checks DG = Dredged
Slope %:		1	Stream Size:	S-1	LWC = Low Water Crossing NA = Not applicable OT = Other (See
Level II - Stream Morphological Description		Depositional Features: Meander Patterns:	M-1	Comments) PI = Pipe RSC = Road Side Channel	
Width at Bottom	of Stream:	0.00	Stream Channel Debris: Stream Bank Erosion:		
Bankfull Surface	Width:	0.00	Stream Aggradation:		
Width of Flood F	Prone Area:	0.00	Channel Stability:		
Bankfull Mean Depth:		0.00	Altered Channel:		
Entrenchment R	atio:	0.00			
Width / Depth Ratio:		0.00	Percent Riffle:	0	
Stream Type:		Swale	Percent Run:	0	
			Percent Pool:	0	
			Step Pool:		

Comments: Feature is hillside diversion.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

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Henderson County Solar Stream Assessment Worksheet

Stream 2ASC	:1L3B	Date: 5/11/2020	Inv.: Scott Mitchell	Entry: Ry	yan Winka
Latitude: 37.77863 N Longitude: -87.62927 W		Level III - Stream State or Condition Morphological Description			
Length: Distance: Sinuosity: FlowType: Area In Acres: Slope %:	vel II - Stree logical Des of Stream:	644 640 1.01 1.01 0.00 2	Primary Riparian Left: Primary Riparian Right: Secondary Riparian Left: Secondary Riparian Right: Stream Flow Regime: Stream Size: Depositional Features: Meander Patterns: Stream Channel Debris: Stream Bank Erosion: Stream Aggradation:	generation generation	Altered Channel Key CH = Channelized CV = Culvert DAM = Weir, Dam, or Rock Checks DG = Dredged LWC = Low Water Crossing NA = Not applicable OT = Other (See Comments) PI = Pipe RSC = Road Side Channel
Width of Flood F Bankfull Mean D Entrenchment R Width / Depth R Stream Type:	epth: atio:	0.00 0.00 0.00 Gulley	Channel Stability: Altered Channel: Percent Riffle: Percent Run: Percent Pool: Step Pool:		

Comments: Watershed entirely in agriculture production.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

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Henderson County Solar Stream Assessment Worksheet

Stream 2MS1		Date: 5/5/2020	Inv.: Keith Michalski	Entry: Ryan Harris			
Latitude: 037.78741 N Longitude: -87.62783 W			Level III - Stream State or Condition Morphological Description				
Length:		1987	Primary Riparian Left:	10b	100	Altered Cl	hannel Key
Distance:		1755	Primary Riparian Right:	10b	60	CH = Channel	-
Sinuosity:		1.13	Secondary Riparian Left:		U	CV = Culvert DAM = Weir, I	Dam or Pock
FlowType:		Perennial	Secondary Riparian Right:	RV 1	40	Checks	,
Area In Acres:		1.28	Stream Flow Regime:	P2		DG = Dredgeo LWC = Low W	
Slope %:		1	Stream Size:	S-4		NA = Not appl	licable
Level II - Stream			Depositional Features:	OT = Other (See Comments)		bee	
	logical De		Meander Patterns:	M-1		PI = Pipe RSC = Road S	Side Channel
Width at Bottom	•	14.00	Stream Channel Debris:	D3			
Bankfull Surface	Width:	28.00	Stream Bank Erosion:	High			
Width of Flood F	Prone Area:	200.00	Stream Aggradation:	Stable			
Bankfull Mean Depth:		4.60	Channel Stability:	Fair			
Entrenchment Ratio:		7.14	Altered Channel:	PI			
Width / Depth Ratio:		6.09	Percent Riffle:	20			
Stream Type:		E6	Percent Run:	50			
1			Percent Pool:	30			
			Step Pool:				

Comments: Stream accesses floodplain irregularly and may backwater flood.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1-1		Date: 5/6/2020	Inv.: Ryan Winka	Entry: Ryan Harris		
Latitude: 37.78477 N Longitude: -87.63895 W			Level III - Stream State or Condition Morphological Description			
Length:		780	Primary Riparian Left:	10b 100	Altered Channel Key	
Distance:		677	Primary Riparian Right:	10b 50) CH = Channelized	
Sinuosity:		1.15	Secondary Riparian Left:		0 CV = Culvert DAM = Weir, Dam, or Rock	
FlowType:		Perennial	Secondary Riparian Right:	RV 1 5	0 Checks	
Area In Acres:		0.54	Stream Flow Regime:	P1	DG = Dredged LWC = Low Water Crossing	
Slope %:		1.5	Stream Size:	S-5	NA = Not applicable OT = Other (See	
Level II - Stream		Depositional Features:	B-1,B-4	Comments)		
	logical De		Meander Patterns:	M-1	PI = Pipe RSC = Road Side Channel	
Width at Bottom	•	15.00	Stream Channel Debris:	D3		
Bankfull Surface	Width:	30.00	Stream Bank Erosion:	High		
Width of Flood F	Prone Area:	200.00	Stream Aggradation:	SI deg		
Bankfull Mean D	epth:	4.00	Channel Stability:	Poor		
Entrenchment Ratio:		6.67	Altered Channel:	NA		
Width / Depth Ratio:		7.50	Percent Riffle:	30		
Stream Type:		E6	Percent Run:	40		
1			Percent Pool:	30		
			Step Pool:			

Comments: Evidence of past overbank flooding.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1A		Date: 5/6/2020	Inv.: Keith Michalski	Entry: Ryan Harris		
Latitude: 37.78752 N Longitude: -87.62620 W			Level III - Stream State or Condition Morphological Description			
Length:		51	Primary Riparian Left:	10c 50	Altered Channel Key	
Distance:		48	Primary Riparian Right:	10c 50	CH = Channelized	
Sinuosity:		1.06	Secondary Riparian Left:	RV 1 50	CV = Culvert DAM = Weir, Dam, or Rock	
FlowType:		Ephemeral	Secondary Riparian Right:	RV 1 50	Checks	
Area In Acres:		0.00	Stream Flow Regime:	E2	DG = Dredged LWC = Low Water Crossing	
Slope %:		4	Stream Size:	S-2	NA = Not applicable	
Level II - Stream			Depositional Features:	None	OT = Other (See Comments)	
-	logical Des	-	Meander Patterns:	M-1	PI = Pipe RSC = Road Side Channel	
Width at Bottom	•	1.00	Stream Channel Debris:	D2		
Bankfull Surface	Width:	2.80	Stream Bank Erosion:	High		
Width of Flood F	Prone Area:	3.40	Stream Aggradation:	Deg		
Bankfull Mean D	enth.	0.40	Channel Stability:	Poor		
Entrenchment Ratio:		1.21	Altered Channel:	NA		
Width / Depth Ratio:		7.00	Percent Riffle:	0		
Stream Type:		G6	Percent Run:	0		
			Percent Pool:	0		
			Step Pool:	\checkmark		

Comments: Gully like steam drains crop field.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1B		Date: 5/6/2020	Inv.: Keith Michalski	Entry: Ryan Harris		
Latitude: 37.78720 Longitude: -87.62802			Level III - Stream State or Condition Morphological Description			
Length:		47	Primary Riparian Left:	10c 50	Altered Channel Key	
Distance:		40	Primary Riparian Right:	10c 50	CH = Channelized	
Sinuosity:		1.18	Secondary Riparian Left:	RV 1 50	CV = Culvert DAM = Weir, Dam, or Rock	
FlowType:		Ephemeral	Secondary Riparian Right:	RV 1 50	Checks	
Area In Acres:		0.00	Stream Flow Regime:	E2	DG = Dredged LWC = Low Water Crossing	
Slope %:		3	Stream Size:	S-2	NA = Not applicable	
Level II - Stream			Depositional Features:	NA	OT = Other (See Comments)	
_	logical Des	-	Meander Patterns:	M-1	PI = Pipe RSC = Road Side Channel	
Width at Bottom	•	1.20	Stream Channel Debris:	D2		
Bankfull Surface	Width:	2.60	Stream Bank Erosion:	High		
Width of Flood F	Prone Area:	3.50	Stream Aggradation:	SI deg		
Bankfull Mean D	enth.	0.40	Channel Stability:	Poor		
Entrenchment Ratio:		1.35	Altered Channel:	NA		
Width / Depth Ratio:		6.50	Percent Riffle:	20		
Stream Type:		G6	Percent Run:	80		
			Percent Pool:	0		
			Step Pool:			

Comments: Gully like stream drains crop field.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

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Henderson County Solar Stream Assessment Worksheet

Stream 2MS1C Date: 5/6/2020		Inv.: Keith Michalski		Entry: Ry	an Harris	
Latitude: Longitude:		37.78675 N -87.62907 W	Level III - Stre Morphol	eam State ogical Des		ion
Length:		41	Primary Riparian Left:	10c	20	Altered Channel Key
Distance:		40	Primary Riparian Right:	3a	20	CH = Channelized
Sinuosity:		1.02	Secondary Riparian Left:	RV 1	80	CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Ephemeral	Secondary Riparian Right:	RV 1	80	Checks
Area In Acres:		0.00	Stream Flow Regime:	E2		DG = Dredged LWC = Low Water Crossing
Slope %:		3	Stream Size:	S-2		NA = Not applicable
Level II - Stream		Depositional Features:	B-1		OT = Other (See Comments)	
Morphological Description		Meander Patterns:	M-1		PI = Pipe RSC = Road Side Channel	
Width at Bottom	•	1.00	Stream Channel Debris:	D2		
Bankfull Surface	Width:	2.40	Stream Bank Erosion:	High		
Width of Flood F	Prone Area:	3.40	Stream Aggradation:	SI deg		
Bankfull Mean D		0.30	Channel Stability:	Poor		
Entrenchment R	•	1.42	Altered Channel:	NA		
Width / Depth R		8.00	Percent Riffle:	20		
-	all0.	G6	Percent Run:	75		
Stream Type:		Go	Percent Pool:	5		
			Step Pool:			
				<u> </u>		

Comments: Gully like stream drains crop field.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1F3 Date: 5/7/202		Date: 5/7/2020	Inv.: Ryan Winka	Entry: Scott Mitchell			
Latitude: Longitude:		37.78805 N 87.64140 W	Level III - Stre Morphole	eam State		on	-
Length:		412	Primary Riparian Left: Primary Riparian Right:	10b 8a	30	Altered	Channel Key
Distance: Sinuosity:		410	Secondary Riparian Left:	RV 1	70	CH = Chanr CV = Culver	
FlowType:		Intermittent	Secondary Riparian Right: Stream Flow Regime:	RV 1	95	Checks DG = Dredg	, ,
Area In Acres: Slope %:		0.02	Stream Size:	S-2		NA = Not ap	
Level II - Stream Morphological Description		Depositional Features: Meander Patterns:	NA M-1		OT = Other (See Comments) PI = Pipe RSC = Road Side Channel		
Width at Bottom	•	1.40	Stream Channel Debris:	D2			
Bankfull Surface	Width:	2.60	Stream Bank Erosion: Stream Aggradation:	Low SI deg			
Width of Flood F		3.70	Channel Stability:	Fair			
Bankfull Mean D Entrenchment R	•	0.25	Altered Channel:	CH,RSC			
Width / Depth R		10.40	Percent Riffle:	35			
Stream Type:		G6c	Percent Run:	55			
			Percent Pool:	10			
			Step Pool:				



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1	I	Date: 5/7/2020	Inv.: Ryan Winka		Entry: Sc	ott Mitchell	
Latitude: Longitude:		37.78665 N -87.62786 W	Level III - Stre Morphole	eam State c ogical Desc		on	-
Length:		208	Primary Riparian Left:	10b	100	Altered	Channel Key
Distance:		197	Primary Riparian Right:	10b	100	CH = Chann	elized
Sinuosity:		1.06	Secondary Riparian Left:		0	CV = Culver	t , Dam, or Rock
FlowType:		Ephemeral	Secondary Riparian Right:		0	Checks	
Area In Acres:		0.02	Stream Flow Regime:	E2		DG = Dredg LWC = Low	ed Water Crossing
Slope %:		2	Stream Size:	S-2		NA = Not ap OT = Other	
Level II - Stream		Depositional Features:	B-4		Comments)	(See	
_	logical Des	-	Meander Patterns:	M-1		PI = Pipe RSC = Road	Side Channel
Width at Bottom	•	1.40	Stream Channel Debris:	D4			
Bankfull Surface	Width:	3.90	Stream Bank Erosion:	Low			
Width of Flood F	Prone Area:	5.60	Stream Aggradation:	Stable			
Bankfull Mean D	epth:	0.20	Channel Stability:	Good			
Entrenchment R		1.44	Altered Channel:	ОТ			
Width / Depth Ra	atio:	19.50	Percent Riffle:	25			-
Stream Type:		B6	Percent Run:	55			
<u> </u>			Percent Pool:	20			
			Step Pool:				

Comments: Large amounts of slash throughout stream due to past logging.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1	L	Date: 5/11/2020	Inv.: Keith Michalski		Entry: Ry	an Winka	
Latitude: Longitude:		37.78248 N -87.63264 W	Level III - Stre Morphole	eam State ogical Des		on	
Length:		687	Primary Riparian Left:	10b	20	Altered 0	Channel Key
Distance:		653	Primary Riparian Right:	10b	30	CH = Chann	elized
Sinuosity:		1.05	Secondary Riparian Left:	RV 1	80	CV = Culvert	t , Dam, or Rock
FlowType:		Perennial	Secondary Riparian Right:	RV 1	70	Checks	, ,
Area In Acres:		0.26	Stream Flow Regime:	12		DG = Dredge LWC = Low	ed Water Crossing
Slope %:		1.5	Stream Size:	S-4		NA = Not applicable OT = Other (See	
Level II - Stream		Depositional Features:	B-1		Comments)	366	
Morphological Description			Meander Patterns:	M-1		PI = Pipe RSC = Road	Side Channel
Width at Bottom	•	6.20	Stream Channel Debris:	D2			
Bankfull Surface	Width:	16.80	Stream Bank Erosion:	High			
Width of Flood F	Prone Area:	26.00	Stream Aggradation:	Stable			
Bankfull Mean D	epth:	3.80	Channel Stability:	Fair			
Entrenchment R		1.55	Altered Channel:	CV			
Width / Depth Ra	atio:	4.42	Percent Riffle:	25			
Stream Type:		G5c	Percent Run:	40			
1			Percent Pool:	35			
			Step Pool:				



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1L-1 Date: 5/12/2020		Inv.: Ryan Harris	Entry: Keith Michalski			i	
Latitude: Longitude:		37.77949 N 87.63468 W	Level III - Stre Morphole	eam State o ogical Des		ion	-
Length:		2313	Primary Riparian Left:	10b	50	Altered	Channel Key
Distance:		2032	Primary Riparian Right:	10b	20	CH = Chann	
Sinuosity:		1.14	Secondary Riparian Left:	RV 1	50	CV = Culver	t , Dam, or Rock
FlowType:		Intermittent	Secondary Riparian Right:	RV 1	80	Checks	, ,
Area In Acres:		0.76	Stream Flow Regime:	12		DG = Dredg LWC = Low	ed Water Crossing
Slope %:		1	Stream Size:	S-3		NA = Not ap	plicable
Level II - Stream		Depositional Features:	B-1,B-4		OT = Other Comments)	(See	
Morphological Description			Meander Patterns:	M-1		PI = Pipe RSC = Road	d Side Channel
Width at Bottom	•	6.90	Stream Channel Debris:	D3			
Bankfull Surface	Width:	14.30	Stream Bank Erosion:	High			
Width of Flood F	Prone Area:	22.00	Stream Aggradation:	Stable			
Bankfull Mean D	epth:	3.10	Channel Stability:	Fair			
Entrenchment R	•	1.54	Altered Channel:	CH,PI			
Width / Depth Ra	atio:	4.61	Percent Riffle:	30			
Stream Type:		G4c	Percent Run:	40			
1			Percent Pool:	30			
			Step Pool:				



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1	L2	Date: 5/11/2020	Inv.: Keith Michalski		Entry: Ry	an Winka
Latitude: Longitude:		37.78302 N -87.63232 W	Level III - Stre Morphole	eam State c ogical Desc		on
Length:		48	Primary Riparian Left:	10b	20	Altered Channel Key
Distance:		46	Primary Riparian Right:	10b	20	CH = Channelized
Sinuosity:		1.04	Secondary Riparian Left:	RV 1	80	CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Intermittent	Secondary Riparian Right:		0	Checks
Area In Acres:		0.00	Stream Flow Regime:	12		DG = Dredged LWC = Low Water Crossing
Slope %:		3	Stream Size:	S-2		NA = Not applicable
Level II - Stream		Depositional Features:	NA		OT = Other (See Comments)	
Morphological Description		Meander Patterns:	M-1		PI = Pipe RSC = Road Side Channel	
Width at Bottom	•	1.60	Stream Channel Debris:	D3		
Bankfull Surface	Width:	3.10	Stream Bank Erosion:	High		
Width of Flood F	Prone Area:	4.00	Stream Aggradation:	Deg		
Bankfull Mean D	enth:	0.60	Channel Stability:	Poor		
Entrenchment R		1.29	Altered Channel:	DAM,OT,PI		
Width / Depth Ra		5.17	Percent Riffle:	40		
Stream Type:		G6	Percent Run:	55		
1-			Percent Pool:	5		
			Step Pool:			

Comments: Old trash has been dumped in stream.



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1	L-2	Date: 5/12/2020	Inv.: Ryan Harris	E	Entry: Ke	ith Michalski
Latitude: Longitude:		37.77345 N -87.63566 W	Level III - Stre Morphol	eam State or ogical Descri		on
Length:		1439	Primary Riparian Left:	10b	30	Altered Channel Key
Distance:		1413	Primary Riparian Right:	10b	20	CH = Channelized
Sinuosity:		1.02	Secondary Riparian Left:	RV 1	70	CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Intermittent	Secondary Riparian Right:	RV 1	80	Checks
Area In Acres:		0.44	Stream Flow Regime:	12		DG = Dredged LWC = Low Water Crossing
Slope %:		1	Stream Size:	S-3		NA = Not applicable
Level II - Stream		Depositional Features:	B-2		OT = Other (See Comments)	
Morphological Description		Meander Patterns:	M-1		PI = Pipe RSC = Road Side Channel	
Width at Bottom	-	10.80	Stream Channel Debris:	D2		
Bankfull Surface	Width	13.30	Stream Bank Erosion:	High		
Width of Flood P		19.00	Stream Aggradation:	Stable		
		2.00	Channel Stability:	Fair		
Bankfull Mean De	•		Altered Channel:	CH,CV,OT,PI		
		1.43	Dereent Diffler	20	1	
Width / Depth Ra	atio:	6.65	Percent Riffle:	30]	
Stream Type:		G5c	Percent Run:	60]	
			Percent Pool:	10]	
Commenter Old	f awa t ua - 1	houdhout stream se	Step Pool:			

Old farm trash thoughout stream segment. omments:



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1L3 Date: 5/11/20		Date: 5/11/2020	Inv.: Ryan Harris	Entry: F	Ryan Winka
Latitude: Longitude:		37.78131 N 87.63165 W		eam State or Cond ogical Description	ition
Length:		2421	Primary Riparian Left:	10b 20	Altered Channel Key
Distance:		2381	Primary Riparian Right:	10b 20	CH = Channelized
Sinuosity:		1.02	Secondary Riparian Left:	RV 1 80	CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Intermittent	Secondary Riparian Right:	RV 1 80	Checks
Area In Acres:		0.66	Stream Flow Regime:	12	DG = Dredged LWC = Low Water Crossing
Slope %:		1.5	Stream Size:	S-3	NA = Not applicable
Level II - Stream		Depositional Features:	B-4	OT = Other (See Comments)	
Morphological Description			Meander Patterns:	M-1	PI = Pipe RSC = Road Side Channel
Width at Bottom	•	5.90	Stream Channel Debris:	D3	
Bankfull Surface	Width:	11.90	Stream Bank Erosion:	High	
Width of Flood F	rone Area:	15.50	Stream Aggradation:	SI deg	
Bankfull Mean D	epth:	2.80	Channel Stability:	Fair	
Entrenchment R	•	1.30	Altered Channel:	CH,CV,PI	
Width / Depth Ra	atio:	4.25	Percent Riffle:	30	
Stream Type:		G5c	Percent Run:	40	
1			Percent Pool:	30	
			Step Pool:		



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Latitude:37.77743NLongitude:-87.62680WLength:194Distance:194Sinuosity:1.02FlowType:EphemeralArea In Acres:0.02	
LonguiIonDistance:191Sinuosity:1.02FlowType:EphemeralArreada Arreada0.02Stream Flow Regime:F2	,
Sinuosity: 1.02 FlowType: Ephemeral Stream Flow Regime: F2	or Rock
Sinuosity: 1.02 FlowType: Ephemeral Secondary Riparian Right: RV 1 95 Stream Flow Regime: F2	or Rock
FlowType: Ephemeral Secondary Riparian Right: RV 1 95 Checks Arrow In Annual 0.02 Stream Flow Regime: F2 DG = Dredged	DI NOCK
	crossina
Slope %· 1.5 Stream Size: S-3 NA = Not applicable	5
Level II - Stream Depositional Features: NA OT = Other (See Comments)	
Morphological Description Meander Patterns: M-1	hannel
Width at Bottom of Stream: 2.20 Stream Channel Debris: D2	
Bankfull Surface Width: 5.10 Stream Bank Erosion: High	
Width of Flood Prone Area: 8.10 Stream Aggradation: Stable	
Channel Stability: Poor	
Bankfull Mean Depth: 1.60 Altered Channel: CH,DAM,LWC	
Entrenchment Ratio: 1.59	
Width / Depth Ratio: 3.19 Percent Riffle: 20	
Stream Type: G6c Percent Run: 60	
Percent Pool: 20	
Step Pool:	

Comments:



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1	L4	Date: 5/12/2020	Inv.: Ryan Harris		Entry: Kei	ith Michalsk	i
Latitude: Longitude:		37.77897 N -87.63469 W	Level III - Stre Morphole	eam State ogical Des		on	-
Length:		118	Primary Riparian Left:	10b	15	Altered	Channel Key
Distance:		110	Primary Riparian Right:	10b	10	CH = Chann	
Sinuosity:		1.07	Secondary Riparian Left:	RV 1	85	CV = Culver	t , Dam, or Rock
FlowType:		Ephemeral	Secondary Riparian Right:	RV 1	90	Checks	
Area In Acres:		0.01	Stream Flow Regime:	E2		DG = Dredg LWC = Low	ed Water Crossing
Slope %:		1.5	Stream Size:	S-2		NA = Not ap	plicable
Level II - Stream		Depositional Features:	B-4		OT = Other (See Comments)		
Morphological Description		Meander Patterns:	M-1		PI = Pipe RSC = Road	l Side Channel	
Width at Bottom	-	1.80	Stream Channel Debris:	D2		rioo rioud	
Bankfull Surface	Width:	3.70	Stream Bank Erosion:	High			
Width of Flood F	Prone Area	5.20	Stream Aggradation:	Stable			
Bankfull Mean D		0.60	Channel Stability:	Fair			
Entrenchment R	•		Altered Channel:	DAM,PI			
		1.41	D (D)(()	00			-
Width / Depth Ra	atio:	6.17	Percent Riffle:	30			
Stream Type:		G6c	Percent Run:	60			
			Percent Pool:	10			
			Step Pool:				



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1	L5	Date: 5/12/2020	Inv.: Ryan Winka	Entr	y: Keith Michalski
Latitude: Longitude:		37.77918 N 87.63500 W		eam State or Co ogical Descripti	
Length:		124	Primary Riparian Left:	10b :	50 Altered Channel Key
Distance:		120	Primary Riparian Right:	10b	50 CH = Channelized
Sinuosity:		1.03	Secondary Riparian Left:	RV 1	50 CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Ephemeral	Secondary Riparian Right:	RV 1	50 Checks
Area In Acres:		0.01	Stream Flow Regime:	E2	DG = Dredged LWC = Low Water Crossing
Slope %:		1.5	Stream Size:	S-2	NA = Not applicable
Level II - Stream		Depositional Features:	NA	OT = Other (See Comments)	
-	logical Des	-	Meander Patterns:	M-1	PI = Pipe RSC = Road Side Channel
Width at Bottom	-	1.00	Stream Channel Debris:	D3	
Bankfull Surface	Width:	3.20	Stream Bank Erosion:	Moderate	
Width of Flood F	rone Area:	4.40	Stream Aggradation:	SI deg	
Bankfull Mean D		0.40	Channel Stability:	Fair	
Entrenchment R	•	1.38	Altered Channel:	NA	
Width / Depth Ra		8.00	Percent Riffle:	40	
Stream Type:		G6c	Percent Run:	55	
cacan Type.			Percent Pool:	5	
			Step Pool:		



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Stream 2MS1	06	Date: 10/26/2020	Inv.: Ryan Harris	Entr	y: Ryan Harris
Latitude: Longitude:		37.79163 N -87.62754 W		eam State or Co ogical Descripti	
Length:		22	Primary Riparian Left:	10b 2	20 Altered Channel Key
Distance:		22	Primary Riparian Right:	10a 2	20 CH = Channelized
Sinuosity:		1.00	Secondary Riparian Left:	3b	80 CV = Culvert DAM = Weir, Dam, or Rock
FlowType:		Ephemeral	Secondary Riparian Right:	RV 1	80 Checks
Area In Acres:		0.00	Stream Flow Regime:	E2	DG = Dredged LWC = Low Water Crossing
Slope %:		1	Stream Size:	S-3	NA = Not applicable OT = Other (See
Level II - Stream		Depositional Features:	NA	Comments)	
	logical De		Meander Patterns:	M-1	PI = Pipe RSC = Road Side Channel
Width at Bottom	•	2.80	Stream Channel Debris:	D2	
Bankfull Surface	Width:	5.30	Stream Bank Erosion:	Moderate	
Width of Flood F	Prone Area:	8.20	Stream Aggradation:	Stable	
Bankfull Mean D	epth:	0.50	Channel Stability:	Fair	
Entrenchment R	atio:	1.55	Altered Channel:	CH,PI,RSC	
Width / Depth Ra	atio:	10.60	Percent Riffle:	20	
Stream Type:		G4c	Percent Run:	70	
1			Percent Pool:	10	
			Step Pool:		



Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

Project ID: Henderson	County Solar	Stream Class:	Perennial Exhibit 14 Attachment 14.1
Stream ID: 1MS1		Location;	HENDERSON KY Page 45 of 237
Lat: 37.80201	Long: -87.62741	River Basin	Ohio
Investigators: Keith Mic	balski Date: 04-May-20		Paggan for Survey
Signature:	Time: 2:10 PM		Reason for Survey: 404 functional Assessment:
WEATHER			
CONDITIONS	Current Past 24 Hour		n in last 7 days
	Storm (Heavy Rain)	□ No	Yes
	□ Rain Steady □ Rain Steady □ Showers (Intermittent) ✓ Showers (Intermittent)	Air Temp F	
		Air Temp C	24
	Clear/Sunny	0 Other	
STREAM			
CHARACTERIZATION	Stream Subsystem		Stream Type
	Perennial 🗌 Intermittent 🗌 Ephemeral		Coldwater
	Stream Origin		✓ Warmwater Catchment Area
	Upland Runoff I Mixture of Origins		Mile ² 116.00
	Spring-fed/Ground Water Wetland Other		Km ² 300.44
WATERSHED	Surrounding Land Use & Percentage		Vatershed NPS Pollution
FEATURES			_
			evidence Some potential sources
	Agriculture 50		Vatershed Erosion
	Residential 15		ne 🗹 Moderate 🗌 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant sp	pecies present	Dominant Species
(18 meter buffer)	✓ Trees	None	Mixed mast.
INSTREAM		Capan	y Cover
FEATURES	Est Reach Length ft 100 m		
	Est Stream Width ft 90.0 m		aded 🗹 Partly Shaded
	Sampling Reach Area ft ² 9000.0 m ²	030.1	
			ater Mark ft 15.00
	Est Water Depth in 80.0 m		ater Mark m 4.57
	Surface Velocity ft/s 0.1 m/s		ream Morphology
		✓ Riffle	
	Channelized Yes Vo	✓ Pool	
	Dam Present □Yes ✔ No	Step	Pool Series
LARGE WOODY DEBRIS	LWD 0.9 m 2	10 ft ²	
DEDRIS		000009290 _{ft} 2 /	mile 2 0.000003587
AQUATIC	Indicate the dominant type and record the dominant spec		
VEGETATION		Rooted Floating	✓ None Portion of the reach with aquatic vegetation
		Floating Algae	present: 0
		Floating Algae	
WATER QUALITY	□ No Water Present Temperature 21 ^O C	69 ⁰ F	Water Odors
QUALITY	□ No Flow Present Conductivity µs/cm	457	✔ Normal/None
	Total Disolved Solids	229 mg/l	Chemical Anaerobic
	pH	7.2	Do: 5.79 mg/L
	Turbidity		er Surface Oils
	Clear Slightly Turbid Turbid		Slick Sheen Globs Flecks
	☐ Opaque ☐ Stained ☐ Other		Other

							Exhibit 14 Atte	ehmont 14.1
SEDIMENT/ SUBSTRATE		Odors	_			Deposits	Pa	ge 46 of 237
		✓	Normal Sewage	Petroleum		Sludge Saw	/dust 🗌 Pa	aper Fiber
			Chemical 🗌 Anaerobi	ic 🗌 None		Sand Relie	c Shells 🗌 Of	ther
			Other			tink on	· •	
		Oils				oking at stones which are bedded, are undersides		
		✓	Absent 🗌 Slight 🗌 M	/loderate 🗌 Profus		Yes Volume	DIGUN III UUIUI.	
Substrate	Diame	-	% Composite in	-	Substrate			Composition in
Туре		10.	Reach		Туре			mpling Reach
Bedrock	·		0		Dietritus	Sticks, wood, coa		10
Boulder	>10'		0		1	plant material		
Cobble	2.5 - 1		0		Muck-	Black, very fine		0
Gravel	0.1 - 2		10		Mud	organic matter	r	-
Sand	gritty	•	15		Marl	Grey, shell fragments		0
Silt Clay	gooe slick	•	50 25					
,			20					
Habita Paramet		<u> </u>	Optimal			W GRADIENT STREAM	<u>AS</u>	Poor
1. Epifaunal		Great	Optimal ater than 50% for low	SubOpt 30-50% for low o		Marginal 10-30% for low gradier	-+ 10% for !	Poor low gradient
Substrate/		gradie	ient streams) of substrate	streams) mix of	stable	streams) mix of stable	streams)	stable habitat;
Available Cover			rable for epifaunal nization & fish cover; mix o	habitat; well-suite		habitat; habitat availab		abitat is substrate unstable
Cover		snags	s, submerged logs,	adequate habitat	at for	less than desirable; substrate frequently	obvious; or lacking	
		under	ercut banks, cobble or othe	er maintenance of	populations;	disturbed or removed.		5.
			le habitat & at stage to v full colonization potential	presence of addi substrate in form				
		(i.e., I	logs/snags that are not	but not yet prepa	ared for			
		new t	fall and not transient).	colonization (ma high end of scale				
Score	9	20				10 ⊻987		
2. Pool	<u> </u>	Mixtu	ure of substrate materials,			All mud or clay or sand	d Hardpan	clay or bedrock:
Substrate		with g	gravel and firm sand	clay; mud may b	be dominant;	bottom: little or no root	mat: no root m	nat or vegetation.
Characterization	n		alent; root mats and nerged vegetation commo	some root mats a		no submerged vegetati	ion.	
		345	leigen vegennion eenni	present.	lation			
				ľ				
0	44				10-40-411			
Score	11 lity	20	□ 19 □ 18 □ 17 □ 16 mix of large shallow, large	1	3 _ 12 ⊻ 11		L 6 L 5 L 4	
3. Pool Variabili			n mix of large shallow, large o, small shallow, small-dee			Shallow pools much m prevalent than deep po		of pools small- or pools absent.
			s present.					, poere
								<u> </u>
Score	9	20					1	
4. Sediment Deposition			or no enlargement of ds or point bars and less	Some new increation, mostly		Moderate deposition of gravel, sand or fine		eposits of fine increased bar
Deposition		than •	<20% of the bottom	gravel, sand or fi	fine	sediment on old and ne	ew developn	ment; more than
		affect	ted by sediment deposition	on. sediment; 20-50)% of the	bars; 50-80% of the bo	ottom 80% of th	he bottom
				bottom affected; deposition in poo		affected; sediment dep at obstructions,		g frequently; pools bsent due to
						constrictions, and benc	ds; substanti	ial sediment
						moderate deposition of pools prevalent.	f depositio	ın.
Score	11	20	19 18 17 16	6 15 14 13	3 🗌 12 🕊 11	10 9 8 7		□3□2 □ 1□ 0

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the XNI available channel, and/or riffle substrates are mostly exposed.	ଅV ଌିମ୍ୟୁ ମିଖିନେ ଭେଉଜାମ୍ବାର୍ମ ଧର୍ମରାମାର and mପିଷ୍ଥିତ କିନ୍ତିକରିଥିରିର standing pools.
Score 18	20 □ 19 ⊻ 18 □ 17 □ 16	15 14 13 12 11		5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 10		15 14 13 12 11	✓ 10 □ 9 □ 8 □ 7 □ 6	
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 7	/2019181716	15 14 13 12 11	1098 ✔76 [
8. Bank Stability (score each bank) Note: determine left o right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	erosion mostly healed over	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
Score (LB) 3			5 4 23	
Score (RB) 3 9. Vegetative Protection (score each bank) Note: determine left o right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macronbytes; vegetative	8 7 6 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	5 4 ✓3 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	2 1 0 Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 4	10 9		5 🖌 4 🗌 3	
Score (RB) 4 10. Riparian Vegetative Zone Width (score each bank riparian zone) Note: determine left o right side by facing downstream.	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	8 7 6 Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	5 √ 4 3 Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	☐2 ☐ 1 ☐ 0 Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
Score (LB) 6				
Score (RB)8Total Score103		⊻ 8 ∐7 ∐6		
	<u> </u>			

Project ID: Henderson	County Solar	Stream Class:	Perennial Exhibit 14 Attachment 14.1
Stream ID: 1MS1A		Location;	HENDERSON KY Page 48 of 237
Lat: 37.80330	Long: -87.63178	River Basin	Ohio
Investigators: Ryan Wi	-	- <u>-</u>	
Signature:	Date: 04-May-20		Reason for Survey:
5	Time: 9:30 AM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Hopyy rain	in last 7 days
CONDITIONS			
	Storm (Heavy Rain) Storm (Heavy Rain)	No No	Yes
	Rain Steady Rain Steady	Air Temp F	65
	Showers (Intermittent) Showers (Intermittent)	Air Temp C	18
	Cloud Cover % 0 Cloud Cover %	Other	
	Clear/Sunny		
STREAM			Stream Type
CHARACTERIZATION	Stream Subsystem		
	Perennial Intermittent Ephemeral		Coldwater
	Stream Origin		✓ Warmwater Catchment Area
	Stream Origin		Mile ² 2.89
	Upland Runoff Mixture of Origins		Km ² 7.49
	Spring-fed/Ground Water Wetland Other		Kii <u>7.49</u>
WATERSHED	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
FEATURES			
			evidence Some potential sources
	☐ Field/Pasture 0 ☐ Other 0	L Ob	vious sources
	Agriculture 50	Local V	Vatershed Erosion
	Residential 0		ne 🗹 Moderate 🗌 Heavy
RIPARIAN			
VEGETATION	Indicate the dominant type and record the dominant sp	pecies present	Dominant Species
(18 meter buffer)	🗹 Trees 🗌 Shrubs 🗌 Grasses 🗌 Herbs	None	Soft Mast species
INSTREAM			
FEATURES	Est Reach Length ft 100 m	30 Canopy	/ Cover
	Est Stream Width ft 25.0 m	7.6 Dp	en 🗌 Partly Open
	Sampling Reach Area ft ² 2500.0 m ²	232.3 🗹 Sha	aded 🗌 Partly Shaded
			ater Mark ft 3.00
	Est Water Depth in 60.0 m	1.5 High Wa	ater Mark m 0.91
	Surface Velocity ft/s 0.2 m/s	0.1 % of Str	eam Morphology
		✓ Riffle	e % 40 🗹 Run % 20
	Channelized Yes No	✓ Pool	% 40 Glide Pool
	Dam Present □Yes ✔ No		Pool Series
LARGE WOODY DEBRIS	LWD 0.9 m 2	10 ft ²	
DEDITIO	Density of LWD m 2 /km 2 0.00	000009290 _{ft} 2 /r	0.000003587
	···· /Km	n - /r	
AQUATIC VEGETATION	Indicate the dominant type and record the dominant spec		Portion of the reach with
	Rooted Emergent Rooted Submergent	Rooted Floating	✓ None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
WATER QUALITY	□ No Water Present Temperature 20 ° C	68 ⁰ F	Water Odors
	□ No Flow Present Conductivity µs/cm	419	✔ Normal/None
	Total Disolved Solids	210 mg/l	Chemical Anaerobic
		0.00	
	pH	6.86	Do: 5.76 mg/L
	Turbidity	Wate	er Surface Oils
	Clear 🖌 Slightly Turbid 🗌 Turbid		Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	Opaque Stained Other		Other

								Exhit	hit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors					Deposits		Page 49 of 237
		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	Anaerobic	None		Sand	Relic Shel	lls 🗌 Other
			Other						· .
		Oils						s which are not o ndersides black	
		✓	Absent	Slight 🗌 Mod	derate 🗌 Profus		Yes	No	
									COMPONENTS
Substrate	Diame	-		Composite in S	-	Substrate		racteristic	% Composition in
Туре	_			Reach	u	Туре	·		Sampling Reach
Bedrock	<u> </u>			0		Dietritus	· · · ·	wood, coarse	5
Boulder	>10"			0				nt material	
Cobble	2.5 - 1			0		Muck- Mud		k, very fine inic matter	0
Gravel	0.1 - 2			0		Mud Marl	•		0
Sand Silt	gritty gooe	•	+	80		IVidii		ey, shell agments	U
Clay	slick	•		20		L		<u> </u>	
Habita		T			HABITAT ASSES	SMENT - LO		STRFAMS	
Paramet		-	Opti	-	SubOpt		1	rginal	Poor
1. Epifaunal		-	ter than 50%	% for low	30-50% for low g	radient	10-30% for lo	ow gradient	10% for low gradient
Substrate/		gradie	ent streams	s) of substrate	streams) mix of s	stable	streams) mix	of stable	streams)stable habitat;
Available Cover			able for epif	faunal sh cover; mix of	habitat; well-suite colonization pote		habitat; habita less than des		lack of habitat is obvious;substrate unstable
		snags	s, submerge	ed logs,	adequate habitat	t for	substrate free	quently	or lacking.
			rcut banks, e habitat & a	cobble or other at stage to	maintenance of p		disturbed or r	removed.	
		allow	full coloniza	ation potential	substrate in form	of new fall,			
			logs/snags f fall and not t	that are not transient)	but not yet prepa colonization (may				
			all and not .		high end of scale				
Score	6	20	19 18	8 🗌 17 🗌 16	15 14 13	· · · · · · · · · · · · · · · · · · ·	10 9	8 7 16	
2. Pool				rate materials,	Mixture of soft sa		All mud or cla	ay or sand	Hardpan clay or bedrock:
Substrate Characterization			gravel and fi alent; root m		clay; mud may be some root mats a			or no root mat: d vegetation.	no root mat or vegetation.
Ondraster					submerged vege		10000	u vogo	
					present.				
Score	7	20	19 11	8 🗌 17 🗌 16	15 14 13	3 12 11	10 9	8 🖌 7 🗌 6	
3. Pool Variabil	lity	Even		e shallow, large-			Shallow pools	s much more	Majority of pools small-
			, small shall s present.	low, small-deep	very few shallow		prevalent that	n deep pools.	shallow or pools absent.
		роов	present.						
Score	6	20	19 11	8 🗌 17 🗌 16	15 14 13	3 12 11	10 9	8 7 16	
4. Sediment		Little	or no enlarg	gement of	Some new increa	ase in bar	Moderate dep	position of new	Heavy deposits of fine
Deposition		island	ds or point b	bars and less	formation, mostly	y from	gravel, sand	or fine	material, increased bar
			<20% of the ted by sedin	e bottom ment deposition.	gravel, sand or finsediment; 20-50%		sediment on obars; 50-80%		development; more than 80% of the bottom
				10111 20P	bottom affected;	slight	affected; sedi	iment deposits	changing frequently; pools
					deposition in poo	ls.	at obstruction constrictions,	,	almost absent due to substantial sediment
							moderate dep	position of	deposition.
							pools prevale	ent.	
Score	13	20	19 11	8 🗌 17 🗌 16		8 12 11		8 7 6	
1									
1									

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	WeryntteeWatenfin triannel and mo ିଷ୍ଥତ ନିବ୍ଦର୍ହନ୍ୟ standing pools.
Score 13	2019181716	1514 🗹 13 1211		
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 13	2019181716	1514 ✔ 131211		
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 5	2019181716	15 14 13 12 11		✓5 □4 □3□2 □ 1□ 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
Score (LB) 3	10 9		_5 _4 ⊻3	
Score (RB) 4	□ 10 □ 9		_5 ⊻4 _3	
 Vegetative Protection (score each bank) Note: determine left or right side by facing downstream. 	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 4			5 24 3	
Score (RB) 4 10. Riparian	10 9 Width of riparian zone >18	8 7 6 Width of riparian zone 12-18	U 5 ✓4 U 3 Width of riparian zone 6-12	☐2 ☐ 1 ☐ 0 Width of riparian zone <6
Vegetative Zone Width (score each bank riparian zone) Note: determine left or right side by facing downstream.	meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	meters; human activities have impacted zone only minimally.	meters; human activities have impacted zone a great deal.	meters: little or no riparian vegetation due to human activities.
Score (LB) 4	10 9		5 ✔43	
Score (RB) 6				
Total Score 88				

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 1MS1B	,	Location;	HENDERSON KY Page 51 of 237
Lat: 37.80275	Long: -87.63112	River Basin	Ohio
Investigators: Scott Mit	chell		
Signature:	Date: 04-May-20		Reason for Survey:
0	Time: 11:00 AM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	i in last 7 days
CONDITIONS			✓ Yes
	Storm (Heavy Rain)	No	
	Rain Steady	Air Temp F	
	□ Showers (Intermittent) ☑ Showers (Intermittent)		21
		0 Other	
	Clear/Sunny		
STREAM	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial Intermittent I Ephemeral		
			✓ Warmwater Catchment Area
	Stream Origin		
	Upland Runoff I Mixture of Origins		Mile ² 0.01
	Spring-fed/Ground Water Wetland Other		Km ² 0.03
WATERSHED			
FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
	✓ Forest 60 Commercial 0	🗌 No	evidence Some potential sources
	Field/Pasture 0 Other 0	□ Ob	vious sources
	✓ Agriculture 40	_	Vatershed Erosion
	Residential 0		ne 🗹 Moderate 🗌 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant s	pecies present	Dominant Species
(18 meter buffer)			Soft mast
	✓ Trees	None	
INSTREAM	Est Reach Length ft 100 m	30 Canopy	/ Cover
FEATURES			
	Est Stream Width ft 3.5 m		
	Sampling Reach Area ft ² 350.0 m ²	32.5 V Sha	
	Sampling Area mile ² 0.000013 km ² 0.0	000032 High Wa	ater Mark ft 0.30
	Est Water Depth in 0.0 m	0.0 High Wa	ater Mark m 0.09
	Surface Velocity ft/s 0.0 m/s	0.0 % of Str	ream Morphology
		✓ Riffle	
	Channelized Yes Vo	Pool	
	Dam Present □Yes ✔ No	Step	Pool Series
LARGE WOODY	LWD 0.2 m 2	2 ft ²	
DEBRIS		00001959	0.000000717
	Density of LWD m ² /km ² 0.00	ft ² /r	nile ²
AQUATIC VEGETATION	Indicate the dominant type and record the dominant spe	cies present	Portion of the reach with
VEGETATION	□ Rooted Emergent □ Rooted Submergent □	Rooted Floating	✓ None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
		r roadinig / ligao	
WATER	✓ No Water Present Temperature 0 ° C	0 ⁰ F	Water Odors
QUALITY	No Flow Present Conductivity µs/cm	0	□ Normal/None □ Sewage □ Petroleum
	Total Disolved Solids	0 mg/l	
		°	
	pH	0 [Do: mg/L
	Turbidity	Wate	er Surface Oils
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	Opaque Stained Other		Other

								<u> </u>	bit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors					Deposits		Page 52 of 237
		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	Anaerobic	None None		Sand	Relic Shel	lls 🗌 Other
			Other						
		Oils						which are not ondersides black	
		✓	Absent	Slight 🗌 Mod	derate 🗌 Profus		Yes	No	
								SUBSTRATE C	OMPONENTS
Substrate	Diame	-		Composite in S	-	Substrate		racteristic	% Composition in
Туре				Reach		Туре	·		Sampling Reach
Bedrock	<u> </u>		T	0		Dietritus	· · · ·	wood, coarse	5
Boulder	>10'			0		· · · ·		t material	
Cobble	2.5 - 1			0		Muck- Mud		k, very fine nic matter	0
Gravel Sand	0.1 - 2			0		Mud Marl	°	ey, shell	0
Sand	gritty gooe	•	+	5 95	I	Wan		ey, shell agments	U
Clay	slick	•	+	0		<u> </u>		<u> </u>	
Habita		T			HABITAT ASSES	SMENT - LC	W GRADIENT	STREAMS	
Parame			Opti	imal	SubOpt			rginal	Poor
1. Epifaunal		-	ter than 50%	% for low	30-50% for low g	gradient	10-30% for lo	w gradient	10% for low gradient
Substrate/ Available		gradie	ent streams	s) of substrate	streams) mix of s	stable	streams) mix	of stable	streams)stable habitat; lack of habitat is
Available Cover			able for epifation & fis	faunal sh cover; mix of	habitat; well-suite colonization pote		habitat; habita less than des		lack of habitat is obvious;substrate unstable
		snags	s, submerge	ed logs,	adequate habitat	t for	substrate freq	quently	or lacking.
			rcut banks, o e habitat & a	cobble or other at stage to	maintenance of p presence of addit		disturbed or r	emoved.	
		allow	full coloniza	ation potential	, substrate in form	n of new fall,			
			logs/snags t fall and not t	that are not transient).	but not yet prepa colonization (may				
		no	an ana		high end of scale	e).			
Score	6	-	19 18		15 14 13		□10 □9 □	_8 _7 ⊻6	
2. Pool Substrate				rate materials,	Mixture of soft sa		All mud or cla	ay or sand	Hardpan clay or bedrock:
Substrate Characterizatio			gravel and fi alent; root m		clay; mud may be some root mats a		bottom: little on submerged	or no root mat: d vegetation.	no root mat or vegetation.
					. submerged veget			- 0	
					present.				
Score	10	20	19 18	8 🗌 17 🗌 16	15 14 13	3 12 11	✔10 □9 □	8 7 6	
3. Pool Variabil							Shallow pools		Majority of pools small-
			, small shall s present.	low, small-deep	very few shallow		prevalent thar	n deep poois.	shallow or pools absent.
		P	P100-1						
Score	5	20	19 18	8 🗌 17 🗌 16	15 14 13	3 12 11	10 9	8 7 6	✔5 □4 □3□2 □ 1 □0
4. Sediment			or no enlarg		Some new increa				Heavy deposits of fine
Deposition			ds or point b <20% of the	bars and less e bottom	formation, mostly gravel, sand or fin		gravel, sand on sediment on o		material, increased bar development; more than
				ment deposition.	sediment, 20-50%	% of the	bars; 50-80%	o of the bottom	80% of the bottom
					bottom affected; deposition in poo		affected; sedi at obstruction	iment deposits	changing frequently; pools almost absent due to
						15.	constrictions,		substantial sediment
							moderate dep		deposition.
							pools prevale	Int.	
Score	15	20	19 18	8 17 16	✓ 15 14 13	3 12 11	10 9	8 7 6	5 4 3 2 1 0
ا ۔۔۔۔ ا ب	J L								

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	Wery ମଧ୍ୟୟୁକ୍ୟ ଜିନ୍ଦି କରିଥିବି କରିଥିବି standing pools.		
Score 2		15 14 13 12 11		543 ✔2 1 0		
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.		
Score 16	20191817 ⊻16	15 14 13 12 11		5 4 3 2 1 0		
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.		
Score 6		15 14 13 12 11	10 □9 □8 □7 ✔6	5 4 3 2 1 0		
8. Bank Stability (score each bank) Note: determine left or right side by facing	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.		
downstream.						
Score (LB) 7 Score (RB) 7		8 ✓ 7 6				
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes: vegetative	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.		
Score (LB) 8	10 9		5 4 3			
Score (RB) 8 10. Riparian	IO 9 Width of riparian zone >18	✓ 8 ☐ 7 ☐ 6 Width of riparian zone 12-18	U5 U4 U3 Width of riparian zone 6-12	└──2 └── 1 └── 0 Width of riparian zone <6		
Vegetative Zone Width (score each bank riparian zone) Note: determine left or right side by facing downstream.	meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	meters; human activities have impacted zone only minimally.	meters; human activities have impacted zone a great deal.	width of hparan 20he <0 meters: little or no riparian vegetation due to human activities.		
Score (LB) 6						
Score (RB) 9	□ 10					
Total Score 105						

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 1MS1B-1		Location;	HENDERSON KY Page 54 of 237
Lat: 37.80178	Long: -87.63108	River Basin	Ohio
Investigators: Ryan Ha	rris		
Signature:	Date: 04-May-20		Reason for Survey:
-	Time: 11:30 AM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	in last 7 days
CONDITIONS			✓ Yes
	Storm (Heavy Rain) Storm (Heavy Rain)	No	V Yes
	Rain Steady Rain Steady	Air Temp F	70
	Showers (Intermittent)	Air Temp C	21
		0 Other	
	Clear/Sunny		
STREAM	Other and Outherstein		Stream Type
CHARACTERIZATION	Stream Subsystem		Coldwater
	Perennial 🗋 Intermittent 🗹 Ephemeral		
	Stream Origin		✓ Warmwater Catchment Area
	_		Mile ² 0.01
	Upland Runoff Mixture of Origins		Km ² 0.03
	Spring-fed/Ground Water Wetland Other		
WATERSHED	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
FEATURES	✓ Forest 20 Commercial 0		evidence Some potential sources
			•
	□ Field/Pasture 0 ✓ Other 10	Ob	vious sources
	✓ Agriculture 60 Rail line	Local V	Vatershed Erosion
	Residential 0	🗌 No	ne 🗹 Moderate 🗌 Heavy
RIPARIAN			
VEGETATION	Indicate the dominant type and record the dominant s	pecies present	Dominant Species
(18 meter buffer)	✓ Trees ☐ Shrubs ☐ Grasses ☐ Herbs	None	Soft mast.
INSTREAM			
FEATURES	Est Reach Length ft 100 m	30 Canopy	
	Est Stream Width ft 6.2 m	1.9 Dp	en 🔄 Partly Open
	Sampling Reach Area ft ² 620.0 m ²	57.6 🗹 Sh	aded 🗌 Partly Shaded
		00058 High Wa	ater Mark ft 0.30
			ater Mark m 0.09
	Surface Velocity ft/s 0.0 m/s	0.0 % of Str	eam Morphology
		🖌 🗹 Riffle	e % 60 🗹 Run % 35
	Channelized Yes 🗹 No	Pool	% 5 Glide Pool
	Dam Present Yes V No	Step	Pool Series
LARGE WOODY DEBRIS	LWD 0.1 m 2	1 ft ²	
	Density of LWD m ² /km ² 0.00	000000929 ft ² /r	nilo 2 0.000000359
AQUATIC			
VEGETATION	Indicate the dominant type and record the dominant spec		Portion of the reach with
	Rooted Emergent Rooted Submergent	Rooted Floating	✓ None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
WATER QUALITY	✓ No Water Present Temperature 0 ^o C	0 ⁰ F	Water Odors
	□ No Flow Present Conductivity µs/cm	0	🗌 Normal/None 🗌 Sewage 🗌 Petroleum
	Total Disolved Solids	0 mg/l	Chemical Anaerobic
	pH	ů	
			Do: mg/L
		_	er Surface Oils
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🛄 Globs 🛄 Flecks
	🗌 Opaque 🗌 Stained 📃 Other		Other

											Evhil		oobmo	<u>t 11 :</u>	1
SEDIMENT/		Odors	s						Deposits				age 55		
SUBSTRATE		✓	Norma	al [_ Sev	vage	Petroleum		Sludge	e 🗌 Sav	wdust		Paper F		ļ
			Chemi	ical [_ ∏ Ana	aerobic	None		Sand	Rel	lic Shel	ls 🗌 (Other		ł
			Other		_	-							-		ļ
			Uner					Loc	oking at stone	es which a	re not a	deeply			ł
		Oils				_	_	emt	bedded, are	undersides	s black		?		ł
		✓	Absen	ıt ∐ s	Slight		derate 🗌 Profus	e	Yes	🖌 No	,				
	INORGA	NIC S	UBST	RATE (COMPO	ONENT	S		ORGANIC	C SUBSTR	ATE C	OMPON	VENTS	i	
Substrate	Diamet	ter		% C(•		Sampling			e Characteristic		% Composition in			
Туре					Reach		Туре				S	Samplir		ach	
Bedrock						0		Dietritus		, wood, co				15	I
Boulder	>10"					0				ant materia					
Cobble	2.5 - 1					0		Muck-		ck, very fin				0	I
Gravel	0.1 - 2.		<u> </u>			0		Mud	0	janic matte	3r				I
Sand	gritty	/	<u> </u>			10		Marl		Grey, shell				0	I
Silt	gooe		<u> </u>			90		ļ		ragments					
Clay	slick	<u>. </u>				0		I							
Habita							HABITAT ASSES	SMENT - LO		IT STREA	MS				
Parame	ter			Optim	al		SubOpti	imal	М	arginal			Po	or	
1. Epifaunal		-		n 50% f			30-50% for low g	,	10-30% for			10% for			
Substrate/ Available				eams) c or epifau		trate	streams) mix of s		streams) mi			streams lack of			at;
Available Cover				r epitau 1 & fish		mix of	habitat; well-suite colonization pote		habitat; hab less than de		JIIILY	obvious			ostable
0010.		snags	s, subn	nerged	logs,		adequate habitat	t for	substrate fre	equently		or lacki			1010.0.2
				inks, co			maintenance of p		disturbed or	removed.					
				at & at : Ionizatio			presence of addit substrate in form								
	I	(i.e., l	logs/sr	hags the	at are r	nuai 10t	but not yet prepa	,							
				l not tra			colonization (may	y rate at							
<u> </u>	I	<u> </u>			 		high end of scale		<u> </u>		, , , ,				
Score	4	20	19	-	L 17	16			□10 □9	-		5 🖌		2	10
2. Pool				ubstrate		erials,	Mixture of soft sa		All mud or c	lay or san	d t mot	Hardpa			
Substrate Characterizatio				and firm oot ma			clay; mud may be some root mats a		bottom: little			no root	mat or	vegeu	ation.
Ondraotonzatio						ommon.			no ousine.g	ou vogota	lion.				
	I		-	-			present.								
	I														
	I														
	I														
	I														
Score	6	20	19	18	17	16	15 14 13	3 12 11	10 9	8 7	✔6	54	4 🗌 3 🗌	2	10
3. Pool Variabil						, large-			Shallow poo			Majority			
				shallov	v, smal	l-deep	very few shallow		prevalent th	an deep p	ools.	shallow	or poo	ols abs	ent.
	I	poois	preser	nt.											
	I														
	I														
	I														
	I														
	I														
Score	2	20	19	18	17	16	15 14 13	3 12 11	10 9	8 7	6		4 🗌 3 🕻	∕2 [1 🗌 0
4. Sediment		Little	or no e	enlargei	ment o	of	Some new increa	ase in bar	Moderate de	eposition c	of new	Heavy			ne
Deposition		island	ds or po	oint bar	rs and I		formation, mostly	y from	gravel, sand	d or fine		materia	ıl, incre	eased b	bar
				of the b		- Hon	gravel, sand or fin		sediment or			develop			than
	I	aneco	euby	sedime	ni uepu	JSILION.	sediment; 20-50% bottom affected;		bars; 50-80 ^o affected; se			80% of changir			pools
	I						deposition in poo		at obstructio		poen	almost	• •		
	I						-		constriction			substar		diment	t
	I								moderate de pools preva		of	deposit	ion.		
	I								poors preva	lent.					
Score	14	20	19	18	17	16		3 2 12 11		8 7	6	54	4 🗌 3	2	1 0
	t												+ 🗆 🗸	_	
1															
1															
1															
							52								

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	WeryntteeWatenfun channel and mo sge ନହେ ଣ୍ଣୟିଙ୍କ standing pools.
Score 1	20 19 18 17 16	15 14 13 12 11		5432 ✔ 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 15	2019181716	✓ 15 □ 14 □ 13 □ 12 □ 11		5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 5		15 14 13 12 11		✓5 □4 □3□2 □ 1□ 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	erosion mostly healed over.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
Score (LB) 8	10 9	√ 8 □7 □6	5 4 3	
Score (RB) 8	10 9	⊻ 8 □7 □6		
 Vegetative Protection (score each bank) Note: determine left or right side by facing downstream. 	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 8	10 9		5 4 3	
Score (RB) 8 10. Riparian	10 9 Width of riparian zone >18	✓ 8 7 6 Width of riparian zone 12-18	Uidth of riparian zone 6-12	☐2 ☐ 1 ☐ 0 Width of riparian zone <6
Vegetative Zone Width (score each bank riparian zone) Note: determine left or right side by facing downstream.	meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	meters; human activities have impacted zone only minimally.	meters; human activities have impacted zone a great deal.	weters: little or no riparian vegetation due to human activities.
Score (LB) 3	10 9		54 ✔3	
Score (RB) 6				
Total Score 88				

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 1MS1C		Location;	HENDERSON KY Page 57 of 237
Lat: 37.80191	Long: -87.62975	River Basin	Ohio
Investigators: Ryan Wi	nka		
Signature:	Date: 04-May-20		Reason for Survey:
0	Time: 12:00 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	i in last 7 days
CONDITIONS			✓ Yes
	Storm (Heavy Rain)	No	
	Rain Steady	Air Temp F	
	☐ Showers (Intermittent)		22
		0 Other	
	Clear/Sunny		
STREAM	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial Intermittent I Ephemeral		
			✓ Warmwater Catchment Area
	Stream Origin		
	Upland Runoff Mixture of Origins		Mile ² 0.01
	Spring-fed/Ground Water Wetland Other		Km ² 0.03
WATERSHED		L	
FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
	✓ Forest 50 Commercial 0	🗌 No	evidence 🗌 Some potential sources
	Field/Pasture 0 0 Other 0	✓ Ob	vious sources
	✓ Agriculture 40	_	Vatershed Erosion
	Residential 0		ne 🗹 Moderate 🗌 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant s	pecies present	Dominant Species
(18 meter buffer)			Soft mast.
	✓ Trees	☐ None	
INSTREAM	Est Reach Length ft 100 m	30 Canopy	/ Cover
FEATURES			
	Est Stream Width ft 3.7 m		aded
	Sampling Reach Area ft 2 370.0 m 2	34.4	
	Sampling Area mile ² 0.000014 km ² 0.0	000034 High Wa	ater Mark ft 0.50
	Est Water Depth in 0.5 m	0.0 High Wa	ater Mark m 0.15
	Surface Velocity ft/s 0.0 m/s	0.0 % of Str	eam Morphology
		/i or ou	
	Channelized Yes Vo	Pool	
	Dam Present ☐Yes ✔ No		Pool Series
LARGE WOODY	LWD 1.9 m 2	20 ft ²	
DEBRIS		000010501	
	Density of LWD m ² /km ² 0.00	ft ² /r	nile ²
AQUATIC VEGETATION	Indicate the dominant type and record the dominant spe	cies present	Portion of the reach with
VEGETATION	□ Rooted Emergent □ Rooted Submergent □	Rooted Floating	✓ None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
	5 5	5 5	
WATER	No Water Present Temperature 0 ° C	0 ⁰ F	Water Odors
QUALITY	✓ No Flow Present Conductivity µs/cm	0	✓ Normal/None □ Sewage □ Petroleum
	Total Disolved Solids	0 mg/l	□ Chemical □ Anaerobic
		ů	
	рН	0	Do: mg/L
	Turbidity		er Surface Oils
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	Opaque Stained Other		Other

								Exhil	bit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors		_	_	_	Deposits		Page 58 of 237
		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	Anaerobic	None		Sand	Relic Shel	lls 🗌 Other
			Other						
		Oils						s which are not on ndersides black	
			Absent 🗌 Sli	ight 🗌 Moo	oderate 🗌 Profus		Yes	No	
	INORGA			-					
Substrate	Diame	-		nposite in S	-	Substrate		racteristic	% Composition in
Type	Biuiii	101	/	Reach	ampina	Туре	,	autonotic	Sampling Reach
Bedrock	 I		+	0		Dietritus	Sticks,	wood, coarse	50
Boulder	>10'	"	<u> </u>	0			plan	nt material	
Cobble	2.5 - 1			0	I	Muck-		k, very fine	0
Gravel	0.1 - 2		1	0	P	Mud	J	anic matter	
Sand	gritty	•	+	5	P	Marl		ey, shell agments	0
Silt Clay	gooe slick	•		95 0	P				
,		і т							
Habita Paramet		<u> </u>	Optimal	-	HABITAT ASSES		1		Poor
1. Epifaunal		Grea	ter than 50% for		SubOpt 30-50% for low g		10-30% for lo	rginal	10% for low gradient
Substrate/		gradie	ent streams) of	substrate	streams) mix of s	stable	streams) mix	of stable	streams)stable habitat;
Available Cover		favora	able for epifauna	al	habitat; well-suite colonization pote			at availability	lack of habitat is obvious;substrate unstable
Cover			s, submerged lo		adequate habitat		substrate free		opvious;substrate unstable or lacking.
			rcut banks, cobb		maintenance of p	populations;	disturbed or r		
			e habitat & at sta / full colonization		presence of addit substrate in form				
		(i.e., I	logs/snags that	are not	but not yet prepa	ared for			
		new t	fall and not trans	ient).	colonization (may high end of scale				
Score	6	20	19 18	17 16				8 7 46	
2. Pool		Mixtu	are of substrate	materials,	Mixture of soft sa		All mud or cla	ay or sand	Hardpan clay or bedrock:
Substrate		with g	gravel and firm s	sand	clay; mud may be	e dominant;	bottom: little	or no root mat:	no root mat or vegetation.
Characterization	n		alent; root mats nerged vegetatio		some root mats a		no submerge	ed vegetation.	
		0		// Jen.	present.				
Score	7	20	19 18	17 16	15 14 13	3 12 11		8 🖌 7 🗌 6	
3. Pool Variabili		-	mix of large sha					s much more	Majority of pools small-
0.1001.0	лу	deep,	, small shallow,					in deep pools.	shallow or pools absent.
		pools	s present.						
Scoro	6	20		17 16		3 12 11		8 7 16	
Score 4. Sediment	6	20	or no enlargeme		□ 15 □ 14 □ 13 Some new increa		Moderate der	87 ♥ 6 position of new	☐5 ☐ 4 ☐3 ☐2 ☐ 1 ☐0 Heavy deposits of fine
4. Sediment Deposition		island	ds or point bars a	and less	formation, mostly		gravel, sand	or fine	material, increased bar
-		than •	<20% of the bot	ttom	gravel, sand or fi	ine	sediment on	old and new	development; more than
		afreci	ted by sediment	deposition.	 sediment; 20-50% bottom affected; 			6 of the bottom	80% of the bottom changing frequently; pools
					deposition in poo		at obstructior	ns,	almost absent due to
							constrictions, moderate de		substantial sediment deposition.
							pools prevale		
			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·					
Score	12	20	□19 □18 □	⊥17 ⊥ 16	□ 15 □ 14 □ 13	3 🗹 12 🗌 11	□10 □9		

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	WétyftttteCWaterfint triannel and mo age ନେ ବର୍ତ୍ତନିୟିନିର୍ଣ୍ଣ standing pools.
Score 1		15 14 13 12 11		5432 ✔ 10
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 15	20 19 18 17 16	✓ 15 14 13 12 11		
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 €6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
right side by facing downstream.				
Score (LB) 3			_5 _4 ⊻3	
Score (RB) 3			_5 _4 ⊻3	
 9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream. 	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 2	10 9		5 4 3	
Score (RB) 2				
10. Riparian Vegetative Zone Width (score each bank riparian zone) Note: determine left or	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
right side by facing downstream.				
Score (LB) 9	10 29			
Score (RB) 9	10		5 4 3	
Total Score 81				

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 1MS1C-1	•	Location;	HENDERSON KY Page 60 of 237
Lat: 37.80158	Long: -87.62979	River Basin	Ohio
Investigators: Ryan Wi	nka		
Signature:	Date: 04-May-20		Reason for Survey:
	Time: 12:15 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	i in last 7 days
CONDITIONS			✓ Yes
	Storm (Heavy Rain)	No	
	Rain Steady Rain Steady	Air Temp F	
	□ Showers (Intermittent) ☑ Showers (Intermittent)	Air Temp C	22
		0 Other	
	Clear/Sunny		
STREAM	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial Intermittent I Ephemeral		
	Stream Origin		✓ Warmwater Catchment Area
	□Upland Runoff		Mile ² 0.01
	Spring-fed/Ground Water Wetland Other		Km ² 0.03
WATERSHED FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
	✓ Forest 30 Commercial 0	🗌 No	evidence Some potential sources
	Field/Pasture 0 Other 0	✓ Ob	vious sources
		-	
	Agriculture 70		Vatershed Erosion
	Residential 0		ne 🗹 Moderate 🗌 Heavy
RIPARIAN	Indicate the dominant type and record the dominant s	pecies present	Dominant Species
VEGETATION (18 meter buffer)			Soft mast.
	✓ Trees	☐ None	
INSTREAM	Fat Baach Langth ft 100 m	30 Canopy	/ Cover
FEATURES	Est Reach Length ft 100 m		
	Est Stream Width ft 2.8 m	0.5	
	Sampling Reach Area ft ² 280.0 m ²	26.0 D Sh	aded Partly Shaded
	Sampling Area mile ² 0.000010 km ² 0.0	000026 High Wa	ater Mark ft 0.40
	Est Water Depth in 0.5 m	0.0 High Wa	ater Mark m 0.12
	Surface Velocity ft/s 0.0 m/s	0.0 % of Str	ream Morphology
		% of Sti	
	Channelized Yes No	Pool	
	Dam Present 🛛 Yes 🗹 No	Step	Pool Series
LARGE WOODY	LWD 0.5 m 2	5 ft ²	
DEBRIS		00004645	0.0000001794
	Density of LWD m ² /km ² 0.00	ft ² /r	nile 2 0.0000001734
AQUATIC	Indicate the dominant type and record the dominant spe	cies present	Dertion of the reach with
VEGETATION	□ Rooted Emergent □ Rooted Submergent □	Rooted Floating	✓ None Portion of the reach with aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
		r louting / liguo	
WATER	No Water Present Temperature 0 ° C	0 ⁰ F	Water Odors
QUALITY	✓ No Flow Present Conductivity µs/cm	0	✓ Normal/None
	, , ,	-	
	Total Disolved Solids	0 mg/l	Chemical Anaerobic
	рН	0	Do: mg/L
	Turbidity	Wate	er Surface Oils
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗌 Globs 🔲 Flecks
	Opaque Stained Other		Other

											<u> </u>	hit 14 At	toohma	<u>nt 14 -</u>	1
SEDIMENT/		Odors	s						Deposits				Page 61		
SUBSTRATE		✓	Norma	al [Sev	vage	Petroleum		Sludge	e 🗌 Sav	wdust		Paper F		ŀ
			Chemi	_		aerobic			Sand	_	lic Shel	_	Other		I
				icai L	_ Ana	eropic			🔄 Əanu			IS LI V	Jthe		I
			Other					امر	the states	م مادا ا	+ .	1- seeba			I
		Oils							bking at stone bedded, are ι				°		ŀ
		✓	Absen	π Π <i>f</i>	Slight		derate 🗌 Profus		Yes			in ocie.	:		I
					-										
	INORGA	-	UBSTI			-	-			CSUBSTR					
Substrate	Diamet	ter		% Co	•		Sampling	Substrate	e Cha	aracteristi	ic		Comp		
Туре	ļ		<u> </u>			Reach		Туре				3	Samplir	-	acn
Bedrock						0		Dietritus	· · · · · · · · · · · · · · · · · · ·	, wood, co				5	I
Boulder	>10"	·				0		I	ріа	int materia	d				
Cobble	2.5 - 1	0"	\Box_{-}			0		Muck-		ck, very fir		T		0	
Gravel	0.1 - 2.	.5"				2		Mud	org	anic matte	er				I
Sand	gritty	/				8		Marl		Grey, shell		1		0	
Silt	gooe	Y				90	I		fr	ragments					I
Clay	slick					0		 I				+			i
Habita							HABITAT ASSES				MQ				
Parame		<u> </u>		Ontim			1		1		IN S		Po		I
				Optim			SubOpt			arginal		100/ 6-	-	or	
1. Epifaunal Substrate/		-		n 50% f eams) c		trata	30-50% for low g streams) mix of s	,	10-30% for I streams) mi			10% fo stream			
Available				r epifau		late	habitat; well-suite		habitat; habi			lack of			аι,
Cover				& fish		mix of	colonization pote		less than de		<i>J</i> 1115	obvious			nstable
		snags	s, subr	nerged	logs,		adequate habitat	t for	substrate fre	equently		or lacki			
				inks, co			maintenance of p		disturbed or	removed.					
				at & at : Ionizatio			presence of addit substrate in form								
	I	(i.e., l	loas/sr	hags the	at are r	nuai not	but not yet prepa	,							
				l not tra			colonization (may								
	ا ــــــــــــــــــــــــــــــــــــ						high end of scale	e).			·				
Score	7	20	19	18	17	16	15 14 13	3 12 11	10 9	8 🖌 7	6	5	4 🗌 3	2	1 0
2. Pool				ubstrate		erials,	Mixture of soft sa		All mud or c			Hardpa			
Substrate				and firm			clay; mud may be		bottom: little			no root	mat or	vegeta	ation.
Characterizatio				oot mat		ommon.	some root mats a		no submerg	ed vegeta	tion.				
I	I	Suom	eryeu	Vegera	ition co	/mnon.	present.	lation							
	I						present.								
I	I														
	I														
	I														
	ا 		- 10	10	· · · · · ·	10						┟╷ _┛ ┍╌┰			
Score	7	20	<u> </u> 19	18		<u> </u>							4 🖂 3 🗌	2	1_0
3. Pool Variabil				f large s		, U			Shallow poo			Majority			
			, small s preser	shallov	v, sma⊧	I-deep	very few shallow		prevalent the	an deep p	00IS.	shallow	/ or pou	ils abs	ent.
	I	ρουισ	preser	m.											
	I														
	I														
	I														
	I														
	I														
Score	6	20	19	18	17	16		3 12 11	10 9	8 7	√ 6	5	4 🗌 3 🗌	2	1 0
4. Sediment	<u> </u>														
4. Sediment Deposition				enlargeı oint bar			Some new increation, mostly		Moderate de gravel, sand)T new	Heavy materia			
Deposition				of the b		635	gravel, sand or fi		sediment on		ıew	develop			
				sedime		osition.	sediment; 20-50%	% of the	bars; 50-80°	% of the b	ottom	80% of	the bo	ttom	
	I						bottom affected;		affected; see		posits	changir	• •		•
	I						deposition in poo	ıls.	at obstructio		J	almost			
	I								constrictions moderate de			substar deposit		Jiniem	í
	I								pools preval		/	dopes.	1011.		
	I								F · I						
Score	14	20	19	18	17	16	15 🖌 14 🗌 13	3 12 11	10 9	8 7	6		4 🗌 3	2	1 0
	L								•						
1															
1															
							58								

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the XnII available channel, and/or riffle substrates are mostly exposed.	WeryntteeWaterfin triannel and mo age ନ ହେଇନେୟିନ standing pools.
Score 1				5432 ✔ 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 14	2019181716	15 🖌 14 🗌 13 🗌 12 🗌 11		5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 6	20 19 18 17 16	15 14 13 12 11	10 □9 □8 □7 ✔6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
downstream.				
Score (LB) 4	10 9		_5 ⊻4 _3	
Score (RB) 4 9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	10 9 More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	8 7 6 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	5 ✓4 3 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	2 1 0 Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 4	10 9		5 🖌 4 🗌 3	2 1 0
Score (RB) 4 10. Riparian	U 10 U 9 Width of riparian zone >18	Width of riparian zone 12-18	U 5 ✓4 3 Width of riparian zone 6-12	└──2 └── 1 └── 0 Width of riparian zone <6
Vegetative Zone Width (score each bank riparian zone) Note: determine left or right side by facing	meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	meters; human activities have impacted zone only minimally.	meters; human activities have impacted zone a great deal.	meters: little or no riparian vegetation due to human activities.
downstream.				
Score (LB) 6 Score (RB) 8		87 ⊻ 6 ▼876		
Total Score 85		v		

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 1MS1D	,	Location;	HENDERSON KY Page 63 of 237
Lat: 37.80190	Long: -87.62732	River Basin	Ohio
Investigators: Ryan Wi	nka		
Signature:	Date: 04-May-20		Reason for Survey:
0	Time: 2:21 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	i in last 7 days
CONDITIONS		_	✓ Yes
	Storm (Heavy Rain)	No	
	Rain Steady Rain Steady	Air Temp F	
	Cloud Cover % 30 Cloud Cover %	Air Temp C	24
		0 Other	
	Clear/Sunny Clear/Sunny		
STREAM	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial Intermittent I Ephemeral		
	Stream Origin		✓ Warmwater Catchment Area
	□Upland Runoff ✓ Mixture of Origins	[Mile ² 0.01
	Spring-fed/Ground Water Wetland Other		Km ² 0.03
WATERSHED			
FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
	✓ Forest 30 Commercial 0	🗌 No	evidence Some potential sources
	Field/Pasture 0 Other 0	□ Ob	vious sources
	✓ Agriculture 70		Vatershed Erosion
	Residential 0		ne 🗹 Moderate 🗌 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant s	pecies present	Dominant Species
(18 meter buffer)			·
	✓ Trees	☐ None	
INSTREAM	Est Reach Length ft 100 m	30 Canopy	/ Cover
FEATURES			
	Est Stream Width ft 3.2 m		
	Sampling Reach Area ft ² 320.0 m ²	29.7 V Sha	
	Sampling Area mile ² 0.000012 km ² 0.0	000030 High Wa	ater Mark ft 0.35
	Est Water Depth in 0.5 m	0.0 High Wa	ater Mark m 0.11
	Surface Velocity ft/s 0.0 m/s	0.0 % of Str	ream Morphology
		// OF Str ✓ Riffle	
	Channelized Yes Vo	Pool	
	Dam Present □Yes ✔ No	Step	Pool Series
LARGE WOODY	LWD 1.4 m 2	15 ft ²	
DEBRIS		00012025	
	Density of LWD m ² /km ² 0.00	ft ² /r	nile ²
AQUATIC VEGETATION	Indicate the dominant type and record the dominant spec	cies present	Portion of the reach with
VEGETATION	Rooted Emergent Rooted Submergent	Rooted Floating	✓ None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
	5	5 5	
WATER	No Water Present Temperature 0 ° C	0 ⁰ F	Water Odors
QUALITY	✓ No Flow Present Conductivity µs/cm	0	✔ Normal/None
	Total Disolved Solids	0 mg/l	☐ Chemical ☐ Anaerobic
		°	
	pH	0 [Do: mg/L
	Turbidity	Wate	er Surface Oils
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	Opaque Stained Other		Other

								Exhil	hit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors					Deposits		Page 64 of 237
		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	Anaerobic	None None		Sand	Relic Shel	lls 🗌 Other
			Other						
		Oils						s which are not o ndersides black	
			Absent	Slight 🗌 Moo	derate 🗌 Profus		Yes	No No	
									COMPONENTS
Substrate	Diame	-		COMPONENT Composite in S	-	Substrate		racteristic	% Composition in
Туре		10.	•-	Reach	amhima	Туре		4010110110	Sampling Reach
Bedrock			<u>+</u>	0		Dietritus	· · · ·	wood, coarse	10
Boulder	>10'		†	0				nt material	
Cobble	2.5 - 1			0		Muck-		k, very fine	0
Gravel	0.1 - 2		<u> </u>	0		Mud	J	anic matter	
Sand Silt	gritty	•	<u> </u>	5 		Marl		ey, shell agments	0
Silt Clay	gooe slick	•	+	95 0		 		Iginorite	
Habita		<u> </u>		-	HABITAT ASSES			TOTOEAMQ	
Habita Paramet			Opti	-	HABITAT ASSES SubOpt		1	rginal	Poor
1. Epifaunal		Grea	iter than 50%		30-50% for low g		10-30% for lo	-	10% for low gradient
Substrate/		gradie	ent streams) of substrate	streams) mix of s	stable	streams) mix	of stable	streams)stable habitat;
Available Cover			able for epifation & fis	faunal sh cover; mix of	habitat; well-suite colonization pote		habitat; habit less than des	at availability	lack of habitat is obvious;substrate unstable
Cover		snags	s, submerge	ed logs,	adequate habitat	t for	substrate free	quently	or lacking.
				cobble or other	maintenance of p		disturbed or r		
		allow	e habitat & a / full coloniza	ation potential	substrate in form				
		(i.e., I	logs/snags t	that are not	but not yet prepa	ared for			
		new i	fall and not t	ransient).	colonization (may high end of scale				
Score	5	20	19 11	8 🗆 17 🗀 16				8 7 6	✓5 ↓4 ↓3 ↓2 ↓1 ↓ 0
2. Pool	<u> </u>	Mixtu	are of substra	ate materials,	Mixture of soft sa		All mud or cla	ay or sand	Hardpan clay or bedrock:
Substrate		with g	gravel and fi	irm sand	clay; mud may b	e dominant;	bottom: little	or no root mat:	no root mat or vegetation.
Characterization	'n		alent; root m nerged vege	nats and etation common.	some root mats a submerged vege		no submerge	ed vegetation.	
					present.				
Score	6	20	19 18	8 17 16	15 14 13	3 12 11		8 7 16	
3. Pool Variabili	_	-		e shallow, large-				s much more	Majority of pools small-
0.1 00.		deep,	, small shall	low, small-deep	very few shallow			in deep pools.	shallow or pools absent.
		pools	s present.						
Scoro	5	20		8 🗌 17 🗌 16		10 11		8 7 6	✓5 □ 4 □ 3 □ 2 □ 1 □ 0
Score 4. Sediment	5	20	or no enlarg		□ 15 □ 14 □ 13 Some new increa		Moderate der	876 [position of new	✓5 ↓ 4 ↓ 3 ↓ 2 ↓ 1 ↓ 0 Heavy deposits of fine
4. Sediment Deposition		island	ds or point b	oars and less	formation, mostly	y from	gravel, sand	or fine	material, increased bar
		than •	<20% of the	e bottom	gravel, sand or fi	ine	sediment on	old and new	development, more than
		апесс	led by seum	nent deposition.	sediment; 20-509 bottom affected;			6 of the bottom	80% of the bottom changing frequently; pools
					deposition in poo		at obstructior	ns,	almost absent due to
							constrictions, moderate de		substantial sediment deposition.
							pools prevale		
<u> </u>			· · · · · · · · · · · · · · · · · · ·						
Score	11	20	19 118	8 🗌 17 🗌 16	□15□14□13	3∟12 ✔ 11	□10 □9		

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	Wery ମଧ୍ୟଙ୍କ ଭାଜରେ ଅନ୍ୟର୍ଯ୍ୟରେ କାର୍ଯ୍ୟରେ କାର୍ଯ୍ୟରେ କାର୍ଯ୍ୟ କାର୍ଯ୍ୟରେ କାର୍ଯ୍ୟରେ କାର୍ଯ୍ୟରେ କାର୍ଯ୍ୟରେ କ				
Score 2				543 ✔2 1 0				
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.				
Score 15	20 19 18 17 16	✓ 15 14 13 12 11		5 4 3 2 1 0				
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.				
Score 6	2019181716	15 14 13 12 11	10 9 8 7 €6	5 4 3 2 1 0				
8. Bank Stability (score each bank) Note: determine left or right side by facing	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.				
downstream.								
Score (LB) 4								
Score (RB) 4 9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	10 9 More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	8 7 6 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	5 24 3 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	2 1 0 Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.				
Score (LB) 4	10 9		5 🖌 4 🗌 3	2 1 0				
Score (RB) 4 10. Riparian	IO 9 Width of riparian zone >18	Width of riparian zone 12-18	U 5 ✓4 3 Width of riparian zone 6-12	└──2 └── 1 └── 0 Width of riparian zone <6				
Vegetative Zone Width (score each bank riparian zone) Note: determine left or right side by facing	meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	meters; human activities have impacted zone only minimally.	meters; human activities have impacted zone a great deal.	meters: little or no riparian vegetation due to human activities.				
downstream.								
Score (LB)8Score (RB)6		⊻ 8 ⊥ 7 ⊥ 6 ⊥ 8 ⊥ 7 ⊻ 6						
Total Score 80								

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 1MS1E	•	Location;	HENDERSON KY Page 66 of 237
Lat: 37.80192	Long: -87.62695	River Basin	Ohio
Investigators: Ryan Wi	nka		
Signature:	Date: 04-May-20		Reason for Survey:
	Time: 2:48 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	i in last 7 days
CONDITIONS			
	Storm (Heavy Rain)	No	✓ Yes
	Rain Steady	Air Temp F	
	Showers (Intermittent)		24
	✓ Cloud Cover % 30 Cloud Cover %	0 Other	
	Clear/Sunny		
STREAM	Otra and Orthoustan		Stream Type
CHARACTERIZATION	Stream Subsystem		Coldwater
	Perennial 🗌 Intermittent 🗹 Ephemeral		
	Stream Origin		✓ Warmwater Catchment Area
			Mile ² 0.02
	Upland Runoff Mixture of Origins		Km ² 0.05
	Spring-fed/Ground Water Wetland Other		
WATERSHED FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
FEATURES	✓ Forest 40 Commercial 0		evidence Some potential sources
	Field/Pasture 0 0ther 0		vious sources
	Agriculture 60	Local V	Vatershed Erosion
	Residential 0	🗌 No	ne 🗹 Moderate 🗌 Heavy
RIPARIAN			Densis and One size
VEGETATION	Indicate the dominant type and record the dominant s	pecies present	Dominant Species Mixed mast.
(18 meter buffer)	✓ Trees	None	Mixed mast.
INSTREAM			
FEATURES	Est Reach Length ft 100 m	30 Canopy	
	Est Stream Width ft 5.2 m	1.6 Dp	en 🔛 Partly Open
	Sampling Reach Area ft ² 520.0 m ²	48.3 🖌 Sh	aded 🗌 Partly Shaded
		000048 High Wa	ater Mark ft 0.40
			ater Mark m 0.12
	Surface Velocity ft/s 0.0 m/s	0.0 % of Str	eam Morphology
		🗹 Riffle	e % 60 🗹 Run % 20
	Channelized Yes 🗹 No	✓ Pool	% 20 Glide Pool
	Dam Present □Yes ✔ No	Step	Pool Series
LARGE WOODY DEBRIS	LWD 0.9 m 2	10 ft ²	
	Density of LWD m ² /km ² 0.0	000009290 ft ² /r	nile 2 0.000003587
AQUATIC			
VEGETATION	Indicate the dominant type and record the dominant spe		✓ None Portion of the reach with aquatic vegetation
	□ Rooted Emergent □ Rooted Submergent □	Rooted Floating	nrecent
	Free Floating Attached Algae	Floating Algae	present: 0
WATER QUALITY	No Water Present Temperature 0 ° C	0 ⁰ F	Water Odors
	✓ No Flow Present Conductivity µs/cm	0	✓ Normal/None
	Total Disolved Solids	0 mg/l	Chemical Anaerobic
	pH		
			Do: mg/L
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🛄 Globs 🛄 Flecks
	Opaque Stained Other		Other

								Exhit	hit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors					Deposits		Page 67 of 237
DUDOINAIL		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	Anaerobic	None None		Sand	Relic Shell	lls 🗌 Other
			Other						
		Oils						s which are not o ndersides black	
		✓	Absent	Slight 🗌 Moo	derate 🗌 Profus		Yes	No	
									COMPONENTS
Substrate	Diame	-		Composite in S	-	Substrate		racteristic	% Composition in
Туре	-	10.		Reach	amha	Туре	·	a010110112	Sampling Reach
Bedrock	·		<u> </u>	0		Dietritus		wood, coarse	5
Boulder	>10"		<u> </u>	0				nt material	
Cobble	2.5 - 1			0		Muck-		k, very fine	0
Gravel	0.1 - 2			0		Mud	, v	anic matter	^
Sand Silt	gritty	-		0		Marl		ey, shell agments	0
Clay	gooe slick	•	+	100		+			
Habita		·		-	HABITAT ASSES			TOTOEAMQ	
Habita Paramet			Opti	-	HABITAT ASSES		1	rginal	Poor
1. Epifaunal		Great	ter than 50%		30-50% for low g		10-30% for lo	-	10% for low gradient
Substrate/		gradie	ent streams	s) of substrate	streams) mix of s	stable	streams) mix	of stable	streams)stable habitat;
Available Cover			able for epif	faunal sh cover; mix of	habitat; well-suite colonization pote		habitat; habita less than des		lack of habitat is obvious;substrate unstable
Cover		snags	s, submerge	ed logs,	adequate habitat	t for	substrate free	quently	opvious;substrate unstable or lacking.
				cobble or other	maintenance of p		disturbed or r		-
		allow	e habitat & a full coloniza	ation potential	presence of addit substrate in form				
		(i.e., I	logs/snags t	that are not	but not yet prepa	ared for			
		new 1	fall and not t	transient).	colonization (may high end of scale				
Score	6	20	19 11	8 🗌 17 🗌 16		-		8 7 16	
2. Pool	J_L_	Mixtu	ire of substra	rate materials,	Mixture of soft sa		All mud or cla	ay or sand	Hardpan clay or bedrock:
Substrate		with g	gravel and fi	irm sand	clay; mud may be	e dominant;	bottom: little	or no root mat:	no root mat or vegetation.
Characterization	n		alent; root m nerged vege		some root mats a submerged vege		no submerge	ed vegetation.	
		3u.	Ciget .	Janon com	present.	lation			
Score	6	20	19 11	8 17 16	15 14 13	3 12 11		_8 _7 ✔6	
3. Pool Variabili				8 17 16 e shallow, large-			Shallow pools		Majority of pools small-
J. F UUI VUIIGE		deep,	, small shall	low, small-deep	very few shallow			n deep pools.	shallow or pools absent.
			present.					-	
Score	5	20			15 14 13				
4. Sediment Deposition			or no enlarg ds or point b	gement of pars and less	Some new increation, mostly		Moderate dep gravel, sand o		Heavy deposits of fine material, increased bar
		than •	<20% of the	e bottom	gravel, sand or fi	ine	sediment on o	old and new	development, more than
		affect	ted by sedin	ment deposition.	sediment; 20-50% bottom affected;			6 of the bottom	80% of the bottom changing frequently; pools
					deposition in poo		at obstruction	ns,	almost absent due to
							constrictions, moderate der		substantial sediment deposition.
							pools prevale		deposition.
	T.T.	<u> </u>							
Score	11	20	19 11	8 🗌 17 🗌 16	15 14 13	3 🗌 12 🕊 11	10 9	8 7 6	

5. Channel Flow Status		Water reaches ba lower banks, and amount of channe exposed.	mimimal	Water fil available of chanr exposed	e ch nel s	annel	; or <	25%	Wate availa riffle s expos	able c subst	han	nel,	and/	or	₩eryfti and mi standir	Bags	€ 61€	se∮a?		nnel
Score 2	2		8 🗌 17 🗌 16	15	14	13	12	2 11	1		9	8	7	6	5	4	3	2	1	0
6. Channel Alteration		Channelization or absent or minima normal pattern.	minimal; stream with present, us				area ; evic ation, thar sent,	lence i.e., past but	Chan exten shorii on bo 80% chan	isive; ng str oth ba of str	emi ructu anks eam	bank ires ; and i rea	men prese 1 40 t ch	ent to	Banks or cem stream and dis habitat remove	ent; rea srup gre	ove ich o ted. atly	er 80 char Inst alte)% o ineliz rear	f the zed n
Score 14	1		8 🗌 17 🗌 16	15 🗸	14	13	12	2 11	10		9 🗌	8	7	6	5	4 🗌	3	2	1	0
7. Channel Sinuosity		The bends in the increase the streat 4 times longer that straight line. (Note braiding is consid plains and other r lying areas. this p not easily rated in	am length 3 to an if it was in a e - channel ered coastal normal low- parameter is	The ben increase to 3 time was in a	e the es lo	strea	ım le than	ngth 2	The t increa 1 to 2 was i	ase tł 2 time	ne si es lo	trear nger	n len thar	igth	Chann has be long di	en d	char			
Score 6	6		8 🗌 17 🗌 16	15	14	13	12	2 11	10		9 🗌	8	7	∕6	5	4	3	2	1	0
8. Bank Stability (score each bank) Note: determine left o		Banks stable; evio erosion or bank fa minimal; little pote problems. <5% of	infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has			Mode 60% areas erosic flood	of bai s of ei on po	nk ir rosic	n rea on; h	ich h igh	as	Unstat areas; freque sectior obviou 100% erosior	"rav ntly is ai s ba of ba	v" aı alor nd b ınk s ank	reas ng st end slou has	raigl s;	nt			
right side by facing downstream.																				
	3	□ 10	9			7	6		[5		4	✔:			2		1	0	
	3	□ 10	9	8		7				5		4	✓ :					1	0	
 9. Vegetative Protection (score each bank) Note: determine left of right side by facing downstream. 	or	More than 90% of streambank surfa immediate riparia covered by native including trees, ui shrubs, or nonwo macrophytes; veg disruption through mowing minimal of almost all plants a naturally.	ces and n zones e vegetation, nderstory ody getative n grazing or or not evident;	70-90% surfaces vegetation plants is represent evident l plant group great ex half of th stubble l	s cov on, l not nted but i but i but i cwth tent	vered out on well disru not aff poter ; more otentia	by na e cla ption fectin ntial f e that al pla	ative iss of ig full to any n one- int	50-70 surfa veget obvio soil o veget than poter heigh	ces c tation us; p r clos tation one-h ntial p	over ; dis atch sely con nalf c lant	red b rupti les o crop nmo of the stub	oy ion of bar ped n; les ə	e	Less th stream covere disrupt vegeta vegeta remove or less height.	ban d by ion tion tion ed to in a	k su veq of si is v has o 5 d	urfac geta trear ery bee centi	es tion; nba high en met	nk ; ers
	2	10	9			7	6		[5		4			✓2			1	0	
	2		9	3		7	6	10.12	[]	5]4			✓ 2			1 [0	
10. Riparian Vegetative Zone Width (score each bank riparian zone) Note: determine left c	or	Width of riparian : meters; human ac parking lots, road cuts, lawns, or cro impacted zone.	ctivities (i.e., beds, clear-	Width of meters; have imp minimall	hum pact	nan ao	ctiviti	es	Width mete have deal.	rs; hu	imar	ו act	ivitie	s	Width meters vegeta activitie	: litt tion	le o	r no	ripa	rian
right side by facing downstream.																				
	3	L 10	9	V (7	6		<u> </u> [5		4					_	1 L	0	
	3	└ 10	9	√ {	8 L	7	6		l	5		4		3		2		1 L	0	
Total Score 76	ò																			

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 1MS1F		Location;	HENDERSON KY Page 69 of 237
Lat: 37.80213	Long: -87.62621	River Basin	Ohio
Investigators: Ryan Wi	nka		
Signature:	Date: 04-May-20		Reason for Survey:
	Time: 7:44 AM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	n in last 7 days
CONDITIONS			✓ Yes
	Storm (Heavy Rain)	No	
	Rain Steady	Air Temp F	
	Showers (Intermittent)		24
		0 Other	
	Clear/Sunny Clear/Sunny		
STREAM	Other and Outherstein		Stream Type
CHARACTERIZATION	Stream Subsystem		
	Perennial 🗋 Intermittent 🗹 Ephemeral		
	Stream Origin		✓ Warmwater Catchment Area
	_		Mile ² 0.01
	Upland Runoff Mixture of Origins		Km ² 0.03
	Spring-fed/Ground Water Wetland Other		
WATERSHED FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
FEATURES	✓ Forest 60 Commercial 0		evidence Some potential sources
	Field/Pasture 0 0ther 0	Ob	vious sources
	✓ Agriculture 40	Local V	Vatershed Erosion
	Residential 0	🗌 No	ne 🗹 Moderate 🗌 Heavy
RIPARIAN			Deminent Orestine
VEGETATION	Indicate the dominant type and record the dominant s	pecies present	Dominant Species Mixed mast
(18 meter buffer)	✓ Trees	None	Mixed mast
INSTREAM			
FEATURES	Est Reach Length ft 100 m	00	y Cover
	Est Stream Width ft 2.1 m	0.6 Dp	en 🗹 Partly Open
	Sampling Reach Area ft ² 210.0 m ²	19.5 Sh	aded 🗌 Partly Shaded
)00020 High Wa	ater Mark ft 0.40
		Ū	
			ater Mark m <u>0.12</u>
	Surface Velocity ft/s 0.0 m/s		eam Morphology
		🗹 Riffle	e % 60 🗹 Run % 30
	Channelized Ves 🗹 No	✓ Pool	% 10 Glide Pool
	Dam Present Yes V No	Step	Pool Series
LARGE WOODY DEBRIS	LWD 0.0 m 2	0 ft ²	
	Density of LWD m ² /km ² 0.00	000000000 ft ² /r	0.000000000 000 000 000 000 000 000 000
AQUATIC			
VEGETATION	Indicate the dominant type and record the dominant spectral Rooted Emergent Rooted Submergent		None Portion of the reach with
		Rooted Floating	
	Free Floating Attached Algae	Floating Algae	present: 5
WATER QUALITY	✓ No Water Present Temperature 0 ° C	0 ⁰ F	Water Odors
	□ No Flow Present Conductivity µs/cm	0	🗌 Normal/None 🗌 Sewage 🗌 Petroleum
	Total Disolved Solids	0 mg/l	Chemical Anaerobic
	pH		
			Do: mg/L
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗋 Globs 🛄 Flecks
	Opaque Stained Other		Other

								Exhil	hit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors	_				Deposits		Page 70 of 237
DUBSINAL		✓	Normal S	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical 🗌 A	Anaerobic	None None		Sand	Relic Shel	lls 🗌 Other
			Other			•		·	
		Oils						s which are not on ndersides black	
		✓	Absent 🗌 Sligh	ht 🗌 Mo	oderate 🗌 Profus		Yes	No	
									COMPONENTS
Substrate	Diame	-		posite in S	-	Substrate		racteristic	% Composition in
Туре	D 10	10.	//	Reach	amping	Туре		autonone	Sampling Reach
Bedrock	[0		Dietritus		wood, coarse	5
Boulder	>10'			0				t material	
Cobble	2.5 - 1			0		Muck-		k, very fine	0
Gravel	0.1 - 2			0		Mud	v	nic matter	
Sand	gritty			0		Marl		ey, shell agments	0
Silt	gooe	•	+	100	!	ļ		Igments	
Clay	slick	<u> </u>		0					
Habita Parame			C - time al	ı	HABITAT ASSES		1		
	ter		Optimal		SubOpt			rginal	Poor
1. Epifaunal Substrate/		-	iter than 50% for lo ient streams) of su		30-50% for low g streams) mix of s	,	10-30% for lo streams) mix		10% for low gradient streams)stable habitat;
Available		favora	able for epifaunal	I	habitat; well-suite	ed for full	habitat; habita	at availability	lack of habitat is
Cover			nization & fish covers, submerged logs		colonization pote adequate habitat		less than des substrate free		obvious;substrate unstable or lacking.
		under	rcut banks, cobble	e or other	maintenance of p	populations;	disturbed or r		
		stable	e habitat & at stag	ge to	presence of addi	itional			
		allow (i.e.,	I full colonization p logs/snags that ar	ootentiai	substrate in form but not yet prepa	,			
			fall and not transie		colonization (may	ly rate at			
		Ļ	· · · · · · · · · · · · · · · · · · ·	·	high end of scale	1 1 1 1		· · · · · · · · · · · · · · · · · · ·	
Score	6			17 16				87 ⊻6	
2. Pool Substrate			ure of substrate m gravel and firm sa		Mixture of soft sa clay; mud may be		All mud or cla	ay or sand or no root mat:	Hardpan clay or bedrock: no root mat or vegetation.
Substrate Characterizatio		preva	alent; root mats a	and	some root mats a	and	no submerge		NO TOOL THAL OF VEYERATION.
		subm	nerged vegetation	ו common.		tation		-	
					present.				
Score	6	20	□ 19 □ 18 □ 1	17 🗌 16	15 14 13	3 12 11	10 9	8 7 16	
3. Pool Variabil	ility	Even	mix of large shall	llow, large-	- Majority of pools	large-deep;	Shallow pools	s much more	Majority of pools small-
			, small shallow, sr	mall-deep	very few shallow	C		n deep pools.	shallow or pools absent.
		poors	s present.						
Score	1			17 16		10 11			
Score	4	20		17 16	□ 15 □ 14 □ 13				
4. Sediment Deposition			or no enlargemen ds or point bars ar		Some new increation, mostly		Moderate dep gravel, sand o	position of new or fine	Heavy deposits of fine material, increased bar
,		than <	<20% of the botto	om	gravel, sand or fi	ine	sediment on	old and new	development, more than
		affect	ted by sediment d	leposition.	 sediment; 20-50% bottom affected; 			o of the bottom iment deposits	80% of the bottom changing frequently; pools
					deposition in poo		at obstruction	ns,	almost absent due to
							constrictions,	and bends;	substantial sediment
							moderate dep pools prevale		deposition.
	_			_			pee.e -		
Score	15	20	□ 19 □ 18 □ 1	17 🗌 16	✔ 15 14 13	3 🗌 12 🗌 11	10 9	8 7 6	

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	Wery MERE Water ଦା ପ୍ୟାରମାନା and mପିଷ୍ଥିତ ହିନ୍ତିହେଁ ନିହିଣ୍ଟ standing pools.
Score 1			 └─_10 └─_9 └─_8 └─_7 └─_6 │	5432 ✔ 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 15	20 19 18 17 16	✓ 15 14 13 12 11		
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
downstream.				
Score (LB) 7	10 9	8 ₹76	5 4 3	
Score (RB) 7				
 9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream. 	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 7	10 9	8 27 6	5 4 3	
Score (RB) 7 10. Riparian	I0 9 Width of riparian zone >18	8 ✓ 7 6 Width of riparian zone 12-18	U5 4 3 Width of riparian zone 6-12	☐2 ☐ 1 ☐ 0 Width of riparian zone <6
Vegetative Zone Width (score each bank riparian zone) Note: determine left or right side by facing	meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	meters; human activities have impacted zone only minimally.	meters; human activities have impacted zone a great deal.	meters: little or no riparian vegetation due to human activities.
downstream.				
Score (LB) 8				
Score (RB)8Total Score97	L IU L 9			
10tal 000le 97				

Project ID: Henderson	County Solar	Stream Class: Intermittent Exhibit 14 Attachment 14.1	
Stream ID: 1MS1G	-	Location; HENDERSON KY Page 72 of 237	
Lat: 37.80106	Long: -87.62496	River Basin Ohio	
Investigators: Ryan Wi	nka		
Signature:	Date: 04-May-20	Reason for Survey:	
	Time: 11:07 AM	404 functional Assessment:	
WEATHER	Current Past 24 Hour	Heavy rain in last 7 days	
CONDITIONS			
	Storm (Heavy Rain)	No Yes	
	Rain Steady Rain Steady	Air Temp F 75	
	Showers (Intermittent)	Air Temp C 24	
		0 Other	
	Clear/Sunny Clear/Sunny		
STREAM		Stream Type	
CHARACTERIZATION	Stream Subsystem		
	Perennial 🗹 Intermittent 🗌 Ephemeral	Coldwater	
	Otras and Ostation	✓ Warmwater Catchment Area	
	Stream Origin	Mile ² 0.	.07
	Upland Runoff		.18
	Spring-fed/Ground Water Wetland Other	KIII - 0.	. 10
WATERSHED	Surrounding Land Use & Percentage	Local Watershed NPS Pollution	
FEATURES			
	✓ Forest 50 Commercial 0	No evidence ✓ Some potential sources	6
	Field/Pasture 0 Other 0	Obvious sources	
	Agriculture 50	Local Watershed Erosion	
	Residential 0	🗌 None 🗹 Moderate 🗌 Heavy	
RIPARIAN			
VEGETATION	Indicate the dominant type and record the dominant sp		
(18 meter buffer)	🗹 Trees 🗌 Shrubs 🗌 Grasses 🗌 Herbs	None Mixed mast.	
INSTREAM FEATURES	Est Reach Length ft 100 m	30 Canopy Cover	
I EATOREO	Est Stream Width ft 9.0 m	2.7 Open 🗹 Partly Open	
	Sampling Reach Area ft ² 900.0 m ²	83.6 Shaded Partly Shaded	
		65.0	
	Sampling Area mile ² 0.000033 km ² 0.0	00084 High Water Mark ft 0.75	
	Est Water Depth in 1.0 m	0.0 High Water Mark m 0.23	
	Surface Velocity ft/s 0.3 m/s	0.1 % of Stream Morphology	
		✓ Riffle % 40 ✓ Run % 30	
		✓ Pool % 30 Glide Pool	
	Channelized Yes Vo		
	Dam Present □Yes ✔ No	Step Pool Series	
LARGE WOODY	LWD 0.9 m 2	10 ft ²	
DEBRIS			
	Density of LWD m ² /km ² 0.00	ft ² /mile ²	
	Indicate the dominant type and record the dominant spec		a with
VEGETATION	Rooted Emergent Rooted Submergent	Rooted Floating Vone Portion of the reach aquatic vegetation	
	Free Floating Attached Algae	Floating Algae present:	0
WATER	No Water Present Temperature 16 ° C	61 ^o F Water Odors	
QUALITY			loum
	□ No Flow Present Conductivity µs/cm	702 ✓ Normal/None Sewage Petrol	ieum
	Total Disolved Solids	351 mg/l Chemical Anaerobic	
	рН	7.64 Do: 8.48 mg	g/L
	Turbidity	Water Surface Oils	-
	☐ Clear Slightly Turbid	Slick Sheen Globs Flecks	s
	🗌 Opaque 🗌 Stained 🔛 Other		

								Evbi	ibit 14 Attachment 14 1					
SEDIMENT/		Odors	s				Deposits		Page 73 of 237					
SUBSTRATE		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber					
			Chemical	Anaerobic	None		Sand	Relic She						
			Other	-			-							
			Othor					which are not						
		Oils	· · □ •					ndersides black	(in color?					
			Absent S	ilight 🗌 Moo	derate 🗌 Profus	3e 🗆	Yes	✓ No						
	INORGA	NIC S	SUBSTRATE C	OMPONENT	S		ORGANIC	SUBSTRATE	TE COMPONENTS					
Substrate Type	Diame	ter	% Cor	mposite in S Reach	ampling	Substrate Type) Char	racteristic	% Composition in Sampling Reach					
Bedrock			1	0		Dietritus	· · · ·	wood, coarse	10					
Boulder	>10"			0			plant	t material						
Cobble	2.5 - 1			0		Muck-		k, very fine	0					
Gravel	0.1 - 2			2		Mud		nic matter						
Sand	gritty	/		3		Marl		ey, shell	0					
Silt	gooe	•	<u> </u>	95		ļ	lia	agments						
Clay	slick	<u>. </u>		0		L								
Habita					HABITAT ASSES		W GRADIENT	STREAMS						
Parame	ter		Optima		SubOpt			rginal	Poor					
1. Epifaunal		-	ter than 50% fo		30-50% for low g	,	10-30% for lo		10% for low gradient					
Substrate/ Available			ent streams) of able for epifaur		streams) mix of s habitat; well-suite		streams) mix habitat; habita		streams)stable habitat; lack of habitat is					
Cover			nization & fish c		colonization pote		less than des		obvious;substrate unstable					
-		snags	s, submerged lo	ogs,	adequate habitat	t for	substrate freq	quently	or lacking.					
			rcut banks, cob		maintenance of p		disturbed or re	emoved.						
			e habitat & at si / full colonization		presence of addit									
		(i.e.,	logs/snags that	t are not	but not yet prepa	,								
			fall and not tran		colonization (may	y rate at								
					high end of scale									
Score	7							<u>8</u> ⊻ 7 <u>6</u>						
2. Pool Substrate			ure of substrate gravel and firm		Mixture of soft sa		All mud or cla	ay or sand or no root mat:	Hardpan clay or bedrock: no root mat or vegetation.					
Characterizatio			alent; root mats		some root mats a		no submerge		10 1001 mai or vegetation.					
			nerged vegetat		. submerged vege		-	5						
					present.									
<u> </u>	T				<u> </u>									
Score	7	20		1716				8 ✔76						
3. Pool Variabil			mix of large sh				Shallow pools		Majority of pools small-					
			, small shallow, s present.	, smail-deep	very few shallow		prevalent thar	n aeep poois.	shallow or pools absent.					
		μοσιο	present.											
Score	7	20	□19 □18 □	1716	15 14 13	3 🗌 12 🗌 11	□10 □9 □	_8 ✔7 _6						
4. Sediment			or no enlargem		Some new increa			position of new						
Deposition			ds or point bars <20% of the bo		formation, mostly gravel, sand or fi		gravel, sand of sediment on of		material, increased bar development; more than					
			<20% of the bo ted by sedimen					old and new	80% of the bottom					
		G			bottom affected;			iment deposits						
					deposition in poo	ols.	at obstruction	is,	almost absent due to					
							constrictions, moderate dep		substantial sediment deposition.					
							pools prevale							
							P 1							
Score	15	20	□ 19 □ 18 L	17 16	✔ 15 14 13	3 12 11	10 9	8 7 6						
J (J <u>_</u>													
					70									
					70	/								

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the XNII available channel, and/or riffle substrates are mostly exposed.	WdfyfftffæWatentin Erlannel and mB ag g ଜୁନ୍ଦିହେଁନ୍ନର୍ମଣ୍ଡ standing pools.
Score 8	2019181716		109 ✔876	
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 15	20 19 18 17 16	✓ 15 14 13 12 11		5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 6	1	15 14 13 12 11	10 9 8 7 €6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
downstream.				
Score (LB) 5	10 9			
Score (RB) 5 9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	10 9 More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	8 7 6 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	✓ 5 4 3 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 5	10 9		✓5 □4 □3	
Score (RB) 5 10. Riparian	U 10 U 9 Width of riparian zone >18	Width of riparian zone 12-18	✓ 5 4 3 Width of riparian zone 6-12	└──2 └── 1 └── 0 Width of riparian zone <6
Vegetative Zone Width (score each bank riparian zone) Note: determine left or right side by facing	meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	meters; human activities have impacted zone only minimally.	meters; human activities have impacted zone a great deal.	meters: little or no riparian vegetation due to human activities.
downstream.				
Score (LB) 8 Score (RB) 8		 ✓8 □7 □6 ✓8 □7 □6 		
Total Score 101	L			

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 1MS1G1		Location;	HENDERSON KY Page 75 of 237
Lat: 37.80000	Long: -87.62523	River Basin	Ohio
Investigators: Ryan Wi	nka		
Signature:	Date: 04-May-20		Reason for Survey:
	Time: 4:05 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	i in last 7 days
CONDITIONS			
	Storm (Heavy Rain)	No No	✓ Yes
	Rain Steady Rain Steady	Air Temp F	
	Showers (Intermittent)	Air Temp C	22
		0 Other	
	Clear/Sunny Clear/Sunny		
STREAM	Ohn and Orden states		Stream Type
CHARACTERIZATION	Stream Subsystem		
	Perennial 🗌 Intermittent 🗹 Ephemeral		Coldwater
	Stream Origin		✓ Warmwater Catchment Area
			Mile ² 0.01
	Upland Runoff Mixture of Origins		Km ² 0.03
	Spring-fed/Ground Water Wetland Other		
WATERSHED	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
FEATURES	✓ Forest 20 Commercial 0		evidence Some potential sources
	Field/Pasture 0 Other 0		vious sources
	Agriculture 80	Local V	Vatershed Erosion
	Residential 0	🗌 No	ne 🗹 Moderate 🗌 Heavy
RIPARIAN			Densis and One size
VEGETATION	Indicate the dominant type and record the dominant sp	pecies present	Dominant Species Mixed mast.
(18 meter buffer)	🗹 Trees 🗌 Shrubs 🗌 Grasses 🗌 Herbs	None	Mixed mast.
INSTREAM			
FEATURES	Est Reach Length ft 100 m	30 Canopy	
	Est Stream Width ft 4.2 m	1.3 Op	en 🗌 Partly Open
	Sampling Reach Area ft ² 420.0 m ²	39.0 🖌 Sh	aded 🗌 Partly Shaded
			ater Mark ft 0.30
	Est Water Depth in 0.5 m	0.0 High Wa	ater Mark m 0.09
	Surface Velocity ft/s 0.1 m/s	0.0 % of Str	eam Morphology
		🗹 Riffle	e % 40 🗹 Run % 50
	Channelized Yes 🗹 No	✓ Pool	% 10 Glide Pool
	Dam Present Yes V No	Step	Pool Series
LARGE WOODY DEBRIS	LWD 0.9 m 2	10 ft ²	
	Density of LWD m ² /km ² 0.00	000009290 _{ft} 2 /r	nilo 2 0.000003587
AQUATIC			
VEGETATION	Indicate the dominant type and record the dominant spec		Portion of the reach with
	Rooted Emergent Rooted Submergent	Rooted Floating	✓ None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
WATER QUALITY	□ No Water Present Temperature 14 ^O C	57 ⁰ F	Water Odors
	□ No Flow Present Conductivity µs/cm	728	✓ Normal/None □ Sewage □ Petroleum
	Total Disolved Solids	364 mg/l	Chemical Anaerobic
	H	7.00	
			Do: 8.22 mg/L
	Turbidity	_	er Surface Oils
	Clear Slightly Turbid Turbid	_	Slick 🗌 Sheen 🛄 Globs 🛄 Flecks
	Opaque Stained Other		Other

								Exhil	bit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors					Deposits		Page 76 of 237
		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	Anaerobic	None None		Sand	Relic Shel	lls 🗌 Other
			Other						
		Oils						s which are not o Indersides black	
		✓	Absent	Slight 🗌 Mod	derate 🗌 Profus		Yes	No	
									COMPONENTS
Substrate	Diame	-		Composite in S	-	Substrate		racteristic	% Composition in
Туре	· _			Reach	·····	Туре			Sampling Reach
Bedrock	<u> </u>		<u> </u>	0		Dietritus	· · · ·	wood, coarse	5
Boulder	>10'			0				nt material	
Cobble	2.5 - 1			0		Muck- Mud		k, very fine anic matter	0
Gravel	0.1 - 2			0		Mad	J		0
Sand Silt	gritty gooe	•		5 95	P	IVidi i		rey, shell agments	U
Clay	slick	•		95				<u> </u>	
Habita		T		-	HABITAT ASSES	SMENT - LC		TSTRFAMS	
Paramet			Opti	imal	SubOpt		1	arginal	Poor
1. Epifaunal		-	ter than 50%	% for low	30-50% for low g	gradient	10-30% for lo	ow gradient	10% for low gradient
Substrate/		gradie	ent streams	s) of substrate	streams) mix of s	stable	streams) mix	of stable	streams)stable habitat;
Available Cover			able for epif nization & fis	faunal sh cover; mix of	habitat; well-suite colonization pote		habitat; habit less than des	tat availability sirable;	lack of habitat is obvious;substrate unstable
		snags	s, submerge	ed logs,	adequate habitat	t for	substrate free	quently	or lacking.
			rcut banks, e habitat & a	cobble or other at stage to	maintenance of p		disturbed or r	removed.	
		allow	full coloniza	ation potential	substrate in form	n of new fall,			
			logs/snags f fall and not t	that are not transient).	but not yet prepa colonization (may				
		11011	all and net.	lansen.	high end of scale				
Score	5	20	19 11	8 🗌 17 🗌 16		-	10 9		✓5 □4 □3□2□ 1□ 0
2. Pool				rate materials,	Mixture of soft sa		All mud or cla	ay or sand	Hardpan clay or bedrock:
Substrate Characterization			gravel and fi alent; root m		clay; mud may be some root mats a			or no root mat: ed vegetation.	no root mat or vegetation.
					. submerged vege			,a	
					present.				
Score	6	20	19 11	8 🗌 17 🗌 16	15 14 13	3 12 11	10 9	87 ✔6	
3. Pool Variabil			0	e shallow, large-				s much more	Majority of pools small-
			, small shall present.	low, small-deep	very few shallow		prevalent tha	an deep pools.	shallow or pools absent.
		μουις	present.						
Score	3	20	19 11	8 🗌 17 🗌 16	15 14 13	3 12 11	10 9	8 7 6	54 ✔32 10
4. Sediment		Little	or no enlarg	gement of	Some new increa	ase in bar	Moderate dep	position of new	Heavy deposits of fine
Deposition		island	ds or point b	pars and less	formation, mostly	y from	gravel, sand	or fine	material, increased bar
			<20% of the ted by sedin	e bottom ment deposition.	gravel, sand or fin sediment; 20-50%		sediment on bars; 50-80%	old and new 6 of the bottom	development; more than 80% of the bottom
		u			bottom affected;	slight	affected; sed	liment deposits	changing frequently; pools
					deposition in poo	ıls.	at obstruction constrictions,	,	almost absent due to substantial sediment
							moderate de	position of	deposition.
							pools prevale	ent.	
Score	14	20	19 11	8 🗌 17 🗌 16		3 12 11		8 7 6	
30016		20							

5. Channel Fle Status	ow	Water r lower ba amount expose	anks, a of cha	and n	nimimal		Water availat of chai expose	ole ch nnel :	nanne	el; or	<25	5%	Water availat riffle s expose	ole ch ubstr	nanne	el, ar	nd/or	a	and	y/fittfa mB€ nding	9 9 ø	7esi			el
Score	4	20	19	18	17	16	15	14	13	· [_] ،	12	11	10	9	8		7 🗌 (3 L	5	✔ 4	3		2	1	0
6. Channel Alteration		Channe absent normal	or mini	mal;			Some presen bridge of past dredgii 20 yr) recent presen	nt, us abut t chai ng, (g may char	ually i ments nneliz greate be pre	in ar s; e\ zatio er th eser	reas /iden n, i.e an pa nt, bu	nce e., ast ut	Chann extens shorin on bot 80% o chann	ive; e g stru h bar f stre	emba ucture nks; a am re	nkm es pr ind 4 each	ents eseni 10 to	orc ts a	or c stre and nabi	ks sl eme am r disru itat g oved	nt; o each upteo reat	ver h ch d. In ly al	80% anne stre tere	of t elize am	the d
Score	14	20	19	18	<u> </u>	16	15	✔ 14	□13	; [] ·	12	11	10	9	8		7 🗌 (6	5	4	□3		2	1	0
7. Channel Sinuosity		The ber increase 4 times straight braiding plains a lying an not eas	e the s longer line. (f is cor ind oth eas. th	trear thar Note nside er no is pa	n length if it wa - chanr red coa ormal lo iramete	is in a nel istal w- r is	The be increas to 3 tin was in	se th nes l	e stre onger	am tha	lengi n if it		The be increas 1 to 2 was in	se th times	e stre s long	eam Ier th	lengt nan if	h r	nas	innel beer j dist	n cha	anne			
Score	5	20	19	18	17	16	15_	14	<u> </u>	; 🗌 '	12	11	10	9	8		7 🗌 (6 ⊻	5	4	□3		2	1] 0
8. Bank Stabi (score each b Note: determ right side by downstream.	ank) ine left or facing	Banks s erosion minima problem	or ban I; little	ık fai poter	lure abs ntial for	sent or future	Modera infrequ erosion 5-30% areas	ient, n mo of ba	small stly h ank in	are eale i rea	d ov	er.	Moder 60% o areas erosio floods	f ban of ero n pot	k in r osion	each ; higl	n has h	a fi s c 1	area freq sect obvi 100	table as; "r uent tions ious % of siona	aw" ly alo and bank ban	area ong ber ƙslo ƙha	as strai nds; ough	ight	
Score (LB)	5		10		9			8	□ 7		6			5	4		3			2		1		0	
Score (RB) 9. Vegetative Protection (s each bank) Note: determ right side by downstream.	ine left or facing	More th stream immedi coverec includin shrubs, macrop disrupti mowing almost naturall	bank su ate ripa I by na g trees or non hytes; on thro minim all plan	urfac arian tive v s, uno woo vege vege ugh al or	es and zones vegetati derstory dy etative grazing	or dent;	70-90% surface vegeta plants represe eviden plant g great e half of stubble	% of t es co ition, is no enteo it but growtl exten the p	overec but o t well d disru not a h pote t; mor potent	rean d by ne c uptic ffect entia re th	nban nativ class on ting f il to a an o olant	ve s of full any one-	50-709 surfac vegeta obviou soil or vegeta than o potent height	es co ation; is; pa close ation ne-ha ial pla	overed disru itches ely cro comn alf of ant st	rean d by ptior oppe non; the ubbl	n bare ed less	s c v v r c	stre cove disre vege vege rem	2 s tha amba ered uptio etatio etatio oved ess ir pht.	ank s by v n of on is on ha to 5	surfa ege stre ver as b 5 cer	of the aces tatio amb amb y hig een	s n; bank gh; eter	s
Score (LB)	5	naturali	10		9			8	7	_	6			5	4		_3			_2] 1		0	
Score (RB) 10. Riparian Vegetative Z Width (score bank ripariar zone) Note: determ right side by downstream.	e each i ine left or facing	Width c meters; parking cuts, lav impacte	huma lots, ro wns, or	n act badb r crop	ivities (eds, cle	i.e., ear-	Width meters have ir minima	s; hur mpac	man a	zon activ	ities		Width meters have in deal.	s; hui	man a	zon	ities	n at v	net /eg	2 ers: etatio vities	ittle on du	or n	zon o rip	baria	an
Score (LB)	5		10		9			8	7		6		V	5	4		3			2		1		0	
Score (RB)	5		L 10		9			8	7		6		V	5	4		3		L	2] 1		0	
Total Score	81																								

Project ID: Henderson County Solar Stream Class: Intermittent Exhibit 14 Attachment 1 Stream ID: 2AS1F Location; HENDERSON KY Page 78 of Lat: 37.78741 Long: -87.64021 River Basin Ohio Investigators: Ryan Harris Signature: Date: 07-May-20 Reason for Survey: Signature: Date: 07-May-20 Reason for Survey: Time: 9:18 AM WEATHER CONDITIONS Current Past 24 Hour Heavy rain in last 7 days Investigator WEATHER CONDITIONS Storm (Heavy Rain) Storm (Heavy Rain) Storm (Heavy Rain) Air Temp F 65	
Lat: 37.78741 Long: -87.64021 River Basin Ohio Investigators: Ryan Harris	
Investigators: Ryan Harris Signature: Date: 07-May-20 Reason for Survey: Time: 9:18 AM 404 functional Assessment: WEATHER CONDITIONS Current Past 24 Hour Heavy rain in last 7 days Storm (Heavy Rain) Storm (Heavy Rain) No Yes Rain Steady Rain Steady Air Temp F 65	
Time: 9:18 AM 404 functional Assessment: WEATHER CONDITIONS Current Past 24 Hour Heavy rain in last 7 days Storm (Heavy Rain) Storm (Heavy Rain) No Yes Rain Steady Rain Steady Air Temp F 65	
Time: 9:18 AM 404 functional Assessment: WEATHER CONDITIONS Current Past 24 Hour Heavy rain in last 7 days Storm (Heavy Rain) Storm (Heavy Rain) No Yes Rain Steady Rain Steady Air Temp F 65	
CONDITIONS Current Past 24 Hour Heavy rain Storm (Heavy Rain) Storm (Heavy Rain) No Rain Steady Rain Steady Air Temp F	
CONDITIONS □ Storm (Heavy Rain) □ Storm (Heavy Rain) □ No ✓ Yes □ Rain Steady □ Rain Steady □ Air Temp F 65	
Rain Steady Rain Steady Air Temp F 65	
□ Showers (Intermittent) □ Showers (Intermittent)	
Clear/Sunny	
STREAM Stream Subsystem Stream Type	
CHARACTERIZATION Stream Subsystem	
Stream Origin	rea
□ Upland Runoff ✓ Mixture of Origins	0.61
Spring-fed/Ground Water Wetland Other Km ²	1.58
WATERSHED FEATURES Surrounding Land Use & Percentage Local Watershed NPS Pollution	
✓ Forest 10 Commercial 0 No evidence ✓ Some potential sou	urces
Field/Pasture 0 Other 0 Obvious sources	
Residential 0 None Moderate Heavy	
RIPARIAN VECETATION Indicate the dominant type and record the dominant species present Dominant Species	
Trees Shrubs 🗹 Grasses 🗌 Herbs 🗋 None	
INSTREAM EEATURES Est Reach Length ft 100 m 30 Canopy Cover	
FEATURES	
Sampling Reach Area ft ² 940.0 m ² 87.3 Shaded Partly Shaded	
Sampling Area mile ² 0.000034 km ² 0.000087 High Water Mark ft 3.00	
Est Water Depth in 3.0 m 0.1 High Water Mark m 0.91	
Surface Velocity ft/s 0.5 m/s 0.2 % of Stream Morphology	
% of stream morphology ✓ Riffle % 20 ✓ Riffle % 20 ✓	
Channelized Yes No Pool % 20 Glide Pool	
Dam Present ☐ Yes ✔ No ☐ Step Pool Series	
LARGE WOODY LWD 0.0 m 2 0 ft 2	
Density of LWD m ² /km ² 0.000000000 ft ² /mile ² 0.0000000000	
AQUATIC Indicate the dominant type and record the dominant species present	acch with
VEGETATION Sector and a contraction of the sector and the contraction of the sector and the sect	
□ Free Floating	10
WATER IN No Water Present Temperature 20 ° C 68 ° F Water Odors	
	etroleum
	cuoicum
Total Disolved Solids 315 mg/l Chemical Anaerobic	
pH 7.8 Do: 9.68	mg/L
pH 7.8 Do: 9.68 Turbidity Water Surface Oils	mg/L
Turbidity Water Surface Oils	mg/L Flecks

								Exhit	hit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors					Deposits		Page 79 of 237
DUDOINAIL		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	Anaerobic	None		Sand	Relic Shel	lls 🗌 Other
			Other						
		Oils						which are not ondersides black	
		✓	Absent	Slight 🗌 Mod	derate 🗌 Profus		Yes	No	
									COMPONENTS
Substrate	Diame	-		Composite in S	-	Substrate		racteristic	% Composition in
Туре				Reach	ampinio	Туре	·	4010.12.1	Sampling Reach
Bedrock				0		Dietritus		wood, coarse	1
Boulder				0		l		t material	
Cobble	2.5 - 1			0		Muck- Mud		k, very fine nic matter	0
Gravel	0.1 - 2		+	10			Ŭ		
Sand Silt	gritty	-		5		Marl		ey, shell agments	0
Clay	gooe slick	•	+	5 80		+		9	-
Habita		T			HABITAT ASSES			TOTDEAMS	
Paramet			Opti	-	SubOpt		1	rginal	Poor
1. Epifaunal		Great	ter than 50%		30-50% for low g		10-30% for lo	-	10% for low gradient
Substrate/		gradie	ent streams	s) of substrate	streams) mix of s	stable	streams) mix	of stable	streams)stable habitat;
Available Cover			able for epif	faunal sh cover; mix of	habitat; well-suite colonization pote		habitat; habita less than des		lack of habitat is obvious;substrate unstable
		snags	s, submerge	ed logs,	adequate habitat	t for	substrate free	quently	or lacking.
			rcut banks, e habitat & a	cobble or other	maintenance of p		disturbed or r	emoved.	
		allow	full coloniza	ation potential	substrate in form	n of new fall,			
		(i.e., I	logs/snags t	that are not	but not yet prepa	ared for			
		new i	fall and not t	transient).	colonization (may high end of scale				
Score	6	20	19 11	8 🗌 17 🗌 16		-	10 9	8 7 26	
2. Pool	J_L_	Mixtu	ire of substra	rate materials,	Mixture of soft sa	and, mud or	All mud or cla	ay or sand	Hardpan clay or bedrock:
Substrate		with g	gravel and fi	irm sand	clay; mud may be	e dominant;	bottom: little of	or no root mat:	no root mat or vegetation.
Characterization	n		alent; root m nerged vege		some root mats a submerged vege		no submerge	d vegetation.	
		.			present.	101.5.			
Score	6	20	19 11	8 17 16	15 14 13	3 12 11		_8 _7 ✔6	
3. Pool Variabili				e shallow, large-			Shallow pools		Majority of pools small-
0.100.20	•	deep,	, small shall	low, small-deep	very few shallow		prevalent that		shallow or pools absent.
		pools	s present.				-		
0	6			- 47 16					
Score	6	20			15 14 13				
4. Sediment Deposition			or no enlarg ds or point b	gement of pars and less	Some new increation, mostly		Moderate dep gravel, sand o	oosition of new or fine	Heavy deposits of fine material, increased bar
_ ,		than •	<20% of the	e bottom	gravel, sand or fi	ine	sediment on o	old and new	development, more than
		affecu	ied by seam	ment deposition.	sediment; 20-50% bottom affected;			o of the bottom iment deposits	80% of the bottom changing frequently; pools
					deposition in poo		at obstruction	ns,	almost absent due to
							constrictions, moderate dep		substantial sediment deposition.
							pools prevale		
	T	<u> </u>							
Score	14	20		8 🗌 17 🗌 16	□15 ⊻ 14 □ 13	3 412 11	□10 □9 □	8 7 6	

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	WeryntteeWatenfin & nannel and m ତିଃଞ୍ଚତ ନିର୍ଦ୍ଦେ ହିନ୍ଦିର୍ଥିଣିର standing pools.
Score 14				5432 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 6		15 14 13 12 11	10 □9 □8 □7 ✔6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 3	2019181716	15 14 13 12 11		54 ✔32 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
downstream.				
Score (LB) 2 Score (RB) 5			<u> </u>	 ✓2 ⊥1 ⊥0 ⊥2 ⊥1 ⊥0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 4	10 9		5 🖌 4 🗌 3	
Score (RB) 5 10. Riparian	IO 9 Width of riparian zone >18	Width of riparian zone 12-18	✓5 ↓4 ↓3 Width of riparian zone 6-12	└──2 └── 1 └── 0 Width of riparian zone <6
Vegetative Zone Width (score each bank riparian zone) Note: determine left or right side by facing downstream.	meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	mathers; human activities have impacted zone only minimally.	meters; human activities have impacted zone a great deal.	weith of hpanan 2016 vo meters: little or no riparian vegetation due to human activities.
Score (LB)1Score (RB)1		8 47 46 8 7 46		□2 ✓ 1 □ □2 ✓ 1 □
Total Score 73				

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 2AS1F1		Location;	HENDERSON KY Page 81 of 237
Lat: 37.78872	Long: -87.63843	River Basin	Ohio
Investigators: Keith Mic			
Signature:	Date: 07-May-20 Time: 9:52 AM		Reason for Survey: 404 functional Assessment:
WEATHER CONDITIONS	Current Past 24 Hour	Heavy rai	n in last 7 days
	Storm (Heavy Rain) Storm (Heavy Rain)	└ No	✓ Yes
	Rain Steady Rain Steady	Air Temp F	
	□ Showers (Intermittent) □ Showers (Intermittent) □ Cloud Cover % 0 ✔ Cloud Cover %	Air Temp (
	□ Cloud Cover % 0 ✓ Cloud Cover % 5 ✓ Clear/Sunny □ Clear/Sunny	0 Other	
STREAM CHARACTERIZATION	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial 🗍 Intermittent 🗹 Ephemeral		Coldwater
			✓ Warmwater Catchment Area
	Stream Origin		Mile ² 0.01
	Upland Runoff		Km ² 0.03
	Spring-fed/Ground Water Wetland Other		KIII - 0.03
WATERSHED FEATURES	Surrounding Land Use & Percentage	Local	Watershed NPS Pollution
FEATORES	✓ Forest 10 Commercial 0		evidence Some potential sources
	$\Box \text{ Field/Pasture } 0 \Box \text{ Other } 0$		pyious sources
	✓ Agriculture 90		Watershed Erosion
	Residential 0		one 🗹 Moderate 🗌 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant sp	pecies present	Dominant Species
(18 meter buffer)	🗌 Trees 🗹 Shrubs 🔲 Grasses 🔲 Herbs		Soft Mast and Vines (L. japonica)
INSTREAM FEATURES	Est Reach Length ft 35 m	11 Canop	y Cover
	Est Stream Width ft 2.7 m	0.8 🗌 Op	ben 🔛 Partly Open
	Sampling Reach Area ft ² 94.5 m ²	8.8 Sł	naded 🗹 Partly Shaded
	Sampling Area mile ² 0.000003 km ² 0.0	00009 High W	ater Mark ft 0.40
	Est Water Depth in 0.5 m	0.0 High W	ater Mark m 0.12
	Surface Velocity ft/s 0.0 m/s	0.0 % of St	ream Morphology
		_	e % 20
	Channelized Yes No	✓ Poo	
	Channelized		o Pool Series
LARGE WOODY DEBRIS	LWD 0.0 m 2	0 ft ²	
	Density of LWD m ² /km ² 0.00	00000000 ft ² /	mile 2 0.000000000
AQUATIC	Indicate the dominant type and record the dominant spec		
VEGETATION		Rooted Floating	✓ None Portion of the reach with aquatic vegetation
		•	present: 0
	☐ Free Floating ☐ Attached Algae ☐	Floating Algae	
WATER	No Water Present Temperature 0 C	0 ⁰ F	Water Odors
QUALITY	✓ No Flow Present Conductivity µs/cm	0	✓ Normal/None
	Total Disolved Solids	0 mg/l	Chemical Anaerobic
	pH	0	
			Do: mg/L
			er Surface Oils
	Clear Slightly Turbid Turbid		Slick Sheen Globs Flecks
	Opaque Stained Other		Other

								Exhit	bit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors					Deposits		Page 82 of 237
		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	Anaerobic	None		Sand	Relic Shel	lls 🗌 Other
			Other						· .
		Oils						s which are not on dersides black	
		✓	Absent	Slight 🗌 Mod	derate 🗌 Profus		Yes	No	
								SUBSTRATE C	COMPONENTS
Substrate	Diame	-		Composite in S	-	Substrate		racteristic	% Composition in
Туре	_			Reach	u	Туре			Sampling Reach
Bedrock	<u> </u>		<u> </u>	0		Dietritus		wood, coarse	10
Boulder	>10"			0				t material	
Cobble	2.5 - 1			0		Muck- Mud		k, very fine Inic matter	0
Gravel	0.1 - 2			0		Mud	v		0
Sand Silt	gritty gooe	•		80		IVidi i		ey, shell agments	U
Clay	slick	•		20				<u> </u>	
Habita		T			HABITAT ASSES	SMENT - LO		STRFAMS	
Paramet			Opti	-	SubOpt		1	rginal	Poor
1. Epifaunal		-	ter than 50%	% for low	30-50% for low g	gradient	10-30% for lo	w gradient	10% for low gradient
Substrate/		gradie	ent streams	s) of substrate	streams) mix of s	stable	streams) mix	of stable	streams)stable habitat;
Available Cover			able for epif nization & fis	faunal sh cover; mix of	habitat; well-suite colonization pote		habitat; habita less than des		lack of habitat is obvious;substrate unstable
		snags	s, submerge	ed logs,	adequate habitat	t for	substrate free	quently	or lacking.
			rcut banks, e habitat & a	cobble or other at stage to	maintenance of p		disturbed or r	emoved.	
		allow	full coloniza	ation potential	substrate in form	n of new fall,			
			logs/snags f fall and not t	that are not transient)	but not yet prepa colonization (may				
			all and not .	fansient <i>j</i> .	high end of scale				
Score	3	20	19 18	8 🗌 17 🗌 16	15 14 13		10 9	8 7 6	54 ⊻32_ 1 0
2. Pool				rate materials,	Mixture of soft sa		All mud or cla	ay or sand	Hardpan clay or bedrock:
Substrate Characterization			gravel and fi alent; root m		clay; mud may be some root mats a		bottom: little on submerge	or no root mat: d vegetation.	no root mat or vegetation.
Ondracter					submerged vege		10 002	u vogo	
					present.				
Score	6	20	19 11	8 🗌 17 🗌 16	15 14 13	3 12 11	10 9	8 7 16	
3. Pool Variabil	lity	Even	0	e shallow, large-			Shallow pools	s much more	Majority of pools small-
			, small shall s present.	low, small-deep	very few shallow		prevalent that	n deep pools.	shallow or pools absent.
		ροοιο	present.						
Score	3	20	19 11	8 🗌 17 🗌 16	15 14 13	3 12 11	10 9	8 7 6	54 ✔32 10
4. Sediment		Little	or no enlarg	gement of	Some new increa	ase in bar	Moderate dep	position of new	Heavy deposits of fine
Deposition		island	ds or point b	pars and less	formation, mostly	y from	gravel, sand	or fine	material, increased bar
			<20% of the ted by sedin	e bottom ment deposition.	gravel, sand or finsediment; 20-50%		sediment on obars; 50-80%		development; more than 80% of the bottom
				10111 20p	bottom affected;	slight	affected; sedi	iment deposits	changing frequently; pools
					deposition in poo	ıls.	at obstruction constrictions,	,	almost absent due to substantial sediment
							moderate dep	position of	deposition.
							pools prevale	ent.	
Score	10	20	<u> 19 18</u>	8 🗌 17 🗌 16	15 14 13	3 12 11	✓ 10 □ 9 □	8 7 6	
1									
1									

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	Werymene and m Bage ନ ହେହେଁନ୍ଦର standing pools.
Score 4				5 ✓43_2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 8	2019181716	15 14 13 12 11	10 9 28 7 6	
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 3	20 19 18 17 16	15 14 13 12 11		54 ✔32 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
downstream.				
Score (LB) 4				
Score (RB) 4 9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	10 9 More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	8 7 6 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	5 24 3 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	□2 □ 1 □ 0 Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 5	10 9		✓5 □4 □3	
Score (RB) 5 10. Riparian	↓ 10 ↓ 9 Width of riparian zone >18	8 7 6 Width of riparian zone 12-18	✓ 5 4 3 Width of riparian zone 6-12	2 1 0 Width of riparian zone <6
Vegetative Zone Width (score each bank riparian zone) Note: determine left or right side by facing	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	main control inpartan cone incention activities have impacted zone only minimally.	meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
downstream.				
Score (LB) 1 Score (RB) 5				
Score (RB) 5			▼ 3 ∟4 ∟3	

Lat:37.78918Long:-87.64422River BasinOhio	4 of 237
Lat: 37.78918 Long: -87.64422 River Basin Ohio	
Investigators: Ryan Harris	
Signature: Date: 07-May-20 Reason for Survey:	
Time: 10:55 AM 404 functional Assessment:	
WEATHER Current Past 24 Hour Heavy rain in last 7 days	
CONDITIONS	
Rain Steady Rain Steady Air Temp F 65	
Cloud Cover % 0 Cloud Cover % 50	
Clear/Sunny	
STREAM Stream Subsystem Stream Type	
CHARACTERIZATION Stream Subsystem	
Stream Origin	ent Area
☐ Upland Runoff ✓ Mixture of Origins Mile 2	0.23
Spring-fed/Ground Water Wetland Other Km ²	0.60
WATERSHED FEATURES Surrounding Land Use & Percentage Local Watershed NPS Pollution	
Forest 0 Commercial 0 No evidence Some potentia	al sources
☐ Field/Pasture 0 Other 0 Ø Øbvious sources	
✓ Agriculture 100 Local Watershed Erosion	
Residential 0 None Moderate Heavy	
RIPARIAN VEGETATION Indicate the dominant type and record the dominant species present Dominant Species	
(To meter bunner) □ Trees □ Shrubs ✔ Grasses □ Herbs □ None	
INSTREAM EEATURES Est Reach Length ft 100 m 30 Canopy Cover	
FEATURES	
Sampling Reach Area ft ² 1000.0 m ² 92.9 Shaded Partly Shaded	
Sampling Area mile ² 0.000037 km ² 0.000093 High Water Mark ft 2.00	
Est Water Depth in 3.0 m 0.1 High Water Mark m 0.61	
Surface Velocity ft/s 0.5 m/s 0.2 % of Stream Morphology	
✓ Riffle % 20 ✓ Run %	70
Channelized Yes No Pool % 10 Glide Pool	
Dam Present Yes Vo Step Pool Series	
LARGE WOODY LWD 0.0 m 2 0 ft 2	
Density of LWD m ² /km ² 0.000000000 ft ² /mile ² 0.0000000000	
AQUATIC Indicate the dominant type and record the dominant species present	the reach with
VEGETATION Rooted Emergent Rooted Submergent Rooted Floating None Portion of aquatic ve	the reach with eqetation
□ Free Floating	5
WATER IN No Water Present Temperature 24 °C 76 °F Water Odors	
QUALITY □ No Flow Present Conductivity µs/cm 559 ✓ Normal/None □ Sewage	Petroleum
Total Disolved Solids 280 mg/l Chemical Anaerobic	;
pH 7.85 Do: 1	1.67 mg/L
Turbidity Water Surface Oils	
Clear Slightly Turbid Turbid Slick Sheen Globs	Flecks

								Exhil	bit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors	_				Deposits		Page 85 of 237
5000110112	1	✓	Normal Se	ewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical 🗌 An	naerobic	None None		Sand	Relic Shel	lls 🗌 Other
ĺ	1		Other				1 1-11-1		
	1	Oils						which are not ondersides black	
	1	✓	Absent 🗌 Slight	t 🗌 Moo	derate 🗌 Profus		Yes	No	
	INORGA						·		COMPONENTS
Substrate	Diame	-	% Compo	-	-	Substrate		racteristic	% Composition in
Туре				Reach	u	Туре	·	<u> </u>	Sampling Reach
Bedrock			<u> </u>	0		Dietritus	· · · ·	wood, coarse	1
Boulder	>10"			0		ļ		t material	
Cobble	2.5 - 1			0		Muck- Mud		<, very fine nic matter	0
Gravel	0.1 - 2		+	30 20		Mud	J		0
Sand Silt	gritty gooe	-		35		lviai i		ey, shell Igments	U
Clay	slick	•	+	15					
Habita		T		-	HABITAT ASSES	SMENT - LC		STRFAMS	
Paramet			Optimal		SubOpt		-	rginal	Poor
1. Epifaunal		-	ter than 50% for low		30-50% for low g	gradient	10-30% for lov	w gradient	10% for low gradient
Substrate/		gradie	ent streams) of sub		streams) mix of s	stable	streams) mix	of stable	streams)stable habitat;
Available Cover			able for epifaunal nization & fish cover	r [.] mix of	habitat; well-suite colonization pote		habitat; habita less than desi		lack of habitat is obvious;substrate unstable
0000		snags	s, submerged logs,	,	adequate habitat	t for	substrate freq	quently	or lacking.
			rcut banks, cobble o e habitat & at stage		maintenance of p		disturbed or re	emoved.	
		allow	/ full colonization pot	otential	substrate in form	n of new fall,			
			logs/snags that are fall and not transien		but not yet prepa colonization (may				
		11611	and not dance	lj.	high end of scale				
Score	6		19 18 17			· · · · · · · · · · · · · · · · · · ·	10 9	8 7 26	
2. Pool			ure of substrate mat		Mixture of soft sa		All mud or cla	ly or sand	Hardpan clay or bedrock:
Substrate Characterizatio			gravel and firm sand alent; root mats and		clay; mud may be some root mats a		bottom: little on submerged	or no root mat: d vegetation.	no root mat or vegetation.
Ondracter			nerged vegetation c		. submerged vege		10 042 0	1 1090	
					present.				
Score	5	20	19 18 17	7 🗌 16	15 14 13	3 12 11	10 9	8 7 6	✓5 □4 □3 □2 □ 1 □0
3. Pool Variabil	lity	Even	mix of large shallow				Shallow pools		Majority of pools small-
			, small shallow, sma s present.	all-deep	very few shallow		prevalent thar	ו deep pools.	shallow or pools absent.
		puois	present.						
Score	6	20	19 18 17	7 🗌 16	15 14 13	3 12 11	10 9	8 7 26	
4. Sediment		Little	or no enlargement	of	Some new increa	ase in bar	Moderate dep	position of new	Heavy deposits of fine
Deposition		island	ds or point bars and	d less	formation, mostly	y from	gravel, sand o	or fine	material, increased bar
			<20% of the bottom ted by sediment dep		gravel, sand or fin sediment; 20-50%		sediment on o bars; 50-80%		development; more than 80% of the bottom
		and		,000	bottom affected;	slight	affected; sedi	iment deposits	changing frequently; pools
					deposition in poo	ols.	at obstruction constrictions,	,	almost absent due to substantial sediment
							moderate dep	position of	deposition.
							pools prevale	nt.	
Score	13	20		7 🗌 16	15 14 🖌 13	3 12 11		8 7 6	
30010									
ĺ									

5. Channel Fle Status	DW.	Water reaches b lower banks, and amount of chanr exposed.	l mimimal	Water fills available of channe exposed.	channe	l; or <2	5%	Water fills 25-75% of the XNII available channel, and/or riffle substrates are mostly exposed.					₩êfyħŧti and mða standing	ige øk	esérit		nel
Score	13	20191	8 🗌 17 🗌 16	15 1	4 🖌 13	12	11	10	9	8	7	6	5 4	3	2	1	0
6. Channel Alteration		Channelization c absent or minima normal pattern.	00	Some cha present, u bridge abi of past ch dredging, 20 yr) ma recent cha present.	isually i utments anneliz (greate y be pre	n areas s; evide ation, i. r than p esent, b	nce e., bast out	Chann extens shorin on bot 80% o chann	sive; e g stru h ban f stre	emban ictures iks; an am rea	kmen prese id 40 1 ach	ent to	Banks s or ceme stream i and disr habitat g removed	nt; ov each upted greatly	er 80 chani Insti alter	% of neliz ream	f the ced
Score	6	20191	8 🗌 17 🗌 16	15 1	4 🗌 13	12	11	10	□9	8	7	∕6	54	3	2	_1_	_ 0
7. Channel Sinuosity		The bends in the increase the stree 4 times longer the straight line. (No braiding is consi- plains and other lying areas, this not easily rated i	am length 3 to Ian if it was in a te - channel dered coastal normal low- parameter is	The bend increase t to 3 times was in a s	he strea longer	am leng than if	gth 2	The be increat 1 to 2 was in	se the times	e strea longe	im len er than	gth	Channe has bee long dis	n cha			
Score	3	20 19 1	8 🗌 17 🗌 16	15 1	4 🗌 13	12	11	10	9	8	7	6	54	✔3	2	1	0
8. Bank Stabi (score each b Note: determ right side by downstream.	ank) ine left or facing	Banks stable; ev erosion or bank t minimal; little po problems. <5% o	failure absent or tential for future	Moderate infrequent erosion m 5-30% of areas of e	t, small ostly he bank in	areas o ealed ov reach l	ver.	Moder 60% o areas erosio floods	f ban of erc n pote	k in re sion; l	ach h high	as	Unstable areas; " frequent sections obvious 100% of erosiona	aw" a ly alou and b bank bank	reas ng str bends sloug has	aigh ;	ıt
Score (LB)	2	L 10	9	8	7	6			5	4		3	√ 2		1	0	
Score (RB)	1	10	9	8	7	6			5	4		3	2	✓	1	0	
 Vegetative Protection (s each bank) Note: determ right side by downstream. 	ine left or facing	More than 90% of streambank surf- immediate riparia covered by nativ including trees, u shrubs, or nonwor macrophytes; ve disruption throug mowing minimal almost all plants naturally.	aces and an zones e vegetation, understory oody getative getative or not evident;	70-90% o surfaces o vegetation plants is r represent evident bu plant grov great exte half of the stubble ho	covered n, but or not well ed disru ut not at wth pote ent; mor potent	l by nati ne class uption ffecting ential to re than o ial plant	full any one-	50-709 surface vegeta obviou soil or vegeta than o potent height	es co ation; is; pa close ation c ne-ha ial pla	vered disrup tches ely crop commo alf of th ant stu	by tion of bar pped on; les าe	e	Less tha streamb covered disruptic vegetati vegetati remove or less i height.	ank s by ve on of s on is v on has d to 5	urface getat trean very h s bee centii	es ion; iban igh; n nete	ers
Score (LB)	2		9	8	7	6			_5 _5	4			✓ 22	 ✓ 	1	0	
Score (RB) 10. Riparian Vegetative Z Width (score bank ripariar zone) Note: determ right side by downstream.	ine left or	Uidth of riparian meters; human a parking lots, road cuts, lawns, or ci impacted zone.	activities (i.e., dbeds, clear-	8 Width of r meters; h have impa minimally	iparian uman a acted zo	ctivities	;	Width meters have in deal.	of rip s; hun	arian z nan ac	ctivitie	6-12 s	Width o meters: vegetati activities	f ripari little c on due	an zo r no i	ipari	ian
Score (LB)	2		9		7	6			5	4			√ 2		1	0	
Score (RB) Total Score	1 61	10	9	8	 7	6			5	4		3	2	✓	1 L	0	
	01																

Project ID: Henderson	County Solar	Stream Class:	Intermittent Exhibit 14 Attachment 14.1
Stream ID: 2AS1F2		Location;	HENDERSON KY Page 87 of 237
Lat: 37.78884	Long: -87.63857	River Basin	Ohio
Investigators: Ryan Ha	rris		
Signature:	Date: 07-May-20		Reason for Survey:
0	Time: 10:03 AM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	in last 7 days
CONDITIONS			✓ Yes
	Storm (Heavy Rain)	No	V Yes
	Rain Steady Rain Steady	Air Temp F	65
	Showers (Intermittent)	Air Temp C	18
		0 Other	
	Clear/Sunny		
STREAM	Other and Orthographic		Stream Type
CHARACTERIZATION	Stream Subsystem		Coldwater
	Perennial 🗹 Intermittent 🗌 Ephemeral		
	Stream Origin		✓ Warmwater Catchment Area
			Mile ² 0.23
	Upland Runoff Mixture of Origins		Km ² 0.60
	Spring-fed/Ground Water Wetland Other		
WATERSHED FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
LATURES	✓ Forest 10 Commercial 0		evidence Some potential sources
			vious sources
	Agriculture 90		Vatershed Erosion
	Residential 0		ne 🗹 Moderate 🗌 Heavy
RIPARIAN	Indicate the deminant type and record the dominant a	nacioa procent	Dominant Spacias
VEGETATION	Indicate the dominant type and record the dominant sp	pecies present	Dominant Species Soft Mast, L. japonica
(18 meter buffer)	🗹 Trees 🗌 Shrubs 🗌 Grasses 🔲 Herbs	None	
INSTREAM		5 Canopy	/ Cover
FEATURES	Est Reach Length ft17 m		
	Est Stream Width ft 8.5 m	2.6 Op	
	Sampling Reach Area ft ² 144.5 m ²	13.4 Sha	aded 🗹 Partly Shaded
	Sampling Area mile ² 0.000005 km ² 0.0	00013 High Wa	ater Mark ft 1.80
	Est Water Depth in 2.0 m	0.1 High Wa	ater Mark m 0.55
			1
	Surface Velocity ft/s 0.6 m/s		eam Morphology
		✓ Riffle	
	Channelized Ves 🗹 No	Pool	% 40 Glide Pool
	Dam Present 🛛 Yes 🖌 No	Step	Pool Series
LARGE WOODY		2 ft ²	
DEBRIS	LWD 0.2 m 2		
	Density of LWD m ² /km ² 0.00	000001858 _{ft} 2 /r	nile 2 0.000000717
AQUATIC	Indicate the dominant type and record the dominant spec		
VEGETATION		Rooted Floating	None Portion of the reach with
		-	
	☐ Free Floating ✓ Attached Algae	Floating Algae	present: 30
WATER			Weter Orlean
QUALITY	No Water Present Temperature 18 ° C	65 ⁰ F	Water Odors
	□ No Flow Present Conductivity µs/cm	665	✓ Normal/None Sewage Petroleum
	Total Disolved Solids	333 mg/l	Chemical Anaerobic
	pH	7.81	Do: 9.26 mg/L
		•	
	Turbidity ✓ Clear □ Slightly Turbid □ Turbid	_	er Surface Oils Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	☐ Opaque ☐ Stained ☐ Other		Other

								Exhil	bit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors					Deposits		Page 88 of 237
DUDOINALE		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	Anaerobic	None		Sand	Relic Shel	lls 🗌 Other
ĺ			Other						
		Oils						s which are not o ndersides black	
		✓	Absent	Slight 🗌 Moo	derate 🗌 Profus		Yes	No	
									OMPONENTS
Substrate	Diame	-		Composite in S	-	Substrate		racteristic	% Composition in
Туре		10.		Reach	amha	Туре	`	401011012	Sampling Reach
Bedrock			<u> </u>	0	î	Dietritus		wood, coarse	6
Boulder	>10'		<u> </u>	0		I		nt material	
Cobble	2.5 - 1			0		Muck-		k, very fine	0
Gravel	0.1 - 2		1	0		Mud	•	anic matter	
Sand	gritty	•		10		Marl		ey, shell agments	0
Silt Clay	gooe slick	•	+	20		<u> </u>		ignone	
		<u>.</u>	<u> </u>						
Habita Parame		<u> </u>	Opti	-	HABITAT ASSES SubOpt		1		Poor
1. Epifaunal		Great	ter than 50%		30-50% for low g		Ma 10-30% for lo	ow gradient	Poor 10% for low gradient
Substrate/		gradie	ent streams	s) of substrate	streams) mix of s	, stable	streams) mix	of stable	streams)stable habitat;
Available Cover			able for epif	, faunal sh cover; mix of	habitat; well-suite			at availability	lack of habitat is obvious;substrate unstable
Cover		snags	s, submerge	ed logs,	colonization pote adequate habitat	t for	less than des substrate free		obvious;substrate unstable or lacking.
		under	rcut banks,	cobble or other	maintenance of p	populations;	disturbed or i		
		allow	e habitat & a full coloniza	ation potential	presence of addit substrate in form				
		(i.e., I	logs/snags t	that are not	but not yet prepa	ared for			
		new t	fall and not t	transient).	colonization (may high end of scale				
Score	8	20	19 11	8 17 16				✔87	
2. Pool		Mixtu	ire of substra	rate materials,	Mixture of soft sa		All mud or cla		Hardpan clay or bedrock:
Substrate		with g	gravel and fi	irm sand	clay; mud may be	e dominant;	bottom: little	or no root mat:	no root mat or vegetation.
Characterizatio	'n		alent; root m neraed veae		some root mats a submerged vege		no submerge	ed vegetation.	
		345.	Elyca	station commen	present.	lation			
Cooro	Q			- 47 16				* <u>-</u> 6	
Score 3. Pool Variabil	8 litv	20	19 11	8 ∐17 ∐16 e shallow, large-	Majority of pools			✓8 □7 □6 s much more	
3. P00i Vanaon			0	e shallow, large- low, small-deep	Majority of pools very few shallow			s much more In deep pools.	Majority of pools small- shallow or pools absent.
			s present.		1017		P'	II WEEF 1	
	<u> </u>	L,_	<u> </u>			·			
Score	6	20	19 11					87 ⊻6 [
4. Sediment Deposition			or no enlarg ds or point b	gement of pars and less	Some new increation, mostly		Moderate de gravel, sand	position of new or fine	Heavy deposits of fine material, increased bar
Берознат.		than •	<20% of the	e bottom	gravel, sand or fi	ine	sediment on	old and new	development, more than
		affect	ted by sedin	ment deposition.	sediment, 20-50%	% of the		of the bottom	80% of the bottom
					bottom affected; deposition in poo		affected; sed at obstructior	liment deposits ns,	changing frequently; pools almost absent due to
							constrictions	, and bends;	substantial sediment
							moderate de pools prevale		deposition.
							peere p	<i>//</i> .	
Score	13	20	19 11	8 🗌 17 🗌 16	15 14 🗹 13	3 🗆 12 🗆 11	10 9	8 7 6	└─5 └─4 └─3└─2 └─ 1└─ 0
	L								
1									

5. Channel Flow Status	 a	Water reaches ba ower banks, and amount of channe exposed.	mimimal	availa	ible cl annel	>75% hannel substr	l; or	<25%	avail	able o subsi	cha	nnel,	and/		and	Ayn∰ dimB≋ nding	gę p	resé		
Score 13	3	20 19 18	17 16	15	14	✓ 13	1	2 11	1	0 🗆	9	8	7	6	5	4	3	2		1 0
6. Channel Alteration	á	Channelization or absent or minimal normal pattern.	0 0	prese bridge of pas dredg 20 yr)	nt, us e abui st cha jing, () may t chai	nneliza sually in tments nneliza greate be pre nneliza	n are ; evi atior r tha esen	dence ı, i.e., ın past t, but	Char exter shori on bo 80% chan	nsive; ng st oth ba of str	; en ruct anks rear	nbank tures s; ano n rea	kmen pres d 40 ach	ent to	or o stre and hat	nks sl cemer eam r d disru bitat g noved	nt; ov each upteo reatl	ver 8 cha d. Ins y alt	80% innel strea ered	of the ized m
Score 6	3	20 🗌 19 🗌 18	□17 □16	15	L 14	13	1	2 🗌 11	1	0 🗌	9	8	7	∕6	5	4	□3	2		0
7. Channel Sinuosity	i 2 5 6 6 7	The bends in the s ncrease the strea 4 times longer tha straight line. (Note oraiding is conside olains and other n ying areas. this p not easily rated in	m length 3 to in if it was in a e - channel ered coastal ormal low- arameter is	increa to 3 ti	ase th mes l	in the le strea longer raight l	am le thar	ength 2	incre	bends ase t 2 time in a s	he s es lo	streai ongei	m ler r thar	gth	has		n cha	anne		erway I for a
	3	20 🗌 19 🗌 18	□17 □16	15	□ 14	13	1	2 🗌 11	1	0	9	8	7	6	5	4	√ 3	_2		1 🗌 0
8. Bank Stability (score each bank) Note: determine left o right side by facing	e r F	Banks stable; evic erosion or bank fa ninimal; little pote problems. <5% of	ilure absent or ential for future	infreq erosic 5-30%	uent, on mo 6 of b	stable small ostly he ank in osion.	area ealeo	l over.	Mode 60% areas erosi flood	of ba s of e on po	ank i erosi	in rea ion; h	ach h nigh	as	are frec sec obv 100	stable as; "r quent ctions /ious 0% of siona	aw" a ly alc and bank banl	area ong s ben slou k has	s straio ds; ughii	
downstream.																				
Score (LB) 4		10	9		8	7	_	6		5	•	4		-		2		1		
Score (RB) 3 9. Vegetative Protection (score each bank)	l s i	10 More than 90% of streambank surfac mmediate ripariar	ces and n zones	surfac veget	% of ces co ation,		eam by r	bank	50-7 surfa vege	ices o tatior	cove n; di	ered I srupt	by tion	ank	stre cov	2 ss tha eamba vered	ank s by v	surfa eget	ices atior	1;
Note: determine left o right side by facing downstream.	i s or r a	covered by native ncluding trees, ur shrubs, or nonwoo macrophytes; veg disruption through mowing minimal c almost all plants a naturally.	nderstory ody etative grazing or or not evident;	, repre: evide plant great half o	sente nt but growt exter f the	h pote	fecti ntial e tha ial pl	ng full to any an one- ant	obvic soil c vege than poter heigh	or clos tatior one-l	sely n co half plan	r crop mmo of th t stub	oped on; le: e		veg veg ren or l	ruptio getatio noved ess ir ght.	on is on ha I to 5	very as be cen	' higl een itime	n; ters
Score (LB) 4	1	10	9		8	7				5	_	4				2		1		
Score (RB) 3 10. Riparian	_	U 10 Width of riparian z	9 70ne >18	Width	8	∐7 Darian		6 e 12-18	Widt	∐5 hofr		_4 ian z	one f		Wi	2 dth of	rine	1 rian	(
Vegetative Zone Width (score each bank riparian zone)	r F	meters; human ac parking lots, roadl cuts, lawns, or cro mpacted zone.	ctivities (i.e., peds, clear-	meter	rs; hu impao	man a cted zo	ctivit	ies	mete	impa	uma	an ac	tivitie	s	me veç	ters: getation ivities	ittle on du	or no	o ripa	arian
Note: determine left o right side by facing downstream.	or																			
Score (LB) 4		10	9	<u> </u>	8	7			1	5		4				2		1		
Score (RB) 2		□ 10	9	L	8	∐7		6		5	L	4	\Box :	3		√ 2		1)
Total Score 77	ſ																			

Project ID: Henderson	County Solar	Stream Class:	Intermittent Exhibit 14 Attachment 14.1
Stream ID: 2AS1L3A		Location;	HENDERSON KY Page 90 of 237
Lat: 37.77994	Long: -87.62812	River Basin	Ohio
Investigators: Scott Mit	chell		
Signature:	Date: 11-May-20		Reason for Survey:
0	Time: 3:36 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	in last 7 days
CONDITIONS			✓ Yes
	Storm (Heavy Rain)		
	Rain Steady	Air Temp F	55
	Cloud Cover % 50 Cloud Cover %		13
		0 Other	
	Clear/Sunny Clear/Sunny		
STREAM	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial Intermittent Ephemeral		
			✓ Warmwater Catchment Area
	Stream Origin		
	✓ Upland Runoff	[Mile ² 0.07
	Spring-fed/Ground Water Wetland Other		Km ² 0.18
WATERSHED			
FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
	Forest 0 Commercial 0	🗌 No	evidence Some potential sources
	Field/Pasture 0 Other 0	✓ Ob	vious sources
	✓ Agriculture 100	-	Vatershed Erosion
	Residential 0		ne 🗹 Moderate 🗌 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant s	pecies present	Dominant Species
(18 meter buffer)			Soft Mast
	🗌 Trees 🗹 Shrubs 🗌 Grasses 🗌 Herbs	☐ None	
INSTREAM	Est Reach Length ft 100 m	30 Canopy	/ Cover
FEATURES			
	Est Stream Width ft 3.5 m		aded
	Sampling Reach Area ft ² 350.0 m ²	32.5 Sha	
	Sampling Area mile ² 0.000013 km ² 0.0	000032 High Wa	ater Mark ft 0.80
	Est Water Depth in 0.5 m	0.0 High Wa	ater Mark m 0.24
	Surface Velocity ft/s 0.1 m/s	0.0 % of Str	eam Morphology
		✓ Riffle	
	Channelized Yes No	Pool	
	Dam Present 🛛 Yes 🗹 No	Step	Pool Series
LARGE WOODY	LWD 0.0 m 2	0 ft 2	
DEBRIS		00000000	
	Density of LWD m ² /km ² 0.00	ft ² /r	nile ²
AQUATIC VEGETATION	Indicate the dominant type and record the dominant spec	cies present	Portion of the reach with
VEGETATION	Rooted Emergent Rooted Submergent	Rooted Floating	None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 3
	5 5	5 5	
WATER	No Water Present Temperature 12 ° C	54 ⁰ F	Water Odors
QUALITY	□ No Flow Present Conductivity µs/cm	596	✓ Normal/None
	Total Disolved Solids	298 mg/l	□ Chemical □ Anaerobic
		7.00	
	pH	7.23 [Do: 9.01 mg/L
	Turbidity	Wate	er Surface Oils
	✔ Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	Opaque Stained Other		Other

											Exhit	hit 14 Attach	mont 14	1
SEDIMENT/		Odors	s						Deposits	;			91 of 23	-
SUBSTRATE		✓	Norma	al [Sev	wage	Petroleum		Sludg		wdust		er Fiber	
			Chemi	ical [_	aerobic	 □ None		Sand	_	ic Shel	_		ļ
													1	
			Other					Lor	Lina at ator	- so which a	not (ļ
		Oils								nes which a e undersides				ļ
		✓	Absen	1t 🗌 f	Slight		derate 🗌 Profus		Yes					
							1							
	INORGA		UBSTI					<u> </u>				COMPONEN		_
Substrate	Diame	ter		% Co	•		Sampling	Substrate	e Ch	haracteristi	C		mpositio	
Туре	 		<u> </u>			Reach		Туре				Sam	pling Rea	acn
Bedrock						0		Dietritus		s, wood, co			2	
Boulder	>10"			;	;	0		<u> </u>		lant materia				
Cobble	2.5 - 1					0		Muck-		ack, very fin			0	
Gravel	0.1 - 2.	.5"				5		Mud		rganic matte	er			
Sand	gritty	/		5				Marl		Grey, shell		T	0	-
Silt	gooey		\Box			5		l		fragments				
Clay	slick		\square			85								
Habita	at	HABITAT ASSESSMENT -						SMENT - LO	W GRADIE	NT STREA	MS			
Parame		<u> </u>		Optim	al		SubOpt		1	Marginal	<u></u>	Т	Poor	
1. Epifaunal		Great		n 50% f			30-50% for low g			r low gradie	nt	10% for lov		+
Substrate/				eams) c			streams) mix of s			nix of stable		streams)sta		
Available		favora	able for	or epifau	unal		habitat; well-suite	ed for full	habitat; ha	ibitat availat		lack of hab	itat is	
Cover				1 & fish		mix of	colonization pote		less than d	,		obvious;sul	bstrate ur	nstable
				nerged inks, co		- other	adequate habitat maintenance of p		substrate f	frequently or removed.		or lacking.		
				at & at s			presence of addit		aisturbea a	or removed.				
		allow	full col	lonizatio	ion pote	ential	substrate in form							
		(i.e., I	logs/sn	hags tha	at are r	not	but not yet prepa							I
	I	new f	all and	l not tra	nsient).	colonization (may							
0:000			140	1 40	147	10	high end of scale			<u> </u>				
Score	5	20	<u>19</u>	-		<u>16</u>	15 14 13			9 🗌 8 🗌 7	-	-	3_2_	
2. Pool Substrate				ubstrate and firm			Mixture of soft sa clay; mud may be			clay or san tle or no roo		Hardpan clano root mat		
Substrate Characterizatio			9	oot mat			some root mats a			rged vegeta		10 100t ma	f or veger	auon.
Ondiaste		•	,						10 002	gou				
	I		-	-			present.							
	I													
	I													
	I													
	I													
Score	5	20	19	18	<u> </u>	16	15 14 13	3 12 11	10 🗆 9	9 🗌 8 🗌 7	6	✔5 4	3 2	1_0
3. Pool Variabil		Even	mix of	large s	shallow	v, large-	Majority of pools	large-deep;	Shallow pc	ools much m	nore	Majority of	pools sm	all-
		deep,	, small	shallov		all-deep				than deep p		shallow or		
	I	pools	s preser	nt.										
	I													
	I													
	I													
	I													
	I													
		L												
Score	3	20	□19	□18	∐17	16			1	9 🗌 8 🛄 7		54 ⊻		」1 └─0
4. Sediment				enlarger			Some new increa			deposition c	of new	Heavy depo		
Deposition				oint bar of the b			formation, mostly gravel, sand or find		gravel, san	nd or fine on old and n	014/	material, in developme		
						osition.				0% of the b		80% of the		llian
	I		cu,			02	bottom affected;	slight	affected; s	ediment de		changing fr	equently;	
	I						deposition in poo	ıls.	at obstruct	tions,		almost abs	ent due to	0
	I									ns, and ben deposition c		substantial		t
	I								pools preva		л	deposition.		
	I								poolo pi o	alon.				
Score	16	20	19	18	17	✔ 16	15 14 13	3 12 11	10	9 🗌 8 🗌 7	6		3 2	1 0
							88							

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	Werry Mtter Water în Erlannel and m ତିଶ୍ରନ ନିନ୍ଦିର୍ହ୍ୟ ନିର୍ଦ୍ଧିର standing pools.
Score 8			109 ✔876 ↓	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 6	20 19 18 17 16	15 14 13 12 11	10 □9 □8 □7 ✔6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 3	20 19 18 17 16	15 14 13 12 11		54 ✔32 1 0
8. Bank Stability (score each bank) Note: determine left of right side by facing	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
downstream.				
Score (LB) 6	10 9		5 4 3	
Score (RB) 6				
 Vegetative Protection (score each bank) Note: determine left or right side by facing downstream. 	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 6	10 9	8 7 46	5 4 3	
Score (RB) 6	10 9 Width of ringrign Zong ≥ 19	8 7 ✓6		
10. Riparian Vegetative Zone Width (score each bank riparian zone) Note: determine left of	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
right side by facing downstream.				
Score (LB) 2	10 9			
Score (RB) 2	10 9	8 7 6		⊻ 2 □ 1 □ 0
Total Score 74				

Project ID: Henderson	County Solar	Stream Class:	Perennial Exhibit 14 Attachment 14.1
Stream ID: 2MS1		Location;	HENDERSON KY Page 93 of 237
Lat: 037.78741	Long: -87.62783	River Basin	Ohio
Investigators: Keith Mic	Date: 05-May-20		Reason for Survey:
Signature:	Time: 2:01 PM		404 functional Assessment:
WEATHER			
CONDITIONS	Current Past 24 Hour		in last 7 days
	Storm (Heavy Rain)	No	✓ Yes
	Rain Steady Rain Steady Showers (Intermittent)	Air Temp F	60
			16
	Clear/Sunny	0 Other	
STREAM			
CHARACTERIZATION	Stream Subsystem		Stream Type
	Perennial 🗌 Intermittent 🗌 Ephemeral		Coldwater
	Stream Origin		✓ Warmwater Catchment Area
	□ Upland Runoff	[Mile ² 10.00
	Spring-fed/Ground Water Wetland Other		Km ² 25.90
WATERSHED		 	
FEATURES	Surrounding Land Use & Percentage		/atershed NPS Pollution
	✓ Forest 30 Commercial 0		evidence Some potential sources
	Field/Pasture 0 0ther 0	db 🗌 🗌	vious sources
	Agriculture 70		/atershed Erosion
	Residential 0	✓ Nor	ne 🗌 Moderate 🗌 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant s	pecies present	Dominant Species
(18 meter buffer)	✓ Trees	□ None	Mixed Mast
INSTREAM FEATURES	Est Reach Length ft 100 m	30 Canopy	Cover
	Est Stream Width ft 28.0 m	8.5 Dpe	en 🗹 Partly Open
	Sampling Reach Area ft ² 2800.0 m ²	260.1 Sha	aded 🗌 Partly Shaded
	Sampling Area mile ² 0.000103 km ² 0.0)00260 High Wa	ter Mark ft 4.60
	Est Water Depth in 3.0 m	0.1 High Wa	iter Mark m 1.40
	Surface Velocity ft/s 0.7 m/s	0.2 % of Str	eam Morphology
		✓ Riffle	
	Channelized Ves V No	✓ Pool	
	Dam Present □Yes ✔ No		Pool Series
LARGE WOODY			
DEBRIS	LWD 0.9 m 2	10 ft ²	
	Density of LWD m ² /km ² 0.0	000009290 _{ft} ² /n	nile 2 0.000003587
AQUATIC VEGETATION	Indicate the dominant type and record the dominant spe	cies present	Portion of the reach with
VEGETATION	□ Rooted Emergent □ Rooted Submergent □	Rooted Floating	None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
WATER			
QUALITY	No Water Present Temperature 16 ° C	60 ⁰ F	Water Odors
	No Flow Present Conductivity µs/cm	524	✓ Normal/None □ Sewage □ Petroleum
	Total Disolved Solids	262 mg/l	Chemical Anaerobic
	рН	7.9 [Do: 9.64 mg/L
	Turbidity		er Surface Oils
	🗌 Clear 🔄 Slightly Turbid 🗹 Turbid	s	Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	🗌 Opaque 🗌 Stained 🔤 Other		Dther

								Exhit	bit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors					Deposits		Page 94 of 237
		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	Anaerobic	None		Sand	Relic Shel	lls 🗌 Other
			Other						
		Oils						s which are not on dersides black	
		✓	Absent	Slight 🗌 Mod	derate 🗌 Profus		Yes	No	
	INORGA							SUBSTRATE C	OMPONENTS
Substrate	Diame	-		Composite in S	-	Substrate		racteristic	% Composition in
Туре		•		Reach		Туре	·		Sampling Reach
Bedrock			†	0		Dietritus		wood, coarse	5
Boulder	>10"			0		· · ·		t material	
Cobble	2.5 - 1			0		Muck- Mud		k, very fine Inic matter	0
Gravel Sand	0.1 - 2.5" gritty			10 10		Marl	v	ey, shell	0
Sand	gritty	•	+	30		IViai i		ey, snell agments	U
Clay	slick	•	+	50				<u> </u>	
Habita		T			HABITAT ASSES	SMENT - LO	W GRADIEN	STREAMS	
Paramet			Opt	imal	SubOpt		1	rginal	Poor
1. Epifaunal		-	ter than 50%	% for low	30-50% for low g	gradient	10-30% for lo	w gradient	10% for low gradient
Substrate/		gradie	ent streams	s) of substrate	streams) mix of s	stable	streams) mix	of stable	streams)stable habitat;
Available Cover			able for epif	faunal sh cover; mix of	habitat; well-suite colonization pote		habitat; habita less than des		lack of habitat is obvious;substrate unstable
		snags	s, submerge	ed logs,	adequate habitat	t for	substrate free	quently	or lacking.
			rcut banks, e habitat & a	cobble or other at stage to	maintenance of p		disturbed or r	emoved.	
		allow	full coloniza	ation potential	substrate in form	n of new fall,			
			logs/snags f fall and not t	that are not transient)	but not yet prepa colonization (may				
			all and not .		high end of scale				
Score	8	20	19 18	8 🗌 17 🗌 16	15 14 13			✔8 □7 □6	
2. Pool				rate materials,	Mixture of soft sa		All mud or cla		Hardpan clay or bedrock:
Substrate Characterization			gravel and fi alent; root m		clay; mud may be some root mats a		bottom: little on submerge	or no root mat: d vegetation.	no root mat or vegetation.
Ondraster					submerged vege		10 002	u vogo	
					present.				
Score	8	20	19 11	8 🗌 17 🗌 16	15 14 13	3 12 11	10 9	✔8 □7 □6	
3. Pool Variabil	lity	Even	0	e shallow, large-			Shallow pools		Majority of pools small-
			, small shall s present.	low, small-deep	very few shallow		prevalent that	n deep pools.	shallow or pools absent.
		роов	present.						
Score	12	20	19 11	8 17 16		3 ✔ 12 🗌 11		8 7 6	
4. Sediment	L.	1	or no enlar		Some new increa			position of new	Heavy deposits of fine
Deposition		island	ds or point b	oars and less	formation, mostly	y from	gravel, sand	or fine	material, increased bar
			<20% of the ted by sedin	e bottom ment deposition.	gravel, sand or finsediment; 20-50%		sediment on obars: 50-80%		development; more than 80% of the bottom
		ances	.00 07 222	for depoeter	bottom affected;	slight	affected; sedi	iment deposits	changing frequently; pools
					deposition in poo	ols.	at obstruction constrictions,	,	almost absent due to substantial sediment
							moderate dep	position of	deposition.
							pools prevale	ent.	
Scoro	11	20	19 11	8 🗌 17 🗌 16	15 14 13	3 🗌 12 ✔ 11		8 7 6	
Score	<u>'</u> t	20				.∟12 ┖ । ।			
1									

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the XNI available channel, and/or riffle substrates are mostly exposed.	ଅVery ମଧ୍ୟାହେତି ଅଭିନ୍ୟାର୍ଥି ଧରୁ ଅଭିନ୍ୟରିକ୍ଷର and moogge କୁହିଛିନିନ୍ଦିର୍କ୍ଷର standing pools.
Score 18	2019 🗹 181716	15 14 13 12 11		5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 13	20 19 18 17 16	1514 ✔ 13 1211		
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 9	20 19 18 17 16	15 14 13 12 11	10 ♥9 □8 □7 □6 [5432 1 0
8. Bank Stability (score each bank) Note: determine left o right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. r	erosion mostly healed over	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
Score (LB) 2				
Score (RB) 2 9. Vegetative Protection (score each bank) Note: determine left oright side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes: vegetative	8 7 6 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	5 4 3 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	
Score (LB) 4	10 9		5 24 3	
Score (RB) 4 10. Riparian Vegetative Zone Width (score each bank riparian zone) Note: determine left o right side by facing downstream.	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	8 6 Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	5 √ 4 3 Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	□2 □ 1 □ 0 Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
Score (LB) 5				
Score (RB) 9				
Total Score 105	1			

Project ID: Henderson	County Solar	Stream Class: Perennial Exhibit 14 Attachment 14.1
Stream ID: 2MS1-1		Location; HENDERSON KY Page 96 of 237
Lat: 37.78477	Long: -87.63895	River Basin Ohio
Investigators: Ryan Wi	nka	
Signature:	Date: 06-May-20	Reason for Survey:
	Time: 1:31 PM	404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain in last 7 days
CONDITIONS	Storm (Heavy Rain) Storm (Heavy Rain)	□ No ✔ Yes
	Rain Steady Rain Steady Showers (Intermittent) Showers (Intermittent)	Air Temp F 65 Air Temp C 18
	Cloud Cover % 0 ✓ Cloud Cover % 10	
	✓ Clear/Sunny	00 Other
STREAM	Stream Subsystem	Stream Type
CHARACTERIZATION	Perennial Intermittent Ephemeral	Coldwater
		✓ Warmwater Catchment Area
	Stream Origin	
	Upland Runoff I Mixture of Origins	Mile ² 8.40
	Spring-fed/Ground Water Wetland Other	Km ² 21.76
WATERSHED		
FEATURES	Surrounding Land Use & Percentage	Local Watershed NPS Pollution
	✓ Forest 50 Commercial 0	☐ No evidence Some potential sources
	Field/Pasture 0 0 Other 0	Obvious sources
	✓ Agriculture 50	Local Watershed Erosion
	Residential 0	None 🗹 Moderate 🗌 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant s	pecies present Dominant Species
(18 meter buffer)		Mixed Mast
	✓ Trees	□ None
INSTREAM	Est Reach Length ft 100 m	30 Canopy Cover
FEATURES	Est Stream Width ft 30.0 m	9.1 Open 🗹 Partly Open
	Sampling Reach Area ft ² 3000.0 m ²	216.1
	Sampling Area mile ² 0.000110 km ² 0.0	000279 High Water Mark ft 4.00
	Est Water Depth in 36.0 m	0.9 High Water Mark m 1.22
	Surface Velocity ft/s 0.1 m/s	0.0 % of Stream Morphology
		✓ Riffle % 30 ✓ Run % 40
	Channelized Ves Vo	
	Dam Present □Yes ✔ No	Step Pool Series
LARGE WOODY	LWD 0.9 m 2	10 ft 2
DEBRIS		
	Density of LWD m ² /km ² 0.00	tt 2 /mile 2 0.0000003587
AQUATIC VEGETATION	Indicate the dominant type and record the dominant spec	
	Rooted Emergent Rooted Submergent	Rooted Floating Vone aquatic vegetation
	Free Floating Attached Algae	Floating Algae present:
WATER	No Water Present Temperature 16 ° C	61 ^O F Water Odors
QUALITY	No Flow Present Conductivity µs/cm	547 Vormal/None Sewage Petroleum
	Total Disolved Solids	274 mg/l Chemical Anaerobic
		7.02
	pH	7.63 Do: 10.8 mg/L
	Turbidity	Water Surface Oils
	🗌 Clear 🔄 Slightly Turbid 🗹 Turbid	Slick Sheen Globs Flecks
	Opaque Stained Other	Other

SEDIMENT/		<u>Adar</u>						
SUBSTRATE		Odors	_				Deposits	Page 97 of 237
			Normal	Sewage	Petroleum		Sludge Sawdust	
			Chemical	Anaerobic	None		Sand Relic Sh	ells 🗌 Other
			Other					
		Oils					king at stones which are no bedded. are undersides blac	
			Absent 🗌 S	Slight 🗌 Moo	derate 🗌 Profus		Yes Ves	X in color?
				-				
		-			-	Curle admote		
Substrate Type	Diame	ter	% Co	omposite in S Reach	ampling	Substrate Type		% Composition in Sampling Reach
Bedrock				0		Dietritus	Sticks, wood, coarse plant material	5
Boulder	>10"			0		h fi i alc	•	
Cobble	2.5 - 1			0		Muck- Mud	Black, very fine organic matter	0
Gravel	0.1 - 2.			10 10				
Sand	gritty	gooey 40				Marl	Grey, shell fragments	0
Silt		slick 40				ļ		
Clay		.						
Habita Parame			0				W GRADIENT STREAMS	
	lei		Optima		SubOpt		Marginal	Poor
1. Epifaunal Substrate/	I	-	ter than 50% fo ent streams) o		30-50% for low g streams) mix of s		10-30% for low gradient streams) mix of stable	10% for low gradient streams)stable habitat;
Available		favora	able for epifau	ınal	habitat; well-suite		habitat; habitat availability	lack of habitat is
Cover		coloni	ization & fish o	cover; mix of	colonization pote		less than desirable;	obvious;substrate unstable
			s, submerged l rcut banks, col		adequate habitat maintenance of p		substrate frequently disturbed or removed.	or lacking.
			e habitat & at s		presence of addit			
		allow	full colonization	on potential	substrate in form	n of new fall,		
	I	(i.e., l	logs/snags tha	at are not	but not yet prepa			
	I	new i	fall and not trar	nsient).	colonization (may high end of scale			
Score	9	20	19 18	17 16	15 14 13		10 ⊻9876	
2. Pool		-	re of substrate		Mixture of soft sa		All mud or clay or sand	Hardpan clay or bedrock:
Substrate			gravel and firm		clay; mud may be		bottom: little or no root mat	
Characterizatio	on	preva	alent; root mat	ts and	some root mats a	and	no submerged vegetation.	-
	I	subm	erged vegeta	tion common.	submerged vege present.	tation		
	I				present.			
	I							
	I							
	I							
Score	9	20	□19 □18 [17 16		3 12 11	10 ✔9 □8 □7 □6	
3. Pool Variabil		1	mix of large sl				Shallow pools much more	Majority of pools small-
0.100.100.			, small shallow		very few shallow		prevalent than deep pools.	shallow or pools absent.
			present.		-			
	I							
	I							
	I							
	I							
	I							
Score	10	20	☐ 19 18	□17 □16	15 14 13	3 2 12 11	✓ 10 □ 9 □ 8 □ 7 □ 6	
4. Sediment		1	or no enlarger		Some new increa		Moderate deposition of nev	
Deposition			ds or point bars		formation, mostly		gravel, sand or fine	material, increased bar
			<20% of the bo		gravel, sand or fi	ine	sediment on old and new	development, more than
	I	affect	ted by sedimer	nt deposition.	sediment; 20-50% bottom affected;		bars; 50-80% of the bottom affected; sediment deposits	
	I				deposition in poo		at obstructions,	almost absent due to
	I						constrictions, and bends;	substantial sediment
	I						moderate deposition of	deposition.
	I						pools prevalent.	
Score	14	20	□19 □18 l	□17 □16		3 12 11		
1								
					94			

5. Channel Fl Status	ow	lower ba	er banks, and mimimal a ount of channel substrate is o osed. e					available channel; or <25% of channel substrate is					available channel, and/or							Wéry ମଧ୍ୟଙ୍ୟ ଅବନ୍ୟାର୍ମ ଧର୍ମରାମ and mତିଷ୍ଥିତ ହାଇ ହେଇଥିଲି କରିଥିନ standing pools.					
Score	15	20	19	18	17	16	✔ 15	14	1 13	s 🗌 1	2	11	1	0	9	8	7	6		5 🗆	4	3	2		1 0
6. Channel Alteration		Channe absent normal	or min	imal;	•	•	Some presen bridge of past dredgii 20 yr) recent presen	nt, us abut t chai ng, (g may char	ually ments nneliz greate be pr	in are s; ev atior er tha esen	iden n, i.e in pa t, bu	of ce ., ast t	shori on b 80%	nsive ng s oth l of s	e; er struc bank trea	nban tures s; an m rea	kme s pre nd 40 ach	nts o sent	r or sti an ha	cer rear nd d abita	nen n re isru at gr	it; ov	er 8 cha . Ins / alte	0% nnel strea ered	
Score	13	20	19	18	1 7	16	15	14	✔ 13	s 🗌 1	2	11	1	0 [9	8	7	6		5 [4	3	2	<u> </u>	0 🗌 0
7. Channel Sinuosity		The ber increase 4 times straight braiding plains a lying an not eas	e the s longer line. (l g is cor and oth eas. th	trear than Note nside er no	m lengt n if it wa - chan ered coa ormal lo aramete	as in a nel astal ow- er is	The be increas to 3 tin was in	se th nes l	e stre onger	am l thar	engt			ase 2 tin	the nes l	strea onge	am le er tha	am ength an if it	ha	as b	een		nnel		erway I for a
Score	7	20	19	18	1 7	16	15	14	□ 13	s 🗌 1	2	11	1	0 [9	8	✔ 7	6		5 []4[3	2		1 🗌 0
8. Bank Stabi (score each b Note: determ right side by downstream	nine left or facing	Banks s erosion minima problem	or bar l; little	nk fai potei	lure ab ntial for	sent or future	Modera infrequ erosion 5-30% areas	ient, n mo of ba	small stly h ank ir	area ealeo reao	d ove	er.	Mode 60% area erosi flood	of b s of on p	ank eros	in re sion;	ach high	has	ar fre se ob 10	eas eque ectic ovio 00%	; "ra ently ons a us b of l	; mai aw" a y alo and bank bank sca	ng s bend slou has	s traio ds; ughii	
Score (LB)	2		10		9			8	7		6			5		4		3		✓			1		
Score (RB) 9. Vegetative Protection (s each bank) Note: determ right side by downstream	nine left or facing	More th stream immedi coverec includin shrubs, macrop disrupti mowing almost naturall	bank si ate ripa d by na ig trees or nor hytes; on thro minim all plar	% of urfac arian itive s, un woo vege bugh nal o	es and zones vegetat derstor dy etative grazing r not ev	ion, y g or ident;	70-90% surface vegeta plants represe eviden plant g great e half of stubble	% of t es co ition, is no enteo it but growtl exten the p	overed but o ot well d disru not a h pote t; mou potent	ream d by r ne cl uptio ffecti ential re tha	iban nativ ass n ng fu to a an or	e of ull iny	50-7 surfa vege obvid soil d vege than poter heigl	ices tatic ous; or clo tatic one ntial	of th cov on; d pato osely on co -half plar	ered isrup ches y crop ommo f of th nt stu	eaml by tion of ba ppec on; le	are I ess	str co dis ve ve re or	rear over srup get get mov	thar nba ed t otior atio atio /ed s in	n 50° ink s by ve n of s n is n ha to 5 ave	urfa egeta strea very s be cen	ces atior amba higl en time	ı; ank ı;
Score (LB)	4	naturali	10		9			8	7					5		✔4		3			2		1 [_ (-
Score (RB) 10. Riparian Vegetative Z Width (score bank riparian zone) Note: determ right side by downstream	e each n hine left or r facing	Width c meters; parking cuts, lav impacte	, huma lots, ro wns, o	an z n act oadb r cro	tivities (eds, clo	(i.e., ear-	Width meters have ir minima	s; hur mpac	man a	activi	e 12- ies		mete	rs; l imp	ripa num	an ao	zone ctiviti	3 6-12 es grea	m t ve	'idth eter	s: li atio	n du	or no	o ripa	e <6 arian
Score (LB)	6		10		9			8	7	✓	6			5	[4		3			2		1	()
Score (RB)	9		□10		√ 9			8	□7		6			5	[4		3			2		1)
Total Score	104																								

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 2MS1A	,	Location;	HENDERSON KY Page 99 of 237
Lat: 37.78752	Long: -87.62620	River Basin	Ohio
Investigators: Keith Mic	shalski		
Signature:	Date: 06-May-20		Reason for Survey:
0	Time: 1:17 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	i in last 7 days
CONDITIONS		_	✓ Yes
	Storm (Heavy Rain)	No	
	Rain Steady	Air Temp F	
	□ Showers (Intermittent) □ Showers (Intermittent) □ Showers (Intermittent) □ Cloud Cover % 10	Air Temp C	16
		0 Other	
	Clear/Sunny		
STREAM	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial Intermittent I Ephemeral		
			✓ Warmwater Catchment Area
	Stream Origin		
	Upland Runoff I Mixture of Origins		Mile ² 0.01
	Spring-fed/Ground Water Wetland Other		Km ² 0.03
WATERSHED			
FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
	✓ Forest 20 Commercial 0	🗌 No	evidence Some potential sources
	Field/Pasture 0 0 Other 0	Ob	vious sources
	✓ Agriculture 80	Local V	Vatershed Erosion
	Residential 0		ne 🗌 Moderate 🗹 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant s	pecies present	Dominant Species
(18 meter buffer)			Soft Mast
	✓ Trees	☐ None	
INSTREAM	Est Reach Length ft 51 m	16 Canopy	/ Cover
FEATURES			
	Est Stream Width ft 2.8 m		
	Sampling Reach Area ft ² 142.8 m ²	13.3 V Sha	
	Sampling Area mile ² 0.000005 km ² 0.0	00013 High Wa	ater Mark ft 0.40
	Est Water Depth in 0.0 m	0.0 High Wa	ater Mark m 0.12
	Surface Velocity ft/s 0.0 m/s	0.0 % of Str	ream Morphology
		Pool	
	Channelized Yes No		
	Dam Present □Yes ✔ No	✓ Step	Pool Series
LARGE WOODY	LWD 0.0 m 2	0 ft 2	
DEBRIS		20000000	
	Density of LWD m ² /km ² 0.00	ft ² /r	nile ²
AQUATIC VEGETATION	Indicate the dominant type and record the dominant spe	cies present	Portion of the reach with
VEGETATION	Rooted Emergent Rooted Submergent	Rooted Floating	✓ None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
	5	3 3	
WATER	✓ No Water Present Temperature 0 ° C	0 ⁰ F	Water Odors
QUALITY	No Flow Present Conductivity µs/cm	0	□ Normal/None □ Sewage □ Petroleum
	Total Disolved Solids	0 mg/l	☐ Chemical ☐ Anaerobic
		°	
	pH	0 [Do: mg/L
	Turbidity	Wate	er Surface Oils
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	Opaque Stained Other		Other

								Exhil	hit 14 Attachment 14.1
SEDIMENT/ SUBSTRATE		Odors					Deposits	_/	Page 100 of 237
5000110112		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	Anaerobic	None		Sand	Relic Shel	lls 🗌 Other
ĺ			Other						
		Oils						s which are not o Indersides black	
			Absent	Slight 🗌 Mod	oderate 🗌 Profus		Yes	Indersides black	
	INOPG/								CONDONENTS
Substrate	Diame	-		COMPONENT Composite in S	-	Substrate		racteristic	% Composition in
Туре		16.		Reach	פייייקיווא	Туре	-		Sampling Reach
Bedrock	[-	0		Dietritus		wood, coarse	3
Boulder	>10'		<u> </u>	0				nt material	
Cobble	2.5 - 1			0		Muck-		k, very fine	0
Gravel	0.1 - 2		_	0		Mud	Ŭ,	anic matter	· · · ·
Sand	gritty	•		0		Marl		rey, shell agments	0
Silt Clay	gooe slick	•		100	ľ	<u> </u>		aymente	
		<u>.</u>		-					
Habita Parame			Optim	-	HABITAT ASSES		1		Poor
1. Epifaunal		Great	Optim ter than 50%		SubOpt 30-50% for low g		Ma 10-30% for le	arginal ow gradient	Poor 10% for low gradient
Substrate/		gradie	ient streams)	of substrate	streams) mix of s	stable	streams) mix	k of stable	streams)stable habitat;
Available		favora	able for epifat	aunal	habitat; well-suite	ed for full	habitat; habi	tat availability	lack of habitat is
Cover			nization & fish Is, submerged	n cover; mix of d logs,	colonization pote adequate habitat		less than des substrate fre		obvious;substrate unstable or lacking.
		under	ercut banks, co	obble or other	maintenance of p	populations;	disturbed or		
			e habitat & at / full colonizati		presence of addit substrate in form				
		(i.e., I	logs/snags th	hat are not	but not yet prepa	ared for			
			fall and not tra		colonization (may	ay rate at			
Score	2	20	19 18	17 16	high end of scale	· · · · · · · · · · · · · · · · · · ·			543 ✔2 1 0
2. Pool		-	ure of substrat		Mixture of soft sa		All mud or cl		Hardpan clay or bedrock:
Substrate		with g	gravel and firn	m sand	clay; mud may be	e dominant;	bottom: little	or no root mat:	no root mat or vegetation.
Characterizatio		preva	alent; root ma		some root mats a		no submerge	ed vegetation.	
		Subm	ergen vegen	ation common.	present.	lation			
					1				
Score	5		$19 \square 18$						
3. Pool Variabil				shallow, large- ow, small-deep				ls much more an deep pools.	Majority of pools small- shallow or pools absent.
			s present.	W, Onica	very lott		provence		
Score	2	1	19 18		15 14 13		10 9		
4. Sediment			or no enlarge		Some new increa			position of new	Heavy deposits of fine
Deposition			ds or point ba <20% of the b		formation, mostly gravel, sand or fi		gravel, sand sediment on	or fine old and new	material, increased bar development; more than
				ent deposition.	sediment; 20-50%	% of the	bars; 50-80%	6 of the bottom	80% of the bottom
					bottom affected; deposition in poo		affected; sec at obstructio	diment deposits	changing frequently; pools almost absent due to
						<i>N</i> 5.	constrictions	, and bends;	substantial sediment
							moderate de pools prevale		deposition.
							hoors hieven	ent.	
Score	11	20	19 18	17 🗌 16	15 14 13	3 🗌 12 🗹 11	10 9		5432 1 0
· · · · · · · · · · · · · · · · · · ·	ı L								
1									

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	₩ởዯ∰tਿ&Water∿in &Hannel and magetyl∯teséନେୟs standing pools.
Score 1	20 19 18 17 16	15 14 13 12 11		5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 11	2019181716	15141312 ✔ 11		
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 5				✓5 □4 □3□2 □ 1□ 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
Score (LB) 2	10 9			
Score (RB) 2				
 9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream. 	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 2	10 9		5 4 3	
Score (RB)210. RiparianVegetative ZoneWidth (score eachbank riparianzone)Note: determine left orright side by facingdownstream.	10 9 Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	8 6 Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	5 4 3 Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	✓ 2 1 0 Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
Score (LB) 5				
Score (RB) 5	10 9	8 7 6	⊻ 5	
Total Score 55				

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 2MS1B		Location;	HENDERSON KY Page 102 of 237
Lat: 37.78720	Long: -87.62802	River Basin	Ohio
Investigators: Keith Mic	Date: 06-May-20		Reason for Survey:
Signature:	Time: 1:42 PM		404 functional Assessment:
WEATHER			
CONDITIONS	Current Past 24 Hour		n in last 7 days
	Storm (Heavy Rain)	No No	Yes
	Rain Steady Rain Steady Showers (Intermittent) Showers (Intermittent)	Air Temp F	
	□ Showers (Intermittent) □ Showers (Intermittent) □ Cloud Cover % 0 ✔ Cloud Cover % 10	Air Temp C	2 16
	✓ Clear/Sunny Clear/Sunny	0 Other	
STREAM			
CHARACTERIZATION	Stream Subsystem		Stream Type
	Perennial 🗌 Intermittent 🗹 Ephemeral		
	Stream Origin		✓ Warmwater Catchment Area
	□ Upland Runoff		Mile ² 0.01
	Spring-fed/Ground Water Wetland Other		Km ² 0.03
WATERSHED			
FEATURES	Surrounding Land Use & Percentage		Vatershed NPS Pollution
	✓ Forest 20 Commercial 0		evidence Some potential sources
	Field/Pasture 0 Other 0		ovious sources
	Agriculture 80		Watershed Erosion
	Residential 0		ne 🗌 Moderate 🗹 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant sp	pecies present	Dominant Species
(18 meter buffer)	✓ Trees	None	Mixed Mast
INSTREAM FEATURES	Est Reach Length ft 47 m	14 Canop	y Cover
	Est Stream Width ft 2.6 m	0.8 Dp	en 🗹 Partly Open
	Sampling Reach Area ft ² 122.2 m ²	11.4 🗌 Sh	aded 🗌 Partly Shaded
	Sampling Area mile ² 0.000004 km ² 0.0	00011 High W	ater Mark ft 0.40
	Est Water Depth in 0.0 m	0.0 High W	ater Mark m 0.12
	Surface Velocity ft/s 0.0 m/s	0.0 % of Str	ream Morphology
		✓ Riffle	
	Channelized Ves 🗸 No	Pool	
	Dam Present □Yes ✔ No		o Pool Series
LARGE WOODY			
DEBRIS	LWD 0.0 m 2	0 ft ²	
	Density of LWD m ² /km ² 0.00	000000000 ft ² /	mile ² 0.000000000
AQUATIC VEGETATION	Indicate the dominant type and record the dominant spec	cies present	Portion of the reach with
VEGETATION	Rooted Emergent Rooted Submergent	Rooted Floating	None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
WATER			
WATER QUALITY	✓ No Water Present Temperature 0 C	0 ⁰ F	Water Odors
	□ No Flow Present Conductivity µs/cm	0	□ Normal/None □ Sewage □ Petroleum
	Total Disolved Solids	0 mg/l	Chemical Anaerobic
	pH	0	Do: mg/L
	Turbidity	Wat	er Surface Oils
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	Opaque Stained Other		Other

										<u>(hibit 14</u>	Attachmont 14.1					
SEDIMENT/		Odors	s					Deposits			Page 103 of 237					
SUBSTRATE		✓	Normal	Sev	wage	Petroleum		Sludge	e 🗌 Sawdus		Paper Fiber					
			Chemical	_	aerobic	None		Sand	Relic S	hells	Other					
				L / "··~	1010010											
			Other				Loc	king at stone	es which are no	ot deeply	v					
		Oils							undersides bla							
		✓	Absent [Slight		derate 🗌 Profus	se 🗌	Yes	✓ No							
	INORGA	NIC S	UBSTRA	TE COMPO	ONENT	<u> </u>		ORGANI	C SUBSTRATE	F COMP	ONFNTS					
Substrate	Diame	-		% Compos	-	-	Substrate		aracteristic		% Composition in					
Туре	L. 19			•	Reach	ampin.a	Type				Sampling Reach					
Bedrock					0		Dietritus	Sticks	, wood, coarse	<u>,</u>	5					
Boulder	>10'		+		0				nt material		5					
Cobble	2.5 - 1		+		0		Muck-	Blar	ck, very fine		0					
Gravel	0.1 - 2		+		0		Mud		anic matter		U					
Sand	gritty		+		0		Marl	G	Grey, shell		0					
Silt		jooey			100				ragments							
Clay	slick		+		0											
Habita			<u> </u>			HABITAT ASSES			T STREAMS	I						
Parame		<u> </u>	Or	otimal		SubOpt		1	arginal		Poor					
1. Epifaunal		Great		0% for low		30-50% for low g			low gradient	10%	for low gradient					
Substrate/		-		ns) of subs		streams) mix of s	,	streams) mi			ams)stable habitat;					
Available		favora	able for ep	oifaunal		habitat; well-suite	ed for full	habitat; hab	itat availability	lack	of habitat is					
Cover				fish cover;	mix of	colonization pote		less than de			ous;substrate unstab					
			s, submero rout banks	ged logs, s, cobble oi	r other	adequate habitat maintenance of p		substrate fre disturbed or		oria	cking.					
				& at stage t		presence of addit			Tomovou.							
		allow	full coloni	ization pote	ential	substrate in form	,									
				s that are r		but not yet prepa										
		new	all anu no	ot transient)).	colonization (may high end of scale										
Score	2	20	L 19 L	18 🗌 17	16			10 9		3 5	43 ✔2 1					
2. Pool		-	-	strate mate		Mixture of soft sa		All mud or c	-		lpan clay or bedrock					
Substrate		with g	gravel and	l firm sand	,	clay; mud may be	e dominant;	bottom: little	e or no root ma	at: no ro	pot mat or vegetation					
Characterizatio		preva	alent; root	mats and		some root mats a	and		jed vegetation.							
		subm	erged ve	getation co	ommon.		tation									
						present.										
Scoro	5			10 17	16		10 11			~	4 3 2 1					
Score	5	20		18 17												
Pool Variabil				ge shallow allow, smal					ols much more an deep pools	,	brity of pools small- low or pools absent.					
			, small sna s present.	110vv, 0	ll-ucop	Very lew onane.			all neeb beere	. 01						
		F	E.													
	T	L		<u> </u>												
Score	1	20		18 🗌 17	16		3 🗌 12 🗌 11	□10 □9			432 ✔ 1					
4. Sediment				argement o		Some new increa			eposition of ne		vy deposits of fine					
Deposition			ds or point <20% of th	t bars and I he bottom	less	formation, mostly gravel, sand or fi		gravel, sand	d or fine		erial, increased bar elopment; more than					
				liment dep	osition.				% of the bottor		of the bottom					
		u			00	bottom affected;	slight	affected; se	diment deposi	ts chan	nging frequently; poo					
						deposition in poo	ols.	at obstructio	ons,	almo	ost absent due to					
								moderate de	s, and bends; eposition of		stantial sediment osition.					
								pools preval		ucp.	Shon.					
								F 1								
Score	12	20	19	18 🗌 17	16	15 14 13	3 🖌 12 🗌 11	10 9	8 7 6	3 🗆 5 L	4 3 2 1					
· · · · · · · · · · · · · · · · · · ·	J _															
1																
1																
1						4.04	-									
						100)									

5. Channel Fle Status	οw	Water reaches ba lower banks, and amount of channe exposed.	mimimal	available	available channel; or <25% of channel substrate is					25-75% nannel ates a	WéryntteeWater∿int thannel and magety1βres£ନ୍ଦ୍ରିୟs standing pools.							
Score	1		8 🗆 17 🖂 16	15 1	4 🗌 13	12	2 11	10	9	8	7	6	5	4	3	2	1	0
6. Channel Alteration		Channelization or absent or minima normal pattern.	0 0	Some cha present, u bridge ab of past ch dredging, 20 yr) ma recent cha present.	usually i utments anneliz (greate y be pre	in area s; evic ation, er thar esent,	lence i.e., past but	Chanr extens shorin on bot 80% c chann	sive; e ng stru th bar of stre	emban uctures nks; ar am re	ikment s prese nd 40 t ach	s or ent o	Banks or cer strear and d habita remo	nen n re isru at gr	t; ove ach o pted. eatly	er 80 ^r chani Instr alter	% of neliz ream	the ed
Score	11	20 19 18	8 🗆 17 🗌 16	15 1	4 🗌 13	12	2 🖌 11	10	9	8	□ 7	6	5 _	4	3_	2	_1	0
7. Channel Sinuosity		The bends in the increase the streat 4 times longer that straight line. (Not braiding is consid plains and other r lying areas, this p not easily rated in	am length 3 to an if it was in a e - channel ered coastal normal low- arameter is	The bend increase to to 3 times was in a s	the strea longer	am le than	ngth 2	increa	ise the times	e strea s longe	strean am len er than ine.	gth	Chan has b long c	een	char			
Score	6	201918	8 🗌 17 🗌 16	15 1	4 🗌 13	12	2 11	10	9	8	7	6	5]4[3_	2	_ 1	0
8. Bank Stabi (score each b Note: determ right side by downstream.	ank) ine left or facing	Banks stable; evi erosion or bank fa minimal; little pote problems. <5% of	ailure absent or ential for future	Moderate infrequent erosion m 5-30% of areas of e	t, small lostly he bank in	areas ealed reacl	over.	Moder 60% c areas erosio floods	of ban of ero on pot	ik in re osion;	ach ha high	as	Unsta areas freque sectio obvio 100% erosio	; "ra ently ons a us b of t	w" ai and b ank s ank	reas ng str ends sloug has	aigh ;	t
Score (LB)	3	10	9	8	7	6			5	4	✔ 3	;		2		1	0	
Score (RB)	3	10	9	8	□7			L	_5	4	✔3			2		1 L	0	
 Vegetative Protection (s each bank) Note: determ right side by downstream. 	ine left or facing	More than 90% of streambank surfat immediate riparia covered by native including trees, us shrubs, or nonwo macrophytes; veg disruption through mowing minimal of almost all plants a naturally.	ces and n zones vegetation, nderstory ody getative n grazing or or not evident;	70-90% o surfaces o vegetation plants is r represent evident bù plant grow great exte half of the stubble ho	covered n, but of not well ed disru ut not a wth pote ent; mor e potent	l by na ne cla uption ffectin ential t re that ial pla	ative iss of ig full to any n one- int	50-70' surfac vegeta obviou soil or vegeta than o potent height	ces co ation; us; pa close ation o one-ha tial pla	overed disrup atches ely cro comm alf of th ant stu	by otion of bard pped on; les ne	Ð	Less streat cover disrup veget veget remo or les heigh	nba ed b otion ation ation ved s in	nk su by veg i of st n is v n has to 5 d	urface getat trean ery h bee centir	es ion; nbar iigh; n nete	ers
Score (LB)	3		9	8	7	6			5	4	✓ 3			2		1	0	
Score (RB) 10. Riparian Vegetative Z Width (score bank ripariar zone) Note: determ right side by downstream.	ine left or	Uidth of riparian a meters; human a parking lots, road cuts, lawns, or cro impacted zone.	ctivities (i.e., beds, clear-	8 Width of r meters; h have impa minimally	uman a acted zo	ctiviti	12-18 es	Width meter: have i deal.	s; hur	man ao		-12 s	Width meter veget activit	s: li atio	iparia	r no r	ipar	ian
Score (LB)	5	10	9	8	7	6			1 5	4	3			2		1 [0	
Score (RB) Total Score	5 60	10	9	88	□7	6		.	₹5	4	3	5		2		1 🗆	0	
	00																	

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 2MS1C		Location;	HENDERSON KY Page 105 of 237
Lat: 37.78675	Long: -87.62907	River Basin	Ohio
Investigators: Keith Mic	chalski	- -	
Signature:	Date: 06-May-20		Reason for Survey:
	Time: 2:11 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	n in last 7 days
CONDITIONS			✓ Yes
	Storm (Heavy Rain) Storm (Heavy Rain)		
	Rain Steady Rain Steady Showers (Intermittent) Showers (Intermittent)	Air Temp F	
		Air Temp C	16
	✓ Cloud Cover % 20 ✓ Cloud Cover % 100 □ Clear/Sunny □ Clear/Sunny	0 Other	
STREAM	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial Intermittent I Ephemeral		
			✓ Warmwater Catchment Area
	Stream Origin		
	Upland Runoff Mixture of Origins		Mile ² 0.01
	Spring-fed/Ground Water Wetland Other		Km ² 0.03
WATERSHED FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
	✓ Forest 10 Commercial 0	🗌 No	evidence Some potential sources
	Field/Pasture 0 0 Other 0		vious sources
	Agriculture 90		Vatershed Erosion
	Residential 0	L No	ne 🗌 Moderate 🗹 Heavy
RIPARIAN	Indicate the dominant type and record the dominant sp	necies present	Dominant Species
VEGETATION (18 meter buffer)			Annual grasses
	🗌 Trees 🛄 Shrubs 🗹 Grasses 🛄 Herbs	☐ None	, initial gracece
INSTREAM		Canon	y Cover
FEATURES	Est Reach Length ft m		
	Est Stream Width ft 2.4 m	0.1	
	Sampling Reach Area ft ² 98.4 m ²	9.1 🗆 Sh	aded 🔲 Partly Shaded
	Sampling Area mile ² 0.000004 km ² 0.0	00009 High Wa	ater Mark ft 0.30
	Est Water Depth in 0.0 m	0.0 High Wa	ater Mark m 0.09
	Surface Velocity ft/s 0.0 m/s		
		% 01 3ti	
		✓ Riffle	
	Channelized Yes 🗹 No	✓ Pool	% 5 Glide Pool
	Dam Present 🛛 Yes 🗹 No	Step	Pool Series
LARGE WOODY	LWD 0.0 m 2	0 ft 2	
DEBRIS			
	Density of LWD m ² /km ² 0.00	000000000 _{ft} 2 /r	mile 2 0.000000000
AQUATIC	Indicate the dominant type and record the dominant spec	cies present	
VEGETATION		Rooted Floating	✓ None Portion of the reach with aquatic vegetation
			present: 0
	☐ Free Floating	Floating Algae	
WATER	✓ No Water Present Temperature 0 ° C	0 ⁰ F	Water Odors
QUALITY			
	□ No Flow Present Conductivity µs/cm	0	└ Normal/None └ Sewage └ Petroleum
	Total Disolved Solids	0 mg/l	Chemical Anaerobic
	pH	0	Do: mg/L
	Turbidity	Wate	er Surface Oils
	Clear Slightly Turbid Turbid		Slick Sheen Globs Flecks
	☐ Opaque ☐ Stained ☐ Other	_	Other

											Exhil	bit 14 Att	teehme	nt 14_1	1
SEDIMENT/		Odors	3	_	_	_			Deposits	_		Pa	ige 106	of 237	7
SUBSTRATE		✓	Norma	al [Sew	vage	Petroleum		Sludge) 🗌 Sa	awdust		Paper F	iber	ļ
			Chemi	ical [Ana	erobic	None		Sand	🗌 R(elic Shel	lls 🗌 (Other		ł
			Other												ļ
			Outor						oking at stone						ļ
		Oils				_	_	emt	bedded, are	underside	es black		?		ļ
		✓	Absen	t 🗆 S	Slight		derate 🗌 Profus	se	Yes	✓ N	0				!
	INORGA	NIC S	UBSTI	RATE C	COMPC	ONENT	S	 I	ORGANI	C SUBST	RATE C	COMPO	NENTS		
Substrate	Diame	ter		% Cc	•		Sampling	Substrate	e Ch	aracteris	tic		Comp		
Туре					R	Reach		Туре				S	Samplir	ng Rea	ich
Bedrock						0		Dietritus		, wood, c				2	
Boulder	>10"	·				0		I	pla	ant materi	al				
Cobble	2.5 - 1		F			0		Muck-		ck, very f				0	
Gravel	0.1 - 2.	.5"	F			0		Mud	-	ganic mat		l			!
Sand	gritty	/				0		Marl		Grey, shel				0	
Silt	gooe	y				100			1	ragments	;				
Clay	slick	ξ				0						I			
Habita	at					1	HABITAT ASSES	SMENT - LO	W GRADIEN	NT STRE	AMS				
Parame	əter			Optima	al		SubOpti	imal	М	larginal			Po	or	
1. Epifaunal		-	ter than	1 50% f	for low		30-50% for low g	radient	10-30% for	low gradi			r low gr		
Substrate/				eams) o		trate	streams) mix of s	stable	streams) mi	ix of stab	le	stream	s)stable	e habit	
Available Cover				r epifau & fish @		~iv of	habitat; well-suite colonization pote		habitat; hab less than de		ability		habitat s;substr		atable
Cover				nerged		illik or	adequate habitat	for	substrate fr			or lacki		ัลเธ แ.	Slaure
		under	rcut bai	nks, col	bble or		maintenance of p	populations;	disturbed or		J.				
				at & at s			presence of addit								
	I	allow (i.e., l	tuli cor loas/sn	lonizatio nags tha	on pole at are r	ntiai not	substrate in form but not yet prepa	,							
				not tra			colonization (may	y rate at							
		L,	_,				high end of scale	1 1 1 1	L		<u> </u>		<u> </u>	<u> </u>	<u> </u>
Score	2	20	19	-	<u> </u>	16			□10 □9		7 6	-	4 🗌 3 🛚		1 0
2. Pool Substrate				ubstrate		rials,	Mixture of soft sa		All mud or c			Hardpa			
Substrate Characterizatio				and firm			clay; mud may be some root mats a		bottom: little			no root	mat or	vegeu	ation.
				vegeta		ommon.			10 306	Jeu 109-	auon.				
	I			-		-	present.	-							
	I														
	I														
	I														
								<u> </u>							
Score	6	20	19	∐18 ∣	∐17 I	16	15 14 13		□10 □9		7 🖌 6		4 🗌 3 🗌	2	10
3. Pool Variabil				large s					Shallow poo			Majority			
			, small preser	shallow nt.	∕, sma⊪	l-deep	very few shallow		prevalent th	an deep	pools.	shallow	/ or pou	ls aps	ent.
	I	poole	prooe.	π.											
	I														
	I														
	I														
	I														
l									<u> </u>						
Score	3	20	19	18	<u> </u>	16	15 14 13	3 🗌 12 🗌 11	10 9	8	7 🗌 6 🛛	5	4 ✔3	_2 _	1 🗌 0
4. Sediment				enlarger			Some new increa		Moderate d		of new	Heavy			
Deposition				oint bar of the b		ess	formation, mostly gravel, sand or fin		gravel, sand sediment or		2014	materia develop	al, incre		
				sedime		osition.			bars; 50-80			80% of			Ilan
	I	c	 ,			/01.1	bottom affected;	slight	affected; se	ediment d		changir	ng frequ	uently;	•
	I						deposition in poo	ıls.	at obstructio		•-		absent		
	I								constriction moderate d			substar deposit	ntial seo tion.	Jimeni	
	I								pools preva		0.	dop			
					_			_	·						
Score	11	20	19	18	□ 17	16	15 14 13	3 🗌 12 ✔ 11	10 9	8	7 🗌 6	5	4 🗌 3 🗌	2	1 0
·															
1															
							105	`							
							103	ز							

Score 1 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 6. Channel Alteration Channelization or dredging absent or minimal; stream with normal pattern. Some channelization present, suually in areas of past channelization reserve. Channelization may be extensive; embankments or stream reach cha and disrupted. Instable; greatly alt 20 ym any be present, but recent channelization is not present. Channelized and disrupted. Banks stablet greatly alt increase the stream length 3 to the stream length 1 increase the stream length 3 to thread times onsidered coastal plains and other normal low-lying areas. this parameter is not easily rated in these areas.) The bends in the stream length 1 increase the stream length 1 increase the stream length 3 to straight line. (Note - channel low-lying areas. this parameter is not easily rated in these areas.) The bends in the stream length 1 is a straight line. The bends in the stream length 2 is in a straight line. The bends in the stream length 2 is in a straight line. The bends in the stream length 2 is in a straight line. The bends in the stream length 2 is in a straight line. The bends in the stream length 2 is in a straight line. The bends in the stream length 2 is in a straight line. The bends in the stream length 2 is in a straight line. The bends in the stream length 2 is in a straight line. The bends in the stream length 2 is in a straight line. Th	80% of the annelized stream tered or .
Alteration absent or minimal; stream with normal pattern. present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. extensive; embankments or shoring structures present on both banks; and 40 isrupted. In the stream reach channelization is not present. or cement; over 8 stream reach cha and isrupted. In the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low-lying areas, this parameter is not easily rated in these areas.) The bends in the stream (or ease the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream (or ease the stream length 2 to 3 times longer than if it was in a straight line. The bends in the stream (or ease the stream length 2 to 3 times longer than if it was in a straight line. Channel straight; has been channel long distance. Score 6 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 8. Bank Stability Banks stable; evidence of minimal; little potential for future problems. <5% of bank affected.	80% of the annelized stream tered or .
7. Channel The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low-lying areas. this parameter is not easily rated in these areas.) The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 2 to 3 times longer than if it was in a straight line. The bends in the stream length 2 to 3 times longer than if it was in a straight line. The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 1 to 2 times longer than if it was in a straight line. The bends in the stream length 2 times longer than if it was in a straight line. The bends in the stream length 2 times longer than if it 2 times longer tima if ito 2 times longer than if ito 2 tima	waterway elized for a 2 1 0 eroded as straight nds;
Sinuosity increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.) increase the stream length 2 to 3 times longer than if it was in a straight line. increase the stream length 1 to 2 times longer than if it was in a straight line. has been channel long distance. Score 6 20 19 18 17 16 15 14 13 12 11 10 9 8 7 ✓ 6 5 4 3 2 8. Bank Stability (score each bank) Banks stable; evidence of minimal; little potential for future problems. <5% of bank affected.	elized for a
8. Bank Stability (score each bank) Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	eroded as straight nds;
(score each bank) erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. 5-30% of bank in reach has areas of erosion, high erosion potential during floods. 60% of bank in reach has areas of erosion; high erosion potential during floods. 100% of bank has erosional scars.	as straight ìds;
Score (LB) 3 10 9 8 7 6 5 4 ✓3 2 1 a (7a) a b a b a b a b a b a b b a b b a b	0
Score (RB) 3 10 9 8 7 6 5 4 2 1 9. Vegetative Protection (score each bank) More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or right side by facing downstream. More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative almost all plants allowed to grow naturally. 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any anturally. 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. Less than 50% of streambank surfaces covered by veget disruption of streat vegetation has be removed to 5 cen or less in average height.	aces tation; ambank y high; een ntimeters
Score (LB) 2 10 9 8 7 6 5 4 3 ✔2 1	0
Score (RB) 2 10 9 8 7 6 5 4 3 2 1 10. Riparian Width of riparian zone >18 Width of riparian zone 12-18 Width of riparian zone 6-12 Width of riparian zone 6-12	0
10. Riparian Width of riparian zone >18 Width of riparian zone 12-18 Width of riparian zone 6-12 Width of riparian zone 6-12 Vegetative Zone meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not zone) Width of riparian zone 12-18 Width of riparian zone 12-18 Width of riparian zone 6-12 Width of riparian zone 12-18 Meters; human activities Met	o riparian
downstream.	
Score (LB) 2 10 9 8 7 6 5 4 3 ✓2 1 0 10 <td></td>	
Score (RB) 2 10 9 8 7 6 15 4 3 ✓2 1 Total Score 52	0

Project ID: Henderson	County Solar	Stream Class:	Intermittent Exhibit 14 Attachment 14.1
Stream ID: 2MS1F3		Location;	HENDERSON KY Page 108 of 237
Lat: 37.78805	Long: -87.64140	River Basin	Ohio
Investigators: Ryan Wi			
Signature:	Date: 07-May-20		Reason for Survey:
	Time: 10:15 AM		404 functional Assessment:
WEATHER CONDITIONS	Current Past 24 Hour		in last 7 days
	Storm (Heavy Rain) Storm (Heavy Rain)	└ No	✓ Yes
	Rain Steady Rain Steady	Air Temp F	65
	Showers (Intermittent) Showers (Intermittent)	Air Temp C	18
	Cloud Cover % 0 ✓ Cloud Cover % 5	0 Other	
	Clear/Sunny		
STREAM	Otra and Ordersetand		Stream Type
CHARACTERIZATION	Stream Subsystem		
	Stream Origin		✓ Warmwater Catchment Area
	□ Upland Runoff		Mile ² 0.02
	Spring-fed/Ground Water Wetland Other		Km ² 0.05
WATERSHED	Surrounding Land Use & Percentage	Local M	/atershed NPS Pollution
FEATURES	✓ Forest 10 Commercial 0	_	evidence Some potential sources
	Field/Pasture 0 Other 0		vious sources
	✓ Agriculture 90	Local W	atershed Erosion
	Residential 0	Nor	ne 🗹 Moderate 🗌 Heavy
	Indicate the dominant type and record the dominant sp	pecies present	Dominant Species
VEGETATION (18 meter buffer)			Soft Mast
	✓ Trees		
INSTREAM	Est Reach Length ft 100 m	30 Canopy	Cover
FEATURES		0.8 Dpe	
			aded
	Sampling Reach Area ft ² 260.0 m ²	24.2	
	Sampling Area mile ² 0.000010 km ² 0.0	00024 High Wa	ter Mark ft 0.25
	Est Water Depth in 0.5 m	0.0 High Wa	ter Mark m 0.08
	Surface Velocity ft/s 0.3 m/s	0.1 % of Stre	eam Morphology
		✓ Riffle	
	Channelized Yes No	✓ Pool	% 10 Glide Pool
	Dam Present Yes V No		Pool Series
LARGE WOODY DEBRIS	LWD 0.0 m 2	0 ft ²	
	Density of LWD m ² /km ² 0.00	000000000 ft ² /m	oilo 2 0.000000000
AQUATIC			
VEGETATION	Indicate the dominant type and record the dominant spec		Portion of the reach with
	Rooted Emergent Rooted Submergent	Rooted Floating	None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 1
WATER	No Water Present Temperature 17 ° C		Water Odere
QUALITY		63 ⁰ F	Water Odors
	No Flow Present Conductivity µs/cm	615	✓ Normal/None □ Sewage □ Petroleum
	Total Disolved Solids	308 mg/l	Chemical Anaerobic
	pH	7.93	0o: 1.52 mg/L
	Turbidity		r Surface Oils
	Clear Slightly Turbid Turbid		Slick Sheen Globs Flecks
			Other
	Opaque Stained Other	C	

										hibit 14 Attachment 14.1
SEDIMENT/		Odors	s					Deposits		Page 109 of 237
SUBSTRATE		✓	Normal	Se	ewage	Petroleum		Sludge	e 🗌 Sawdust	
			Chemical	Ar	naerobic	None		Sand	Relic Sh	ells Other
			Other							
			Other				Loc	oking at stone	es which are not	t deeply
		Oils			_	_			undersides blac	
		✓	Absent [Slight		derate 🗌 Profus	se	Yes	✓ No	
	INORGA		UBSTRA	TE COMF	ONENT	S		ORGANI	C SUBSTRATE	COMPONENTS
Substrate	Diame	-		-	-	Sampling	Substrate	e Ch	aracteristic	% Composition in
Туре				•	Reach		Туре			Sampling Reach
Bedrock		i	-		0		Dietritus	Sticks	, wood, coarse	5
Boulder	>10"		+		0				ant material	
Cobble	2.5 - 1	0"	-		0		Muck-		ck, very fine	0
Gravel	0.1 - 2	.5"	-		2		Mud		ganic matter	
Sand	gritty	ý			18		Marl		Grey, shell	0
Silt	gooe	-			40]			ragments	
Clay	slick	(40					
Habita	at	<u> </u>				HABITAT ASSES	SMENT - LO		NT STREAMS	
Parame			Oŗ	otimal		SubOpt		-	larginal	Poor
1. Epifaunal		Great	ter than 50		N	30-50% for low g			low gradient	10% for low gradient
Substrate/		gradie	ent stream	ns) of sub		streams) mix of s	stable	streams) mi	ix of stable	streams)stable habitat;
Available			able for ep		the of	habitat; well-suite			oitat availability	lack of habitat is
Cover			ization & f			colonization pote adequate habitat		less than de substrate fre		obvious;substrate unstable or lacking.
		under	rcut banks	s, cobble o	or other	maintenance of p	populations;	disturbed or		0
			e habitat 8			presence of addi	itional			
		allow (i.e. l	full coloni logs/snags	zation poi	cential	substrate in form but not yet prepa	,			
			fall and no			colonization (may				
		ľ _			.,.	high end of scale	e).			
Score	7	20	L 19 L	18 🗌 17	16	15 14 13	3 12 11	□10 □9	8 🖌 7 🗌 6	
2. Pool			ire of subs			Mixture of soft sa		All mud or c		Hardpan clay or bedrock:
Substrate Characterizatio			gravel and			clay; mud may be			e or no root mat	t: no root mat or vegetation.
Characterizatio	'n		alent; root nerged ve			some root mats a . submerged vege		No Submery	ged vegetation.	
		34.	ciges .	Join -	Unit	present.	lation			
						•				
Score	6	20	19	18 🗌 17	16	15 14 13	3 12 11	10 9	8 7 46	
3. Pool Variabil			mix of lar	0	, U				ols much more	Majority of pools small-
			, small sha	allow, sma	all-deep	very few shallow		prevalent th	an deep pools.	shallow or pools absent.
		poois	present.							
Score	4	20	19	18 🗌 17	16	15 14 13	3 12 11	10 9	8 7 6	5 ✔ 4 □ 3 □ 2 □ 1 □ 0
4. Sediment		Little	or no enla	argement	of	Some new increa	ase in bar	Moderate de	eposition of new	W Heavy deposits of fine
Deposition		island	ds or point	t bars and	less	formation, mostly	y from	gravel, sand	d or fine	material, increased bar
			<20% of th ted by sed			gravel, sand or fi sediment; 20-509			n old and new % of the bottom	development; more than 80% of the bottom
		aneor	ea ny sou	Imenic act	JOSILION.	bottom affected;			% of the bottom	
						deposition in poo		at obstruction	ons,	almost absent due to
									s, and bends;	substantial sediment
								moderate de pools preva		deposition.
									ient.	
Score	14	20	19	18 🗌 17	16	15 🖌 14 🗌 13	3 12 11	10 9	8 7 6	
] [10 _						
1										
1										
						106	3			

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	Wéłγn∰eeWater∿int Channel and ଳିବ୍ରଖ √1βteséatSas standing pools.
Score 10			⊥ ✓ 10 └ 9 └ 8 └ 7 └ 6 │	5432 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 12	2019181716	151413 ✔ 1211		
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 5	20 19 18 17 16	15 14 13 12 11		✓5 □4 □3□2 □ 1□ 0
8. Bank Stability (score each bank) Note: determine left or right side by facing	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
downstream.				
Score (LB) 7 Score (RB) 7		8 ⊻ 7 <u>6</u> 8 ⊻ 7 <u>6</u>		
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes: vegetative	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 7	10 9		5 4 3	
Score (RB) 7 10. Riparian	IO 9 Width of riparian zone >18	8 ✓ 7 6 Width of riparian zone 12-18	Uidth of riparian zone 6-12	└──2 └── 1 └── 0 Width of riparian zone <6
Vegetative Zone Width (score each bank riparian zone) Note: determine left or right side by facing downstream.	meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	meters; human activities have impacted zone only minimally.	meters; human activities have impacted zone a great deal.	meters: little or no riparian vegetation due to human activities.
Score (LB) 1	10 9			
Score (RB) 3	10 9	8 7 6	_5 _4 ₹3	
Total Score 90				

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 2MS1I		Location;	HENDERSON KY Page 111 of 237
Lat: 37.78665	Long: -87.62786	River Basin	Ohio
Investigators: Ryan Wi	nka		
Signature:	Date: 07-May-20		Reason for Survey:
	Time: 3:21 PM		404 functional Assessment:
WEATHER CONDITIONS	Current Past 24 Hour		in last 7 days ✔ Yes
	Storm (Heavy Rain)	□ No	
	Rain Steady Rain Steady Showers (Intermittent)	Air Temp F	70
		Air Temp C	21
	✓ Cloud Cover % 60 ✓ Cloud Cover % 50 ○ Clear/Sunny ○ Clear/Sunny	0 Other	
STREAM	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial Intermittent I Ephemeral		Coldwater
			✓ Warmwater Catchment Area
	Stream Origin		
	Upland Runoff I Mixture of Origins		Mile ² 0.02
	Spring-fed/Ground Water Wetland Other		Km ² 0.05
WATERSHED			
FEATURES	Surrounding Land Use & Percentage	_	/atershed NPS Pollution
	✓ Forest 95 Commercial 0		evidence Some potential sources
	☐ Field/Pasture 0 ☐ Other 0		vious sources
	Agriculture 5	Local W	atershed Erosion
	Residential 0	Nor	ne 🗹 Moderate 🗌 Heavy
RIPARIAN	Indicate the dominant type and record the dominant or	acies present	Deminent Species
VEGETATION	Indicate the dominant type and record the dominant sp		Dominant Species Soft Mast
(18 meter buffer)	🗹 Trees 🗌 Shrubs 🗌 Grasses 🗌 Herbs	None	
INSTREAM	Fot Booch Longth ft 100 m	30 Canopy	Cover
FEATURES	Est Reach Length ft 100 m		
	Est Stream Width ft 3.9 m	1.2	
	Sampling Reach Area ft ² 390.0 m ²	36.2 🖌 Sha	aded 🔲 Partly Shaded
	Sampling Area mile ² 0.000014 km ² 0.00	00036 High Wa	ter Mark ft 0.20
	Est Water Depth in 0.3 m	0.0 High Wa	ter Mark m 0.06
	Surface Velocity ft/s 0.0 m/s	0.0 % of Str	eam Morphology
		✓ Riffle	
	Channelized Ves 🗹 No	✓ Pool	
			Pool Series
	Dam Present Yes 🗹 No		rooi series
LARGE WOODY DEBRIS	LWD 1.9 m 2	20 ft ²	
DEDITIO	Density of LWD m ² /km ² 0.00	000018581 _{ft} 2 /m	0.000007174
AQUATIC			
VEGETATION	Indicate the dominant type and record the dominant spec		Portion of the reach with
	Rooted Emergent Rooted Submergent	Rooted Floating	None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 5
WATER	No Water Present Temperature 0 C	0 ⁰ F	Western Onlying
QUALITY			Water Odors
	✓ No Flow Present Conductivity µs/cm	0	✓ Normal/None
	Total Disolved Solids	0 mg/l	Chemical Anaerobic
	pH	0 [Do: mg/L
	Turbidity		r Surface Oils
	Clear Slightly Turbid Turbid	_	Slick Sheen Globs Flecks
			Dther
	Opaque Stained Other		

									Exhi	hit 14 Attachment 14.1
SEDIMENT/		Odors	s					Deposits		Page 112 of 237
SUBSTRATE		✓	Normal	🗌 S [,]	ewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	_	•			Sand	Relic She	
					naerobic			Sanu		
			Other				Lor	Line of stopp	which are not	1
		Oils							es which are not o undersides black	
			Absent	Slight	+ 🗌 Mo	derate 🗌 Profus		Yes		
				-				·		
	INORGA	NIC S	UBSTRA	-	-	-			SUBSTRATE C	
Substrate	Diame	ter	9	% Compo		Jampling	Substrate	ə Cha	aracteristic	% Composition in
Туре					Reach		Туре			Sampling Reach
Bedrock		ı			0		Dietritus		wood, coarse	50
Boulder	>10"	л — —	1		0	1		plai	nt material	
Cobble	2.5 - 1	0"	1		0		Muck-	Blac	ck, very fine	0
Gravel	0.1 - 2	.5"	1		0		Mud	orga	anic matter	
Sand	gritty		+		0		Marl	G	rey, shell	0
Silt	gooe	-	<u> </u>		100				agments	-
Clay	slick		+		0					
		·	<u> </u>		-					
Habita					I	HABITAT ASSES		1		
Parame	ter		Or	ptimal		SubOpt			arginal	Poor
1. Epifaunal	_	-	ter than 50			30-50% for low g	,	10-30% for l		10% for low gradient
Substrate/			ent stream		ostrate	streams) mix of s		streams) mix		streams)stable habitat;
Available			able for ep		the of	habitat; well-suite			itat availability	lack of habitat is
Cover			nization & f			colonization pote adequate habitat		less than de substrate fre		obvious;substrate unstable or lacking.
			rcut banks			maintenance of p		disturbed or		of lacking.
			e habitat 8			presence of addi		ulduidea e.	Temoved.	
		allow	full coloni	ization po	otential	substrate in form				
		(i.e., l	logs/snags	s that are	e not	but not yet prepa	ared for			
			fall and no			colonization (mag	ly rate at			
<u> </u>	T	L,			<u> </u>	high end of scale	1 1 1 1			
Score	6	20	-	18 🗌 17		15 14 13		□10 □9		
2. Pool			ire of subs			Mixture of soft sa		All mud or cl		Hardpan clay or bedrock:
Substrate			gravel and			clay; mud may b			or no root mat:	no root mat or vegetation.
Characterizatio	'n		alent; root			some root mats a		no submerge	ed vegetation.	
		subm	nerged ve	getation	common.		tation			
						present.				
Score	6	20	19	18 🗌 17	7 🗌 16	15 14 13	3 12 11	10 9	8 7 16	
3. Pool Variabil			mix of lar						Is much more	Majority of pools small-
0.100.00			, small sha	0	, U				an deep pools.	shallow or pools absent.
			s present.	A		,		F	AII 22 1	
		ľ	•							
Score	5	20	19	18 🗌 17	7 🗌 16	15 14 13	3 12 11	10 9	8 7 6	✓5 □4 □3□2 □ 1 □0
4. Sediment		1								
4. Sediment Deposition			or no enla ds or point			Some new increation, mostly		gravel, sand	eposition of new	Heavy deposits of fine material, increased bar
Deposition			<20% of th			gravel, sand or fi			old and new	development; more than
			ted by sed						% of the bottom	80% of the bottom
						bottom affected;	slight	affected; sec	diment deposits	changing frequently; pools
						deposition in poo	ols.	at obstructio		almost absent due to
									s, and bends;	substantial sediment
								moderate de		deposition.
								pools preval	ent.	
	40									
Score	12	20	□19 □	18 🗌 17	7 🗌 16		3 🗹 12 🗌 11	□10 □9		
1										
						109	3			

5. Channel Fl Status	ow	lower ba	ver banks, and mimimal nount of channel substrate is posed.						available channel; or <25%						cha	-75% nnel, es ar	and	and	ବିV ଶିମ୍ମ ମଧ୍ୟୟେକମ୍ବାମ ଝମିବନ and ମିବ୍ରସ ୍ୟୁମ୍ମୀମିହିରହିନିସିର୍ଣ୍ଣ standing pools.						
Score	5	20	19 🗌	18	17	16	15	14	13	3	12	11	1	зL	9	8	7	6	✓ 5	4	3	2		1 🗌 0	
6. Channel Alteration		Channe absent c normal p	or minin	nal; s	•	•	Some preser bridge of pas dredgi 20 yr) recent preser	nt, us abut t cha ng, (may char	ually tment nneliz greate be pr	in ar s; e\ zatio er th eser	eas viden n, i.e an pa nt, bu	ce ., ast it	Chan exter shori on bo 80% chan	isive ng s oth b of st	; en truct anks rear	nban tures s; an n rea	kme pres d 40 ach	nts or sent to	or stre and hal	nks s ceme eam r d disr bitat g novec	nt; o each upteo reat	ver 8 i cha d. Ins y alt	0% nnel strea ered	of the ized m	
Score	13	20	19 🗌	18	17	16	15	14	13	3	12	11	1	οL	9	8	7	6	5	4	□3	2		0	
7. Channel Sinuosity		The ben increase 4 times straight braiding plains at lying are not easi	e the str longer f line. (N is cons nd othe eas. this	ream than ote - sider r nor s par	i lengt if it wa chani ed coa rmal lo amete	as in a nel astal ow- er is	The be increas to 3 tir was in	se th nes l	e stre ongei	am tha	lengt n if it		The t incre 1 to 2 was i	ase 2 tim	the s es lo	strea onge	m le r tha		has		n cha	anne		erway I for a	
Score	6	20	19 🗌	18	17	16	15	14	13	3	12	11	1	о [_]9 [8	7	✔6		4	3	2		1 🗌 0	
8. Bank Stabi (score each b Note: determ right side by downstream.	ank) ine left or facing	Banks s erosion minimal problem	or bank ; little p	c failu oten	ure ab tial for	sent or future	Moder infrequ erosio 5-30% areas	uent, n mo o of b	small stly h ank ir	l are eale ì rea	d ov	er.	Mode 60% areas erosi flood	of ba s of e on p	ank i erosi	in re ion; l	ach l high	has	are free sec obv 100	stable eas; "i quent ctions vious 0% of osiona	aw" ly alo and bank bank	area ong s ben slou k has	s straio ds; ughii		
Score (LB)	8		10	[9		L	8	7		6		[5		4		3		2		1)	
Score (RB)	8		10		9		V	8	7		6		[5		_4		3		2		1)	
 Vegetative Protection (s each bank) Note: determ right side by downstream. 	ine left or facing	More tha streamb immedia covered including shrubs, macroph disruptic mowing almost a naturally	ank sur by nati g trees, or nonv hytes; v minima all plant	rface rian z ive ve und vood reget igh g al or	es and zones egetat erstor y ative razing not ev	ion, y g or ident;	70-909 surface plants repres eviden plant g great e half of stubble	es co ation, is no ente t but growt exten	overed but c ot well d disr not a h pote t; mo poten	d by one o uptio iffec entia re th tial p	nativ lass ing f l to a an o lant	of ull any	50-7(surfa vege obvic soil o vege than poter heigh	ces tatio ous; or clo tatio one- ntial	cove n; di patc sely n co half plan	ered srup hes crop mmo of th t stu	by tion of ba oped on; le	are ess	stre cov dis veç veç ren or	ss tha eamb ruptic getatio getatio novec less in ight.	ank s by v on of on is on ha d to 5	surfa egeta strea very as be i cen	ces atior amba higi en time	ank n; ters	
Score (LB)	8		10	[9			8			6		[5		4		3		2		1			
Score (RB) 10. Riparian Vegetative Z Width (score bank ripariar zone) Note: determ right side by downstream.	e each i ine left or facing	Width of meters; parking cuts, lav impacte	human lots, roa vns, or	activ adbe crop	vities (ds, cle	(i.e., ear-	Width meters have in minim	s; hui mpao	man a	zon activ	ties	-18	Widtl mete have deal.	rs; h	uma	an ac	zone ctiviti		me veç	2 dth of eters: getation tivities	little on du	or no	o ripa	e <6 arian	
Score (LB)	5		10	[9			8	□ 7		6			√ 5		4		3		2		1			
Score (RB) Total Score	5 95		L 10	L	9		L	8	∐7		6		l	√ 5	L	4		3		 2		1	()	
	55																								

Project ID: Henderson	County Solar	Stream Class:	Intermittent Exhibit 14 Attachment 14.1
Stream ID: 2MS1L		Location;	HENDERSON KY Page 114 of 237
Lat: 37.78248	Long: -87.63264	River Basin	Ohio
Investigators: Keith Mic	chalski		
Signature:	Date: 11-May-20		Reason for Survey:
	Time: 3:00 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	n in last 7 days
CONDITIONS			✓ Yes
	Storm (Heavy Rain) Storm (Heavy Rain)		
	Rain Steady Rain Steady Showers (Intermittent) Showers (Intermittent)	Air Temp F	
		Air Temp C	10
	✓ Cloud Cover % 50 ☐ Cloud Cover % ☐ Clear/Sunny ✓ Clear/Sunny	0 Other	
STREAM	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial V Intermittent Ephemeral		
			✓ Warmwater Catchment Area
	Stream Origin		
	Upland Runoff Mixture of Origins		Mile ² 1.36
	Spring-fed/Ground Water Wetland Other		Km ² 3.52
WATERSHED FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
	✓ Forest 10 Commercial 0	🗌 No	evidence Some potential sources
	Field/Pasture 0 Other 0		vious sources
	Agriculture 80		Vatershed Erosion
	Residential 10	L No	ne 🗌 Moderate 🗹 Heavy
RIPARIAN	Indicate the dominant type and record the dominant sp	oecies present	Dominant Species
VEGETATION (18 meter buffer)			Mixed Mast
	✓ Trees	☐ None	
INSTREAM		30 Canopy	y Cover
FEATURES	Est Reach Length ft 100 m		
	Est Stream Width ft 16.8 m	0.1	
	Sampling Reach Area ft ² 1680.0 m ²	156.1 L Sh	aded Partly Shaded
	Sampling Area mile ² 0.000062 km ² 0.0	00156 High Wa	ater Mark ft <u>3.80</u>
	Est Water Depth in 3.0 m	0.1 High Wa	ater Mark m 1.16
	Surface Velocity ft/s 0.5 m/s	0.2 % of Str	
		% of Str ✓ Riffle	ream Morphology ∋ % 25 ✔ Run % 40
	Channelized Yes Vo	Pool	
	Dam Present □Yes ✔ No	Step	Pool Series
LARGE WOODY	LWD 0.5 m 2	5 ft ²	
DEBRIS		00004645	0.0000001794
	Density of LWD m ² /km ² 0.00	ft ² /r	mile 2 0.0000001794
AQUATIC	Indicate the dominant type and record the dominant spec	cies present	Deutien of the model with
VEGETATION	Rooted Emergent Rooted Submergent	Rooted Floating	None Portion of the reach with aquatic vegetation
	□ Free Floating ✓ Attached Algae □	Floating Algae	present: 5
		ribating Aigac	
WATER	No Water Present Temperature 19 ° C	67 ⁰ F	Water Odors
QUALITY	□ No Flow Present Conductivity µs/cm	537	✓ Normal/None
	, , ,		
	Total Disolved Solids	268 mg/l	Chemical Anaerobic
	рН	7.81	Do: 9.02 mg/L
	Turbidity	Wate	er Surface Oils
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗌 Globs 🔲 Flecks
	☐ Opaque ☐ Stained ☐ Other		Other

								Exhi	bit 14 Attechment 14.1
SEDIMENT/ SUBSTRATE		Odors	s				Deposits		Page 115 of 237
SUBSIRATE		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
1			Chemical	Anaerobic	None None		Sand	Relic Shel	ells 🗌 Other
l			Other						—
			Outor					s which are not o	
		Oils	_	·	—			Indersides black	(in color?
			Absent	Slight Moo	derate 🗌 Profus	se 🗌	Yes	✓ No	
	INORGA	NIC S	UBSTRATE	E COMPONENT	S		ORGANIC	SUBSTRATE C	COMPONENTS
Substrate Type	Diame	ter	% (Composite in S Reach	ampling	Substrate Type	e Cha	racteristic	% Composition in Sampling Reach
Bedrock				0		Dietritus		wood, coarse	3
Boulder	>10"	a		0			plar	nt material	
Cobble	2.5 - 1	0"	·	0		Muck-		k, very fine	0
Gravel	0.1 - 2	.5"		10		Mud		anic matter	
Sand	gritty	/	<u> </u>	25		Marl		rey, shell	0
Silt	gooe	•		30			113	agments	
Clay	slick	:		35					
Habita				I	HABITAT ASSES	SMENT - LO	W GRADIEN	T STREAMS	
Paramet	ter		Opti	mal	SubOpt	timal	Ма	arginal	Poor
1. Epifaunal		-	ter than 50%		30-50% for low g		10-30% for lo		10% for low gradient
Substrate/) of substrate	streams) mix of s		streams) mix	k of stable	streams)stable habitat;
Available Cover			able for epifa	aunal h cover: mix of	habitat; well-suite colonization pote		habitat; habit less than des	tat availability	lack of habitat is obvious:substrate unstable
Cover			s, submerge	,	adequate habitat		substrate fre		or lacking.
		under	rcut banks, o	cobble or other	maintenance of p	populations;	disturbed or		
			e habitat & a		presence of addi				
				ation potential	substrate in form				
			logs/snags t fall and not t		but not yet prepa colonization (ma				
		no		Tansione _j .	high end of scale				
Score	8	20	19 18	8 🗌 17 🗌 16		,	10 9	✔8 _7 _6	
2. Pool				ate materials,	Mixture of soft sa		All mud or cl	ay or sand	Hardpan clay or bedrock:
Substrate		with g	gravel and fi	irm sand	clay; mud may b	e dominant;	bottom: little	or no root mat:	no root mat or vegetation.
Characterization	'n		alent; root m	nats and etation common.	some root mats a . submerged vege		no submerge	ed vegetation.	
4		Subm	eryeu vogo	tation common.	present.	lation			
4					p100011.				
4									
4									
4									
Score	7	20	19 18	8 🗌 17 🗌 16	15 14 13	3 12 11		8 ✔76	
3. Pool Variabili		-		e shallow, large-	1		1	ls much more	Majority of pools small-
0.1 00		deep,	, small shallo	low, small-deep				an deep pools.	shallow or pools absent.
			present.	,	-		•	• •	
Score	8	20	19 18	8 17 16		3 12 11		✔8 7 6	
		1						position of new	
 Sediment Deposition 		lislanc	or no enlarg ds or point b	pement of pars and less	Some new increation, mostly		gravel, sand		Heavy deposits of fine material, increased bar
B - P			<20% of the		gravel, sand or fi	ine		old and new	development; more than
		affect	ied by sedim	nent deposition.				6 of the bottom	80% of the bottom
					bottom affected; deposition in poc		affected; sec at obstruction	diment deposits	changing frequently; pools almost absent due to
						JIS.	constrictions		substantial sediment
							moderate de	position of	deposition.
							pools prevale	ent.	
Score	12	20	□19 □18	8 🗌 17 🗌 16		3 🗹 12 🗌 11	□10 □9		
i									
1									
1									
1									
					4.4.0	•			

5. Channel Flo Status	ΟW	lower banks,	ver banks, and mimimal a nount of channel substrate is posed. 2019181716 ♥						available channel; or <25%							l, ar	f the nd/o mos	o₩ê ano sta		nel					
Score	15	20 19	18	17	16	✔ 15	14	13	; 🗌 ·	12	11	1	0	9	8		7	6	5	4		3	2	1	0
6. Channel Alteration		Channelizati absent or mi normal patte	nimal	•	•	Some preser bridge of pas dredgi 20 yr) recent preser	nt, us abut t cha ng, (may char	ually tments nneliz greate be pr	in ar s; ev atio er tha eser	eas riden n, i.e an pa nt, bu	of ce ., ast it	exte shor on b 80%	nsiv ing oth of:	ve; e stru ban stre:	ion m mbar cture ks; a am re I and	nkm s pr nd 4 each	nents rese 40 to n	nt ว	or stro and hal	nks s ceme eam r d disr bitat g noveo	nt; c eacl upte great	over h ch d. Ir tly a	80% ann nstre Itere	o of elize am	the ed
Score	14	20 19	18	1 7	16	15	✔ 14	13	; [12	11		0	9	8		7 🗌	6	5	4		3	2	1	0
7. Channel Sinuosity		The bends ir increase the 4 times long straight line. braiding is co plains and of lying areas. I not easily rai	strea er tha (Note onside her n his pa	m leng n if it w e - char ered co ormal l aramet	as in a nel astal ow- er is	The be increas to 3 tir was in	se th nes l	e stre onger	am l tha	lengt n if it		incre 1 to	ease 2 tir	e the mes	n the e strea longo aight	am er tl	leng han	gth	has	anne s bee ig dis	n ch	ann			
Score	6	20 19	18	17	16	15	14	13	· :	12	11	1	0	9	8		7 🗸	6	5	4		3	2] 1[0
8. Bank Stabil (score each ba Note: determ right side by downstream.	ank) ine left or facing	Banks stable erosion or ba minimal; little problems. <{	ank fa pote	ilure at ential fo	osent or r future	Moder infrequ erosio 5-30% areas	uent, n mo o of b	small stly h ank ir	area eale i rea	d ove	ər.	60% area	of l is of ion	banl f ero	unsta k in re psion; ential	eacl hig	h ha h		are free sec obv	stable eas; "i quent ctions vious 0% of osiona	aw" ly al anc ban bar	are ong l bei k slo ik ha	as stra nds; ough	ight	
Score (LB)	3	1	C	9			8	7		6				5	4		✔ 3			2		1		0	
Score (RB)	3)	9		Ļ		□7				1		5	4		√ 3			2		1		0	
 Vegetative Protection (s each bank) Note: determ right side by downstream. 	ine left or facing	More than 90 streambank immediate ri covered by r including tree shrubs, or no macrophytes disruption th mowing mini almost all pla naturally.	surfac pariar ative es, ur onwoo ; veg rough mal c	ces and r zones vegeta idersto ody etative grazin or not e	s tion, ry g or vident;	70-909 surface vegeta plants repres eviden plant g great e half of stubble	es co ation, is no ente t but growt exten	overed but o ot well d disru not a h pote it; moi potent	d by ne c uptic ffect entia re th	nativ lass ing f l to a an o lant	e of ull iny	surfa vege obvi soil vege than pote	aces ous or c etati one ntia	s co on; ; pa lose on c e-ha l pla	he str vered disruj tches ly cro comm ilf of t ant str ining	l by ption of l oppe non; the ubbl	n bare ed les)	stre cov dis veç veç rer or	ss tha eamb ruptic getati getati noveo less i ight.	ank by v on of on is on h d to s	surf /ege stre s ver as b 5 ce	aces tatic aml y hig een ntim	s on; oanl gh; eter	rs
Score (LB)	3			9			8	7							4		√ 3			2		1		0	
Score (RB) 10. Riparian Vegetative Z Width (score bank riparian zone) Note: determ right side by downstream.	ine left or facing	Uidth of ripa meters; hum parking lots, cuts, lawns, impacted zoo	rian z an ac roadi or cro	tivities beds, c	(i.e., lear-	Width meters have in minim	s; hui mpao	man a	zon activi	ties		mete	ers; e im	f rip hun	✓ 4 arian nan a ted zo	zor ictiv	rities	-12 5	me veç	2 dth of eters: getation tivities	little on d	or r	no rij	oaria	an
Score (LB)	3			9			8	7		6					4		√ 3		<u> </u>	□2 □2		1		0	
Score (RB) Total Score	4 90	L 1	J	9		L	8	∐7		o				D	√ 4		3			 2	L	<u> </u>		0	

Project ID: Henderson	County Solar	Stream Class:	Intermittent Exhibit 14 Attachment 14.1
Stream ID: 2MS1L-1		Location;	HENDERSON KY Page 117 of 237
Lat: 37.77949	Long: -87.63468	River Basin	Ohio
Investigators: Ryan Ha	rris		
Signature:	Date: 12-May-20		Reason for Survey:
_	Time: 3:12 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	n in last 7 days
CONDITIONS			✓ Yes
	Rain Steady Rain Steady Showers (Intermittent) Showers (Intermittent)	Air Temp F	
	✓ Cloud Cover % 100 ✓ Cloud Cover % 56	Air Temp C	16
	Clear/Sunny	0 Other	
STREAM CHARACTERIZATION	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial 🗹 Intermittent 🗌 Ephemeral		Coldwater
			✓ Warmwater Catchment Area
	Stream Origin		
	Upland Runoff I Mixture of Origins		Mile ² 0.84
	Spring-fed/Ground Water Wetland Other		Km ² 2.18
WATERSHED			
FEATURES	Surrounding Land Use & Percentage		Vatershed NPS Pollution
	✓ Forest 10 Commercial 0	L No	evidence Some potential sources
	☐ Field/Pasture 0 ☐ Other 0	Ob	vious sources
	Agriculture 90	Local V	Vatershed Erosion
	Residential 0	No	ne 🗹 Moderate 🗌 Heavy
RIPARIAN			
VEGETATION	Indicate the dominant type and record the dominant sp	pecies present	Dominant Species
(18 meter buffer)	🗹 Trees 🗌 Shrubs 🗌 Grasses 🗌 Herbs	None	Soft mast.
INSTREAM			
FEATURES	Est Reach Length ft 100 m		y Cover
	Est Stream Width ft 14.3 m	4.4 Dp	
	Sampling Reach Area ft ² 1430.0 m ²	132.9 🖌 Sh	aded 🗌 Partly Shaded
	Sampling Area mile ² 0.000052 km ² 0.0	00133 High Wa	ater Mark ft 3.10
	Est Water Depth in 4.0 m	0.1 High Wa	ater Mark m 0.94
	Surface Velocity ft/s 0.2 m/s	0.1 % of Str	I
		% of Str ✓ Riffle	ream Morphology ∋ % 30 ✔ Run % 40
	Channelized Yes No	✓ Pool	
	Dam Present □Yes ✔ No		Pool Series
LARGE WOODY	LWD 1.4 m 2	15 ft ²	
DEBRIS		000013935	
	···· /Km	π - /r	
AQUATIC VEGETATION	Indicate the dominant type and record the dominant spec		Portion of the reach with
	Rooted Emergent Rooted Submergent	Rooted Floating	None aquatic vegetation
	□ Free Floating	Floating Algae	present: 10
WATER			
QUALITY	No Water Present Temperature 12 ° C	54 ⁰ F	Water Odors
	□ No Flow Present Conductivity µs/cm	487	✓ Normal/None Sewage Petroleum
	Total Disolved Solids	242 mg/l	Chemical Anaerobic
	pH	7.75	Do: 9.85 mg/L
	Turbidity		er Surface Oils
	Clear Slightly Turbid Turbid	_	Slick Sheen Globs Flecks
	Opaque Stained Other	_	Other
			outor

															Evhik	hit 14 A	ttoob	mont	14	1
SEDIMENT/		Odors	s								Depo	osits					Page 1			-
SUBSTRATE		✓	Norma	al	<u> </u>	Sewage	Pet	troleum				Sludge		Sawo	dust		Pape			
			Chem	nical		Anaerobic	: 🗌 Nor	no				Sand		Pelic	: Shell	_	Othe			
						liderobie						anu		Nene	, onen	15	Ouic	I		
			Other							Loc	oking at	etone	e whic	-h are	not c	doonly				
		Oils									ibedded						or?			
		✓	Abser	nt 🗌	Sligh	ht 🗌 Mo	oderate	Prof	fuse		Yes	,		No						
											OR	GANIC	SIIR	STR/		СОМРО		тς		
Substrate	Diame					posite in S		~	S	ubstrate		-	racte	-			% Cor	-	sitio	n in
Type	Diame	lei		/0 、	201115	Reach		3		Type	3	Una	lacie	risuc			Samp			
Bedrock	<u> </u>					0			<u> </u>	Dietritus	ç	Sticks,	wood	coar	rea			4		
Boulder	>10"		┥───			0				//etinae			nt mat		50			4		
Cobble	2.5 - 1		╡────			0			_	Muck-			k, ver					0		
Gravel	0.1 - 2					60			\dashv	Mud			anic m					-		
Sand	gritty					15				Marl		•	rey, sł					0		
Silt	gooe	-				15			\neg	Inc.			agmei					-		
Clay	slick	•				10							-							
,		T	<u> </u>			-		- 1005				DIEN	- • • • • •			<u> </u>				
Habita Parame		┝──		Onti			HABITA			-			-		15	т		200		
				Optin					ptimal		40.20(argina			400/ f		Poor		
1. Epifaunal Substrate/		-		an 50% reams)		ow ubstrate		6 for low s) mix o				% for lo ns) mix			t	10% fo stream				
Available		favora	able fo	or epifa	aunal		habitat;	; well-su	uited for	r full	habitat	it; habit	tat ava	ailabil	lity	lack of	f habi	tat is	6	
Cover		coloni	ization	n & fisl	h cove	er; mix of	coloniza	ation po	otential;		less th	nan des	sirable	e;	,		,	ostrat	te un	nstable
				merge	•			ate habit		-tione:		ate fre				or lack	king.			
				anks, c itat & a		e or other ae to		nance o ce of ad			alstur)ea ui	remov	/eu.						
						otential		ate in for												
		(i.e., I	logs/sr	nags t	that ar	re not	but not	yet prep	pared fo	or										
		new f	all and	d not ti	ransie	≠nt).		ation (m		e at										
Cooro		20	19	1	- 1	17 16	0	nd of sca		~ 11	10	√ 9	8	7	6	5	1.	3	2	1 0
Score	9	-	-								-				0					Î III Î
2. Pool Substrate				substra and fir		naterials, nd		e of soft ud may				id or cla n: little			mat:	Hardp no roo				
Characterizatio	n			root m				oot may		fillian,		n: iittie omerge				10.00	յլ լրա	Ui v	390	ation.
						n common	n. submer	rged veg		ı		-		<u>,</u> -						
							present		-											
Score	9	20	19			17 🗌 16	15		13 🗌 1:		10	√ 9	8	7 _	6	5	4	3	2 🗌	1_0
3. Pool Variabil						ow, large-		y of poo		-deep;		w pool				Majori				
					ow, sn	mall-deep	very fev	w shallo	W		preval	ent tha	an dee	əp poo	ols.	shallo	w or p	ools	abse	ent.
		роогъ	prese	ent.																
Score	10	20	19	18	8 🗌 1	17 🗌 16	15	14	13 🗌 1:	2 🗌 11	✔ 10	9	8	7	6	5	4	3	2 🗌	1 🗌 0
4. Sediment		1		enlarg			1	new incr				rate de				Heavy				
Deposition		island	ds or p	point b	ars ar	nd less		on, mos				, sand			101	materi				
•		than <	<20%	of the	botto	m	gravel,	sand or	r fine		sedime	ent on	old ar	nd ne		develo	opmer	nt; m	ore t	
		affect	ed by	sedim	ient de	leposition.		ent; 20-5				50-80%				80% o				
								affected tion in po		t	affecte at obsi	ed; sed		t aepu	SIIS	chang almos				
							uepoon	1011111	0013.		constri			bend	s;	substa				
											moder	rate de	positi			depos	ition.			
											pools (prevale	ent.							
					<u> </u>		+		- 1 4								1.I-1			<u>, , , , , , , , , , , , , , , , , , , </u>
Score	9	20	□19	∐18	8 🗌 1	17 🗌 16	15	14 <i>′</i>	13 🗌 13	2_11	∟10	⊻ 9	8	7 L	6	5	4	3	2 🗆	1 🗌 0
								1 ⁻	15											
									10											

5. Channel Flo Status	ÐW	Water n lower ba amount exposed	anks, a of cha	and n	nimimal		Water availat of chai expose	ole ch nnel :	nanne	el; or	<25	%	Wate availa riffle expo	able subs	cha strat	nnel,	and	l/or	ar	ndíP⊓	ðgfi	Wate y1pR bools	séri		inel
Score	12	20	19	18	1 7	16	15	14	13		12	11		0	9	8	7	6		5 🗆	4	3	2	1	0
6. Channel		Channe absent normal	or mini	imal;			Some presen bridge of past dredgii 20 yr) recent presen	nt, us abut t chai ng, (g may char	ually i ments nneliz greate be pre	in ar s; e\ zatio er th eser	eas riden n, i.e an pa nt, bu	of ce ., ast it	Char exter shori on bo 80% chan	nsive ng s oth b of s	e; en truc bank trea	nban tures s; an m rea	kme pre d 40 ach	nts o sent) to	r or sti ar ha	rean rean nd di abita	nent n rea srup t gre	ored ;; ove ach c oted. eatly entire	er 80' chani Instr alter	% o neliz ean	f the ced
Score	11	20	19	18	1 7	16	15	14	□ 13	; 🗌 ·	12 🗸	11	1	0	9	8	7	6		5 🗆	4	3	2	_1	0
7. Channel Sinuosity		The ber increase 4 times straight braiding plains a lying are not easi	e the s longer line. (f is cor nd oth eas. th	trear thar Note nside er no is pa	n length if it wa - chanr red coa ormal lo ramete	is in a nel istal w- r is	The be increas to 3 tin was in	se th nes l	e stre onger	am tha	lengt n if it		The I incre 1 to 2 was i	ase 2 tim	the ies l	strea onge	m le r tha	ngth	ha		en	traig chan nce.			
Score	6	20	19	18	17	16	15_	14	□ 13	; 🗌 '	12	11	1	0	9[8	7	✔6		5 🗆	4	_3_	2	1	0
8. Bank Stabili (score each ba Note: determi right side by f downstream.	ine left or	Banks s erosion minimal problem	or ban ; little	nk fai poter	lure abs ntial for	sent or future	Modera infrequ erosion 5-30% areas	ient, n mo of ba	small stly h ank in	are eale i rea	d ove	ər.	Mode 60% areas erosi flood	of b s of on p	ank eros	in rea ion; l	ach high	has	ar fre se ob 10	eas; eque ectio oviou 00%	"ra ntly ns a is b of b	man w" ar alon and b ank s bank scars	eas g str ends loug has	aigh ;	
Score (LB)	3		10		9			8	7		6			5		4	✓				2			0	
Score (RB) 9. Vegetative Protection (so each bank) Note: determi right side by downstream.	core ine left or	More th streamb immedia covered includin shrubs, macrop disruptio mowing almost a naturall	bank su ate ripa I by na g trees or non hytes; on thro minim all plan	urfac arian tive v s, uno woo vege vege ough nal or	es and zones vegetati derstory dy etative grazing	v or dent;	70-90% surface vegeta plants represe eviden plant g great e half of stubble	% of t es co ition, is no enteo it but growtl exten the p	overec but o ot well d disru not a h pote t; moi potent	rean d by ne c uptic ffect entia re th	nban nativ lass on ing f l to a an o lant	e of ull iny	50-70 surfa vege obvic soil c vege than poter heigh	ces tatio ous; or clo tatio one one	of th cover n; d patcosely n co half plar	ered isrup hes / crop ommo of th of th	by tion of ba opec on; le	oank are I ess	sti cc dis ve ve re or	ess t rean overe srup egeta egeta mov	nbai ed b tion atior atior ed t s in	50% nk su y veg of st n is v n has co 5 c avera	irface getat rean ery h bee centir	es ion; ibar igh; n nete	ers
Score (LB)	4	naturali	10		9			8	7	_	6			5	[✔ 4		3					1	0	
Score (RB) 10. Riparian Vegetative Zo Width (score bank riparian zone) Note: determining right side by formation of the side of the	each ine left or	Width o meters; parking cuts, lav impacte	huma lots, ro wns, or	n act oadb r crop	ivities (eds, cle	i.e., ear-	Width meters have ir minima	s; hur mpac	man a	zon activ	ties		Widtl mete have deal.	rs; ł imp	num	an ac	tiviti	6-12 es	m at ve	eters	of r s: lit atior	iparia tle on n due	no r	ipar	ian
Score (LB)	2		10		9			8	7		6			5	[4		3		√	2		1	0	
Score (RB)	5		10		9			8	□7					✓ 5	[4		3					1	0	
Total Score	86																								

Project ID: Henderson	County Solar	Stream Class:	Intermittent Exhibit 14 Attachment 14.1
Stream ID: 2MS1L2		Location;	HENDERSON KY Page 120 of 237
Lat: 37.78302	Long: -87.63232	River Basin	Ohio
Investigators: Keith Mic	Date: 11-May-20		Reason for Survey:
Signature:	Time: 2:28 PM		404 functional Assessment:
WEATHER			· · · · -
CONDITIONS	Current Past 24 Hour		in last 7 days
	Storm (Heavy Rain)	No No	✓ Yes
	Rain Steady	Air Temp F	50
	□ Showers (Intermittent) □ Showers (Intermittent) ✔ Cloud Cover % 75 □ Cloud Cover % 75	Air Temp C	10
	Clear/Sunny Clear/Sunny	0 Other	
0775444			
STREAM CHARACTERIZATION	Stream Subsystem		Stream Type
	Perennial 🗹 Intermittent 🗌 Ephemeral		Coldwater
			✓ Warmwater Catchment Area
	Stream Origin		Mile ² 0.04
	Upland Runoff Mixture of Origins		Km ² 0.10
WATERSHED			
FEATURES	Surrounding Land Use & Percentage		Vatershed NPS Pollution
	✓ Forest 10 Commercial 0		evidence Some potential sources
	Field/Pasture 0 0	_ Ob [,]	vious sources
	✓ Agriculture 90		/atershed Erosion
	Residential 0	Nor	ne 🗹 Moderate 🗌 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant s	pecies present	Dominant Species
(18 meter buffer)	✓ Trees	□ None	Mixed Mast
INSTREAM FEATURES	Est Reach Length ft 48 m	15 Canopy	/ Cover
	Est Stream Width ft 3.1 m	0.9 Dp	en 🗹 Partly Open
	Sampling Reach Area ft ² 148.8 m ²	13.8 🗌 Sha	aded 🗌 Partly Shaded
		000014 High Wa	ater Mark ft 0.60
	Est Water Depth in 1.0 m		ater Mark m 0.18
	Surface Velocity ft/s 0.7 m/s	0.2 % of Str	eam Morphology
		✓ Riffle	
	Channelized Ves V No	✓ Pool	% 5 Glide Pool
	Dam Present □Yes ✔ No		Pool Series
LARGE WOODY			
DEBRIS	LWD 0.2 m 2	2 ft ²	
	Density of LWD m ² /km ² 0.00	000001858 _{ft} ² /n	nile 2 0.000000717
AQUATIC VEGETATION	Indicate the dominant type and record the dominant spe	cies present	Portion of the reach with
VEGETATION	Rooted Emergent Rooted Submergent	Rooted Floating	None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
WATER		<u> </u>	
QUALITY	No Water Present Temperature 18 °C	65 ⁰ F	Water Odors
	No Flow Present Conductivity µs/cm	474	✓ Normal/None Sewage Petroleum
	Total Disolved Solids	237 mg/l	Chemical Anaerobic
	рН	7.18	Do: 7.72 mg/L
	Turbidity		er Surface Oils
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	Opaque Stained Other		Other

									Exhi	hit 14 Attachment 14.1
SEDIMENT/		Odors	s					Deposits		Page 121 of 237
SUBSTRATE		✓	Normal		Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemica	al 🗌	Anaerobic	None		Sand	Relic She	lls Other
			Other							
			Other				Loc	oking at stone	s which are not	deeply
		Oils							undersides black	
		✓	Absent	Slig	ght 🗌 Moo	derate 🗌 Profus	зе	Yes	🖌 No	
	INORGA		UBSTRA	ATE COI	MPONENT	S		ORGANIC	SUBSTRATE C	COMPONENTS
Substrate	Diame	-		-	posite in S	-	Substrate	e Cha	aracteristic	% Composition in
Туре					Reach		Туре			Sampling Reach
Bedrock					0		Dietritus	Sticks,	wood, coarse	2
Boulder	>10"		1		0				nt material	
Cobble	2.5 - 1	0"			0		Muck-		ck, very fine	0
Gravel	0.1 - 2				0		Mud		anic matter	
Sand	gritty	ý			10	I	Marl		rey, shell	0
Silt	gooe	-			70]			agments	
Clay	slick	(20					
Habita	at	Τ			ł	HABITAT ASSES	SMENT - LO	W GRADIEN	T STREAMS	
Parame			0	ptimal		SubOpt		1	arginal	Poor
1. Epifaunal		Great	ter than 5	•	low	30-50% for low g		10-30% for le	-	10% for low gradient
Substrate/		gradie	ent strear	ms) of si	ubstrate	streams) mix of s	stable	streams) mix	x of stable	streams)stable habitat;
Available			able for e		ll ver; mix of	habitat; well-suite colonization pote			tat availability	lack of habitat is obvious;substrate unstable
Cover			s, submei			adequate habitat		less than des substrate fre		obvious;substrate unstable or lacking.
		under	rcut bank	s, cobbl	le or other	maintenance of p	populations;	disturbed or		
			e habitat a			presence of addit	itional			
		allow (i.e. l	full colon logs/snag	lization p	potential	substrate in form but not yet prepa	,			
			fall and no			colonization (may				
		ľ				high end of scale	e).			
Score	3	20	L 19 L		17 🗌 16	15 14 13		□10 □9		_5 _4 ⊻3_2_1_0
2. Pool			ire of sub			Mixture of soft sa		All mud or cl		Hardpan clay or bedrock:
Substrate Characterizatio			gravel and alent; root			clay; mud may be some root mats a			or no root mat: ed vegetation.	no root mat or vegetation.
บไปได้ได้ประการสถาง	'n							NO Submong	За vegetation.	
			0.3	19-1	1.02	present.	101.5.			
						•				
Score	5	20	19	18 🗌	17 🗌 16	15 14 13	3 12 11	10 9	8 7 6	✓5 4 3 2 1 0
3. Pool Variabil				0	, 0				Is much more	Majority of pools small-
					small-deep	very few shallow		prevalent that	an deep pools.	shallow or pools absent.
		роогъ	present.							
	_		_				_			
Score	2	20	19	18 🗌 [.]	17 🗌 16	15 14 13	3 🗌 12 🗌 11	10 9	8 7 6	<u>5</u> 4 3 √ 2 1 0
4. Sediment			or no enla			Some new increa			eposition of new	Heavy deposits of fine
Deposition		island	ds or poin	nt bars a	and less	formation, mostly		gravel, sand		material, increased bar
			<20% of t ted by see		om deposition.	gravel, sand or finsediment; 20-50%			old and new % of the bottom	development; more than 80% of the bottom
		an.e .	້ອດເຈົ້າ	dime	Jehoorer.	bottom affected;	slight	affected; sec	diment deposits	changing frequently; pools
						deposition in poo	ols.	at obstructio	ons,	almost absent due to
								constrictions moderate de	s, and bends;	substantial sediment deposition.
								pools prevale		
								P 1		
Score	14	20	19	18	17 16	15 🖌 14 🗌 13	3 12 11	10 9	8 7 6	
·	J L									
1										
1										
1										
1							-			
						118	3			

amount of channel substrate is exposed. exposed. exposed. exposed. exposed.	% of th e xnib₩∂fyftttिcWatentirl &Hannel , and/or and Ragt yୀβራséନିβିas re mostly standing pools.
Score 12 20 19 18 17 16 15 14 13 ✓ 12 11 10 19 18	
6. Channel Channelization or dredging absent or minimal; stream with normal pattern. Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. Channelization matches about the present about	kments or s present ad 40 to ach b c cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or
Score 5 20 19 18 17 16 15 14 13 12 11 10 9 8	76 ↓54321 0
7. Channel The bends in the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low-lying areas. this parameter is not easily rated in these areas.) The bends in the stream length 2 to 3 times longer than if it was in a straight line. The bends in the stream length 2 to 3 times longer than if it was in a straight line. The bends in the stream length 2 to 3 times longer than if it was in a straight line. The bends in the stream length 2 to 3 times longer than if it was in a straight line.	am length has been channelized for a er than if it long distance.
Score 3 20 19 18 17 16 15 14 13 12 11 10 9 8	
8. Bank Stability (score each bank) Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	ach has areas; "raw" areas high frequently along straight
Score (LB) 2 10 9 8 7 6 5 4	
Score (RB) 2 10 9 8 7 6 5 4	
9. Vegetative Protection (score each bank) More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full great extent; more than one- half of the potential plant 50-70% of the streambank surfaces covered vegetation, disruption evident but not affecting full plant great extent; more than one- half of the potential plant	by streambank surfaces tion covered by vegetation; of bare disruption of streambank pped vegetation is very high; on; less vegetation has been ne removed to 5 centimeters
Score (LB) 3 10 9 8 7 6 5 4	
Score (RB)21098765410. Riparian Vegetative Zone Width (score each bank riparian zone)Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have notWidth of riparian zone 12-18 meters; human activities have impacted zone only minimally.Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.Width of riparian zone 12-18 meters; human activities have impacted zone only deal.	ctivities meters: little or no riparian
Note: determine left or	
right side by facing downstream.	
right side by facing	

Project ID: Henderson	County Solar	Stream Class:	Intermittent Exhibit 14 Attachment 14.1
Stream ID: 2MS1L-2		Location;	HENDERSON KY Page 123 of 237
Lat: 37.77345	Long: -87.63566	River Basin	Ohio
Investigators: Ryan Ha	rris		
Signature:	Date: 12-May-20		Reason for Survey:
-	Time: 4:26 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	i in last 7 days
CONDITIONS			✓ Yes
	Storm (Heavy Rain)		
	Rain Steady Rain Steady Showers (Intermittent) Showers (Intermittent)	Air Temp F	
		Air Temp C	14
	✓ Cloud Cover % 100 ✓ Cloud Cover % 50 □ Clear/Sunny □ Clear/Sunny	0 Other	
STREAM	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial		
			✓ Warmwater Catchment Area
	Stream Origin		
	Upland Runoff I Mixture of Origins		Mile ² 0.75
	Spring-fed/Ground Water Wetland Other		Km ² 1.94
WATERSHED			
FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
	✓ Forest 10 Commercial 0	🗌 No	evidence Some potential sources
	Field/Pasture 0 Other 0	□ Ob	vious sources
	✓ Agriculture 90		Vatershed Erosion
	Residential 0		ne 🗹 Moderate 🗌 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant sp	pecies present	Dominant Species
(18 meter buffer)			Mixed mast.
, , , , , , , , , , , , , , , , , , ,	✓ Trees		
INSTREAM	Est Reach Length ft 100 m	30 Canopy	/ Cover
FEATURES			
	Est Stream Width ft 13.3 m		aded 🗹 Partly Shaded
	Sampling Reach Area ft ² 1330.0 m ²	123.6 I Sh	
	Sampling Area mile ² 0.000049 km ² 0.0	00124 High Wa	ater Mark ft 2.00
	Est Water Depth in 3.0 m	0.1 High Wa	ater Mark m 0.61
	Surface Velocity ft/s 0.2 m/s	0.1 % of Str	eam Morphology
		// OF Str ✓ Riffle	
		_	
	Channelized Yes No	Pool	
	Dam Present □Yes ✔ No	Step	Pool Series
LARGE WOODY	LWD 0.5 m 2	5 ft ²	
DEBRIS		00004645	0.0000001794
	Density of LWD m ² /km ² 0.00	ft ² /r	mile 2 0.0000001734
AQUATIC	Indicate the dominant type and record the dominant spec	cies present	Portion of the reach with
VEGETATION	Rooted Emergent Rooted Submergent	Rooted Floating	✓ None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
		r louing / ligue	
WATER	No Water Present Temperature 14 ° C	58 ⁰ F	Water Odors
QUALITY	No Flow Present Conductivity µs/cm	463	✓ Normal/None
	Total Disolved Solids	231 mg/l	Chemical Anaerobic
	рН	7.9	Do: 9.88 mg/L
	Turbidity	Wate	er Surface Oils
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	☐ Opaque ☐ Stained ☐ Other		Other

								Exhib	hit 14 Attachmont 14.1
SEDIMENT/		Odors	s				Deposits		Page 124 of 237
SUBSTRATE		✓	Normal	Sewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	Anaerobic	None		Sand	Relic Shel	lls 🗌 Other
			Other	L.,	L				
			Other			Loc	king at stone	s which are not o	deeplv
		Oils						indersides black	
		✓	Absent] Slight 🗌 Moo	derate 🗌 Profus	se 🗌	Yes	✓ No	
	INORGA		UBSTRATE		 S		ORGANIC	SUBSTRATE C	OMPONENTS
Substrate	Diame			Composite in S		Substrate		racteristic	% Composition in
Туре		10.		Reach	amping	Type	,	luotonotic	Sampling Reach
Bedrock				0		Dietritus	Sticks,	wood, coarse	5
Boulder	>10"			0		1		nt material	
Cobble	2.5 - 1	0"	+	0		Muck-	Blac	k, very fine	0
Gravel	0.1 - 2	.5"	+	30		Mud		anic matter	
Sand	gritty			40		Marl	Gi	rey, shell	0
Silt	gooe	y.		15			fra	agments	
Clay	slick	(15		<u> </u>			
Habita	at	Γ			HABITAT ASSES	SMENT - LO	W GRADIEN	T STREAMS	
Paramet			Opti		SubOpt		-	arginal	Poor
1. Epifaunal		Grea	ter than 50%		30-50% for low g		10-30% for lo	-	10% for low gradient
Substrate/		gradie	ent streams)) of substrate	streams) mix of s	stable	streams) mix	c of stable	streams)stable habitat;
Available			able for epifa		habitat; well-suite			tat availability	lack of habitat is
Cover			ization & fisl s, submerge	h cover; mix of	colonization pote adequate habitat		less than des substrate free		obvious;substrate unstable or lacking.
				cobble or other	maintenance of p		disturbed or		of laoking.
		stable	e habitat & a	at stage to	presence of addi	itional			
				ation potential	substrate in form but not yet prepa				
			logs/snags t fall and not to		colonization (may				
					high end of scale				
Score	8	20	19 18	8 🗌 17 🗌 16	15 14 13	3 12 11	10 9	✔876	
2. Pool	_			ate materials,	Mixture of soft sa		All mud or cla		Hardpan clay or bedrock:
Substrate			gravel and fir		clay; mud may b			or no root mat:	no root mat or vegetation.
Characterization	'n		alent; root m	nats and etation common.	some root mats a submerged vege		no submerge	ed vegetation.	
		505	leigen voge	dation common.	present.	lauon			
					F.				
Score	10	20	19 18	8 🗌 17 🗌 16	15 14 13	3 12 11	✔ 10 9	8 7 6	
3. Pool Variabili	lity	Even	mix of large	e shallow, large-				ls much more	Majority of pools small-
		deep,	, small shall	ow, small-deep				an deep pools.	shallow or pools absent.
		pools	s present.						
Score	6	20	19 18	8 🗌 17 🗌 16	15 14 13	3 12 11	10 9	8 7 16	
4. Sediment			or no enlarg		Some new increa			position of new	Heavy deposits of fine
Deposition		island	ds or point b	ars and less	formation, mostly	y from	gravel, sand	or fine	material, increased bar
			<20% of the		gravel, sand or fi			old and new	development; more than
		afreci	ied by seum	nent deposition.	sediment; 20-509 bottom affected;			6 of the bottom	80% of the bottom changing frequently; pools
					deposition in poo		at obstruction		almost absent due to
							constrictions		substantial sediment
							moderate de pools prevale		deposition.
							μουιο μισναις	3111.	
Score	10	20	19 18	8 🗆 17 🗆 16	15 14 13	3 12 11	✓ 10 □ 9		
1									
1									
1									
					121	1			

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the XNII available channel, and/or riffle substrates are mostly exposed.	Very ୩୩୧୫୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦
Score 9			10 ⊻9876	
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 8	20 19 18 17 16	15 14 13 12 11	10 □9 ⊻8 □7 □6	
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 6	20 19 18 17 16	15 14 13 12 11	10 □9 □8 □7 ✔6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
downstream.				
Score (LB) 2	10 9			
Score (RB) 3 9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	10 9 More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	8 7 6 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	5 4 ✓3 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	□2 □ 1 □0 Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 5	10 9		✓5 □4 □3	
Score (RB) 5 10. Riparian	U 10 U 9 Width of riparian zone >18	Width of riparian zone 12-18	✓ 5 4 3 Width of riparian zone 6-12	□2 □1 □ Width of riparian zone <6
Vegetative Zone Width (score each bank riparian zone) Note: determine left or right side by facing	meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	maters; human activities have impacted zone only minimally.	meters; human activities have impacted zone a great deal.	weith of hiparian 2016 <0 meters: little or no riparian vegetation due to human activities.
downstream.				
Score (LB)3Score (RB)4				
Total Score 79				

Project ID: Henderson	County Solar	Stream Class:	Intermittent Exhibit 14 Attachment 14.1
Stream ID: 2MS1L3		Location;	HENDERSON KY Page 126 of 237
Lat: 37.78131	Long: -87.63165	River Basin	Ohio
Investigators: Ryan Ha	rris	<u>.</u>	
Signature:	Date: 11-May-20		Reason for Survey:
-	Time: 3:26 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rair	n in last 7 days
CONDITIONS	Storm (Heavy Rain)		✓ Yes
	Rain Steady Rain Steady Showers (Intermittent) Showers (Intermittent)	Air Temp F	
		Air Temp C	13
	Clear/Sunny ✓ Clear/Sunny	0 Other	
STREAM CHARACTERIZATION	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial 🗹 Intermittent 🗌 Ephemeral		Coldwater
			✓ Warmwater Catchment Area
	Stream Origin		
	Upland Runoff I Mixture of Origins		Mile ² 0.36
	Spring-fed/Ground Water Wetland Other		Km ² 0.93
WATERSHED			
FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
	✓ Forest 20 Commercial 0	No	evidence Some potential sources
	Field/Pasture 0 0 0ther 0		vious sources
	Agriculture 80	Local V	Vatershed Erosion
	Residential 0		ne 🗹 Moderate 🗌 Heavy
RIPARIAN			
VEGETATION	Indicate the dominant type and record the dominant sp	pecies present	Dominant Species
(18 meter buffer)	✓ Trees	□ None	Mixed Mast
INSTREAM FEATURES	Est Reach Length ft 100 m	30 Canop	y Cover
I LATORES	Est Stream Width ft 11.9 m	3.6 Dp	en 🗹 Partly Open
	Sampling Reach Area ft ² 1190.0 m ²		aded 🗌 Partly Shaded
			ater Mark ft 2.80
	Est Water Depth in 3.0 m	0.1 High Wa	ater Mark m 0.85
	Surface Velocity ft/s 0.5 m/s	0.2 % of Str	eam Morphology
		✓ Riffle	e % 30 🗹 Run % 40
	Channelized Yes No	✓ Pool	% 30 Glide Pool
	Dam Present □Yes ✔ No		Pool Series
LARGE WOODY DEBRIS	LWD 0.9 m 2	10 ft ²	
DEBINO	Density of LWD m 2 /km 2 0.00	000009290 _{ft} 2 /I	mile 2 0.000003587
AQUATIC			
VEGETATION	Indicate the dominant type and record the dominant spec		Portion of the reach with
	Rooted Emergent Rooted Submergent	Rooted Floating	None aquatic vegetation
	☐ Free Floating ✓ Attached Algae	Floating Algae	present: 10
WATER			
QUALITY	No Water Present Temperature 12 ° C	53 ⁰ F	Water Odors
	□ No Flow Present Conductivity µs/cm	586	✓ Normal/None Sewage Petroleum
	Total Disolved Solids	293 mg/l	Chemical Anaerobic
	pH	7.73	Do: 9.93 mg/L
			er Surface Oils
	Turbidity □ Clear ✔ Slightly Turbid □ Turbid		er Surrace Olis Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	Opaque Stained Other		Other

												Evhik	hit 14 At	toobme	unt 1.1	1
SEDIMENT/		Odors	s						Deposit	S				age 127		
SUBSTRATE		✓	Norma	al	🗌 Se	ewage	Petroleum		Slud	_	Sawd	lust		Paper F		·•
			Chem			naerobic				-	Relic		_	Other	·	
					L / VI	derobie					None	0110.1	18 L	Outor		
			Other					١o	oking at sto	nes whi	ch are	not c	haanly			
		Oils							bedded, ar					?		
		✓	Abser	nt 🗌	Slight	🗌 Mo	oderate 🗌 Profi		Yes	_	No					
	INORGA								ORGAI	NIC SUB	OTRA					
Substrate	Diame						Sampling	Substrate		Characte	-					on in
Type	Diame	lei		/0 🔾		Reach	Sampling	Type	e	ildi auto	1500			Sampli		
Bedrock	<u> </u>					0		Dietritus	Stic	ks, wood	l coar	20		•	5	
Boulder	>10"		+			0		-		plant ma		30			0	
Cobble	2.5 - 1					0		Muck-	E	Black, ver	rv fine				0	
Gravel	0.1 - 2					30		Mud		organic n					U	
Sand	gritty					30		Marl		Grey, s					0	
Silt	gooe					20		-		fragme					U	
Clay	slick					20		-								
		I											<u> </u>			
Habita Parame		├		Ontir			HABITAT ASSE			-		5	τ			
				Optin			SubOp		10.000/ £	Margina			400/ fa	-	oor	
1. Epifaunal Substrate/		-			o for low		30-50% for low streams) mix of		10-30% for streams)			•	10% fo stream	or low gi is)stable		
Available		favora	able fo	or epifa	aunal		habitat; well-sui	ited for full	habitat; h	abitat av	ailabili	ity	lack of	habitat	t is	
Cover		coloni	ization	n & fish	n cover;	; mix of	colonization pot	tential;	less than	desirable	e;	.,	obviou	s;subst		instable
			-	mergeo	•	othor	adequate habita		substrate disturbed				or lack	ing.		
				,	t stage	or other to	maintenance of presence of add		alsuinea	oriento	veu.					
					tion pot		substrate in for									
		(i.e., l	logs/sr	nags th	hat are	not	but not yet prep	bared for								
		new fa	all and	l not tra	ransient	t).	colonization (m									
Caara	10	20	19	10	17	16	high end of sca	,	✓ 10	9 8	7	6	5	4 3	2	1 0
Score	10	-	-						-			_ b L				v i l l v
2. Pool Substrate					ate mat m sand		Mixture of soft s		All mud o bottom: li			mat:	Hardpa no root			
Characterizatio	n				ats and		some root mats		no subme				10100	. IIIa. c.	Veye	ໄປແບກ.
						common.	. submerged veg				5-					
1							present.									
Score	8	20	19					13 12 11		9 🖌 8 [7_	6	5	4 🗌 3 🛛	2	10
3. Pool Variabil						w, large-							Majorit			
					w, sma	all-deep	very few shallow	N	prevalent	than dee	ep poc	ols.	shallov	v or poo	ols abs	sent.
		роогъ	prese	int.												
Score	8	20	1 9	18	8 🗌 17	16	15 14 1	13 12 11	10	9 🖌 8 [7	6	5	4 🗌 3	2	1 🗌 0
4. Sediment		1			ement		Some new incre		Moderate				Heavy			
Deposition		island	ds or p	point be	ars and	less	formation, most		gravel, sa			no.		al, incre		
		than <	<20%	of the I	bottom	า	gravel, sand or	fine	sediment	on old a	nd nev		develo	pment;	more	
		affect	ed by	sedime	ent dep	position.			bars; 50-8				80% of			
							bottom affected deposition in po		affected; at obstrue		t aepu	SIIS	changi almost	absent		
								1013.	constrictio		bends	s;	substa			
									moderate	depositi			deposi	tion.		
									pools pre	valent.						
			10	10	47	10								•		
Score	11	20	□19	∟18	8 ∐17	16		13 🗌 12 🗹 11	□10 □	9 🗌 8 [7	6	5	4 🗌 3	2	_ 1_ 0
							12	24								

5. Channel Fl Status	ow	Water reacht lower banks, amount of ch exposed.	and r	nimimal		Water availal of cha expose	ble cl nnel	hanne	el; or	<25%	6	avail riffle	able	cha	nnel	, and		a	eryntt nd Ræ tanding	gely1	Rest		
Score	12	20 19	18	17	16	15	14	13	3 🗸 ·	12	11	1	0	9	8	7	6		5 🗆 4		3 2	2	1 0
6. Channel Alteration		Channelizati absent or mi normal patte	nimal;			Some preser bridge of pas dredgi 20 yr) recent preser	nt, us abul t cha ing, (may char	ually i tments nneliz greate be pre	in ar s; ev zatio er tha eser	eas o idenc n, i.e., an pas it, but	f ;e ; ; st ;	exter shor on b 80%	ing si oth b of st	; en truc ank reai	nban tures s; ar m rea	kme s pre nd 40 ach	ents o esent	r or st ar ha	anks s r ceme tream nd disi abitat emove	ent; c react rupte great	iver 8 n cha d. In ly al	80% anne strea terea	of the lized am
Score	8	2019 [18	□ 17 □	16	15	14	13	3	12	11	1	0	9	∕8	7	6		5 🗌 4		3 🗆 2	2	1 0
7. Channel Sinuosity		The bends ir increase the 4 times longe straight line. braiding is co plains and ot lying areas. t not easily rat	strear er thar (Note onside her no his pa	n length n if it wa - chann red coa ormal lov arameter	s in a iel stal w- r is	The be increas to 3 tir was in	se th nes l	e stre onger	am l tha	ength n if it	12 i	incre 1 to		the es l	strea onge	am le er tha	am ength an if it	ha		n ch	anne		erway d for a
Score	5	20 19	18	<u> </u>	16	15	14	13	3 🗌 -	12	11	1	0	9[8	7	6	✓	5 🗌 4	. □:	3 🗌 2	2	1 0
8. Bank Stabi (score each b Note: determ right side by downstream	ank) ine left or facing	Banks stable erosion or ba minimal; little problems. <5	nk fai potei	lure abs	future	Moder infrequ erosio 5-30% areas	uent, n mo o of b	small stly h ank in	area eale i rea	d ove	r.a s	60% area	erate of ba s of e ion p s.	ank eros	in re ion;	ach high	has	aı fro se ol 10	nstabl reas; " equen ections bvious 00% o rosion	raw" tly al s and ban f bar	area ong l ber k slo ik ha	as strai ids; ughi	
Score (LB)	4	1)	9			8	7		6			5	•	∕4		3		2		1		0
Score (RB)	3	L 10		9		Ļ		∐7			I		5		4		3		2		1		0
 Vegetative Protection (s each bank) Note: determ right side by downstream. 	ine left or facing	More than 90 streambank simmediate rip covered by n including tree shrubs, or no macrophytes disruption thi mowing mini almost all pla naturally.	surfac parian ative es, un pnwoo rough rough mal o	es and zones vegetation derstory dy etative grazing r not evice	or dent;	70-909 surface vegeta plants repres eviden plant g great e half of stubble	es co ation, is no ente t but growt exten	overec but o ot well d disru not a h pote t; moi potent	d by ne c uptic ffect entia re th tial p	native lass c ing fu l to ar an on lant	e s of s s s s s s s s s s s s s s s s s s s	surfa vege obvid soil d vege than pote	0% o aces station bus; p or clo station one- ntial nt rer	cove n; di pato sely n co half plan	ered isrup hes cro mmo of th of th	by of ba ppea on; l	are d ess	st co di ve ve re or	ess that treamb overect isruption egetation egetation emove r less i eight.	bank by v on of on is on h d to	surfa vege stre ver as b 5 cer	aces tatio amb y hig een ntime	n; ank h; eters
Score (LB)	6	1		9			8	7	✓				5		_4		3		2		1	_	0
Score (RB) 10. Riparian Vegetative Z Width (score bank ripariar zone) Note: determ right side by downstream.	e each i ine left or facing	Uidth of ripa meters; hum parking lots, cuts, lawns, impacted zor	rian z an ac roadb or cro	tivities (i eds, cle	.e., ar-	Width meters have in minim	s; hui mpao	man a	activi	e 12-1 ties	l	Widt mete	ers; h imp	uma	an ao	zone ctivit	_3 ≥ 6-12 ies a grea	m ntve	/idth o neters: egetati ctivitie	little on d	or n	zon o rip	arian
Score (LB)	4			9			8	7		6			5		✓ 4		3		2		1		0
Score (RB) Total Score	4	L 10	J	9			8	∐7		0			5	Ľ	∕ 4		3		 2	L	<u> </u> 1		0
	00																						

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 2MS1L3C		Location;	HENDERSON KY Page 129 of 237
Lat: 37.77743	Long: -87.62680	River Basin	Ohio
Investigators: Ryan Ha	rris		
Signature:	Date: 12-May-20		Reason for Survey:
	Time: 9:20 AM		404 functional Assessment:
WEATHER CONDITIONS	Current Past 24 Hour	Heavy rain	n in last 7 days
	Storm (Heavy Rain) Storm (Heavy Rain)	🗌 No	✓ Yes
	Rain Steady Rain Steady	Air Temp F	53
	Showers (Intermittent) Showers (Intermittent)	Air Temp C	: 12
	✓ Cloud Cover % 100 ✓ Cloud Cover % 50	0 Other	
	Clear/Sunny Clear/Sunny		
STREAM			
CHARACTERIZATION	Stream Subsystem		Stream Type
	🗌 Perennial 🔛 Intermittent 🗹 Ephemeral		└ Coldwater
			✓ Warmwater Catchment Area
	Stream Origin		Mile ² 0.05
	Upland Runoff		Km ² 0.13
	Spring-fed/Ground Water Wetland Other		Kiii 0.13
WATERSHED	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
FEATURES	✓ Forest 5 Commercial 0		evidence Some potential sources
			•
	Field/Pasture 0 Other 0	7	vious sources
	Agriculture 95]	Vatershed Erosion
	Residential 0	🗌 No	ne 🗹 Moderate 🗌 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant sp	pecies present	Dominant Species
(18 meter buffer)	🗌 Trees 🔲 Shrubs 🗹 Grasses 🗌 Herbs	□ None	Annual grasses
INSTREAM			
FEATURES	Est Reach Length ft 100 m	30 Canopy	y Cover
	Est Stream Width ft 5.1 m	1.6 Dp	• •
	Sampling Reach Area ft ² 510.0 m ²	47.4 🗌 Sh	aded 🗹 Partly Shaded
		00047 High Wa	ater Mark ft 1.60
	Est Water Depth in 0.0 m		ater Mark m 0.49
	Surface Velocity ft/s 0.0 m/s	0.0 % of Str ✔ Riffle	ream Morphology ∋ % 20 ✔ Run % 60
	Channelized Yes No	✓ Pool	% 20 Glide Pool
	Dam Present □Yes ✔ No		Pool Series
LARGE WOODY DEBRIS	LWD 0.2 m 2	2 ft ²	
	Density of LWD m ² /km ² 0.00	000001858 _{ft} 2 /r	mile 2 0.000000717
AQUATIC	Indicate the dominant type and record the dominant spec		
VEGETATION		Rooted Floating	✓ None Portion of the reach with aquatic vegetation
		-	present: 0
	☐ Free Floating ☐ Attached Algae	Floating Algae	
WATER	✓ No Water Present Temperature 0 ° C	0 ⁰ F	Water Odors
QUALITY			□ Normal/None □ Sewage □ Petroleum
		0	
	Total Disolved Solids	0 mg/l	Chemical Anaerobic
	pH	0	Do: mg/L
	Turbidity	Wate	er Surface Oils
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗌 Globs 🔲 Flecks
	☐ Opaque ☐ Stained ☐ Other		Other

											C	<u>-vhib</u>	hit 14 At	toohm	ont 11	1
SEDIMENT/		Odors	s						Deposits	3				age 130		
SUBSTRATE		✓	Norma	al	Sev	wage	Petroleum		_ Sludg	_	Sawdu	ust		Paper		<i>.</i> .
			Chem	vical		aerobic	 □ None			-	Relic \$	Shell	_	' Other		
				·	L ' "··-	10106.0				•	Tione .	Une.	<u> </u>	Oure.		
			Other					Loc	oking at sto	nes whi	ch are	not d	teenly			
		Oils							bedded, ar					?		
		✓	Absen	nt 🗌	Slight	Mo	oderate 🗌 Profu	ise	Yes	✓	No					
	INORGA	NIC S	UBST	RATE	COMP	ONENT			ORGAN	NIC SUB	STRA	TF C	OMPO	NENT	2	
Substrate	Diame						Sampling	Substrate		haracte	-				-	on in
Туре						Reach	Juliping.	Туре	-	1.00.0000				Sampli		
Bedrock			<u> </u>			0		Dietritus	Stick	ks, wood	. coars	se			3	
Boulder	>10"		<u> </u>			0		-		plant mat						
Cobble	2.5 - 1		1			0		Muck-		lack, ver					0	
Gravel	0.1 - 2		+			10		Mud		organic n						
Sand	gritty					5		Marl		Grey, s					0	
Silt	gooe					35		-		fragme	nts					
Clay	slick	(50		1								
Habita	at	<u> </u>	<u> </u>				HABITAT ASSES	SMENT - LC	W GRADI	ENT ST	REAMS	s				
Parame		\vdash		Optim	nal		SubOpt		-	Margina				P	oor	
1. Epifaunal		Great	ter tha		for low		30-50% for low g		10-30% fc	-			10% fo			nt
Substrate/		gradie	ent stre	eams)	of subs		streams) mix of	stable	streams) ı	mix of st	able		stream	is)stabl	le habi	
Available Cover				or epifa	iunal i cover:	the state of	habitat, well-suit colonization pote		habitat; ha less than			ty	lack of			Instable
Cover				n & fisn merged	,	ΜΙΧ ΟΙ	adequate habitat		substrate				or lacki	-,	lfate u	nstable
		under	rcut ba	anks, co	obble o		maintenance of	populations;	disturbed				C	.9.		
					t stage t		presence of add									
					tion pote nat are r		substrate in form but not yet prepa									
					ansient		colonization (ma									
						, 	high end of scale	e).				_				
Score	6	20	19	-			15 14 13		-		7 🗸			4 🗌 3		10
2. Pool					te mate		Mixture of soft sa		All mud or				Hardpa			
Substrate Characterizatio					m sand ats and		clay; mud may b some root mats		bottom: lit no subme				no root	: mat o	r vege	tation.
บไปสี่เสียเอารัสแอ	'n					ı ommon.			NO Subine	rgeu vo	Jelano.	h.				
			0.5	0	Lit	21	present.									
												_				
Score	5	20	19			16		3 🗌 12 🗌 11	10	9 🗌 8 [7			4 🗌 3	2	10
3. Pool Variabil						v, large-			Shallow p				Majorit			
			, small s prese		w, sma	all-deep	very few shallow	1	prevalent	than dee	эр рооі	ls.	shallow	v or po	ols abs	sent.
		рооњ	prese	nt.												
	_							_			_	_			_	_
Score	6	20	19	18	17	16	15 14 13	3 🗌 12 🗌 11	10	9 🗌 8 [7 🗸	'6 L	5	4 🗌 3 [2 _	1 🗌 0
4. Sediment		Little	or no (enlarge	ement o	of	Some new incre		Moderate				Heavy			
Deposition		island	ds or po	point ba	ars and	less	formation, mostly		gravel, sa	nd or fin	е		materia	al, incre	eased	bar
				of the b		osition.	gravel, sand or f sediment; 20-50		sediment bars; 50-8				develo 80% of			than
		ancos	cuby	Scum	Sin uop	Ushion.	bottom affected;		affected; s				changi			; pools
							deposition in poo		at obstruc	tions,			almost	absen	t due t	to
									constrictio moderate				substa deposit		dimen	nt
									pools prev		011 01		ueposi	lion.		
									F ,							
Score	12	20	19	18	17	16	15 14 13	3 🖌 12 🗌 11	10	9 8	7	6	5	4 🗌 3	2	1 0
ı ·	J L															
							10	_								
							127	7								

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	₩dfyfttftæWæten∿ifi tHannel and Røgt y1pres€â8as standing pools.
Score 3				54 ⊻32 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 7	2019181716	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 5	20 19 18 17 16	15 14 13 12 11		✓5 □4 □3□2 □ 1□ 0
8. Bank Stability (score each bank) Note: determine left or	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
right side by facing downstream.				
Score (LB) 2	10 9			✓ 2 □ 1 □0
Score (RB) 3 9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	10 9 More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	8 6 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	5 4 ✓3 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	□2 □ 1 □ 0 Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 2	10 9	8 7 6	5 4 3	√ 2 □ 1 □ 0
Score (RB) 2 10. Riparian	IO 9 Width of riparian zone >18	Width of riparian zone 12-18	U5 U4 U3 Width of riparian zone 6-12	✓2
Vegetative Zone Width (score each bank riparian zone) Note: determine left or right side by facing	meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	meters; human activities have impacted zone only minimally.	meters; human activities have impacted zone a great deal.	meters: little or no riparian vegetation due to human activities.
downstream.				
Score (LB)1Score (RB)1				
Total Score 55				

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 2MS1L4		Location;	HENDERSON KY Page 132 of 237
Lat: 37.77897	Long: -87.63469	River Basin	Ohio
Investigators: Ryan Ha	rris	<u>.</u>	
Signature:	Date: 12-May-20		Reason for Survey:
	Time: 2:33 PM		404 functional Assessment:
WEATHER	Current Past 24 Hour	Heavy rain	n in last 7 days
CONDITIONS			✓ Yes
	Storm (Heavy Rain) Storm (Heavy Rain)		
	Rain Steady Rain Steady Showers (Intermittent) Showers (Intermittent)	Air Temp F	
		Air Temp C	16
	✓ Cloud Cover % 100 ✓ Cloud Cover % 50 ○ Clear/Sunny ○ Clear/Sunny	0 Other	
STREAM	Stream Subsystem		Stream Type
CHARACTERIZATION	Perennial Intermittent I Ephemeral		
			✓ Warmwater Catchment Area
	Stream Origin		
	Upland Runoff Mixture of Origins		Mile ² 0.05
	Spring-fed/Ground Water Wetland Other		Km ² 0.13
WATERSHED FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
	✓ Forest 10 Commercial 0		evidence Some potential sources
	Field/Pasture 0 Other 0		vious sources
	Agriculture 90		Vatershed Erosion
	Residential 0	L No	ne 🗹 Moderate 🗌 Heavy
RIPARIAN	Indicate the dominant type and record the dominant sp	necies present	Dominant Species
VEGETATION (18 meter buffer)			Soft mast
	✓ Trees	☐ None	
INSTREAM		Canon	y Cover
FEATURES	Est Reach Length ft 100 m		
	Est Stream Width ft 3.7 m	1.1 Op	• •
	Sampling Reach Area ft ² 370.0 m ²	34.4 🗆 Sh	aded 🗹 Partly Shaded
	Sampling Area mile ² 0.000014 km ² 0.0	00034 High Wa	ater Mark ft 0.60
	Est Water Depth in 2.0 m	0.1 High Wa	ater Mark m 0.18
	Surface Velocity ft/s 0.5 m/s		
		70 01 01	
		✓ Riffle	
	Channelized Yes 🗹 No	✓ Pool	% 10 Glide Pool
	Dam Present 🛛 Yes 🗹 No	Step	Pool Series
LARGE WOODY	LWD 0.5 m 2	5 ft ²	
DEBRIS			
	Density of LWD m ² /km ² 0.00	000004645 ft ² /I	mile 2 0.000001794
AQUATIC	Indicate the dominant type and record the dominant spec	cies present	
VEGETATION		Rooted Floating	✓ None Portion of the reach with aquatic vegetation
		•	present: 0
	☐ Free Floating ☐ Attached Algae ☐	Floating Algae	
WATER	No Water Present Temperature 18 ° C	65 ⁰ F	Water Odors
QUALITY			
	□ No Flow Present Conductivity µs/cm	551	✓ Normal/None □ Sewage □ Petroleum
	Total Disolved Solids	267 mg/l	Chemical Anaerobic
	pH	6.92	Do: 6.86 mg/L
	Turbidity		er Surface Oils
	Clear Slightly Turbid Turbid		Slick Sheen Globs Flecks
			Other
	Opaque Stained Other		

									Exhit	hit 14 Attachment 14.1
SEDIMENT/		Odors	s					Deposits		Page 133 of 237
SUBSTRATE		✓	Normal	S	ewage	Petroleum		Sludge	Sawdust	Paper Fiber
			Chemical	_	-			Sand	Relic Shel	
					naerobic			Sanu		
			Other				Lor	the states	the sea pot .	н
		Oils							s which are not o indersides black	
			Absent [Slight	+ 🗌 Mo	derate 🗌 Profus		Yes	No	
	INORGA	NIC S	UBSTRA	-	-	-			SUBSTRATE C	
Substrate	Diame	ter	%	% Compo		Sampling	Substrate	ə Cha	racteristic	% Composition in
Туре					Reach		Туре			Sampling Reach
Bedrock		ı			0		Dietritus		wood, coarse	10
Boulder	>10"	л —			0	1		plar	nt material	
Cobble	2.5 - 1	0"	1		0		Muck-	Blac	k, very fine	0
Gravel	0.1 - 2		1		0		Mud	orga	anic matter	
Sand	gritty		<u> </u>		5		Marl	G	rey, shell	0
Silt	gooe	-	<u> </u>		70				agments	-
Clay	slick				25					
		·	<u> </u>		-					
Habita					ł	HABITAT ASSES		1		
Parame	ter		Or	ptimal		SubOpt			arginal	Poor
1. Epifaunal	_	-	ter than 50			30-50% for low g	,	10-30% for le		10% for low gradient
Substrate/			ent stream		ostrate	streams) mix of s		streams) mix		streams)stable habitat;
Available			able for ep		iv of	habitat; well-suite			tat availability	lack of habitat is
Cover			ization & f			colonization pote adequate habitat		less than des substrate fre		obvious;substrate unstable or lacking.
			rcut banks			maintenance of p		disturbed or		Ul lacking.
			e habitat 8			presence of addi				
		allow	full coloni	ization po	otential	, substrate in form	n of new fall,			
		(i.e., l	logs/snags	s that are	e not	but not yet prepa				
		new f	fall and no	t transier	nt).	colonization (may				
		<u> </u>	· · · · · · · · ·	· · · · · ·		high end of scale	1 1 1 1		· · · · · · · · · · · · · · · · · · ·	
Score	6	20	-	18 🗌 17				□10 □9		
2. Pool			ire of subs			Mixture of soft sa		All mud or cl		Hardpan clay or bedrock:
Substrate			gravel and			clay; mud may b			or no root mat:	no root mat or vegetation.
Characterizatio	'n		alent; root			some root mats a		no submerge	ed vegetation.	
		SUDIT	nerged ve	getation	common.	. submerged vege present.	tation			
						present.				
Score	5	20	19	18 🗌 17	7 🗌 16	15 14 13	3 12 11	10 9	8 7 6	✔5 4 3 2 1 10
3. Pool Variabil			mix of lar	ae shallc	w. large-	Majority of pools	large-deep;	Shallow poo	ls much more	Majority of pools small-
0		deep,	, small sha						an deep pools.	shallow or pools absent.
			present.			-			•	
Score	3	20	19	18 🗌 17	7 🗌 16	15 14 13	3 12 11	10 9		54 ✔32 10
4. Sediment		1	or no enla			Some new increa			position of new	Heavy deposits of fine
Deposition			ds or point			formation, mostly		gravel, sand		material, increased bar
Deposition			<20% of th			gravel, sand or fi			old and new	development; more than
			ted by sed						% of the bottom	80% of the bottom
			•		•	bottom affected;	slight		diment deposits	changing frequently; pools
						deposition in poo	ols.	at obstructio		almost absent due to
									, and bends;	substantial sediment
								moderate de		deposition.
								pools preval	eni.	
Cooro					- 10					
Score	7	20	□19 □	18 🗌 17	7 🗌 16		3 🗆 12 🗆 11	□10 □9	8 ✔76	
1										
1										
						130	J			

5. Channel Flow Status	Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the Xnit available channel, and/or riffle substrates are mostly exposed.	WeryntteeWaterfint Channel and MageyୀβAsséASas standing pools.
Score 10			⊻10 □9 □8 □7 □6 1	5432 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score 6		15 14 13 12 11	10 □9 □8 □7 ✔6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low- lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score 5	20 19 18 17 16	15 14 13 12 11		✓5 □4 □3□2 □ 1□ 0
8. Bank Stability (score each bank) Note: determine left o right side by facing	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	erosion mostly healed over.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
downstream.				
Score (LB) 4		8 7 6	_5 ✔4 _3	
Score (RB) 3			_5 _4 ⊻3	
 9. Vegetative Protection (score each bank) Note: determine left o right side by facing downstream. 	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one- half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 4	10 9	8 7 6	_5 ✔4 _3	
Score (RB) 3		Width of ripprian zono 12.18	5 4 $\checkmark 3$	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone) Note: determine left o	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
right side by facing downstream.				
Score (LB) 2	10 9			
Score (RB) 2		8 7 6		
Total Score 60				

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 2MS1L5		Location;	HENDERSON KY Page 135 of 237
Lat: 37.77918	Long: -87.63500	River Basin	Ohio
Investigators: Ryan Wi			
Signature:	Date: 12-May-20 Time: 2:25 PM		Reason for Survey: 404 functional Assessment:
WEATHER CONDITIONS	Current Past 24 Hour Storm (Heavy Rain) Storm (Heavy Rain)	No	in last 7 days ✔ Yes
	Rain Steady □ Rain Steady Showers (Intermittent) □ Showers (Intermittent) ✓ Cloud Cover % 100 ✓ Cloud Cover % 50 □ Clear/Sunny □ Clear/Sunny	Air Temp F Air Temp C O Other	<u> 60</u> 16
STREAM CHARACTERIZATION	Stream Subsystem ☐ Perennial ☐ Intermittent ✔ Ephemeral Stream Origin		Stream Type Coldwater Warmwater Catchment Area Mile ² 0.04
	□ Upland Runoff ✓ Mixture of Origins □ Spring-fed/Ground Water □ Wetland □ Other		Mile ² 0.04 Km ² 0.10
WATERSHED FEATURES	Surrounding Land Use & Percentage Image: Forest 10 Commercial 0 Field/Pasture 0 Other 0 Image: Agriculture 90 Image: Commercial 0 Residential 0 Image: Commercial 0	☐ No ☐ Ob ^r Local W	/atershed NPS Pollution evidence
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and record the dominant sp ✓ Trees □ Shrubs □ Grasses □ Herbs	Decies present	Dominant Species Mixed mast.
INSTREAM FEATURES	Est Water Depth in 0.0 m Surface Velocity ft/s 0.0 m/s Channelized Yes V No	29.7 00030 High Wa 0.0 High Wa 0.0 % of Structure ✔ Riffle ✔ Pool	en Partly Open aded Partly Shaded ater Mark ft 0.40 ater Mark m 0.12 eam Morphology % 40 Partly Shaded % 5 Glide Pool
LARGE WOODY	Dam Present Yes ✓ No	2 ft 2	Pool Series
DEBRIS		2 n = 000001858 ft ² /n	nile 2 0.000000717
AQUATIC VEGETATION		ties present Rooted Floating Floating Algae	☐ None Portion of the reach with aquatic vegetation present: 2
WATER QUALITY	 ✓ No Water Present Temperature 0°C No Flow Present Conductivity µs/cm Total Disolved Solids pH Turbidity Clear Slightly Turbid Turbid Opaque Stained Other 	Wate	Water Odors Water Odors Normal/None Sewage Petroleum Chemical Anaerobic Oo: mg/L er Surface Oils Globs Flecks Slick Sheen Globs Flecks

											<u> </u>	<u>chihit</u>	14 Att	aahme	nt 14	1
SEDIMENT/		Odors	3						Deposits			 ~			5 of 23	
SUBSTRATE		✓	Norma	al [Sev	wage	Petroleum		Sludge	e 🗌 🤅	Sawdus	st		Paper F		I
			Chemi	ical [Ana	aerobic	None		Sand		Relic Sł	hells		Other		I
			Other	_	_					_		•••	_			I
			Uner					Loc	oking at ston	es whic	h are no	ot de	eply			I
		Oils		_		_	_		bedded, are	undersi	ides bla			2		I
		✓	Absen	nt 🗔 s	Slight		derate 🗌 Profu	se	Yes	✓	No					
	INORGA	NIC S	UBST	RATE	COMP	ONENT	S		ORGANI	C SUBS	STRATE	E CC	MPON	IENTS	\$	
Substrate	Diame	ter		% C(ompos	ite in S	Sampling	Substrate	e Ch	aracter	istic				oositio	
Туре		I			F	Reach	-	Туре					S	ampliı	ng Re	ach
Bedrock						0		Dietritus		s, wood,		;			15	
Boulder	>10"					0		l	pla	ant mate	ərial					
Cobble	2.5 - 1		F			0		Muck-		ack, very					0	
Gravel	0.1 - 2.	.5"	F			0		Mud	,	ganic ma						
Sand	gritty	y				0		Marl		Grey, sh					0	
Silt	gooe					80		·	1	fragmen	its					
Clay	slick	ί				20										
Habita	at						HABITAT ASSES	SMENT - LO	W GRADIE	NT STR	EAMS					
Parame	ter			Optim	al		SubOpt	timal	N	larginal	1			Pc	oor	
1. Epifaunal		-	ter thar	n 50% f	for low		30-50% for low g	gradient	10-30% for	low gra	dient		10% for			
Substrate/				eams) o		trate	streams) mix of	stable	streams) m	nix of sta	able	s	streams	s)stable	e habit	
Available Cover				or epifau n & fish		mix of	habitat; well-suite		habitat; hat less than de				ack of h			instable
COVEN		snags	s, subn	merged	logs,		adequate habitat	it for	substrate fr	requently	у		or lackir		au	Πδιακίς
		under	rcut ba	anks, co	obble or		maintenance of	populations;	disturbed o							
				at & at lonizati			presence of addi substrate in form									
				nags tha			but not yet prepa	,								
				d not tra			colonization (ma	ay rate at								
	ا 	<u> </u>					high end of scale		<u> </u>		· · · · · ·					· · · · · · ·
Score	5	20	<u>19</u>	-	<u> </u> 17	16					<u> </u>	-	-	1 ∐3L		
2. Pool Substrate				ubstrate and firm			Mixture of soft sa clay; mud may b		All mud or o bottom: little	clay or s	and		Hardpai no root			
Substrate Characterizatio				and firm oot ma			some root mats		no submerg				10 1001	Μαι υι	Veyer	iation.
••••						ommon.	. submerged vege			<u> </u>	0	·				
	I						present.									
	I															
	I															
	I															
				- 10	· · · · · · · · · · · · · · · · · · ·						- 0		· · · · ,			<u> </u>
Score	6	20	19								7 ⊻ 6			1 ∐3L	2	
3. Pool Variabil				f large s l shallov		/, large- ll-deep			Shallow poo prevalent th				∕lajority shallow			
			, smaii preser		V, 5116.	I-ueer	Very lew shanes.	1	prevalent a	าสม นออ	ρ μουιο.	.	nanon	01 pcc)15 and	sem.
	I	P -	P													
	I															
	I															
	I															
	I															
													- <u></u>			
Score	2	20	□19		<u> </u> 17	16								1 🗌 3 🖢		10
4. Sediment Deposition				enlarge			Some new increa		Moderate d gravel, san				-leavy c nateria			
Deposition				oint bar of the b		ess	formation, mostly gravel, sand or fi		sediment of				nateria levelop			
				sedime		osition.	sediment; 20-50)% of the	bars; 50-80)% of the	e botton	m 8	30% of	the bo	ottom	
	I						bottom affected;		affected; se		deposit		changin	• •		
	I						deposition in poo	ols.	at obstruction		oends:		almost a substan			
	I								moderate d				depositi		unie.	,L
	I								pools preva	alent.			•			
																
Score	15	20	□19	∟18	∐17	16	✓ 15 🗌 14 🗌 13	3 🗌 12 🗌 11	□10 □9	9 🗌 8 🗆	76	3 🗆	5 4	1 🗌 3 🗌	2	_ 1 _ 0
							133	3								

5. Channel Fle Status	ow	Water re lower ba amount exposed	anks, an of chani	d mimir	mal	Water availa of cha expos	ble c annel	hanne	el; or	<25	%	avai	lable sub	e cha stra	5-75 [°] anne ites a	l, ar	nd/or	r	and	YANNA I Ras	l € y1p	r∕esté		annel s
Score	1	20	19 🗌 1	8 🗌 1	7 🗌 16	15	14	1	3	12	11		0	9	8		7	6	5	4	3	2	✓	1 0
6. Channel Alteration		Channel absent c normal p	or minim			Some preser bridge of pas dredgi 20 yr) recent preser	nt, us e abu st cha ing, (may t cha	sually tment anneliz (greate be pr	in ar s; ev zatio er tha reser	eas viden n, i.e an pa nt, bu	of ce ., ast it	exte shor on b 80%	nsive ing s oth l	e; e struc banl strea	ion m mbai cture ks; a ks; a am re and	nkm s pr nd 4 each	ents eser 10 to 1	s or nt	or o stre and hat	nks sl ceme eam r d disro bitat g novec	nt; o each upteo ireat	ver 8 n cha d. In: ly alt	30% anne strea erec	of the lized am
Score	14	20	19 🗌 1	8 🗌 1	7 🗌 16	15	✔ 14	1	3	12	11		0 [9	8		7	6	5	4	□3	2		1 0
7. Channel Sinuosity		increase 4 times straight braiding plains are lying are	longer th line. (No is consi nd other eas. this	eam ler nan if it ote - cha dered o norma paramo	ngth 3 to was in a annel coastal I low-	The bo increa to 3 tir was in	ase th mes	ne stre longe	eam r tha	lengt n if it		incre 1 to	ease 2 tin	the nes	n the stre long aight	am er th	leng nan i	th	has		n cha	anne		erway d for a
Score	6	20	19 🗌 1	8 🗌 1	7 🗌 16	15	14	1	3 🗌 -	12	11		0	9	8		7 🗸	6	5	4	3	2		1 0
8. Bank Stabi (score each b Note: determ right side by downstream.	ank) ine left or facing	minimal	or bank ; little po	failure tential	of absent or for future affected	erosio	uent, on mo 6 of b	smal ostly h oank ir	l are neale n rea	d ove	ər.	60% area	of b s of ion p	ank ero	unsta c in re sion; ential	each higl	າ ha: h	S	are frec sec obv 100	stable as; "r quent ctions vious)% of siona	aw" ly alo and banl ban	area ong s ben s slo k ha	strai ds; ughi	
Score (LB)	6		L 10	9)		8	7	✓	6			5	5	4		3			2		1		0
Score (RB)	6		□10	∐ 9			8	∐7				1	∐5		4		3			2		1		-
 Vegetative Protection (s each bank) Note: determ right side by downstream. 	ine left or facing		ank surf by nativ g trees, f or nonw hytes; ve minimal all plants	aces a an zon ve vege undersi oody egetativ gh graz or not	es tation, tory re	70-90 surface vegeta plants repress evider plant of great of half of	ces co ation is is no sente sente drow grow grow exter f the	overee , but c ot well ed disr t not a th pote nt; mo poten	d by one c uptic affect entia ore th tial p	nativ lass ing f l to a an o lant	e of ull iny	surfa vege obvi soil vege than pote	aces etatic ous; or cle etatic one ntial	cov pat ose on c -ha pla	ne str verec disru ches ly cro omm lf of t nt str ining	l by ptior of to ppe ion; he ubbl	n bare ed less	5	stre cov disi veg veg rem or l	es that vered ruptio getatio getationovec ess ir ght.	ank by v on of on is on ha I to 5	surfa eget strea very as be o cer	aces ation amb / hig een ntime	n; ank h; eters
Score (LB)	7		10	9			8	√ 7							4		3			2		1	_	0
Score (RB) 10. Riparian Vegetative Z Width (score bank ripariar zone) Note: determ right side by downstream.	e each i ine left or facing	Width of meters; parking cuts, lav impacte	human a lots, roa vns, or c	activitie dbeds,	>18 es (i.e., clear-	Width meter have i minim	s; hu impa	man a	n zon activi	ties		mete	ers; l e imp	ripa hum	4 arian an a ed zo	ctivi	ities	eat	me veç	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	little on di	or n	zon zon	arian
Score (LB)	4		10				8	7		6			5		√ 4		3			2		1	_	0
Score (RB) Total Score	4 83	L	∟10	<u> </u>	1	L	8	∐7		6			∐5)	⊻ 4	L	3			2		1		0
	00																							

Project ID: Henderson	County Solar	Stream Class:	Ephemeral Exhibit 14 Attachment 14.1
Stream ID: 2MS106		Location;	HENDERSON KY Page 138 of 237
Lat: 37.79163	Long: -87.62754	River Basin	Ohio
Investigators: Ryan Ha			
Signature:	Date: 26-Oct-20 Time: 2:46 PM		Reason for Survey: 404 functional Assessment:
WEATHER CONDITIONS	Current Past 24 Hour	Heavy rain	in last 7 days
CONDITIONS	Storm (Heavy Rain) Storm (Heavy Rain)	🗌 No	✓ Yes
	Rain Steady	Air Temp F	60
	Showers (Intermittent)	Air Temp C	
		O Other	_ _
	Clear/Sunny Clear/Sunny		
STREAM			
CHARACTERIZATION	Stream Subsystem		Stream Type
	🗌 Perennial 🔛 Intermittent 🗹 Ephemeral		└ Coldwater
	Strange Origin		✓ Warmwater Catchment Area
	Stream Origin		Mile ² 0.01
	Upland Runoff Mixture of Origins		Km ² 0.03
	Spring-fed/Ground Water Wetland Other		
WATERSHED FEATURES	Surrounding Land Use & Percentage	Local V	Vatershed NPS Pollution
	✓ Forest 10 Commercial 0	🗌 No	evidence Some potential sources
	✓ Field/Pasture 45 Other 0		vious sources
	✓ Agriculture 45	1	Vatershed Erosion
	Residential 0		ne 🗹 Moderate 🗌 Heavy
RIPARIAN VEGETATION	Indicate the dominant type and record the dominant sp	ecies present	Dominant Species
(18 meter buffer)	✓ Trees		Soft Mast
INSTREAM FEATURES	Est Reach Length ft 22 m	7 Canopy	/ Cover
	Est Stream Width ft 5.3 m	1.6 Op	en 🗌 Partly Open
	Sampling Reach Area ft ² 116.6 m ²	10.8 🗌 Sha	aded 🗹 Partly Shaded
			ater Mark ft 0.50
			1
	Surface Velocity ft/s 0.0 m/s		ream Morphology
		✓ Riffle	
	Channelized Ves 🗹 No	Pool	% 10 Glide Pool
	Dam Present 🛛 Yes 🗹 No	Step	Pool Series
LARGE WOODY	LWD 0.0 m 2	0 ft 2	
DEBRIS		0000000	
	Density of LWD m ² /km ² 0.00	ft ² /r	nile 2
AQUATIC VEGETATION	Indicate the dominant type and record the dominant spec		Portion of the reach with
	Rooted Emergent Rooted Submergent I	Rooted Floating	✓ None aquatic vegetation
	Free Floating Attached Algae	Floating Algae	present: 0
WATER	No Water Present Temperature 0 C	0 ⁰ F	Water Odors
QUALITY			
	✓ No Flow Present Conductivity µs/cm	0	✓ Normal/None □ Sewage □ Petroleum
	Total Disolved Solids	0 mg/l	Chemical Anaerobic
	pH	0	Do: mg/L
	Turbidity	Wate	er Surface Oils
	Clear Slightly Turbid Turbid		Slick 🗌 Sheen 🗌 Globs 🗌 Flecks
	☐ Opaque ☐ Stained ☐ Other		Other
L			

										Exhib	ait 14 Attachment 14.1
SEDIMENT/		Odors	3					Deposits			Page 139 of 237
SUBSTRATE		✓	Normal	ı [Sewage	Petroleum		Sludge	e 🗌 Sawo	dust	Paper Fiber
			Chemic	cal 🗌	Anaerobic	None		Sand	Relic	: Shell	ls 🗌 Other
			Other		J · ····						
			Ulliei				Loc	oking at stone	es which are	e not c	deeply
		Oils			_			bedded, are	undersides		
		✓	Absent	🗌 SI	light 🗌 Mo	oderate 🗌 Profus	se	Yes	🖌 No		
	INORGA		UBSTR		OMPONENT	ĩs		ORGANI	C SUBSTR/	ATE C	OMPONENTS
Substrate	Diame	-	<u> </u>		mposite in S	-	Substrate	e Ch	aracteristic		% Composition in
Туре					Reach		Туре				Sampling Reach
Bedrock					0		Dietritus	Sticks	s, wood, coai	rse	15
Boulder	>10"		<u> </u>		0			pla	ant material		
Cobble	2.5 - 1	0"	1		0		Muck-		ack, very fine		0
Gravel	0.1 - 2	.5"	<u> </u>		30		Mud	org	ganic matter	_	
Sand	gritty	у			10		Marl		Grey, shell		0
Silt	gooe	y	<u> </u>		20			t	fragments		
Clay	slick	(40						
Habita	at					HABITAT ASSES	SMENT - LO	W GRADIE		IS	
Parame	ter		(Optima		SubOpt	timal	M	larginal		Poor
1. Epifaunal		-	ter than	50% fo	or low	30-50% for low g		10-30% for	low gradient	t	10% for low gradient
Substrate/		gradie	ent strea	ams) of	f substrate	streams) mix of s	stable	streams) m	ix of stable		streams)stable habitat;
Available Cover			able for		nal over; mix of	habitat; well-suite colonization pote		habitat; hab less than de	oitat availabil esirable	lity	lack of habitat is obvious;substrate unstable
Cover			s, subm			adequate habitat		substrate fr			obvious;substrate unstable or lacking.
		under	rcut ban	nks, cob	ble or other	maintenance of p	populations;	disturbed of			
			e habitat			presence of addi					
		allow (i.e., l	tull colu Ioas/sna	nization	n potential t are not	substrate in form but not yet prepa	,				
			fall and r			colonization (mag					
l	T				,	high end of scale	e).				
Score	8	20	19	18	1716	15 14 13			8 ∠7 ∟	6	
2. Pool					materials,	Mixture of soft sa			clay or sand		Hardpan clay or bedrock:
Substrate Characterizatio			gravel ar alent; roo			clay; mud may b some root mats a			e or no root i ged vegetatio		no root mat or vegetation.
	41				ion common.			10 300	Jeu vogenni	Jn.	
				-		present.					
l	T	<u> </u>			<u> </u>					r	
Score	10	20	□ 19 □	18	17 🗌 16	15 14 13		✓ 10 □ 9		6	
3. Pool Variabil					nallow, large-				ols much mo		Majority of pools small-
			, small s present		, small-deep	very few shallow		prevalent u	nan deep poo	ols.	shallow or pools absent.
		poole	ргезон	ι.							
			<u> </u>								
Score	5	20	∐ 19 ∟	18	1716		3_12_11	□10 □9			
4. Sediment			or no er			Some new increa			leposition of	new	Heavy deposits of fine
Deposition			ds or poi <20% of		and less	formation, mostly gravel, sand or fi		gravel, sand sediment of	d or fine n old and ne	NA/	material, increased bar development; more than
					nt deposition.				11 old and he 0% of the bot		80% of the bottom
					•	bottom affected;	slight	affected; se	ediment depo		changing frequently; pools
						deposition in poc	ols.	at obstruction			almost absent due to
									ns, and bend leposition of		substantial sediment deposition.
								pools preva			
Score	13	20	19	18	17 16	15 14 🗹 13	3 12 11	10 9	8 🗆 7 🗆	6	
1											
1											
1						136	2				
						130	5				

5. Channel Flo Status	DW.	Water re lower ba amount exposed	anks, ar of chan	nd mir	nimal		Water availal of cha expose	ble c innel	hanne	el; or	<25%	%	Water availat riffle si expose	ble cl ubstr	nanne	l, an	d/or	an	and ing	₿y1 β	èséá		
Score	4	20	19	18	17	16	15	14	13	3□1	2	11	10		8 8		6		5 🖌 4	3	2		1 🗌 0
6. Channel Alteration		Channe absent c normal p	or minin	nal; st	0 0		Some preser bridge of pas dredgi 20 yr) recent preser	nt, us abui t cha ing, (may t chai	sually tment inneliz greate be pr	in ar s; ev zatior er tha esen	eas c idenc n, i.e. an pa it, bu'	of ce ., ist t	Chann extens shorin on bot 80% o chann	sive; o g stru h bar f stre	embai ucture nks; a eam re	nkm s pro nd 4 each	ents or esent 0 to	or str an ha	anks sl ceme ream r nd disru abitat g moved	nt; ov each upted reatl <u>y</u>	ver 80 char I. Insi y alte)% d nneli trea	of the zed m
Score	6	20	19 🗌	18 🗌	17	16	15	14	13	3□1	2	11	□ 10		8 🗌 8		∕ ✔6		5 🗌 4	3	2	1	0
7. Channel Sinuosity		The ben increase 4 times straight braiding plains a lying are not easi	e the str longer t line. (N is cons nd othe eas. this	ream han if ote - o sidere r norr s para	length f it was channe d coas mal low meter	s in a el stal v- is	The be increa to 3 tir was in	ise th mes l	e stre longer	eam I r thar	engtl n if it		The be increa 1 to 2 was in	se th times	e stre s long	am I er th	ength an if it	ha	nannel as beer ng dist	n cha	nneli		
Score	2	20	19	18 🗌	17	16	15	14	13	3 🗌 1	2	11	□ 10		8 🗌 8	7	6		5 🗌 4	3	✔2	<u> </u>	1 🗌 0
8. Bank Stabil (score each b Note: determ right side by downstream.	ank) ine left or facing	Banks s erosion minimal problem	or bank ; little p	failui otenti	re abs al for f	uture	Moder infrequ erosio 5-30% areas	uent, n mc o of b	small stly h ank ir	l area ealeo n rea	d ove	er.	Moder 60% o areas erosio floods	f ban of er n pot	ik in re osion;	each high	has า	ar fre se ob 10	nstable eas; "r equenti ections ovious 00% of osiona	aw" a ly alo and bank bank	areas ng st bend slou t has	raig s; ghin	ht
Score (LB)	5		10	L	9			8	7		6		V	5	4		3		2		1	0	
Score (RB)	5		□10		9		L	8	□7		6		•	1 5	4		3		2		1	0	
 9. Vegetative Protection (s each bank) Note: determ right side by downstream. 	ine left or facing	More tha streamb immedia covered including shrubs, macroph disruptic mowing almost a naturally	eank sur ate ripar by nati g trees, or nonv hytes; v on throu minima all plant	faces ian zo ve ve unde voody egeta gh gr al or n	and ones getations rstory dtive azing ot evice	or dent;	70-90 ^o surfac vegeta plants repres evider plant of great of stubble	es co ation, is no sente sente t but growt exten f the	bvered but o ot well d disru t not a h pote nt; mo potent	d by i one c uptio iffect entia re that tial p	native lass ing fu l to a an or lant	e of ull ny	50-70 ⁹ surface obviou soil or vegeta than o potent height	es co ation; is; pa close ation ne-ha ial pla	overed disru atches ely cro comm alf of t ant st	d by ption of b oppe non; the ubble	are d less	str co dis ve ve re or	ess tha reamb sruptio getatio getatio moved less ir eight.	ank s by ve n of s on is on ha to 5	egeta strea very s bee cent	xes tion mba high en imel	ink ; :ers
Score (LB)	6				9			8		✓				5	4		3		2		1		
Score (RB) 10. Riparian Vegetative Z Width (score bank riparian zone) Note: determ right side by downstream.	ine left or facing	Width of meters; parking cuts, lav impacte	human lots, roa vns, or	n zon activi adbec crops	ities (i. Is, clea	.e., ar-	Width meters have in minim	s; hu mpao	man a	activi	e 12- ties		Width meters have in deal.	s; hui	man a	activi	ties	m t ve	2 didth of eters: egetatio ctivities	ittle o on du	or no	ripa	<6 rian
Score (LB)	6		10		9			8	7	✓				5	4		3		2		1		
Score (RB) Total Score	5 80		L 10	L	9		L	8	∐7		6		V	5	4	L	3		 2		1 L	0	
	00																						

Project/Site: <u>Henderson County Solar</u>	City/County: Henderson/Henderson	Date: 04-May-20
Applicant/Owner: Henderson County Solar LLC	State: KY S	ampling Point: <u>1MW1</u>
Investigators: Scott Mitchell	Sec, Twp, Rng: <u>S NA</u>	
Landform: Flat	Local Relief: Concave	Slope %: <u>1</u>
Subregion: LRR	Lat: <u>38.80247 N</u> Lon: <u>-87.63102 W</u>	Datum: Decimal Degrees
Soil Map Unit Name:	NWI Classification: PFO Area Ft ²	: <u>6,261</u>
Are climatic/hydrologic conditions on this	Remarks (If No):	
site typical for this time of year? Yes		
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal Circum	istances" present: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	ly Problematic? Remarks:	-
	-	

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

Hydrophytic Vegetation Present? <u>Yes</u>	Is the Sampled Area within a Wetland?	<u>Yes</u>
Hydric Soil Present? <u>Yes</u>		
Wetland Hydrology Present? <u>Yes</u>		
Remarks: Floodplain wetland along Canoe Creek.		

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status	Dominance Test Worksheet:		
1. Acer negundo	10.0	No	FAC	Number of Dominant Species that		
2. Populus deltoides	25.0	Yes	FAC	are OBL, FACW or FAC: 4 A		
3. Acer saccharum	20.0	Yes	FACU	Total Number of Dominant Species		
4. Celtis laevigata	10.0	No	FACW	across all Strata: <u>5</u> B		
5.				Percent of Dominant Species that		
	65.0 = To	otal Cover		are OBL, FACW or FAC: <u>80.0</u> A/B		
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:		
1. Celtis laevigata	5.0	Yes	FACW			
2. Platanus occidentalis	5.0	Yes	FACW	OBL <u>0</u> x1= <u>0</u> FACW 0 x2= 0		
3.						
4.				FAC <u>0</u> x3= <u>0</u> FACU 0 x4= 0		
5.				$\begin{array}{cccccccccccccccccccccccccccccccccccc$		
	10.0 = 10	otal Cover		TOTALS		
Herb Stratum Plot Size: Unit				(A) <u>0</u> (B) <u>0</u>		
1. Laportea canadensis	40.0	Yes	FAC	Development la development D/A		
2. Cinna latifolia	5.0	No	FACW	Prevalence Index = B/A =		
3. Symphyotrichum lateriflorum	10.0	No	FACW	Hydrophytic Vegetation		
4.				Indicators:		
5.				✓ Dominance Test is >50%		
6.				$\square \text{ Prevalence Index is } \leq 3.0^{1}$		
7.				☐ Morphologic Adaptations ¹		
8.				Problematic Hydrophytic		
9.				Vegetation ¹ (Explain)		
10	<i>ГГ 0 – Т</i>	- + - 0				
	55.0=10	otal Cover		¹ Indicators of hydric soil & wetland hydrology must be present, unless		
Woody Vine Stratum Plot Size: Unit				disturbed or problematic.		
1.				Hydrophytic Vegetation		
2.	_ _			Present? Yes		
	= 10	otal Cover				
Remarks:						

						0		xhibit 14 Attachment 1 Page 142 of 2	
SOIL						-	bling Point: <u>1MV</u>	VI Ű	
rofile De	Scription: (Desc <u>Matrix</u>	ribe to	depth neede		cument tne x Features	Indicat	or or confirm t	he absence of in	dicators.
Depth	Color		Color	T(CUO)	X T Catalos				
(inches)	(Moist)	<u>%</u>	(Moist)	<u>%</u>	Type ¹	Loc ²	<u>Texture</u>	<u>Remarks</u>	
0-7	10YR 4/2	90	7.5YR 5/6	10	C	M	Loamy		
 7-12	10YR 4/1	90	7.5YR 5/6	10	C	M	Loamy		
Type: C=C	Concentration, D=D	Depletior	n, RM=Reduced	Matrix, N	MS=Masked S	Sand Gra	ains. ² Location:	PL=Pore Lining, M	-Matrix.
ydric Soi	il Indicators:						Indicators Soils ³ :	for Problematic	Hydric
☐ Histoso	l (A1)			Sandy G	leyed Matrix	(S4)	🗌 Red Pa	rent Material (TF2))
	pipedon (A2)				edox (S5)	()		allow Dark Surfac	
	listic (A3)				Matrix (S6)			Explain in Remarks	
	en Sulfide (A4)				face (S7)				
	ed Layers (A5)				Bleyed Matrix		3		
	uck (A10) (LRR				l Matrix (F3)			s of hydrophytic ve	
	ed Below Dark Su				ark Surface			d hydrology must	be
	ark Surface (A12				I Dark Surfa			nless disturbed or	
[]] Sandy I	Mucky Mineral (S	61) (LF			epressions		problemati	С.	
				ron-Ivian	iganese Mas	sses (Fi	2)(LRR N)		
	e Layer (if obsei	rved):							
ype: <u>0</u>						Judric S	oil Present? <u>\</u>	(ec	
epth (incl	nes): <u>0</u>				ſ	iyunc a		65	
emarks:									
lydrolog	•								
/etland H	lydrology Indica	ators:					condary Indicat		
Primary In	dicators (minimu	im of oi	ne is required;	check a	all that apply) (m	inimum of two r	equired)	
	Water (A1)						Surface Soil Crac	ks (B6)	
	ater Table (A2)		Aquatic F		eaves (B9)		-	ed Concave Surface (E	38)
Saturat			True Aqua] Drainage Patterns		,
_	Marks (B1)				• Odor (C1)] Moss Trim Lines		
	ent Deposits (B2)				heres on Liv] Dry-Season Wate		
	posits (B3)		Roots (C				Crayfish Burrows		
	at or Crust (B4)				uced Iron (C	:4)		on Aerial Imagery (C9	9)
	posits (B5)				uction in Tille		-		<i>'</i>)
	ion Visible From	Aerial	Soils (C6] Stunted or Stress		
Imagery		7 101101			ce (C7)		Geomorphic Posi		
inagoi	(21)				. ,		Shallow Aquitard		
				cpiain in	Remarks)] Microtopographic] FAC-Neutral Test		
								(00)	
	ervations:				Danit /				
	ater Present? <u>N</u>	0			Depth (ir		0.0	ad the dual a sure P	
	le Present? <u>No</u>		illen (frimer) M		Depth (ir			nd Hydrology Pre	sent?
	Present? (includ	<u> </u>			Depth (ir	,	<u>0.0 Yes</u>		
escribe R	Recorded Data (S	stream g	gauge, monito	ring well	l, aerial phot	tos, prev	vious inspection), if available:	
emarks:									



WETLAND DETERMINATION DATA FORM Eastern Mountains Pand Pledimont

Project/Site: <u>Henderson County Solar</u>	City/County: Henderson/Henderso	n Date: 04-May-20
Applicant/Owner: Henderson County Solar LLC	State: KY	Sampling Point: 1MW1U
Investigators: Scott Mitchell	Sec, Twp, Rng: <u>S NA</u>	
Landform: Hillslope	Local Relief: <u>Convex</u>	Slope %: <u>30</u>
Subregion: LRR	Lat: 38.80247 N Lon: -87.6310	<u>2 W</u> Datum: <u>Decimal Degrees</u>
Soil Map Unit Name:	NWI Classification: Are	ea Ft²:
Are climatic/hydrologic conditions on this	Remarks (If No):	
site typical for this time of year? Yes	· · · ·	
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal C	Circumstances" present: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	y Problematic? Remarks:	
	-	

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

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

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant Species?	Indicator <u>Status</u>	Dominance Test Worksheet:
1. Carya ovalis	20.0	Yes	FACU	Number of Dominant Species that
2. Populus deltoides	15.0	Yes	FAC	are OBL, FACW or FAC: 4 A
3. Platanus occidentalis	15.0	Yes	FACW	Total Number of Dominant Species
4. Celtis occidentalis	10.0	No	FACU	across all Strata: <u>9</u> B
5.				Percent of Dominant Species that
	60.0 = To	otal Cover		are OBL, FACW or FAC: <u>44.4</u> A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1. Acer negundo	10.0	Yes	FAC	
2. Celtis occidentalis	10.0	Yes	FACU	$OBL _0 x1= _0$
3.				FACW <u>15</u> $x^2 = 30$
4.				FAC 45 x3= 135
5.				FACU <u>60</u> x4= <u>240</u>
	20.0 = To	otal Cover		UPL <u>0</u> x5= <u>0</u>
Herb Stratum Plot Size: Unit				TOTALS (A) <u>120</u> (B) <u>405</u>
1. Laportea canadensis	20.0	Yes	FAC	
2. Parthenocissus quinquefolia	10.0	No	FACU	Prevalence Index = B/A = <u>3.4</u>
3. Poa sp.	20.0	Yes	NI	Hydrophytic Vegetation
4. Euonymus fortunei	5.0	No	NI	Indicators:
5. Galium aparine	5.0	No	FACU	□ Dominance Test is >50%
6.				\Box Prevalence Index is $\leq 3.0^{1}$
7.				☐ Morphologic Adaptations ¹
8.				Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				
_	60.0 = To	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1. Parthenocissus quinquefolia	5.0	Yes	FACU	Hydrophytic Vegetation
2. Euonymus fortunei	5.0	Yes	NI	Present? No
	10.0 = To	otal Cover		
Remarks:				

											4 Attachment 14.	
SOIL									it: <u>1MW</u>		Page 145 of 23	
Profile De	scription: (Desc	ribe to	depth need				icator	or cor	nfirm tl	ne ab	sence of indi	cators.)
Dauth	<u>Matrix</u>		Oslan	Redo	x Features							
Depth (inches)	Color (Moist)	<u>%</u>	Color <u>(Moist)</u>	<u>%</u>	<u>Type¹</u>		oc ²	То	exture	Po	<u>marks</u>	
· /			<u>(IVIOISI)</u>	<u>-70</u>	<u>Type</u>	<u> </u>				Rei	IIIdIKS	
0-4		100							<u>pamy</u>			
4-16	10YR 5/4	100						LC	bamy			
								<u> </u>				
	Concentration, D=D	epletior	, RM=Reduc	ed Matrix, N	MS=Masked	Sand	Grains					
Hydric So	il Indicators:							Soil		for P	roblematic H	yarıc
Histoso	· · ·				leyed Matri	x (S4	.)				laterial (TF2)	
	pipedon (A2)				edox (S5)						Dark Surface	(TF12)
	listic (A3)				Matrix (S6))		$\Box 0$	other (E	xplair	n in Remarks)	
	en Sulfide (A4) d Layers (A5)				face (S7) Gleyed Matri) \					
	uck (A10) (LRR	NI)			Matrix (F3		<u>(</u>)	³ Inc	dicators	of h	ydrophytic veg	etation
	ed Below Dark Su		A11)		ark Surface)				rology must be	
	ark Surface (A12	•			Dark Surfa	•	,				disturbed or	-
	Mucky Mineral (S		(RN)		epressions			prob	olematio) .		
_				Iron-Man	iganese Ma	asses	(F12)(LRR N	N)			
Restrictive	e Layer (if obsei	rved):										
Туре:								Dues		_		
Depth (incl	nes):					Hyar		Prese	ent? <u>N</u>	<u>o</u>		
Remarks:												
Hydrolog	У											
Wetland H	ydrology Indica	tors:					Secor	ndary l	Indicato	ors		
Primary In	dicators (minimu	im of or	ne is require	d: check a	all that apply	V)			of two re		ed)	
	Water (A1)					<u></u>	🗌 Sı	urface S	oil Crack	(B6)		
	ater Table (A2)			stained Le Fauna (B	eaves (B9)						cave Surface (B8)	
Saturat				quatic Plar	,			-	Patterns			
🗌 Water N	/larks (B1)			•	odor (C1)		M	oss Trin	n LInes (B16)		
Sedime	nt Deposits (B2)		_ ` `		heres on L		🗌 Dr	ry-Seas	on Wate	⁻ Table	e (C2)	
	posits (B3)		_ Roots (-	Burrows (
	at or Crust (B4)				uced Iron (🗌 Sa	aturatior	n Visible	on Aer	ial Imagery (C9)	
	posits (B5)	A			uction in Till	led			r Stresse		()	
	ion Visible From	Aeriai	Soils (C				_		hic Posit	•	2)	
Imagery	(67)			uck Surfac	· · /				quitard (
			U Other (Explain in	Remarks)				graphic		(D4)	
								-useu	tral Test	(05)		
Field Obse		-			Devil (i	-					
	ater Present? <u>N</u> le Present? <u>No</u>	<u>0</u>			Depth (Depth (0.0	Watlas	d U.,	drology Brook	nt2
	Present? (includ	ina can	illary fringe)	No	Depth (· ·		No	чпу	drology Prese	5116 1
	ecorded Data (S	• •	,				,			if ou	ailable:	L
Describe P		a cam (Jauge, mom		i, achai phù	105,	previot	лэ шэр	(GOLIOIT)	, n av		
Demoster												
Remarks:												
L												



Project/Site: <u>Henderson County Solar</u>	City/County: <u>Henderson/Henderson</u> Date: <u>04-May</u>	y-20
Applicant/Owner: Henderson County Solar LLC	State: <u>KY</u> Sampling Point: 1	IMW2
Investigators: Ryan Winka	Sec, Twp, Rng: <u>S NA</u>	
Landform: Flat	Local Relief: Concave Slo	pe %: <u>0.5</u>
Subregion: LRR	Lat: <u>37.80309 N</u> Lon: <u>-87.63149 W</u> Datum: <u>Deci</u>	mal Degrees
Soil Map Unit Name:	NWI Classification: PFO Area Ft ² : 6,207	
Are climatic/hydrologic conditions on this	Remarks (If No):	
site typical for this time of year? Yes		
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal Circumstances" preser	nt: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	ly Problematic? Remarks:	

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

Hydrophytic Vegetation Present? <u>Yes</u>	Is the Sampled Area within a Wetland?	<u>Yes</u>
Hydric Soil Present? <u>Yes</u>		
Wetland Hydrology Present? <u>Yes</u>		
Remarks:		

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant <u>Species?</u>	Indicator Status	Dominance Test Worksheet:
1. Acer rubrum	50.0	Yes	FAC	Number of Dominant Species that
2. Ulmus americana	40.0	Yes	FACW	are OBL, FACW or FAC: <u>7</u> A
3.				Total Number of Dominant Species
4.				across all Strata: 7 B
5.				Percent of Dominant Species that
	90.0 = To	otal Cover		are OBL, FACW or FAC: <u>100.0</u> A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1. Acer negundo	15.0	Yes	FAC	
2. Celtis laevigata	10.0	Yes	FACW	OBL 0 x1= 0
3.				FACW 0 x2= 0 FAC 0 x3= 0
4.				
5.				FACU 0 x4= 0 UPL 0 x5= 0
	25.0 = To	otal Cover		0PL <u>0</u> X5= <u>0</u> TOTALS
Herb Stratum Plot Size: Unit				(A) <u>0</u> (B) <u>0</u>
1. Smilax rotundifolia	7.0	Yes	FAC	
2. Laportea canadensis	7.0	Yes	FAC	Prevalence Index = B/A =
3. Polygonum hydropiperoides	5.0	Yes	OBL	Hydrophytic Vegetation
4. Carex sp.	1.0	No	NI	Indicators:
5.				✓ Dominance Test is >50%
6.				\Box Prevalence Index is $\leq 3.0^{1}$
7.				Morphologic Adaptations ¹
8.				Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				
	20.0 = To	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1.				Hydrophytic Vegetation
2.				Present? Yes
	= To	otal Cover		
Remarks:				

						Sam	pling Poi		-	Attachment 14.1 Page 148 of 237
OIL Profile De	scription: (Des	cribe to	depth needed	to do	cument the i		_			ence of indicators.
	<u>Matrix</u>				x Features					
Depth	Color	<i></i>	Color		_ 1	. 2	,		_	
<u>inches)</u>	<u>(Moist)</u>	<u>%</u>	<u>(Moist)</u>	<u>%</u>	Type ¹	Loc ²	<u> </u>	<u>exture</u>	Rema	arks
0-6	10YR 5/2	95	7.5YR 5/8	5	С	М		.oamy		
6-12	10YR 5/2	100						.oamy		
	Concontration D-	Doplotion	PM-Poducod	Matrix N	1S-Maskad S	Sand Cr	aine 2 I	ocation	DI -Dor	e Lining, M=Matrix.
• •	il Indicators:	Depletion		Maurx, N	VIS-IVIASKEU S	anu Gr				blematic Hydric
yane oo	in indicators.							ils ³ :	101 1 10	
_ Black ⊦ _ Hydrog	Epipedon (A2) Histic (A3) en Sulfide (A4)		□ s □ s □ D	andy Re tripped ark Sur	leyed Matrix edox (S5) Matrix (S6) face (S7)			Red Par Very Sha	allow Da	erial (TF2) ark Surface (TF12) n Remarks)
2 cm N Deplete Thick D	ed Layers (A5) luck (A10) (LRR ed Below Dark S Dark Surface (A1 Mucky Mineral (Surface (/ 2)	☑ D A11) □ R □ D (R N) □ R	epleted edox Da epleted edox Da	leyed Matrix Matrix (F3) ark Surface (Dark Surfac epressions (I ganese Mase	(F6) ce (F7) F8)	ano pre pro	d wetlan sent, un blematio	d hydrol less dis	rophytic vegetation logy must be sturbed or
ostrictiv	e Layer (if obse	arved).	— 11		ganese mas	1) 000		11)		
ype: <u>0</u>	e Layer (il obse	nveu).								
epth (inc	hes): <u>0</u>				H	ydric S	Soil Pres	sent? <u>Y</u>	<u>es</u>	
emarks:										
lydrolog	у									
Vetland H	lydrology Indic	ators:				Se	econdary	Indicato	ors	
Primary Ir	dicators (minim	um of or	ne is required;	check a	II that apply)	1	ninimum)
☐ Surface ☐ High W ☑ Saturat	e Water (A1) ater Table (A2)		✓ Water Sta ☐ Aquatic Fa ☐ True Aqua	iined Le auna (B atic Plar	aves (B9) 13)		Drainage		d Concav (B10)	ve Surface (B8)
Sedime Drift De	ent Deposits (B2 eposits (B3)		Oxidized F	Rhizosp	heres on Liv			son Wate Burrows (22)
Iron De	at or Crust (B4) posits (B5)		Recent Irc	on Redu	uced Iron (C4 action in Tille		Stunted	or Stresse	ed Plants	Imagery (C9) (D1)
Imager	ion Visible From y (B7)	Aeriai	Soils (C6)	Surfac	. ,		Shallow	phic Posit Aquitard (D3)	
			U Other (Ex	piain in	Remarks)		FAC-Ne	ographic utral Test		+)
	ervations:								. ,	
ield Obs		No			Depth (in	ches)	0.0			
	ater Present? I	10			• •			Watlan	مرا ا ام	alamy Bracant?
urface W	ater Present? <u>I</u> le Present? <u>No</u>	10			Depth (in	$\frac{1000}{100}$	0.0	vveliai	ia Hyar	ology Present?
urface W /ater Tab			illary fringe) <u>Ye</u>	<u>es</u>	Depth (in Depth (in		0.0	<u>Yes</u>	la Hyar	ology Present?
urface W /ater Tab aturation	le Present? No	ding cap	,		Depth (in	ches)	0.0	<u>Yes</u>	-	
urface W /ater Tab aturation	le Present? <u>No</u> Present? (inclue	ding cap	,		Depth (in	ches)	0.0	<u>Yes</u>	-	



Exhibit 14 Attachment 14.1	
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Project/Site: <u>Henderson County Solar</u>	City/County: Henderson/Henderson	Date: 04-May-20			
Applicant/Owner: Henderson County Solar LLC	State: KY State: KY	ampling Point: <u>1MW2U</u>			
Investigators: Ryan Winka	Sec, Twp, Rng: <u>S NA</u>				
Landform: <u>Hillslope</u>	Local Relief: Convex	Slope %: <u>15</u>			
Subregion: LRR	Lat: <u>37.80309 N</u> Lon: <u>-87.63149 W</u>	Datum: Decimal Degrees			
Soil Map Unit Name:	NWI Classification: Area Ft ² :				
Are climatic/hydrologic conditions on this	Remarks (If No):				
site typical for this time of year? Yes	· · · · ·				
Are Vegetation , Soil , or Hydrology Significantly Disturbed? Are "Normal Circumstances" present: Yes					
Are Vegetation , Soil , or Hydrology Natural	ly Problematic? Remarks:	·			
	-				

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

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

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status	Dominance Test Worksheet:		
1. Celtis occidentalis	65.0	Yes	FACU	Number of Dominant Species that		
2. Carya ovalis	20.0	Yes	FACU	are OBL, FACW or FAC: <u>1</u> A		
3.				Total Number of Dominant Species		
4.				across all Strata: <u>8</u> B		
5.				Percent of Dominant Species that		
	85.0 = To	otal Cover		are OBL, FACW or FAC: <u>12.5</u> A/B		
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:		
1. Celtis occidentalis	10.0	Yes	FACU			
2. Carya ovalis	10.0	Yes	FACU	$OBL \qquad 0 \qquad x1= \qquad 0$		
3. Acer negundo	5.0	No	FAC	FACW 0 $x^2 = 0$		
4.				FAC 20 x3= 60		
5.				FACU <u>175</u> x4= <u>700</u> UPL 0 x5= 0		
	25.0 = To	otal Cover		UPL <u>0</u> x5= <u>0</u> TOTALS		
Herb Stratum Plot Size: Unit				(A) <u>195</u> (B) <u>760</u>		
1. Symphoricarpos orbiculatus	25.0	Yes	FACU			
2. Laportea canadensis	15.0	Yes	FAC	Prevalence Index = B/A = <u>3.9</u>		
3. Parthenocissus quinquefolia	10.0	No	FACU	Hydrophytic Vegetation		
4. Poa pratensis	10.0	No	FACU	Indicators:		
5. Galium aparine	5.0	No	FACU	\Box Dominance Test is >50%		
6. Erigeron annuus	5.0	No	FACU	\Box Prevalence Index is $\leq 3.0^{1}$		
7. Carex sp.	2.0	No	NI	☐ Morphologic Adaptations ¹		
8.				Problematic Hydrophytic		
9.				Vegetation ¹ (Explain)		
10				1		
_	72.0 = To	otal Cover		¹ Indicators of hydric soil & wetland		
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.		
1. Parthenocissus quinquefolia	15.0	Yes	FACU	Hydrophytic Vegetation		
2. Euonymus fortunei	15.0	Yes	NI	Present? No		
	30.0 = To	otal Cover				
Remarks:						

Trofile Description: (Describe to depth needed to document the indiana	c² Texture Remarks Loamy Loamy Grains. ² Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils 3: Indicators for Problematic Hydric Soils 3: Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. (F12)(LRR N)
Depth Color Color inches) (Moist) % Type1 Lot 0-16 10YR 4/3 100	Loamy Grains. 2 Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils 3: Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. (F12)(LRR N)
inches) (Moist) % Type1 Lc 0-16 10YR 4/3 100	Loamy Grains. 2 Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils 3: Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. (F12)(LRR N)
0-16 10YR 4/3 100 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand ydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) Dark Surface (S7) Stratified Layers (A5) Loamy Gleyed Matrix (F3) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses Iron-Manganese Masses testrictive Layer (if observed): Hydri ype: Hydri gent Hydri Itemarks: Hydri Surface Water (A1) Water Stained Leaves (B9)	Loamy Grains. 2 Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils 3: Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. (F12)(LRR N)
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand lydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Straitfied Layers (A5) Stratified Layers (A5) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A12) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N) Depleted Dark Surface (F8) Iron-Manganese Masses testrictive Layer (if observed): ype: lepth (inches): Hydrology Vetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1)	Grains. ² Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils ³ : Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be 7) present, unless disturbed or problematic. (F12)(LRR N)
ydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) Dark Surface (S7) Stratified Layers (A5) Loamy Gleyed Matrix (F3) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses Iron-Manganese Masses estrictive Layer (if observed): Hydri ype: Hydri emarks: Hydrology //ctland Hydrology Indicators: Hydri Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	Indicators for Problematic Hydric Soils ³ : Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. (F12)(LRR N)
ydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) Dark Surface (S7) Stratified Layers (A5) Loamy Gleyed Matrix (F3) 2 cm Muck (A10) (LRR N) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses Iron-Manganese Masses estrictive Layer (if observed): Hydri /pe: Hydrology etand Hydrology Indicators: Hydri Surface Water (A1) Water Stained Leaves (B9)	Indicators for Problematic Hydric Soils ³ : Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. (F12)(LRR N)
ydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) Dark Surface (S7) Stratified Layers (A5) Loamy Gleyed Matrix (F3) 2 cm Muck (A10) (LRR N) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses Iron-Manganese Masses estrictive Layer (if observed): Hydri /pe: Hydrology /dtiand Hydrology Indicators: Hydri Yrimary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	Indicators for Problematic Hydric Soils ³ : Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. (F12)(LRR N)
ydric Soil Indicators: Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) Dark Surface (S7) Stratified Layers (A5) Loamy Gleyed Matrix (F3) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses Iron-Manganese Masses estrictive Layer (if observed): Hydri wpe: Hydri emarks: Hydrology // cetland Hydrology Indicators: Hydri Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	Indicators for Problematic Hydric Soils ³ : Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. (F12)(LRR N)
Histosol (A1) Sandy Gleyed Matrix (S4) Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) Dark Surface (S7) Stratified Layers (A5) Loamy Gleyed Matrix (F3) 2 cm Muck (A10) (LRR N) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses Iron-Manganese Masses Vesticitive Layer (if observed): Hydri ype: Hydrology Vetland Hydrology Indicators: Hydrology Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	Soils ³ : Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. (F12)(LRR N)
Histic Epipedon (A2) Sandy Redox (S5) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) Dark Surface (S7) Stratified Layers (A5) Loamy Gleyed Matrix (F2) 2 cm Muck (A10) (LRR N) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses Iron-Manganese Masses estrictive Layer (if observed): ype: epth (inches): Hydri emarks: ydrology /vetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	 Very Shallow Dark Surface (TF12) Other (Explain in Remarks) ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. (F12)(LRR N)
Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) Dark Surface (S7) Stratified Layers (A5) Loamy Gleyed Matrix (F2) 2 cm Muck (A10) (LRR N) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses Iron-Manganese Masses testrictive Layer (if observed): ype: epth (inches): Hydri Vetland Hydrology Indicators: Hydrology Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	 Other (Explain in Remarks) ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. (F12)(LRR N)
Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) (LRR N) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses Restrictive Layer (if observed): ype: Depth (inches): Hydrology Vetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1)	³ Indicators of hydrophytic vegetation and wetland hydrology must be 7) present, unless disturbed or problematic. (F12)(LRR N)
Stratified Layers (A5) Loamy Gleyed Matrix (F2) 2 cm Muck (A10) (LRR N) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses Iron-Manganese Masses testrictive Layer (if observed): Hydri ype: Hydri temarks: Hydrology	³ Indicators of hydrophytic vegetation and wetland hydrology must be 7) present, unless disturbed or problematic. (F12)(LRR N)
2 cm Muck (A10) (LRR N) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses estrictive Layer (if observed): ype: epth (inches): Hydri emarks: Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	³ Indicators of hydrophytic vegetation and wetland hydrology must be 7) present, unless disturbed or problematic. (F12)(LRR N)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F6) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses estrictive Layer (if observed): ype: epth (inches): Hydri emarks: Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	and wetland hydrology must be 7) present, unless disturbed or problematic. (F12)(LRR N)
Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses estrictive Layer (if observed): ype: epth (inches): Hydri emarks: ydrology /etland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1)	 7) present, unless disturbed or problematic. (F12)(LRR N)
Sandy Mucky Mineral (S1) (LRR N) Redox Depressions (F8) Iron-Manganese Masses estrictive Layer (if observed): ype: epth (inches): Hydri emarks: ydrology /etland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	(F12)(LRR N)
Iron-Manganese Masses estrictive Layer (if observed): ype: epth (inches): Hydri emarks: ydrology /etland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	(F12)(LRR N)
estrictive Layer (if observed): ype: epth (inches): Hydri emarks: ydrology /etland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	
ype: Hydri epth (inches): Hydri emarks: ydrology /etland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	
ype: epth (inches): Hydri emarks: Hydrology /ydrology //etland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Surface Water (A1) Water Stained Leaves (B9)	
Indepth (inches): Hydri Ivemarks: Iverand second secon	
emarks: ydrology /etland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1)	c Soil Present? <u>No</u>
Vetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	
Vetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	
Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water Stained Leaves (B9)	Secondary Indicatora
Surface Water (A1)	Secondary Indicators (minimum of two required)
	Surface Soil Cracks (B6)
	Sparsely Vegetated Concave Surface (B8)
	Drainage Patterns (B10)
	Moss Trim Lines (B16)
Sediment Deposits (B2) Oxidized Rhizospheres on Live	Dry-Season Water Table (C2)
Drift Deposits (B3) Algel Met er Crust (B4) Roots (C3)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Saturation Visible on Aerial Imagery (C9)
□ Iron Deposits (B5) □ Recent Iron Reduction in Tilled	Stunted or Stressed Plants (D1)
Inundation Visible From Aerial Soils (C6)	Geomorphic Position (D2)
Imagery (B7)	Shallow Aquitard (D3)
\Box Other (Explain in Remarks)	Microtopographic Reilef (D4)
	FAC-Neutral Test (D5)
ield Observations:	
urface Water Present? <u>No</u> Depth (inches	
Vater Table Present? <u>No</u> Depth (inches	s) 0.0
Saturation Present? (including capillary fringe) No Depth (including	
) 0.0 Wetland Hydrology Present?
Describe Recorded Data (Stream gauge, monitoring well, aerial photos, p	0.0 Wetland Hydrology Present? 0.0 No
	0.0 Wetland Hydrology Present? 0.0 No



Exhibit 14 Attachment 14.1	
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Project/Site: <u>Henderson County Solar</u>	City/County: Henderson/Henderson	Date: 04-May-20					
Applicant/Owner: Henderson County Solar LLC	State: KY Sa	ampling Point: <u>1MW3</u>					
Investigators: Ryan Harris	Sec, Twp, Rng: <u>S NA</u>						
Landform: Flat	Local Relief: Concave	Slope %: <u>1</u>					
Subregion: LRR	Lat: <u>37.80167 N</u> Lon: <u>-87.62983 W</u>	Datum: Decimal Degrees					
Soil Map Unit Name:	NWI Classification: PFO Area Ft ² :	2,871					
Are climatic/hydrologic conditions on this	Remarks (If No):						
site typical for this time of year? Yes							
Are Vegetation , Soil , or Hydrology Signification	Are Vegetation _, Soil _, or Hydrology _ Significantly Disturbed? Are "Normal Circumstances" present: <u>Yes</u>						
Are Vegetation , Soil , or Hydrology Natural	ly Problematic? Remarks:						
-	-						

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

Hydrophytic Vegetation Present? <u>Yes</u>	Is the Sampled Area within a Wetland?	<u>Yes</u>
Hydric Soil Present? <u>Yes</u>		
Wetland Hydrology Present? <u>Yes</u>		
Remarks:		

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant <u>Species?</u>	Indicator <u>Status</u>	Dominance Test Worksheet:
1. Platanus occidentalis	40.0	Yes	FACW	Number of Dominant Species that
2. Populus deltoides	25.0	Yes	FAC	are OBL, FACW or FAC: <u>5</u> A
3. Salix nigra	5.0	No	OBL	Total Number of Dominant Species
4.				across all Strata: <u>5</u> B
5.				Percent of Dominant Species that
	70.0 = To	otal Cover		are OBL, FACW or FAC: <u>100.0</u> A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1. Acer negundo	15.0	Yes	FAC	
2. Ulmus rubra	5.0	No	FAC	$OBL _0 x1= _0$
3. Populus deltoides	5.0	No	FAC	FACW 0 $x^2 = 0$
4. Platanus occidentalis	5.0	No	FACW	FAC <u>0</u> $x_3 = 0$
5.				FACU <u>0</u> x4= <u>0</u>
	30.0 = To	otal Cover		UPL <u>0</u> x5= <u>0</u>
Herb Stratum Plot Size: Unit				TOTALS (A) 0 (B) 0
1. Symphyotrichum lateriflorum	25.0	Yes	FACW	
2. Cinna latifolia	10.0	Yes	FACW	Prevalence Index = B/A =
3. Ranunculus hispidus	5.0	No	FAC	Hydrophytic Vegetation
4. Geum canadense	5.0	No	FACU	Indicators:
5. Impatiens capensis	5.0	No	FACW	✓ Dominance Test is >50%
6. Packera glabella	5.0	No	OBL	\Box Prevalence Index is $\leq 3.0^{1}$
7.				☐ Morphologic Adaptations ¹
8.				Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				
	55.0 = To	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1.				Hydrophytic Vegetation
2.				Present? Yes
	= To	otal Cover		· · · · · · · · · · · · · · · · · · ·
Remarks:				

						<u> </u>			chibit 14 Attao Page	chment 14.1 e 154 of 237
SOIL Brofile De	acription: (Dec	oribo ta	donth noo	dad ta da	oumont th			Point: <u>1MW</u>	3 °	e of indicators.)
Frome De	<u>Matrix</u>		deptil hee		x Features				le absenc	e of indicators.)
Depth	Color		Color				2			
<u>(inches)</u>	<u>(Moist)</u>	<u>%</u>	<u>(Moist)</u>	<u>%</u>	<u>Type¹</u>	L	oc ²	<u>Texture</u>	Remarks	<u>6</u>
0-12	10YR 5/2	80	7.5YR 5/6	20	С		Μ	Loamy		
	Concentration, D=I	Depletio	n, RM=Reduc	ed Matrix, I	MS=Masked	Sand	l Grains.			-
Hydric So	oil Indicators:								for Proble	matic Hydric
□ .			Г					Soils ³ :		
🗆 Histoso					leyed Matri	x (S4	.)		ent Materia	
	Epipedon (A2) Histic (A3)				edox (S5)	`			xplain in R	Surface (TF12)
	gen Sulfide (A4)				Matrix (S6) rface (S7))			xpiain in R	emarks)
	ed Layers (A5)				Gleyed Matr	iv (E'	2)			
	luck (A10) (LRR	N)			d Matrix (F3		-)	³ Indicator	s of hydron	hytic vegetation
	ed Below Dark S		(A11)		ark Surface)	and wetlan		
	Dark Surface (A1				Dark Surf			present, un		
	Mucky Mineral (epressions			problematio		
curray		(_			nganese Ma			•		
Restrictiv	e Layer (if obse	erved):								
Туре: <u>0</u>	2 .	-						-		
Depth (inc						Hydr	ic Soil	Present? Y	<u>es</u>	
Remarks:										
Hydrolog										
Wetland H	Hydrology Indic	ators:						dary Indicate		
Primary Ir	ndicators (minim	um of o	ne is require	d; check a	all that appl	y)	(minim	um of two re	equired)	
Surface	e Water (A1)		Water	Stained Le	eaves (B9)		🗌 Sur	face Soil Cracl	(B6)	
_	/ater Table (A2)			c Fauna (E	313)		🗌 Spa	arsely Vegetate	d Concave S	urface (B8)
	tion (A3)			quatic Pla	,		🖌 Dra	iinage Patterns	(B10)	
Water	Marks (B1)				odor (C1)		Mo:	ss Trim LInes (B16)	
Sedime	ent Deposits (B2))			oheres on L		🗌 Dry	-Season Wate	r Table (C2)	
🗌 Drift De	eposits (B3)		_ Roots	(C3) .			Cra	yfish Burrows	(C8)	
_ Algal M	lat or Crust (B4)		Presen	ce of Red	uced Iron (C4)	Sat	uration Visible	on Aerial Ima	gery (C9)
	eposits (B5)				uction in Til	led	🗌 Stu	nted or Stresse	ed Plants (D1)
Inunda	tion Visible From	Aerial	Soils (0	,			🖌 Geo	omorphic Posit	ion (D2)	
Imager	у (В7)		🗌 Thin M	uck Surfa	ce (C7)		Sha	allow Aquitard (D3)	
			🗌 Other (Explain in	Remarks)		Mic	rotopographic	Reilef (D4)	
							FA	C-Neutral Test	(D5)	
	ervations:									
	/ater Present? <u>N</u>	<u>lo</u>			Depth (0.0		
	ole Present? No				Depth (d Hydrolo	gy Present?
	Present? (incluc				Depth (,	0.0 <u>Yes</u>		
Describe F	Recorded Data (Stream	gauge, mon	itoring wel	l, aerial pho	otos,	previous	s inspection)	, if availab	e:
Remarks:										



WETLAND DETERMINATION DATA FORM Eastern Mountains Pand Pederson

Project/Site: <u>Henderson County Solar</u>	City/County: Henderson/Henderson Date: 04-May-20
Applicant/Owner: Henderson County Solar LLC	State: <u>KY</u> Sampling Point: <u>1MW3U</u>
Investigators: Ryan Harris	Sec, Twp, Rng: <u>S NA</u>
Landform: Hillslope	Local Relief: Convex Slope %: 15
Subregion: LRR	Lat: <u>37.80167 N</u> Lon: <u>-87.62983 W</u> Datum: <u>Decimal Degrees</u>
Soil Map Unit Name:	NWI Classification: Area Ft ² :
Are climatic/hydrologic conditions on this	Remarks (If No):
site typical for this time of year? Yes	
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation , Soil , or Hydrology Natural	ly Problematic? Remarks:
- • •	•

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

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

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant <u>Species?</u>	Indicator Status	Dominance Test Worksheet:
1. Gleditsia triacanthos	60.0	Yes	FAC	Number of Dominant Species that
2. Platanus occidentalis	10.0	No	FACW	are OBL, FACW or FAC: <u>6</u> A
3.				Total Number of Dominant Species
4.				across all Strata: 9 B
5.				Percent of Dominant Species that
	70.0 = To	otal Cover		are OBL, FACW or FAC: <u>66.7</u> A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1. Acer negundo	5.0	Yes	FAC	
2. Platanus occidentalis	5.0	Yes	FACW	$OBL \qquad 0 \qquad x1= \qquad 0$
3. Gleditsia triacanthos	10.0	Yes	FAC	FACW 0 x2= 0
4. Fraxinus americana	3.0	No	FACU	FAC 0 x3= 0
5.				FACU <u>0</u> x4= <u>0</u>
	23.0 = To	otal Cover		$\frac{\text{UPL}}{\text{TOTALO}} = \frac{0}{x5} = \frac{0}{x5}$
Herb Stratum Plot Size: Unit				TOTALS (A) <u>0</u> (B) <u>0</u>
1. Galium aparine	15.0	Yes	FACU	Duran harden D/A
2. Cinna latifolia	15.0	Yes	FACW	Prevalence Index = B/A =
3. Euonymus fortunei	10.0	No	NI	Hydrophytic Vegetation
4. Symphoricarpos orbiculatus	5.0	No	FACU	Indicators:
5. Lamium purpureum	5.0	No	NI	✓ Dominance Test is >50%
6. Toxicodendron radicans	3.0	No	FAC	\Box Prevalence Index is $\leq 3.0^{1}$
7. Rosa multiflora	3.0	No	FACU	Morphologic Adaptations ¹
8. Chaerophyllum tainturieri	25.0	Yes	FAC	Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				
	81.0 = To	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1. Rosa multiflora	5.0	Yes	FACU	Hydrophytic Vegetation
2. Euonymus fortunei	5.0	Yes	NI	Present? Yes
	10.0 = To	otal Cover		
Remarks:				

OIL		Samplir	Exhibit ng Point: <u>1MW3U</u>	Page 157 of 237
rofile Description: (Describe	to depth needed to document			sence of indicators
Matrix	Redox Featu	res		
Depth Color	Color	$\frac{1}{1}$ Loc ²	Tayituma Da	
inches) <u>(Moist) %</u>	(Moist) <u>%</u> <u>Type</u>			marks
<u>0-16 10YR 5/3 100</u>			Loamy	
• •	tion, RM=Reduced Matrix, MS=Mas	ked Sand Grain		
ydric Soil Indicators:			Indicators for F Soils ³ :	Problematic Hydric
Histosol (A1)	🗌 Sandy Gleyed M	latrix (S4)	Red Parent N	laterial (TF2)
Histic Epipedon (A2)	🗌 Sandy Redox (S			Dark Surface (TF12)
Black Histic (A3)	📙 Stripped Matrix (└ Other (Explai	n in Remarks)
Hydrogen Sulfide (A4)	\Box Dark Surface (S			
Stratified Layers (A5)	📙 Loamy Gleyed M		3	
2 cm Muck (A10) (LRR N)	\Box Depleted Matrix	· · ·		ydrophytic vegetation
Depleted Below Dark Surfac			and wetland hyd	
Thick Dark Surface (A12)	└─ Depleted Dark S		present, unless	disturbed or
$^{ m J}$ Sandy Mucky Mineral (S1) $$ (problematic.	
	🛛 Iron-Manganese	Masses (F12)	(LRR N)	
estrictive Layer (if observed)):			
ype:				
epth (inches):		Hydric Soi	il Present? No	
emarks:				
ydrology				
/etland Hydrology Indicators		Seco	ondary Indicators	
	f one is required; check all that a	1	mum of two require	ed)
	☐ Water Stained Leaves (E	30) 🗌 S	Surface Soil Cracks (B6)
J Surface Water (A1))
	\square Aquatic Fauna (B13)		Sparsely Vegetated Cor	
High Water Table (A2)	🔄 Aquatic Fauna (B13)		•	cave Surface (B8)
☐ High Water Table (A2) ☐ Saturation (A3)	☐ Aquatic Fauna (B13) ☐ True Aquatic Plants (B14)	4) 🗌 🖸	parsely Vegetated Cor	cave Surface (B8)
High Water Table (A2) Saturation (A3) Water Marks (B1)	 □ Aquatic Fauna (B13) □ True Aquatic Plants (B14 □ Hydrogen Sulfide Odor (4) □ □ C1) □ □	parsely Vegetated Cor Drainage Patterns (B10) Moss Trim LInes (B16)	cave Surface (B8)
 High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) 	 ☐ Aquatic Fauna (B13) ☐ True Aquatic Plants (B14 ☐ Hydrogen Sulfide Odor (☐ Oxidized Rhizospheres c 	4)	Sparsely Vegetated Cor Drainage Patterns (B10) Moss Trim LInes (B16) Dry-Season Water Table	cave Surface (B8)
 High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) 	 Aquatic Fauna (B13) True Aquatic Plants (B14 Hydrogen Sulfide Odor (Oxidized Rhizospheres on Comparison (C3) 	4) C1) Dn Live C1	Sparsely Vegetated Cor Drainage Patterns (B10) Moss Trim LInes (B16) Dry-Season Water Table Crayfish Burrows (C8)	cave Surface (B8)
 High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) 	 Aquatic Fauna (B13) True Aquatic Plants (B14 Hydrogen Sulfide Odor (6 Oxidized Rhizospheres c Roots (C3) Presence of Reduced Irc 	4)	Sparsely Vegetated Cor Orainage Patterns (B10) Moss Trim LInes (B16) Ory-Season Water Table Crayfish Burrows (C8) Saturation Visible on Ae	cave Surface (B8) e (C2) rial Imagery (C9)
 High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) 	 Aquatic Fauna (B13) True Aquatic Plants (B14 Hydrogen Sulfide Odor ((Oxidized Rhizospheres c Roots (C3) Presence of Reduced Irc Recent Iron Reduction in 	4) C1) Dn Live C1)	Sparsely Vegetated Cor Orainage Patterns (B10) Moss Trim LInes (B16) Ory-Season Water Table Crayfish Burrows (C8) Saturation Visible on Ae Stunted or Stressed Pla	cave Surface (B8) e (C2) rial Imagery (C9) nts (D1)
 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 From Aeria 	 Aquatic Fauna (B13) True Aquatic Plants (B14) Hydrogen Sulfide Odor ((Oxidized Rhizospheres c Roots (C3) Presence of Reduced Irc Recent Iron Reduction in Soils (C6) 	4)	Sparsely Vegetated Cor Orainage Patterns (B10) Moss Trim LInes (B16) Ory-Season Water Table Crayfish Burrows (C8) Gaturation Visible on Ae Stunted or Stressed Pla Geomorphic Position (D	cave Surface (B8) e (C2) rial Imagery (C9) nts (D1)
 High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) 	 Aquatic Fauna (B13) True Aquatic Plants (B14) Hydrogen Sulfide Odor (6) Oxidized Rhizospheres of Roots (C3) Presence of Reduced Iron Recent Iron Reduction in Soils (C6) Thin Muck Surface (C7) 	4)	Sparsely Vegetated Cor Drainage Patterns (B10) Moss Trim LInes (B16) Dry-Season Water Table Crayfish Burrows (C8) Gaturation Visible on Ae Stunted or Stressed Pla Geomorphic Position (D Shallow Aquitard (D3)	cave Surface (B8) e (C2) rial Imagery (C9) nts (D1) 2)
 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 From Aeria 	 Aquatic Fauna (B13) True Aquatic Plants (B14) Hydrogen Sulfide Odor ((Oxidized Rhizospheres c Roots (C3) Presence of Reduced Irc Recent Iron Reduction in Soils (C6) 	4) C1) Dn Live Dn (C4) Tilled Sks) N C1 N C2 N C2	Sparsely Vegetated Cor Drainage Patterns (B10) Moss Trim LInes (B16) Dry-Season Water Table Crayfish Burrows (C8) Saturation Visible on Ae Stunted or Stressed Pla Geomorphic Position (D Shallow Aquitard (D3) Microtopographic Reilef	cave Surface (B8) e (C2) rial Imagery (C9) nts (D1) 2)
 Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible From Aeria 	 Aquatic Fauna (B13) True Aquatic Plants (B14) Hydrogen Sulfide Odor (6) Oxidized Rhizospheres of Roots (C3) Presence of Reduced Iron Recent Iron Reduction in Soils (C6) Thin Muck Surface (C7) 	4) C1) Dn Live Dn (C4) Tilled Sks) N C1 N C2 N C2	Sparsely Vegetated Cor Drainage Patterns (B10) Moss Trim LInes (B16) Dry-Season Water Table Crayfish Burrows (C8) Gaturation Visible on Ae Stunted or Stressed Pla Geomorphic Position (D Shallow Aquitard (D3)	cave Surface (B8) e (C2) rial Imagery (C9) nts (D1) 2)
 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 From Aeria Imagery (B7) 	 Aquatic Fauna (B13) True Aquatic Plants (B14 Hydrogen Sulfide Odor (6 Oxidized Rhizospheres of Roots (C3) Presence of Reduced Iron Recent Iron Reduction in Soils (C6) Thin Muck Surface (C7) Other (Explain in Remark 	4) □ C C1) □ M on Live □ C on (C4) □ S n Tilled □ S □ S ks) □ M	Sparsely Vegetated Cor Drainage Patterns (B10) Moss Trim LInes (B16) Dry-Season Water Table Crayfish Burrows (C8) Saturation Visible on Ae Stunted or Stressed Pla Geomorphic Position (D Shallow Aquitard (D3) Microtopographic Reilef	cave Surface (B8) e (C2) rial Imagery (C9) nts (D1) 2)
 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 From Aeria Imagery (B7) 	 Aquatic Fauna (B13) True Aquatic Plants (B14) Hydrogen Sulfide Odor (f Oxidized Rhizospheres of Roots (C3) Presence of Reduced Iron Recent Iron Reduction in Soils (C6) Thin Muck Surface (C7) Other (Explain in Remark 	4) □ □ C1) □ M C1) □ M C1) □ C con Live □ C con (C4) □ S n Tilled □ S ks) □ M ✓ F oth (inches)	Sparsely Vegetated Cor Drainage Patterns (B10) Moss Trim Llnes (B16) Dry-Season Water Table Crayfish Burrows (C8) Gaturation Visible on Ae Stunted or Stressed Pla Geomorphic Position (D Shallow Aquitard (D3) Microtopographic Reilef GAC-Neutral Test (D5)	cave Surface (B8) e (C2) rial Imagery (C9) nts (D1) 2) (D4)
 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 From Aeria Imagery (B7) 	 Aquatic Fauna (B13) True Aquatic Plants (B14 Hydrogen Sulfide Odor ((Oxidized Rhizospheres of Roots (C3) Presence of Reduced Iro Recent Iron Reduction in Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) 	4) □ □ C1) □ M C1) □ M C1) □ C con Live □ □ con (C4) □ s n Tilled □ s C S ks) □ M ✓ F oth (inches)	Sparsely Vegetated Cor Drainage Patterns (B10) Moss Trim Llnes (B16) Dry-Season Water Table Crayfish Burrows (C8) Gaturation Visible on Ae Stunted or Stressed Pla Geomorphic Position (D Shallow Aquitard (D3) Microtopographic Reilef GAC-Neutral Test (D5)	cave Surface (B8) e (C2) rial Imagery (C9) nts (D1) 2)
 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 From Aeria Imagery (B7) 	Aquatic Fauna (B13) True Aquatic Plants (B14 Hydrogen Sulfide Odor ((Oxidized Rhizospheres of Roots (C3) Presence of Reduced Iron Recent Iron Reduction in Soils (C6) Thin Muck Surface (C7) Other (Explain in Remark Dep Dep	4) □ □ C1) □ M c1) □ M c1) □ M con Live □ □ con (C4) □ s n Tilled □ s □ s ks) □ M ✓ F wth (inches) oth (inches)	Sparsely Vegetated Cor Orainage Patterns (B10) Moss Trim LInes (B16) Ory-Season Water Table Crayfish Burrows (C8) Saturation Visible on Ae Stunted or Stressed Pla Geomorphic Position (D Shallow Aquitard (D3) Aicrotopographic Reilef AC-Neutral Test (D5) 0.0 0.0 No	cave Surface (B8) e (C2) rial Imagery (C9) nts (D1) 2) (D4) vdrology Present?
 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 From Aeria Imagery (B7) 	 Aquatic Fauna (B13) True Aquatic Plants (B14 Hydrogen Sulfide Odor ((Oxidized Rhizospheres of Roots (C3) Presence of Reduced Iro Recent Iron Reduction in Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) 	4) □ □ C1) □ M c1) □ M c1) □ M con Live □ □ con (C4) □ s n Tilled □ s □ s ks) □ M ✓ F wth (inches) oth (inches)	Sparsely Vegetated Cor Orainage Patterns (B10) Moss Trim LInes (B16) Ory-Season Water Table Crayfish Burrows (C8) Saturation Visible on Ae Stunted or Stressed Pla Geomorphic Position (D Shallow Aquitard (D3) Aicrotopographic Reilef AC-Neutral Test (D5) 0.0 0.0 No	cave Surface (B8) e (C2) rial Imagery (C9) nts (D1) 2) (D4) vdrology Present?



WETLAND DETERMINATION DATA FORM Eastern Mountains Pand Pedra ont

Project/Site: <u>Henderson County Solar</u>	City/County: Henderson/Henderson Date: 04-May-20
Applicant/Owner: Henderson County Solar LLC	State: <u>KY</u> Sampling Point: <u>1MW4</u>
Investigators: Scott Mitchell	Sec, Twp, Rng: <u>S NA</u>
Landform: Flat	Local Relief: Concave Slope %: 1.5
Subregion: LRR	Lat: <u>37.80200 N</u> Lon: <u>-87.62681 W</u> Datum: <u>Decimal Degrees</u>
Soil Map Unit Name:	NWI Classification: PFO Area Ft ² : <u>1,915</u>
Are climatic/hydrologic conditions on this	Remarks (If No):
site typical for this time of year? Yes	
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation , Soil , or Hydrology Natural	

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

Hydrophytic Vegetation Present? <u>Yes</u>	Is the Sampled Area within a Wetland?	<u>Yes</u>
Hydric Soil Present? <u>Yes</u>		
Wetland Hydrology Present? <u>Yes</u>		
Remarks: Wetland is old stream channel.		

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant <u>Species?</u>	Indicator <u>Status</u>	Dominance Test Worksheet:
1. Celtis laevigata	30.0	Yes	FACW	Number of Dominant Species that
2. Acer saccharum	20.0	Yes	FACU	are OBL, FACW or FAC: <u>4</u> A
3.				Total Number of Dominant Species
4.				across all Strata: <u>5</u> B
5.				Percent of Dominant Species that
	50.0 = Te	otal Cover		are OBL, FACW or FAC: <u>80.0</u> A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1. Ulmus rubra	10.0	Yes	FAC	
2. Celtis laevigata	5.0	No	FACW	$OBL \qquad 0 \qquad x1= \qquad 0$
3. Carya laciniosa	2.0	No	FAC	FACW 0 $x^2 = 0$
4. Fraxinus pennsylvanica	10.0	Yes	FACW	FAC <u>0</u> $x3=$ <u>0</u>
5.				FACU <u>0</u> x4= <u>0</u>
_	27.0 = To	otal Cover		UPL <u>0</u> x5= <u>0</u>
Herb Stratum Plot Size: Unit				TOTALS (A) <u>0</u> (B) <u>0</u>
1. Laportea canadensis	5.0	No	FAC	
2. Carex grayi	3.0	No	FACW	Prevalence Index = B/A =
3. Symphyotrichum lateriflorum	20.0	Yes	FACW	Hydrophytic Vegetation
4. Arundinaria gigantea	2.0	No	FACW	Indicators:
5. Smilax spp.	2.0	No	NI	✓ Dominance Test is >50%
6. Euonymus fortunei	2.0	No	NI	\Box Prevalence Index is $\leq 3.0^1$
7. Galium aparine	2.0	No	FACU	Morphologic Adaptations ¹
8. Symphoricarpos occidentalis	2.0	No	UPL	Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				
	38.0 = T	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1. Euonymus fortunei	2.0	No	NI	Hydrophytic Vegetation
2. Parthenocissus quinquefolia	2.0	No	FACU	Present? Yes
_	4.0 = Te	otal Cover		
Remarks:				

						Comm		xhibit 14 Attachment 1 A Page 160 of 2	
SOIL Brofilo Do	oprintion, (Dooo	riba ta	danth naada	d to do	oursent the		ling Point: <u>1MV</u>	/4 °	
rofile De	Scription: (Desc <u>Matrix</u>	ride to	aeptn neede		x Features	Indicat	or or confirm t	he absence of in	alcators.
Depth	Color		Color	T COO	<u>x i catales</u>				
(inches)	(Moist)	<u>%</u>	(Moist)	<u>%</u>	Type ¹	Loc ²	Texture	<u>Remarks</u>	
0-8	10YR 5/2	95	7.5YR 5/6	5	C	M	Loamy		
<u>8-12</u>	10YR 5/2	90	7.5YR 5/6	10	C	M	Loamy		
		epletior	n, RM=Reduced	l Matrix, N	NS=Masked S	Sand Gra		PL=Pore Lining, M=	
ydric So	il Indicators:						Indicators Soils ³ :	for Problematic	Hydric
Histosc			s	Sandy G	leyed Matrix	(S4)		ent Material (TF2)	
	pipedon (A2)				edox (S5)			allow Dark Surface	
	listic (A3)				Matrix (S6)		🗆 Other (E	xplain in Remarks	5)
	en Sulfide (A4)				face (S7)	(===)			
	d Layers (A5)				Bleyed Matrix		3		
	uck (A10) (LRR I				Matrix (F3)			s of hydrophytic ve d hydrology must l	
	ed Below Dark Su Dark Surface (A12				ark Surface I Dark Surfac			less disturbed or	be
	Mucky Mineral (S				epressions (problemati		
Januy	wucky wineral (S))(L F			iganese Mas		•	5.	
ostrictiv	e Layer (if obser	vod):			. <u>g</u>	(_,,		
ype: <u>0</u>	e Layer (il Obser	veu).							
epth (incl	nes):0				н	lydric S	oil Present? Y	es	
Remarks:	, —								
lydrolog	V								
	ydrology Indica	tors:				Se	condary Indicat	ors	
	dicators (minimu		ne is required;	check a	all that apply)	1	nimum of two r		
	Water (A1)		_				Surface Soil Crac	ks (B6)	
	ater Table (A2)		✓ Water St □ Aquatic F					ed Concave Surface (E	(8)
Saturat			True Aqu	•	,	 ✓ 	Drainage Patterns		
	Marks (B1)				• Odor (C1)		Moss Trim Lines	(B16)	
	ent Deposits (B2)				heres on Liv	/e	Dry-Season Wate	r Table (C2)	
	posits (B3)		Roots (C				Crayfish Burrows	. ,	
	at or Crust (B4)				uced Iron (C	4)	Saturation Visible	on Aerial Imagery (C9)
Iron De	posits (B5)		🗆 Recent Ir	on Redu	uction in Tille	ed 🗆	Stunted or Stress	ed Plants (D1)	
Inundat	ion Visible From	Aerial	Soils (C6)		 _	Geomorphic Posi		
Imager	y (B7)		🗌 Thin Muc	k Surfac	ce (C7)		Shallow Aquitard		
			Other (E)	kolain in	Remarks)		Microtopographic		
				· · · · · · · · · · · · · · · · · · ·	,	 ✓ 	FAC-Neutral Test		
ield Obs	ervations:								
	ater Present? N	0			Depth (ir	nches)	0.0		
	le Present? <u>No</u>	-			Depth (ir			nd Hydrology Pre	sent?
	Present? (includi	ing cap	illary fringe) Y	es	Depth (ir		0.0 <u>Yes</u>		
	Recorded Data (S	• •				, -) if available	
		Journ	gaage, monito		., aona priot	, picv			
emarks:									



Exhibit 14 Attachment 14.1	
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Project/Site: <u>Henderson County Solar</u>	City/County: Henderson/Henderson	Date: 04-May-20
Applicant/Owner: <u>Henderson County Solar LLC</u>	State: KY	Sampling Point: <u>1MW4U</u>
Investigators: Scott Mitchell	Sec, Twp, Rng: <u>S NA</u>	
Landform: Flat	Local Relief: <u>Convex</u>	Slope %: <u>2</u>
Subregion: LRR	Lat: <u>37.80200 N</u> Lon: <u>-87.62681 W</u>	Datum: Decimal Degrees
Soil Map Unit Name:	NWI Classification: Area Ft	2:
Are climatic/hydrologic conditions on this	Remarks (If No):	
site typical for this time of year? Yes		
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal Circu	mstances" present: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	ly Problematic? Remarks:	·
- • •	-	

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

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

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. Acer saccharum	70.0	Yes	FACU	Number of Dominant Species that
2. Juglans nigra	15.0	No	FACU	are OBL, FACW or FAC: 0 A
3.				Total Number of Dominant Species
4.				across all Strata: <u>7</u> B
5.				Percent of Dominant Species that
	85.0 = To	otal Cover		are OBL, FACW or FAC: 0.0 A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1. Acer saccharum	20.0	Yes	FACU	
2.				$OBL \qquad 0 \qquad x1= 0$
3.				FACW 2 $x^2 = 4$
4.				FAC 0 x3= 0
5.				FACU <u>145</u> x4= <u>580</u> UPL 0 x5= 0
	20.0 = To	otal Cover		UPL <u>0</u> x5= <u>0</u> TOTALS
Herb Stratum Plot Size: Unit				(A) <u>147</u> (B) <u>584</u>
1. Poa pratensis	15.0	Yes	FACU	
2. Galium aparine	15.0	Yes	FACU	Prevalence Index = B/A =
3. Euonymus fortunei	10.0	Yes	NI	Hydrophytic Vegetation
4. Parthenocissus quinquefolia	5.0	No	FACU	Indicators:
5. Arisaema dracontium	2.0	No	FACW	\Box Dominance Test is >50%
6.				\Box Prevalence Index is $\leq 3.0^{1}$
7.				Morphologic Adaptations ¹
8.				Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				1
	47.0 = To	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1. Euonymus fortunei	15.0	Yes	NI	Hydrophytic Vegetation
2. Parthenocissus quinquefolia	5.0	Yes	FACU	Present? No
	20.0 = To	otal Cover		
Remarks:				

rofile Description: [Descripte to depth needed to document the indicator or confirm the absence of indicators Depth Color Color Color Color Texture Remarks 0-2 10YR 4/2 100 Loarny 2-16 10YR 5/3 100 Loarny 2-16 10YR 5/3 100 Loarny Indicators for Problematic Hydric Soils 3: Standy Redux (S5) Indicators for Problematic Hydric Soils 3: Standy Redux (S6) Indicators for Problematic Hydric Soils 3: Standy Redux (S6) Indicators for Problematic Hydric Soils 3: Indicators for Problematic Hydric Soils 3: Standy Redux (S6) Indicators for Problematic Hydric Soil Present Matrix (F2) Indicators for Problematic Hydric Soil Otto (F2) Indicators for f							9	ampling			Attachment 14.1 Page 163 of 237
Matrix Redox Features Depth Color Color nches) (Moist) % (Moist) % Ivpe* -2.16 10VR 4/2 100 Loamy	SOIL Profile De	scription: (De	scribe to	o denth nee	ded to do	cument the					ence of indicators
Inches) (Moist) % (Moist) % (ype1 Loc ² Texture Remarks 0-2 10YR 4/2 100 Leamy Leamy Leamy 2-16 10YR 5/3 100 Leamy Leamy 2-16 10YR 5/3 100 Leamy Fype: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location, PL=Pore Lining, M=Matrix, MS=Masked Sand Grains. 2 Locamy Tisk Singlified (A1) Sandy Gleyed Matrix (S4) Red Parent Material (TF2) Hydric Soils 3: Disc Control (A1) Dark Surface (S7) Disc Control (A1) Dark Surface (S7) Indicators of hydrophytic vegetation and wetland hydrology must be Depleted Dark Surface (A1) Depleted Matrix (F2) Indicators of hydrophytic vegetation in Thick Dark Surface (A1) Depleted Matrix (F2) Indicators of hydrophytic vegetation in the sate sate situated or problematic. Indicators of hydrophytic vegetation in Thick Dark Surface (A1) Depleted Dark Surface (A2) Indicators of hydrophytic vegetation in Thick Dark Surface (F6) Indicators of hydrophytic vegetation in Thick Dark Surface (F6)	Tome De										
0-2 10YR 4/2 100 Loamy 2-16 10YR 5/3 100 Loamy ype: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix. ydric Soil Indicators: Indicators for Problematic Hydric Soils 2: Histosol (A1) Sandy Gleyed Matrix (S4) Red Parent Material (TF2) Histo Epipedon (A2) Sandy Redox (S5) Other (Explain in Remarks) Ydrolog Wolfde (A4) Dark Surface (S7) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. 2 cm Muck (A10) (LRR N) Depleted Dark Surface (F7) present, unless disturbed or problematic. 9 Sandy Mucky Mineral (S1) (LRR N) Depleted Dark Surface (F7) present, unless disturbed or problematic. 9 sandy Mucky Mineral (S1) (LRR N) Depleted Dark Surface (F7) present, unless disturbed or problematic. 9 sandy Mucky Mineral (S1) (LRR N) Beatration (A12) Secondary Indicators (minimum of one is required; check all that apply) 9 fettand Hydrology Indicators: Hydric Soil Present? No Secondary Indicators (minimum of two required) 9 further Marks (B1) Hydrogen Sulfade Cdor (C1) Destare Strice Son Uracks (B6) Destare Strice Son Uracks (B6) 9 further Marks (B1)	Depth					1		2	_		
22-16 10YR 5/3 100 Loamy Presc 10YR 5/3 100 Loamy Fype: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix, solution: PL=Pore Lining, Matrix, Solution: PL=Pore, PL=Pore Lining, Matrix, Solution: PL=PoreMatrix, Solution: PL=PoreMatrix, Solution: P	(inches)	<u>(Moist)</u>	<u>%</u>	<u>(Moist)</u>	<u>%</u>	Type	L	<u>.oc</u> 2	<u>Texture</u>	<u>Rem</u>	<u>arks</u>
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2 Location: PL=Pore Lining, M=Matrix, Ydric Soil S: Indicators indicators: Indicators for Problematic Hydric Soils S: Histic Epicedon (A2) Sandy Gleyed Matrix (S4) Red Parent Material (TF2) Black Histic (A3) Stratified Layers (A5) Other (Explain in Remarks) Stratified Layers (A5) Dark Surface (F7) and wetland hydrology must be present, unless disturbed or present (inches): ydrology Ident (inches): Mydric Soil Present? No <td>0-2</td> <td>10YR 4/2</td> <td>100</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Loamy</td> <td></td> <td></td>	0-2	10YR 4/2	100						Loamy		
ydric Soil Indicators: Indicators for Problematic Hydric Solis 3: I Histosol (A1) Sandy Gleyed Matrix (S4) Red Parent Material (TF2) I Histic Epipedon (A2) Sandy Redox (S5) Very Shallow Dark Surface (TF12) Black Histic (A3) Dark Surface (S7) Other (Explain in Remarks) Hydrogen Sulfide (A4) Dark Surface (T7) Traitfiel Layers (A5) Indicators of hydrophytic vegetation and wetland hydrology must be Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) present; unless disturbed or problematic. Thick Dark Surface (A12) Depleted Dark Surface (F7) present; unless disturbed or problematic. Sandy Mucky Mineral (S1) (LRR N) Redox Dark Surface (F7) present; unless disturbed or problematic. Secondary Indicators (finimum of one is required; check all that apply) Innimum of two required) Surface Water (A1) Water Stained Leaves (B9) Surface Soil Creaks (B6) Saturation (A3) True Aquatic Plants (B14) Drainage Patterns (B10) Surface Soil Creaks (B6) Water Marks (B1) Hydrogen Suffide Cdor (C1) Mase Trai Lines (B16) Carylinb Marces (B1) Water Marks (B1) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery (C9) Surface Soil Creaks (B1)	2-16	10YR 5/3	100						Loamy		
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Drift Deposits (B3) Roots (C3) Crayfish Burrows (C8) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery (C9) Iron Deposits (B5) Recent Iron Reduction in Tilled Stunted or Stressed Plants (D1) Inundation Visible From Aerial Soils (C6) Geomorphic Position (D2) Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3) Other (Explain in Remarks) Microtopographic Reilef (D4) FAC-Neutral Test (D5) ield Observations: Depth (inches) 0.0 Vater Table Present? No Depth (inches) 0.0 aturation Present? (including capillary fringe) No Depth (inches) 0.0 escribe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:		· · ·	2)					Dry-	Season Wate	r Table (C2)
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Inundation Visible From Aerial Imagery (B7) Soils (C6) Geomorphic Position (D2) Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3) Other (Explain in Remarks) Microtopographic Reilef (D4) FAC-Neutral Test (D5) ield Observations: Depth (inches) 0.0 Vater Table Present? No Depth (inches) 0.0 Autration Present? (including capillary fringe) No Depth (inches) 0.0 No No No escribe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:	_ Algal M	at or Crust (B4	·)			uced Iron (0	C4)	🗌 Satu	ration Visible	on Aeria	l Imagery (C9)
Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3) Other (Explain in Remarks) Microtopographic Reilef (D4) FAC-Neutral Test (D5) ield Observations: urface Water Present? No Zater Table Present? No Depth (inches) 0.0 Autration Present? (including capillary fringe) No Depth (inches) 0.0 No No escribe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:				Recen	t Iron Redu	uction in Till	led	Stun	ted or Stress	ed Plants	s (D1)
Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3) Other (Explain in Remarks) Microtopographic Reilef (D4) FAC-Neutral Test (D5) ield Observations: Depth (inches) urface Water Present? No Depth (inches) //ater Table Present? No Depth (inches) aturation Present? (including capillary fringe) No Depth (inches) 0.0 No escribe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:			m Aerial		,			Geo	morphic Posi	tion (D2)	
FAC-Neutral Test (D5) ield Observations: urface Water Present? No //ater Table Present? No Depth (inches) 0.0 //ater Table Present? No aturation Present? (including capillary fringe) No Depth (inches) 0.0 No escribe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:	Imager	y (B7)		🗌 Thin M	uck Surfa	ce (C7)					
FAC-Neutral Test (D5) ield Observations: urface Water Present? No /ater Table Present? No Depth (inches) 0.0 /ater Table Present? No aturation Present? (including capillary fringe) No Depth (inches) 0.0 No escribe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:				Other	Explain in	Remarks)		Micro	otopographic	Reilef (D	4)
urface Water Present? No Depth (inches) 0.0 /ater Table Present? No Depth (inches) 0.0 /aturation Present? (including capillary fringe) No Depth (inches) 0.0 Depth (inches) 0.0 No escribe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:					-	,		FAC	-Neutral Test	(D5)	
/ater Table Present? No Depth (inches) 0.0 Wetland Hydrology Present? aturation Present? (including capillary fringe) No Depth (inches) 0.0 No escribe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:	ield Obs	ervations:									
aturation Present? (including capillary fringe) <u>No</u> Depth (inches) <u>0.0</u> <u>No</u> escribe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:	urface W	ater Present?	<u>No</u>			Depth (inche	es)	0.0		
escribe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:			_			• •			0.0 Wetla	nd Hyd	rology Present?
	aturation	Present? (inclu	uding cap	oillary fringe)	No	Depth (inche	es) <u>(</u>).0 <u>No</u>		
emarks:	Describe F	Recorded Data	(Stream	gauge, mon	itoring wel	ll, aerial pho	otos,	previous	inspection), if ava	ilable:
	emarks:										



Project/Site: Henderson County Solar	City/County: Henderson/Henderson	Date: 04-May-20
Applicant/Owner: Henderson County Solar LLC	State: KY	Sampling Point: <u>1MW5</u>
Investigators: Ryan Harris	Sec, Twp, Rng: <u>S NA</u>	
Landform: Flat	Local Relief: Concave	Slope %: 2
Subregion: LRR	Lat: 37.80187 N Lon: -87.62629 V	N Datum: Decimal Degrees
Soil Map Unit Name:	NWI Classification: PFO Area F	-t ² : <u>3,516</u>
Are climatic/hydrologic conditions on this	Remarks (If No):	
site typical for this time of year? Yes		
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal Circ	umstances" present: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	y Problematic? Remarks:	·

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

Hydrophytic Vegetation Present? <u>Yes</u>	Is the Sampled Area within a Wetland?	<u>Yes</u>
Hydric Soil Present? <u>Yes</u>		
Wetland Hydrology Present? <u>Yes</u>		
Remarks:		

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant <u>Species?</u>	Indicator <u>Status</u>	Dominance Test Worksheet:
1. Acer saccharum	30.0	Yes	FACU	Number of Dominant Species that
2. Fraxinus pennsylvanica	20.0	Yes	FACW	are OBL, FACW or FAC: <u>4</u> A
3. Acer saccharinum	15.0	No	FACW	Total Number of Dominant Species
4. Liquidambar styraciflua	20.0	Yes	FAC	across all Strata: <u>8</u> B
5. Quercus pagoda	5.0	No	FACW	Percent of Dominant Species that
_	90.0 = Te	otal Cover		are OBL, FACW or FAC: <u>50.0</u> A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1. Acer saccharum	10.0	Yes	FACU	
2. Ulmus rubra	10.0	Yes	FAC	$OBL 0 \qquad x1= 0$
3.				FACW <u>58</u> x2= <u>116</u>
4.				FAC <u>35</u> x3= <u>105</u>
5.				FACU <u>53</u> x4= <u>212</u>
	20.0 = T	otal Cover		UPL <u>0</u> x5= <u>0</u>
Herb Stratum Plot Size: Unit				TOTALS (A) 146 (B) 433
1. Poa pratensis	10.0	Yes	FACU	
2. Carex gravi	10.0	Yes	FACW	Prevalence Index = B/A = <u>3.0</u>
3. Impatiens capensis	3.0	No	FACW	Hydrophytic Vegetation
4 Persicaria virginiana	5.0	No	FAC	Indicators:
5. Galium aparine	3.0	No	FACU	□ Dominance Test is >50%
6. Euonymus fortunei	10.0	Yes	NI	✓ Prevalence Index is $\leq 3.0^1$
7. Cinna latifolia	5.0	No	FACW	Morphologic Adaptations ¹
8.				Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				. ,
	46.0 = T	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1.				Hydrophytic Vegetation
2.				Present? Yes
	= T(otal Cover		
Remarks:				

						•			D	chment 14.1 e 166 of 237
<u>SOIL</u>							npling Poir		ວ ^ະ	
rofile Des	cription: (Desc Matrix	ribe to d	lepth neede		ument the Features	indic	ator or co	onfirm th	ie absend	ce of indicators
Depth	Color		Color	Neuox	i caluico					
inches)		<u>%</u>	(Moist)	<u>%</u>	Type ¹	Loc	2 <u> </u>	<u>exture</u>	<u>Remark</u>	<u>s</u>
0-5	10YR 4/2	98	7.5YR 5/6	2	С	N		oamy		
5-12	10YR 4/1	90	7.5YR 5/6	10	С	N	1 L	oamy		
Type: C=Co	oncentration, D=D	epletion	RM=Reduced	Matrix M	S=Masked S	Sand G	Grains ² I	ocation.	PI =Pore I	ining M=Matrix
	Indicators:	opiotion,								ematic Hydric
								ls ³ :		,
Histosol				Sandy Gle	yed Matrix	(S4)			ent Materi	
	oipedon (A2)			Sandy Red						Surface (TF12)
Black Hi					latrix (S6)			Other (E	xplain in F	Remarks)
	n Sulfide (A4)			Dark Surfa		. (50)				
	d Layers (A5) ick (A10) (LRR I	IN IN			eyed Matrix Matrix (F3)		³ In	dicators	of hydror	hytic vegetation
	d Below Dark Su				rk Surface					y must be
	ark Surface (A12				Dark Surfa				less distu	
	lucky Mineral (S				pressions			blematic		
,	, , , , , , , , , , , , , , , , , , ,	, -			anese Ma		=12) (LRR	N)		
estrictive	Layer (if obser	ved):								
ype: <u>0</u>										
epth (inch	es): <u>0</u>				F	lydric	Soil Pres	ent? <u>Ye</u>	<u>es</u>	
emarks:										
lydrology										
/etland Hy	/drology Indica	tors:					Secondary			
rimary Inc	licators (minimu	<u>m of one</u>	is required;	check all	that apply	·) (I	minimum	of two re	quired)	
Surface	Water (A1)		✓ Water St	ained I ea	ves (B9)		Surface	Soil Crack	s (B6)	
] High Wa	ater Table (A2)			Fauna (B1			 Sparsely 	-		Surface (B8)
Saturatio				uatic Plant			Drainage		. ,	
-	larks (B1)		Hydrogei	n Sulfide (Odor (C1)		Moss Tri	m LInes (I	316)	
	nt Deposits (B2)			•	eres on Li	ve			Table (C2)	
	oosits (B3)		Roots (C					Burrows (-	(=-)
	at or Crust (B4)				ced Iron (C tion in Tille				on Aerial Im	
	oosits (B5) on Visible From /	Aorial	Soils (C6						d Plants (D1)
Imagery		-chai		,, ck Surface	(C7)		Geomorp			
magory	(27)						_	Aquitard (I	Collef (D4)	
				xplain in R	emarks)		FAC-Net			
eld Obse	rvations:									
	iter Present? No	<u>2</u>			Depth (ir	nches)	0.0			
	e Present? <u>No</u>				Depth (ii	,		Wetlan	d Hydrolo	ogy Present?
aturation F	Present? (includi	ng capill	ary fringe) <u>Y</u>	<u>′es</u>	Depth (ir	nches)	0.0	<u>Yes</u>		
escribe Re	ecorded Data (St	tream ga	luge, monito	ring well,	aerial phot	tos, pr	evious ins	pection)	, if availab	le:
emarks:										



WETLAND DETERMINATION DATA FORM Eastern Mountains Pand Piedimont

Project/Site: Henderson County Solar	City/County: <u>Henderson/Henderson</u>	Date: 04-May-20
Applicant/Owner: Henderson County Solar LLC	State: KY	Sampling Point: <u>1MW5U</u>
Investigators: Ryan Harris	Sec, Twp, Rng: <u>S NA</u>	
Landform: Hillslope	Local Relief: Convex	Slope %: <u>4</u>
Subregion: LRR	Lat: <u>37.80187 N</u> Lon: <u>-87.62629 W</u>	Datum: Decimal Degrees
Soil Map Unit Name:	NWI Classification: Area Ft	2:
Are climatic/hydrologic conditions on this	Remarks (If No):	
site typical for this time of year? Yes		
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal Circur	nstances" present: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural		

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

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

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant <u>Species?</u>	Indicator <u>Status</u>	Dominance Test Worksheet:
1. Gleditsia triacanthos	40.0	Yes	FAC	Number of Dominant Species that
2. Acer saccharum	10.0	No	FACU	are OBL, FACW or FAC: <u>4</u> A
3. Sassafras albidum	10.0	No	FACU	Total Number of Dominant Species
4.				across all Strata: 8 B
5.				Percent of Dominant Species that
	60.0 = T	otal Cover		are OBL, FACW or FAC: <u>50.0</u> A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet:
1. Gleditsia triacanthos	10.0	Yes	FAC	Total % Cover of: Multiply by:
2. Elaeagnus angustifolia	10.0	Yes	FACU	OBL <u>0</u> x1= <u>0</u>
3. Acer saccharum	5.0	No	FACU	FACW <u>20</u> x2= <u>40</u>
4. Fraxinus americana	5.0	No	FACU	FAC <u>75</u> x3= <u>225</u>
5. Sassafras albidum	5.0	No	FACU	FACU <u>80</u> x4= <u>320</u>
	35.0 = Te	otal Cover		UPL <u>0</u> x5= <u>0</u> TOTALS
Herb Stratum Plot Size: Unit				(A) 175 (B) 585
1. Cinna latifolia	20.0	Yes	FACW	
2. Galium aparine	10.0	No	FACU	Prevalence Index = B/A = <u>3.3</u>
3. Chaerophyllum tainturieri	20.0	Yes	FAC	Hydrophytic Vegetation
4. Erigeron annuus	10.0	No	FACU	Indicators:
5. Euonymus fortunei	10.0	Yes	NI	☐ Dominance Test is >50%
6. Parthenocissus quinquefolia	5.0	No	FACU	\Box Prevalence Index is $\leq 3.0^{1}$
7. Allium vineale	5.0	No	FACU	Morphologic Adaptations ¹
8. Lamium purpureum	3.0	No	NI	Problematic Hydrophytic
9. Carex sp.	5.0	No	NI	Vegetation ¹ (Explain)
10 Lonicera japonica	5.0	No	FAC	
	93.0 = Te	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1. Parthenocissus quinquefolia	5.0	Yes	FACU	Hydrophytic Vegetation
2. Euonymus fortunei	3.0	Yes	NI	Present? No
	8.0 = T	otal Cover		
Remarks:				

SOIL	Sampling Point: <u>1MW5U Page 169 of 237</u>
	ocument the indicator or confirm the absence of indicators.)
	lox Features
Depth Color Color	<u>Type¹ Loc² Texture Remarks</u>
(inches) (Moist) % (Moist) %	
0-3 10YR 4/2 100	Loamy
<u>3-16 10YR 5/3 100</u>	Clayey
	, MS=Masked Sand Grains. ² Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
Histosol (A1)	Gleyed Matrix (S4)
	Redox (S5)
	d Matrix (S6) Uther (Explain in Remarks)
	urface (S7) Claved Matrix (E2)
	Gleyed Matrix (F2) ed Matrix (F3) ³ Indicators of hydrophytic vegetation
	Dark Surface (F6) and wetland hydrology must be
	ed Dark Surface (F7) present, unless disturbed or
	Depressions (F8) problematic.
└── Iron-Ma	anganese Masses (F12)(LRR N)
Restrictive Layer (if observed):	
Туре:	Undria Cail Pressant? No
Depth (inches):	Hydric Soil Present? No
Remarks:	
Hydrology Wetland Ukalan Ianu Iadia tana	
Wetland Hydrology Indicators:	Secondary Indicators
Primary Indicators (minimum of one is required; check	all that apply) (minimum of two required)
Surface Water (A1)	Leaves (B9)
High Water Table (A2)	(B13) Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	
 □ Water Marks (B1) □ Sediment Deposits (B2) □ Oxidized Rhizos 	
	spheres on Live Dry-Season Water Table (C2) Crayfish Burrows (C8)
	duced Iron (C4) Saturation Visible on Aerial Imagery (C9)
\Box Iron Deposits (B5) \Box Recent Iron Re	
□ Inundation Visible From Aerial Soils (C6)	Geomorphic Position (D2)
Imagery (B7)	
🗌 Other (Explain i	
	✓ FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? <u>No</u>	Depth (inches) <u>0.0</u>
Water Table Present? <u>No</u>	Depth (inches) 0.0 Wetland Hydrology Present?
Saturation Present? (including capillary fringe) <u>No</u>	Depth (inches) <u>0.0</u> <u>No</u>
Describe Recorded Data (Stream gauge, monitoring w	ell, aerial photos, previous inspection), if available:
Remarks:	

Exhibit 14 Attachment 14.1



Exhibit 14 Attachment 14.1	
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Project/Site: <u>Henderson County Solar</u>	_ City/County: <u>Henderson/Henderson</u> Date: 04-May-2	0
Applicant/Owner: Henderson County Solar LLC	State: <u>KY</u> Sampling Point: <u>1M</u>	W6
Investigators: Scott Mitchell	Sec, Twp, Rng: <u>S NA</u>	
Landform: Flat	Local Relief: Concave Slope	%: <u>1</u>
Subregion: LRR	Lat: <u>37.80175 N</u> Lon: <u>-87.62544 W</u> Datum: <u>Decima</u>	I Degrees
Soil Map Unit Name:	NWI Classification: PFO Area Ft ² : <u>11,379</u>	
Are climatic/hydrologic conditions on this	Remarks (If No):	
site typical for this time of year? Yes		
Are Vegetation , Soil , or Hydrology Signification	cantly Disturbed? Are "Normal Circumstances" present:	<u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	Ily Problematic? Remarks:	

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

Hydrophytic Vegetation Present? <u>Yes</u>	Is the Sampled Area within a Wetland?	<u>Yes</u>
Hydric Soil Present? <u>Yes</u>		
Wetland Hydrology Present? <u>Yes</u>		
Remarks:		

VEGETATION: Scientific Names

Tree Stratum	Plot Size:	Absolute <u>% Cover:</u>	Dominant Species?	Indicator <u>Status</u>	Dominance Test Worksheet:
1.			_ <u>_</u>		Number of Dominant Species that
2.					are OBL, FACW or FAC: <u>4</u> A
3.					Total Number of Dominant Species
4.					across all Strata: <u>6</u> B
5.					Percent of Dominant Species that
		= To	otal Cover		are OBL, FACW or FAC: <u>66.7</u> A/B
Sapling/Shrub	Stratum Plot Size:				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1.					
2.					$OBL 0 \qquad x1= 0$
3.					FACW 0 $x^2 = 0$
4.					FAC 0 x3= 0
5.					FACU <u>0</u> x4= <u>0</u>
		= To	otal Cover		UPL <u>0</u> x5= <u>0</u>
<u>Herb Stratum</u>	Plot Size:				TOTALS (A) 0 (B) 0
1.					
2.					Prevalence Index = B/A =
3.					Hydrophytic Vegetation
4.					Indicators:
5.					✓ Dominance Test is >50%
6.					\Box Prevalence Index is $\leq 3.0^{1}$
7.					Morphologic Adaptations ¹
8.					Problematic Hydrophytic
9.					Vegetation ¹ (Explain)
10					1
		= To	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine St	ratum Plot Size:				hydrology must be present, unless disturbed or problematic.
1.					Hydrophytic Vegetation
2.					Present? Yes
		= To	otal Cover		
Remarks:					

SOIL						Sa	mpling Po	int: <u>1MW</u>	6 Page 172 of 2	237
Profile De	escription: (Desc	ribe to de	pth neede			e indic	cator or co	onfirm th	e absence of in	dicators.)
	<u>Matrix</u>		<u> </u>	Redox	<pre>K Features</pre>					
Depth (inches)	Color	0/	Color	0/	T . m a ¹	Lo	- ² T	-	Dementre	
(inches)	(Moist)	<u>%</u>	(Moist)	<u>%</u>	<u>Type¹</u>			exture	<u>Remarks</u>	
0-12	10YR 5/2	90 7	.5YR 4/6	10	С	N	M L	oamy		
1 Type: C=(Concentration, D=D	epletion R	M=Reduce	d Matrix M	/S=Masked	Sand (Grains ² I	ocation [.]	PI =Pore Lining M=	Matrix
	oil Indicators:			a maan, n		Carla			for Problematic	
								ils ³ :		
□ Histoso	ol (A1)			Sandy Gl	eyed Matrix	x (S4)		Red Pare	ent Material (TF2)	
	Epipedon (A2)				edox (S5)	()		Very Sha	llow Dark Surface	e (TF12)
	Histic (A3)				Matrix (S6)			Other (E	xplain in Remarks	3)
	gen Sulfide (A4)			Dark Surf	• •					
	ed Layers (A5)				leyed Matri				6 1 1 1 1	
	/luck (A10) (LRR I ed Below Dark Su				Matrix (F3 ark Surface				of hydrophytic ve hydrology must	
	Dark Surface (A12				Dark Sunace				ess disturbed or	Je
	Mucky Mineral (S				epressions			blematic		
Carray					ganese Ma		•			
Restrictiv	e Layer (if obser	ved):								
Туре: <u>0</u>		,					_			
Depth (inc						Hydric	c Soil Pres	sent? Ye	<u>es</u>	
Remarks:										
Hydrolog	ЗУ									
Wetland H	Hydrology Indica	tors:				:	Secondary	/ Indicato	rs	
Primary Ir	ndicators (minimu	m of one i	s required	; check al	II that apply		(minimum			
	e Water (A1)	Γ			aves (B9)		Surface	Soil Crack	s (B6)	
	/ater Table (A2)		Aquatic	Fauna (B	13)		Sparsel	y Vegetate	d Concave Surface (E	8)
	tion (A3)			uatic Plan			Drainag	e Patterns	(B10)	
□ Water	Marks (B1)				Odor (Ć1)		Moss Tr	rim Llnes (E	316)	
	ent Deposits (B2)		Oxidized	l Rhizospl	heres on L	ive	Dry-Sea	ason Water	Table (C2)	
	eposits (B3)	Г	_ Roots (C			• •		n Burrows (
	lat or Crust (B4)				uced Iron (C				on Aerial Imagery (C9)
	eposits (B5)	_ ∧ oriol			ction in Till	ea	_		d Plants (D1)	
Imager	tion Visible From	Aenai	Soils (C€ Thin Mu	ck Surfac	$\sim (C7)$			rphic Positi		
inagei	y (D7)				. ,			Aquitard (I	-	
		L	Uther (E	xpiain in i	Remarks)			oographic F eutral Test (
Field Obc	ervations:								- /	
	ater Present? N	0			Depth (i	inches) 0.0			
	ble Present? <u>No</u>	<u>~</u>			Depth (i		<i>,</i>	Wetlan	d Hydrology Pre	sent?
	Present? (includi	ng capilla	ry fringe) N	<u>10</u>	Depth (i		<i>,</i>	Yes		
	Recorded Data (S	• •					,	spection).	if available:	I
	, ,	0		<u> </u>		· •		- //		
Remarks:										

Exhibit 14 Attachment 14.1



WETLAND DETERMINATION DATA FORM Eastern Mountains and Predmont

Project/Site: Henderson County Solar	City/County: Henderson/H	Henderson	Date: 04-May-20
Applicant/Owner: Henderson County Solar LLC	S	tate: <u>KY</u> Sa	mpling Point: <u>1MW6U</u>
Investigators: Scott Mitchell	Sec, Twp, Rng: <u>S NA</u>		
Landform: Flat	Local Relief: Flat		Slope %: 2
Subregion: LRR	Lat: <u>37.80175 N</u> Lon:	-87.62544 W	Datum: Decimal Degrees
Soil Map Unit Name:	NWI Classification:	Area Ft ² :	
Are climatic/hydrologic conditions on this	Remarks (If No):		
site typical for this time of year? Yes	· · · · ·		
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "	Normal Circums	stances" present: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	y Problematic? Rema	arks:	·

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

Hydrophytic Vegetation Present? <u>No</u>	Is the Sampled Area within a Wetland?	<u>No</u>
Hydric Soil Present? <u>No</u>		
Wetland Hydrology Present? <u>No</u>		
Remarks: Upland is crop field.		

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant Species?	Indicator <u>Status</u>	Dominance Test Worksheet:
1.		-		Number of Dominant Species that
2.				are OBL, FACW or FAC: <u>1</u> A
3.				Total Number of Dominant Species
4.				across all Strata: <u>2</u> B
5.				Percent of Dominant Species that
	= Te	otal Cover		are OBL, FACW or FAC: <u>50.0</u> A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1.				
2.				OBL 0 x1= 0
3.				FACW 0 $x^2 = 0$
4.				FAC <u>15</u> $x_3 = 45$
5.				FACU <u>8</u> x4= <u>32</u>
	= Te	otal Cover		UPL <u>0</u> x5= <u>0</u>
Herb Stratum Plot Size: Unit				TOTALS (A) <u>23</u> (B) <u>77</u>
1. Ranunculus hispidus	15.0	Yes	FAC	
2. Allium vineale	5.0	Yes	FACU	Prevalence Index = B/A = <u>3.3</u>
3. Erigeron annuus	3.0	No	FACU	Hydrophytic Vegetation
4.				Indicators:
5.				□ Dominance Test is >50%
6.				\Box Prevalence Index is $\leq 3.0^{1}$
7.				Morphologic Adaptations ¹
8.				Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				1
	23.0 = T	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1.				Hydrophytic Vegetation
2.				Present? No
	= Te	otal Cover		
Remarks:				

						6			D-	achment 14.1 ge 175 of 237
SOIL Brofilo Do	acrintion: (Dece	ribo to	danth naada	d to do	oursont th			Point: <u>1MW</u>	00	ce of indicators.)
Prome De	<u>Matrix</u>	nbe to	depth neede		x Features			commu		ice of indicators.)
Depth	Color		Color		1		2			
<u>(inches)</u>	<u>(Moist)</u>	<u>%</u>	<u>(Moist)</u>	<u>%</u>	<u>Type¹</u>	L	oc ²	<u>Texture</u>	<u>Remar</u>	<u>ks</u>
0-16	10YR 5/3	90	10YR 5/6	10	С		М	Loamy		
Type: C=0	Concentration, D=D	epletio	n, RM=Reduced	l Matrix, I	MS=Masked	d Sand	Grains.	² Location:	PL=Pore I	_ining, M=Matrix.
Hydric So	oil Indicators:								for Prob	lematic Hydric
								Soils ³ :		
Histoso					leyed Matr	ix (S4)		ent Mater	
	Epipedon (A2)				edox (S5)	• • •				k Surface (TF12)
	Histic (A3) gen Sulfide (A4)				Matrix (S6 face (S7))	ļ		xpiain in	Remarks)
	ed Layers (A5)				Gleyed Mat	rix (F2	2)			
	/luck (A10) (LRR	N)			Matrix (F3		.)	³ Indicators	s of hydro	phytic vegetation
	ed Below Dark Su				ark Surfac					gy must be
	Dark Surface (A12				Dark Surf			present, ur		
	Mucky Mineral (S		RRN) 🗌 F	Redox D	epressions	s (F8)	,	problemati	C.	
				ron-Man	nganese M	asses	(F12) (LI	RR N)		
Restrictiv	e Layer (if obsei	ved):								
Гуре:										
Depth (inc						Hydr	IC SOIL P	resent? N	<u>0</u>	
Remarks:										
Hydrolog										
Wetland H	Hydrology Indica	tors:						lary Indicate		
Primary Ir	ndicators (minimu	m of o	ne is required;	check a	all that app	ly)	(minimเ	um of two r	equired)	
□ Surface	e Water (A1)		U Water St	ained I e	aves (R9)		Surf	ace Soil Crac	ks (B6)	
	/ater Table (A2)		Aquatic F	annea Le	313)		🗌 Spa	rsely Vegetate	ed Concave	Surface (B8)
☐ Satura	tion (A3)		🗌 True Aqu		,			nage Patterns		
Water	Marks (B1)				Odor (C1))	Mos	s Trim Llnes (B16)	
	ent Deposits (B2)			Rhizosp	pheres on l	_ive	🗌 Dry-	Season Wate	r Table (C2)
	eposits (B3)		Roots (C					fish Burrows	. ,	
	lat or Crust (B4)				uced Iron (. ,	🗌 Satu	ration Visible	on Aerial In	nagery (C9)
	eposits (B5)				uction in Ti	lled	Stur	ited or Stress	ed Plants (D	01)
	tion Visible From	Aerial	Soils (C6	,	(07)			morphic Posit		
Imager	ту (В7)		Thin Muc					low Aquitard		
			Other (Ex	kplain in	Remarks)			otopographic		
							∐ FAC	-Neutral Test	(D5)	
	ervations:									
	/ater Present? <u>N</u>	<u>o</u>			Depth	•		<u>).0</u>		
	ble Present? <u>No</u>		III	-	Depth				nd Hydro	logy Present?
	Present? (includ				Depth		<i>·</i>	<u>).0 No</u>		
Jescribe F	Recorded Data (S	tream	gauge, monito	ring wel	I, aerial ph	otos, p	orevious	inspection), if availa	ble:
Remarks:										



WETLAND DETERMINATION DATA FORM Eastern Mountains Pand Predmont

Project/Site: <u>Henderson County Solar</u>	City/County: Henderson/Henderson Date: 05-May-20
Applicant/Owner: Henderson County Solar LLC	State: KY Sampling Point: 2MW1
Investigators: Ryan Winka	Sec, Twp, Rng: <u>S NA</u>
Landform: Basin	Local Relief: Flat Slope %: 0.5
Subregion: LRR	Lat: <u>37.00000 N</u> Lon: <u>87.62570 W</u> Datum: <u>Decimal Degrees</u>
Soil Map Unit Name:	NWI Classification: PUBG Area Ft ² : 4,990
Are climatic/hydrologic conditions on this	Remarks (If No):
site typical for this time of year? Yes	
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal Circumstances" present: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	ly Problematic? Remarks:
- • •	-

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

Hydrophytic Vegetation Present? <u>Yes</u>	Is the Sampled Area within a Wetland?	<u>Yes</u>
Hydric Soil Present? <u>Yes</u>		
Wetland Hydrology Present? <u>Yes</u>		
Remarks:		

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant <u>Species?</u>	Indicator <u>Status</u>	Dominance Test Worksheet:
1. Acer rubrum	30.0	Yes	FAC	Number of Dominant Species that
2. Platanus occidentalis	20.0	Yes	FACW	are OBL, FACW or FAC: <u>4</u> A
3.				Total Number of Dominant Species
4.				across all Strata: <u>6</u> B
5.				Percent of Dominant Species that
_	50.0 = To	otal Cover		are OBL, FACW or FAC: <u>66.7</u> A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1.				
2.				OBL <u>0</u> x1= <u>0</u>
3.				FACW <u>0</u> x2= <u>0</u>
4.				FAC <u>0</u> x3= <u>0</u>
5.				FACU <u>0</u> x4= <u>0</u>
	= To	otal Cover		UPL <u>0</u> x5= <u>0</u>
Herb Stratum Plot Size: Unit				TOTALS (A) 0 (B) 0
1. Smilax spp.	2.0	Yes	NI	
2. Parthenocissus quinquefolia	2.0	Yes	FACU	Prevalence Index = B/A =
3. Laportea canadensis	2.0	Yes	FAC	Hydrophytic Vegetation
4. Carex blanda	2.0	Yes	FAC	Indicators:
5.				✓ Dominance Test is >50%
6.				\Box Prevalence Index is $\leq 3.0^{1}$
7.				☐ Morphologic Adaptations ¹
8.				Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				
_	8.0 = To	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1.				Hydrophytic Vegetation
2.				Present? Yes
	= To	otal Cover		
Remarks:				

						~			D -	tachment 14.1 age 178 of 237
SOIL				14 1				Point: 2MV		5
Profile De	scription: (Des <u>Matrix</u>	scribe to	o depth neede		cument the x Features	e ind	icator of	confirm t	ne abser	nce of indicators.)
Depth	Color		Color	11040			_	_		
<u>(inches)</u>	<u>(Moist)</u>	<u>%</u>	<u>(Moist)</u>	<u>%</u>	<u>Type¹</u>	L	oc ²	<u>Texture</u>	<u>Remar</u>	<u>ks</u>
0-12	10YR5/2	90	7.5YR4/6	10	С		М	Loamy		
	Concentration D=	Denletio	n RM=Reducer	Matrix N	MS=Masked	Sand	Grains	2 Location:	PI =Pore	Lining, M=Matrix.
	il Indicators:	Depietio		u Matrix, n	vio-iviaskeu	Sanu				blematic Hydric
								Soils ³ :		
Histoso	ol (A1)			Sandy G	leyed Matri	x (S4	.)	Red Par	ent Mate	rial (TF2)
	Epipedon (A2)				edox (S5)					k Surface (TF12)
	Histic (A3)				Matrix (S6))	l	Other (E	xplain in	Remarks)
	jen Sulfide (A4)				face (S7)		•			
	ed Layers (A5) luck (A10) (LRF				ileyed Matri Matrix (F3		<u>~)</u>	³ Indicator	of hydro	ophytic vegetation
	ed Below Dark S				ark Surface)			gy must be
_ ·	Dark Surface (A				Dark Surfa		/	present, ur		
	Mucky Mineral (epressions		- /	, problematio		
,	, ,	. , .			ganese Ma			RR N)		
Restrictiv	e Layer (if obs	erved):								
Туре: <u>0</u>										
Depth (inc						Hyar		resent? Y	<u>es</u>	
Remarks:										
Hydrolog										
	lydrology India							ary Indicate		
	ndicators (minim		ne is required	check a	Il that apply	/)	<u>`</u>	um of two r	, ,	
_	e Water (A1)		🗹 Water St	ained Le	eaves (B9)			ace Soil Cracl		
	ater Table (A2)		🗌 Aquatic I	⁻ auna (B	313) ` ´					e Surface (B8)
Satural	· · ·		🗌 True Aqu					nage Patterns		
	Marks (B1)				Odor (C1)			s Trim Llnes (,	
	ent Deposits (B2 eposits (B3)	-)			heres on L	ive		Season Wate fish Burrows		.)
	lat or Crust (B4))	Roots (C		uced Iron ((<u>7</u> 4)		ration Visible		magery (C9)
	eposits (B5)	/			uction in Till	,		ted or Stresse		
_	tion Visible Fron	n Aerial	Soils (C6					morphic Posit		51)
Imager	y (B7)		🗌 Thin Muo	k Surfac	ce (C7)			low Aquitard (
			Other (E	xplain in	Remarks)			otopographic	-	
			, , , , , , , , , , , , , , , , , , ,		,		FAC	-Neutral Test	(D5)	
Field Obs	ervations:									
	ater Present?				Depth (i) <u>.3</u>		
	le Present? No	-			Depth (i				d Hydro	logy Present?
	Present? (inclu				Depth (i		,	<u>).0 Yes</u>		
Describe F	Recorded Data (Stream	gauge, monito	oring well	l, aerial pho	otos,	previous	inspection)	, if availa	ible:
D										
Remarks:										



Exhibit 14 Attachment 14.1	
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WETLAND DETERMINATION DATA FORM Eastern Mountains Pand Piedmont

Project/Site: <u>Henderson County Solar</u>	City/County: Henderson/Henderson Date: 05-May-20
Applicant/Owner: Henderson County Solar LLC	State: <u>KY</u> Sampling Point: <u>2MW1U</u>
Investigators: Ryan Winka	Sec, Twp, Rng: <u>S NA</u>
Landform: Hillslope	Local Relief: Convex Slope %: 3
Subregion: LRR	Lat: <u>37.00000 N</u> Lon: <u>87.62570 W</u> Datum: Decimal Degrees
Soil Map Unit Name:	NWI Classification: Area Ft ² :
Are climatic/hydrologic conditions on this	Remarks (If No):
site typical for this time of year? Yes	
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation , Soil , or Hydrology Natural	ly Problematic? Remarks:

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

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

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant <u>Species?</u>	Indicator <u>Status</u>	Dominance Test Worksheet:
1. Celtis occidentalis	55.0	Yes	FACU	Number of Dominant Species that
2. Quercus macrocarpa	15.0	No	FAC	are OBL, FACW or FAC: <u>2</u> A
3. Quercus bicolor	10.0	No	FACW	Total Number of Dominant Species
4.				across all Strata: <u>4</u> B
5.				Percent of Dominant Species that
	80.0 = To	otal Cover		are OBL, FACW or FAC: <u>50.0</u> A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1. Acer negundo	5.0	Yes	FAC	
2.				OBL 0 x1= 0
3.				FACW 15 $x^2 = 30$
4.				FAC <u>75</u> x3= <u>225</u>
5.				FACU <u>85</u> x4= <u>340</u>
	5.0 = To	otal Cover		UPL <u>0</u> x5= <u>0</u>
Herb Stratum Plot Size: Unit				TOTALS (A) <u>175</u> (B) <u>595</u>
1. Laportea canadensis	50.0	Yes	FAC	
2. Poa pratensis	10.0	No	FACU	Prevalence Index = B/A = <u>3.4</u>
3. Galium aparine	5.0	No	FACU	Hydrophytic Vegetation
4. Elymus riparius	5.0	No	FACW	Indicators:
5. Smilax rotundifolia	5.0	No	FAC	□ Dominance Test is >50%
6. Euonymus fortunei	3.0	No	NI	\Box Prevalence Index is $\leq 3.0^{1}$
7.				Morphologic Adaptations ¹
8.				Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				
	78.0 = To	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1. Parthenocissus quinquefolia	15.0	Yes	FACU	Hydrophytic Vegetation
2.				Present? No
	15.0 = To	otal Cover		
Remarks:				

SOII				Sa	ampling P			Attachment 14.1 Page 181 of 237
SOIL Profile Description: (Descril	he to denth nee	eded to do	cument the					ence of indicators
<u>Matrix</u>			x Features	, mai				
Depth Color	Color							
<u>(inches) (Moist) %</u>	<u>(Moist)</u>	<u>%</u>	<u>Type¹</u>	Lo	$5c^2$	<u>Texture</u>	<u>Rem</u>	<u>arks</u>
0-4 10YR4/3 10	0					Loamy		
4-16 10YR4/4 10						Loamy		
Type: C=Concentration, D=Dep	aletion RM=Redu	ced Matrix I	MS=Masked	Sand	Grains ²	Location:	PI =Por	e Lining M=Matrix
lydric Soil Indicators:			ine mached	ound				oblematic Hydric
						oils ³ :		bioinatio nyano
☐ Histosol (A1)	Γ	Sandy G	leved Matrix	x (SA)		n	ont Ma	terial (TF2)
Histic Epipedon (A2)	[edox (S5)	× (04)	/ _			ark Surface (TF12)
\square Black Histic (A3)	[Matrix (S6)					in Remarks)
\square Hydrogen Sulfide (A4)	Г		rface (S7)		L		лріанн	in Normai Noj
Stratified Layers (A5)	[Gleyed Matri	x (F2)			
$\stackrel{=}{\rightarrow}$ 2 cm Muck (A10) (LRR N)	[Matrix (F3)			Indicator	s of hyd	Irophytic vegetation
Depleted Below Dark Surf			ark Surface					logy must be
Thick Dark Surface (A12)			Dark Surfa					sturbed or
Sandy Mucky Mineral (S1)			epressions			roblemati		
			iganese Ma		•			
estrictive Layer (if observe	ad).		5		(<u> </u>			
ype:	<i>-u)</i> .							
)epth (inches):				Hydri	ic Soil Pr	esent? N	0	
Remarks:				-				
lydrology								
Vetland Hydrology Indicato	ors:				Seconda	ry Indicate	ors	
Primary Indicators (minimum	of one is require	ed: check a	all that apply	()	(minimur	n of two r	equired)
Surface Water (A1)				<u> </u>		e Soil Cracl	(s (B6)	
\Box High Water Table (A2)		Stained Le	eaves (B9)				. ,	ve Surface (B8)
\Box Saturation (A3)		ic Fauna (E	,		<u> </u>	ige Patterns		
_ ```		Aquatic Pla				Trim Lines (
UWater Marks (B1)			e Odor (C1)				,	20)
☐ Sediment Deposits (B2) ☐ Drift Deposits (B3)			oheres on Li	ve		eason Wate		52)
\square Algal Mat or Crust (B4)	Roots		uced Iron (C	۱ ۸		sh Burrows	. ,	$\lim_{n \to \infty} c_{n} (C_0)$
\square Iron Deposits (B5)			uction in Till					I Imagery (C9)
\Box Inundation Visible From A				eu	_	d or Stresse		(דט)
		. ,				orphic Posit		
Imagery (B7)		/luck Surfac				w Aquitard (~
	☐ Other	(Explain in	Remarks)			opographic		4)
						leutral Test	(D5)	
ield Observations:								
Surface Water Present? <u>No</u>			Depth (i	nche	s) <u> </u>	<u>)</u>		
Vater Table Present? <u>No</u>			Depth (i			<u>)</u> Wetlar	nd Hyd	rology Present?
aturation Present? (including	g capillary fringe) <u>No</u>	Depth (i	nche	s) <u>0.</u>	<u>) No</u>		
Describe Recorded Data (Stre	eam gauge, mor	nitoring wel	l, aerial pho	tos, p	previous ir	nspection)	, if ava	ilable:
Remarks:								



Exhibit 14 Attachment 14.1	
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WETLAND DETERMINATION DATA FORM Eastern Mountains Pand Piedmont

Project/Site: <u>Henderson County Solar</u>	City/County: Henderson/Henderson Date: 06-May-20
Applicant/Owner: Henderson County Solar LLC	State: <u>KY</u> Sampling Point: <u>2MW10</u>
Investigators: Scott Mitchell	Sec, Twp, Rng: <u>S NA</u>
Landform: Flat	Local Relief: Flat Slope %: 0.5
Subregion: LRR	Lat: <u>37.78871 N</u> Lon: <u>-87.63366 W</u> Datum: <u>Decimal Degrees</u>
Soil Map Unit Name:	NWI Classification: <u>PSS</u> Area Ft ² : <u>1,092</u>
Are climatic/hydrologic conditions on this	Remarks (If No):
site typical for this time of year? Yes	
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation , Soil , or Hydrology Natural	ly Problematic? Remarks:

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

Hydrophytic Vegetation Present? <u>Yes</u>	Is the Sampled Area within a Wetland?	<u>Yes</u>
Hydric Soil Present? <u>Yes</u>		
Wetland Hydrology Present? <u>Yes</u>		
Remarks:		

VEGETATION: Scientific Names

Tree Stratum	Plot Size: <u>Unit</u>	Absolute % Cover:	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1.			_ .		Number of Dominant Species that
2.					are OBL, FACW or FAC: <u>6</u> A
3.					Total Number of Dominant Species
4.					across all Strata: <u>6</u> B
5.					Percent of Dominant Species that
		= To	otal Cover		are OBL, FACW or FAC: <u>100.0</u> A/B
Sapling/Shrub	Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1.					
2.					$OBL \qquad 0 \qquad x1= \qquad 0$
3.					FACW 0 $x^2 = 0$
4.					FAC 0 x3= 0 FACU 0 x4= 0
5.					$\begin{array}{cccccccccccccccccccccccccccccccccccc$
	_	= To	otal Cover		TOTALS <u> </u>
<u>Herb Stratum</u>	Plot Size: <u>Unit</u>				(A) <u>0</u> (B) <u>0</u>
1.					
2.					Prevalence Index = B/A =
3.					Hydrophytic Vegetation
4.					Indicators:
5.					✓ Dominance Test is >50%
6.					\Box Prevalence Index is $\leq 3.0^{1}$
7.					☐ Morphologic Adaptations ¹
8.					Problematic Hydrophytic
9.					Vegetation ¹ (Explain)
10					1
		= 10	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine St	ratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1.					Hydrophytic Vegetation
2.		_			Present? Yes
		= To	otal Cover		
Remarks:					

						0			-	achment 14.1 ge 184 of 237
SOIL							npling Poi		10	0
Profile Des	scription: (Desc <u>Matrix</u>	ribe to	depth neede		ument the Features	indica	ator or co	onfirm th	he absen	ice of indicators
Depth	Color	-	Color	Redux	reatures					
inches)	(Moist)	<u>%</u>	(Moist)	<u>%</u>	Type ¹	Loc	² T	<u>exture</u>	Remar	ks
0-7	10YR4/1	<u>70</u> 90	7.5YR4/6	<u>70</u> 10	C	<u></u> M			rterriar	
7-12	10YR4/1	<u>90</u> 80	7.5YR5/6	20	<u> </u>	M		<u>oamy</u> oamy		
1-12	1011(4/1	00	7.511(5/0	20	0	IV		Uarry		
Type: C=C	Concentration, D=D	enletion	RM=Reduce	d Matrix M	S=Masked 9	Sand G	raine 2 I	ocation:	PI =Pore I	ining M=Matrix
	il Indicators:	epietion				Sanu G				lematic Hydric
yane oo	in maleators.							ls ³ :		
☐ Histoso	Ι (Δ1)			Sandy Gle	eyed Matrix	(\$4)		-	ant Mata	rial (TF2)
	pipedon (A2)			Sandy Re		(04)				k Surface (TF12)
	listic (A3)				Aatrix (S6)					Remarks)
	en Sulfide (A4)			Dark Surfa				- (1	,
Stratifie	d Layers (A5)			Loamy Gl	eyed Matrix		^			
	uck (A10) (LRR I				Matrix (F3)					phytic vegetatior
	ed Below Dark Su				rk Surface	· · ·				gy must be
	ark Surface (A12				Dark Surfa				less distu	urbed or
J Sandy I	Mucky Mineral (S	1) (LR			pressions (•	blematic		
				iron-iviang	anese Mas	sses (F	-12) LRR	N)		
	e Layer (if obser	ved):								
ype: <u>0</u> epth (incł	200):0				F	lvdric	Soil Pres	ent? Y	es	
emarks:	165). <u>0</u>					.,		<u></u>		
cinarks.										
ydrolog		4								
letland H	ydrology Indica	tors:					Secondary			
Primary In	dicators (minimu	m of on	e is required	; check all	I that apply) <u>(</u>	minimum	of two re	equired)	
Surface	Water (A1)		Water St	tained Lea	aves (R9)		Surface	Soil Crack	as (B6)	
	ater Table (A2)			Fauna (B1			Sparsely	Vegetate	d Concave	Surface (B8)
Saturati	ion (A3)			uatic Plant				e Patterns		
] Water N	/larks (B1)		☐ Hydroge	n Sulfide (Odor (Ć1)		🗌 Moss Tri	m LInes (I	B16)	
	nt Deposits (B2)				neres on Liv	ve	Dry-Sea	son Water	Table (C2)
7	posits (B3)		Roots (C	3)			Crayfish	Burrows (C8)	
	at or Crust (B4)				ced Iron (C		Saturation	on Visible	on Aerial In	nagery (C9)
	posits (B5)				ction in Tille	ed	Stunted	or Stresse	d Plants (D	01)
	ion Visible From	Aerial	Soils (C6	,			Geomor	ohic Positi	on (D2)	
Imagery	/ (B7)		□ Thin Mu	ck Surface	e (C7)		Shallow	Aquitard (D3)	
			Other (E	xplain in F	Remarks)		Microtop	ographic I	Reilef (D4)	
							FAC-Nei	utral Test	(D5)	
eld Obse	ervations:									
	ater Present? <u>N</u>	<u>o</u>			Depth (ir	,				
	le Present? <u>No</u>				Depth (ir	,			d Hydro	logy Present?
aturation	Present? (includi	ng capil	llary fringe) <u>N</u>	10	Depth (ir	nches)	0.0	<u>Yes</u>		
escribe R	Recorded Data (S	tream g	auge, monito	oring well,	aerial phot	tos, pre	evious ins	pection)	, if availa	ble:
emarks:										



WETLAND DETERMINATION DATA FORM Eastern Mountains and Predimont

Project/Site: Henderson County Solar	City/County: Henderson/Henderson	on Date: <u>06-May-20</u>
Applicant/Owner: Henderson County Solar LLC	State: KY	Sampling Point: <u>2MW10U</u>
Investigators: Scott Mitchell	Sec, Twp, Rng: <u>S NA</u>	
Landform: Flat	Local Relief: Flat	Slope %: <u>1</u>
Subregion: LRR	Lat: 37.78871 N Lon: -87.633	66 W Datum: Decimal Degrees
Soil Map Unit Name:	NWI Classification: Ar	ea Ft ² :
Are climatic/hydrologic conditions on this	Remarks (If No):	
site typical for this time of year? Yes	· · · ·	
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal	Circumstances" present: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	y Problematic? Remarks:	

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

Hydrophytic Vegetation Present? <u>Yes</u>	Is the Sampled Area within a Wetland?	<u>No</u>
Hydric Soil Present? <u>No</u>		
Wetland Hydrology Present? <u>No</u>		
Remarks: Upland is crop field.		

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1.		_ .		Number of Dominant Species that
2.				are OBL, FACW or FAC: <u>1</u> A
3.				Total Number of Dominant Species
4.				across all Strata: <u>1</u> B
5.				Percent of Dominant Species that
	= To	otal Cover		are OBL, FACW or FAC: 100.0 A/B
	Size: <u>Unit</u>			Prevalence Index Worksheet: <u>Total % Cover of:</u> <u>Multiply by:</u>
1.				
2.				$\begin{array}{c c} OBL & 0 & x1= & 0 \\ \hline DAOM & 0 & x2= & 0 \\ \hline \end{array}$
3.				FACW 0 $x^2 = 0$
4.				FAC 0 $x3= 0$
5.				FACU <u>0</u> x4= <u>0</u> UPL 0 x5= 0
	= To	otal Cover		
Herb Stratum Plot Size: Unit				TOTALS (A) 0 (B) 0
1. Ranunculus sardous	60.0	Yes	FAC	
2.	00.0	165	170	Prevalence Index = B/A =
3.				Hydrophytic Vegetation
4.				Indicators:
5.				✓ Dominance Test is >50%
6.				\Box Prevalence Index is $\leq 3.0^{1}$
7.				Morphologic Adaptations ¹
8.				Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				1
	60.0 = To	otal Cover		¹ Indicators of hydric soil & wetland
	ze: <u>Unit</u>			hydrology must be present, unless disturbed or problematic.
1.				Hydrophytic Vegetation
2.	_			Present? Yes
	= To	otal Cover		
Remarks:				

SOIL						San	npling Poir	nt: <u>2MW</u>	<u>100 Pag</u>	e 187 of 237
	scription: (Desc	cribe to	o depth neede			indica	ator or co	nfirm th	ne absend	ce of indicators
	<u>Matrix</u>			Redo	x Features					
Depth	Color (Moint)	0/	Color (Moiot)	0/	Type ¹	Loc	² т.	ovturo	Remark	•
inches)	(Moist)	<u>%</u>	(Moist)	<u>%</u>				<u>exture</u>	Remark	<u>.5</u>
<u>0-10</u> 10-16	<u>10YR4/1</u> 10YR4/1	<u>95</u> 90	7.5YR4/6 7.5YR5/6	<u>5</u> 10	<u>С</u> С	M M		oamy oamy		
10-10	101114/1	30	7.511(5/0	10	0	IV	L	Janiy		
	Concentration, D=[Depletio	n, RM=Reduce	d Matrix, N	MS=Masked	Sand G				-
ydric Soi	il Indicators:							icators Is ³ :	for Proble	ematic Hydric
Histoso					leyed Matrix	k (S4)			ent Materi	
	pipedon (A2)				edox (S5)					Surface (TF12)
	listic (A3)				Matrix (S6)			Other (E	xplain in F	Remarks)
	en Sulfide (A4)				face (S7)	(=0)				
_	d Layers (A5)				Bleyed Matri		3	diaatawa	of budge	phytic vegetation
	uck (A10) (LRR ed Below Dark S				I Matrix (F3 ark Surface					y must be
	ark Surface (A1		· · · _		I Dark Surfa	· · ·			less distur	
	Mucky Mineral (S				epressions			blematic		
Ganayi					iganese Ma		•			
estrictiv	e Layer (if obse	erved):			_					
ype:	aje: (esee									
	nes):				1	Hydric	Soil Pres	ent? <u>N</u>	<u>0</u>	
epth (incl emarks:	nes):				I	Hydric	Soil Pres	ent? <u>N</u>	0	
epth (incl	nes):					Hydric	Soil Pres	ent? <u>N</u>	<u>0</u>	
epth (incl emarks:					1	Hydric	Soil Pres	ent? <u>N</u>	<u>0</u>	
epth (inch emarks: ydrolog		ators:				-				
epth (inch emarks: lydrolog /etland H	y lydrology Indica		one is required	check a		S	Soil Pres	Indicato	ors	
epth (inch emarks: ydrolog /etland H Primary In	y I <mark>ydrology Indica</mark> dicators (minimu				all that apply	S	econdary	Indicato	ors equired)	
epth (incl emarks: ydrolog /etland H Primary In] Surface	y I <mark>ydrology Indica</mark> dicators (minimu Water (A1)		U Water St	ained Le	all that apply eaves (B9)	S	econdary minimum	Indicato of two re Soil Crack	ors equired) s (B6)	Surface (B8)
ydrolog ydrolog Yetland H Yrimary In Surface High W	y Iydrology Indica dicators (minimu Water (A1) ater Table (A2)		☐ Water St ☐ Aquatic I	tained Le Fauna (B	all that apply eaves (B9) 313)	S	econdary minimum Surface S	Indicato of two re Soil Crack Vegetate	ors equired) is (B6) d Concave S	Surface (B8)
ydrolog ydrolo	y Iydrology Indica dicators (minimu Water (A1) ater Table (A2) ion (A3)		☐ Water St ☐ Aquatic I ☐ True Aqu	tained Le Fauna (B uatic Plar	all that apply eaves (B9) 313) nts (B14)	S	econdary minimum Surface 3 Sparsely Drainage	Indicato of two re Soil Crack Vegetate Patterns	ors equired) is (B6) d Concave S (B10)	Surface (B8)
ydrolog verland H vrimary In Surface High W Saturat Water N	y I <mark>ydrology Indica</mark> dicators (minimu Water (A1) ater Table (A2) ion (A3) Marks (B1)	um of c	☐ Water Si ☐ Aquatic I ☐ True Aqu ☐ Hydroge	tained Le Fauna (B uatic Plar n Sulfide	all that apply eaves (B9) 313) nts (B14) e Odor (C1)) (I	econdary minimum Surface Sparsely Drainage Moss Tri	Indicato of two re Soil Crack Vegetate Patterns m Lines (i	ors equired) s (B6) d Concave S (B10) 316)	Surface (B8)
ydrolog vetland H vetland H Surface Surface High W Saturati Water N Sedime	y lydrology Indica dicators (minimu water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2)	um of c	U Water Si Aquatic I True Aqu Hydroge Oxidized	tained Le Fauna (B uatic Plar n Sulfide Rhizosp	all that apply eaves (B9) 313) nts (B14)) (I	Secondary minimum Surface Sparsely Drainage Moss Tri Dry-Seas	Indicato of two re Soil Crack Vegetate Patterns m Lines (I son Water	ors equired) is (B6) d Concave S (B10) 316) Table (C2)	Surface (B8)
ydrolog verland H Primary In Surface High W Saturati Water N Sedime Drift De	y lydrology Indica dicators (minimu e Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3)	um of c	☐ Water Si ☐ Aquatic I ☐ True Aqu ☐ Hydroge ☐ Oxidized _ Roots (C	tained Le Fauna (B uatic Plar n Sulfide Rhizosp 3)	all that apply eaves (B9) 313) nts (B14) e Odor (C1) oheres on Li	(1 /) (1 ive	Secondary minimum Surface Sparsely Drainage Moss Tri Dry-Seas Crayfish	Indicato of two re Soil Crack Vegetate Patterns m Lines (i son Water Burrows (ors equired) d Concave S (B10) B16) Table (C2) C8)	
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ydrolog etland H rimary In Surface High W Saturati Water N Sedime Drift De Algal M Iron De	y lydrology Indica dicators (minimu e Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3)	<u>um of c</u>)	 ☐ Water Si ☐ Aquatic I ☐ True Aqu ☐ Hydroge ☐ Oxidized ☐ Roots (C ☐ Presence 	ained Le Fauna (B uatic Plau n Sulfide Rhizosp 3) e of Redu ron Redu	all that apply eaves (B9) 313) nts (B14) e Odor (C1) oheres on Li	s ,) (r ive C4)	econdary minimum Surface Sparsely Drainage Moss Tri Dry-Seas Crayfish Saturatic	Indicato of two re Soil Crack Vegetate Patterns m Lines (i son Water Burrows (n Visible or Stresse	ors equired) s (B6) d Concave S (B10) B16) Table (C2) C8) on Aerial Ima d Plants (D1	agery (C9)
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ydrolog ydrolo	y dicators (minimu water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible From	<u>um of c</u>)	 □ Water Si □ Aquatic I □ True Aqu □ Hydroge □ Oxidized □ Roots (C □ Presence □ Recent I Soils (C6 □ Thin Muc 	ained Le Fauna (B uatic Plar n Sulfide Rhizosp 3) e of Redu ron Redu 3) ck Surfac	all that apply eaves (B9) 313) nts (B14) 9 Odor (C1) 9 heres on Li uced Iron (C uction in Till	s ,) (r ive C4)	econdary minimum Surface Sparsely Drainage Moss Tri Dry-Seas Crayfish Saturatio Stunted Geomorp Shallow	Indicato of two re Soil Crack Vegetate Patterns m Lines (I son Water Burrows (on Visible or Stresse ohic Positi Aquitard (ors equired) d Concave S (B10) 316) Table (C2) C8) on Aerial Ima d Plants (D1 on (D2) D3) Reilef (D4)	agery (C9)
epth (incl emarks: ydrolog /etland H Primary In Surface High W Saturat Vater N Sedime Drift De Algal M Iron De Inundat Imagery	y ydrology Indica dicators (minimu Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible From y (B7)	<u>um of c</u>)	 □ Water Si □ Aquatic I □ True Aqu □ Hydroge □ Oxidized □ Roots (C □ Presence □ Recent I Soils (C6 □ Thin Muc 	ained Le Fauna (B uatic Plar n Sulfide Rhizosp 3) e of Redu ron Redu 3) ck Surfac	all that apply eaves (B9) 313) onts (B14) Odor (C1) oheres on Li uced Iron (C uction in Till	s ,) (r ive C4)	econdary minimum Surface Sparsely Drainage Moss Tri Dry-Seas Crayfish Saturatio Stunted Geomorp Shallow	Indicato of two re Soil Crack Vegetate Patterns m LInes (I son Water Burrows (on Visible or Stresse ohic Positi Aquitard (ographic F	ors equired) d Concave S (B10) 316) Table (C2) C8) on Aerial Ima d Plants (D1 on (D2) D3) Reilef (D4)	agery (C9)
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epth (incl emarks: ydrolog /etland H Primary In Surface High W Saturati Saturati Sedime Drift De Algal M Iron De Inundat Imagery ield Obse urface W	y ydrology Indica dicators (minimu water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible From y (B7) ervations: ater Present? <u>N</u>	um of o) ı Aerial	 □ Water Si □ Aquatic I □ True Aqu □ Hydroge □ Oxidized □ Roots (C □ Presence □ Recent I Soils (C6 □ Thin Muc 	ained Le Fauna (B uatic Plar n Sulfide Rhizosp 3) e of Redu ron Redu 3) ck Surfac	all that apply eaves (B9) 313) onts (B14) odor (C1) oheres on Li uced Iron (C uction in Till ce (C7) Remarks) Depth (i	ive (1 24) ed nches)	econdary minimum Surface Sparsely Drainage Moss Tri Dry-Seas Crayfish Saturatic Stunted Geomorp Shallow Microtop FAC-Neu 0.0	Indicato of two re Soil Crack Vegetate Patterns m Lines (I son Water Burrows (on Visible on Stresse ohic Positi Aquitard (ographic f utral Test	ors equired) (B6) d Concave S (B10) Table (C2) C8) on Aerial Ima on (D2) D3) Reilef (D4) (D5)	agery (C9) I)
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epth (incl emarks: ydrolog /etland H Primary In Surface High W Saturati Water N Sedime Drift De Algal M Iron De Inundat Imagery ield Obso urface W /ater Tab aturation	y ydrology Indica dicators (minimu water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible From (B7) ervations: ater Present? <u>N</u> le Present? <u>No</u>	um of o)) Aerial <u>No</u> ding cap	 ☐ Water Si ☐ Aquatic I ☐ True Aqu ☐ Hydroge ☐ Oxidized ☐ Roots (C ☐ Presence ☐ Recent II Soils (C6 ☐ Thin Muc ☐ Other (E 	tained Le Fauna (B Jatic Plar n Sulfide Rhizosp 3) e of Redu 70 Redu 3) ck Surfac xplain in	all that apply eaves (B9) 313) ints (B14) e Odor (C1) oheres on Li uced Iron (C uction in Till ce (C7) Remarks) Depth (i Depth (i	(r) (r) (r) (r) (r) (r) (r) (r) (r) (r) (r) (r) (r)	econdary minimum Surface Sparsely Drainage Moss Tri Dry-Seas Crayfish Saturatic Stunted Geomory Shallow FAC-Neu 0.0 0.0 0.0	Indicato of two re Soil Crack Vegetate Patterns m Lines (i son Water Burrows (on Visible or Stresse ohic Positi Aquitard (ographic f utral Test Wetlan <u>No</u>	equired) s (B6) d Concave S (B10) B16) Table (C2) C8) on Aerial Ima d Plants (D1 on (D2) D3) Reilef (D4) (D5) d Hydrold	agery (C9) I) D gy Present?



WETLAND DETERMINATION DATA FORM Eastern Mountains Pand Pedmont

Project/Site: Henderson County Solar	City/County: Hender	rson/Henderson	Date: 07-May-20
Applicant/Owner: Henderson County Solar LLC		State: KY S	Sampling Point: 2MW13
Investigators: Ryan Winka	Sec, Twp, Rng: SN	A	
Landform: Depression	Local Relief: Concav	/e	Slope %: <u>1.5</u>
Subregion: LRR	Lat: <u>37.78765 N</u>	Lon: <u>-87.64251 W</u>	Datum: Decimal Degrees
Soil Map Unit Name:	NWI Classification:	PEM Area Ft ²	² : <u>2,787</u>
Are climatic/hydrologic conditions on this	Remarks (If No):		
site typical for this time of year? Yes			
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed?	Are "Normal Circur	nstances" present: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	y Problematic?	Remarks:	

SUMMARY OF FINDINGS -- Attach site map showing sampling locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes Is the Sampled Area within a Wetland? Yes Hydric Soil Present? Yes Ves Wetland Hydrology Present? Yes Ves

Remarks: Linear wetland 5 ft wide

VEGETATION: Scientific Names

Tree Stratum	Plot Size:	Absolute % Cover:	Dominant <u>Species?</u>	Indicator <u>Status</u>	Dominance Test Worksheet:
1.					Number of Dominant Species that
2.					are OBL, FACW or FAC: <u>3</u> A
3.					Total Number of Dominant Species
4.					across all Strata: <u>4</u> B
5.					Percent of Dominant Species that
		= To	otal Cover		are OBL, FACW or FAC: <u>75.0</u> A/B
Sapling/Shrub	Stratum Plot Size:				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1.					
2.					$OBL \qquad 0 \qquad x1= \qquad 0$
3.					FACW <u>0</u> x2= <u>0</u> FAC 0 x3= 0
4.					
5.					FACU <u>0</u> x4= <u>0</u> UPL 0 x5= 0
		= To	otal Cover		TOTALS
<u>Herb Stratum</u>	Plot Size:				(A) <u>0</u> (B) <u>0</u>
1.					Prevalence Index = B/A =
2.					
3.					Hydrophytic Vegetation
4.					Indicators:
5. 6.					✓ Dominance Test is >50%
6. 7.					□ Prevalence Index is $\leq 3.0^{1}$
7. 8.					Morphologic Adaptations ¹ Drablematic Lludranbutic
9.					Problematic Hydrophytic Vegetation ¹ (Explain)
9. 10					vegetation (Explain)
10		= To	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine St	ratum Plot Size:				hydrology must be present, unless disturbed or problematic.
1.					Hydrophytic Vegetation
2.					Present? Yes
		= To	otal Cover		<u>100</u>
Remarks:					·

						Sampl	E: ing Point: <u>2MW</u>	xhibit 14 Attachment 14	
SOIL Profile Des	scription: (Desc	ribo to	denth neede	d to do	cumont the	-		he absence of ind	icators
Tome Des	<u>Matrix</u>		depth neede		x Features	mulcate			icators
Depth	Color		Color			-			
inches)	<u>(Moist)</u>	<u>%</u>	<u>(Moist)</u>	<u>%</u>	<u>Type¹</u>	<u>Loc²</u>	<u>Texture</u>	<u>Remarks</u>	
0-4	10YR4/1	90	7.5YR4/6	10	С	М	Clayey		
4-12	10YR5/2	70	7.5YR5/6	30	С	М	Clayey		
		epletion	n, RM=Reduced	Matrix, I	MS=Masked S	Sand Grai		PL=Pore Lining, M=	
yaric Sol	I Indicators:		_				Soils ³ :	for Problematic H	iyaric
Histosol					leyed Matrix	(S4)		ent Material (TF2)	
	pipedon (A2)				edox (S5)			allow Dark Surface	
	istic (A3)				Matrix (S6)		└─ Other (E	xplain in Remarks)	
	en Sulfide (A4)				face (S7)				
	d Layers (A5)				Bleyed Matrix I Matrix (F3)		³ Indiantar	s of hydrophytic veg	rototion
	uck (A10) (LRR I d Below Dark Su				ark Surface			d hydrology must b	
	ark Surface (A12				I Dark Surface			less disturbed or	C
	Aucky Mineral (S				epressions (problematio		
Calluy		,,, (c r			iganese Mas		•		
rpe: <u>0</u> epth (inch emarks:	nes): <u>0</u>				H	lydric So	bil Present? <u>Y</u>	es	
ydrolog	<mark>y</mark> ydrology Indica	itors:				0			
	dicators (minimu		ne is required;	check a	all that apply	1	ondary Indicate		
Surface	Water (A1)		Water St	ainad La	eaves (B9)		Surface Soil Cracl	<s (b6)<="" td=""><td></td></s>	
	ater Table (A2)		Aquatic F				Sparsely Vegetate	d Concave Surface (B8	3)
Saturati			True Aqu				Drainage Patterns	(B10)	
Water M	/larks (B1)				Odor (C1)		Moss Trim Llnes (B16)	
	nt Deposits (B2)				heres on Liv	ve 🗆	Dry-Season Wate	r Table (C2)	
Drift De	posits (B3)		Roots (C				Crayfish Burrows	(C8)	
Algal Ma	at or Crust (B4)		Presence	of Red	uced Iron (C	(4)	Saturation Visible	on Aerial Imagery (C9)	
	posits (B5)		Recent Ir	on Redu	uction in Tille	ed 🗌	Stunted or Stresse	ed Plants (D1)	
	on Visible From	Aerial	Soils (C6)			Geomorphic Posit	ion (D2)	
Imagery	ν (B7)		🗌 Thin Muc	k Surfac	ce (C7)		Shallow Aquitard (D3)	
			Other (E)	plain in	Remarks)		Microtopographic	Reilef (D4)	
			, ,	•	,		FAC-Neutral Test	(D5)	
eld Obse	ervations:								
	ater Present? N	<u>o</u>			Depth (ir	nches)	0.0		
	e Present? <u>No</u>				Depth (ir	· · ·		d Hydrology Pres	ent?
aturation l	Present? (includ	ing cap	illary fringe) <u>N</u>	<u>o</u>	Depth (ir	· · ·	0.0 <u>Yes</u>		
escribe R	ecorded Data (S	tream	gauge, monito	ring well	l, aerial phot	os, previ	ous inspection)	, if available:	
emarks:									



WETLAND DETERMINATION DATA FORM Eastern Mountains Pand Predmont

Project/Site: <u>Henderson County Solar</u>	City/County: <u>Henderson/Henderson</u>	Date: 07-May-20
Applicant/Owner: Henderson County Solar LLC	State: KY	Sampling Point: 2MW13U
Investigators: Ryan Winka	Sec, Twp, Rng: <u>S NA</u>	
Landform: Hillslope	Local Relief: Convex	Slope %: 2
Subregion: LRR	Lat: <u>37.78765 N</u> Lon: <u>-87.64251 V</u>	V Datum: Decimal Degrees
Soil Map Unit Name:	NWI Classification: Area F	t ² :
Are climatic/hydrologic conditions on this	Remarks (If No):	
site typical for this time of year? Yes	· · · · ·	
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal Circ	umstances" present: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	y Problematic? Remarks:	
	-	

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

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

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant Species?	Indicator <u>Status</u>	Dominance Test Worksheet:
1.				Number of Dominant Species that
2.				are OBL, FACW or FAC: <u>0</u> A
3.				Total Number of Dominant Species
4.				across all Strata: <u>1</u> B
5.				Percent of Dominant Species that
	= Te	otal Cover		are OBL, FACW or FAC: 0.0 A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1.				
2.				OBL <u>2</u> x1= <u>2</u>
3.				FACW <u>0</u> x2= <u>0</u>
4.				FAC <u>0</u> x3= <u>0</u>
5.				FACU <u>3</u> x4= <u>12</u>
	= Te	otal Cover		UPL <u>0</u> x5= <u>0</u>
Herb Stratum Plot Size: Unit				TOTALS
	(0.0			(A) <u>5</u> (B) <u>14</u>
1. Lamium amplexicaule	10.0	Yes	NI	Prevalence Index = B/A = 2.8
2. Packera glabella	2.0	No	OBL	
3. Poa annua	3.0	No	FACU	Hydrophytic Vegetation
4. 5.				Indicators:
5. 6.				
o. 7.				✓ Prevalence Index is $\leq 3.0^{1}$
7. 8.				Morphologic Adaptations ¹ Problematic Hydrophytic
o. 9.				Vegetation ¹ (Explain)
10				
	15 0 - T	otal Cover		¹ Indicators of hydric soil & wetland
	15.0 - 10			hydrology must be present, unless
Woody Vine Stratum Plot Size: Unit				disturbed or problematic.
1.				Hydrophytic Vegetation
2.				Present? Yes
	= [0	otal Cover		
Remarks:				

SOIL						San	npling F	oint: <u>2MW</u>	13U Page 193 o	of 237
Profile De	scription: (Desc	ibe to d	epth need				ator or	confirm tl	ne absence of i	indicators.)
D (1	<u>Matrix</u>		0.1	Redox	Features			-		
Depth (inches)	Color (Moist)	0/_	Color (Moist)	0/_	Type ¹	Loc	2	Toxturo	<u>Remarks</u>	
· ·	· · ·	<u>%</u>	<u>(Moist)</u>	<u>%</u>	Type		<u>,</u>	<u>Texture</u>	Remarks	
<u>0-8</u> 8-16		00 00						Loamy		
0-10	101K4/3	00						Loamy		
	Concentration, D=D	anletion F		d Matrix M	IS=Masked	I Sand G	raine 2	Location:	PI =Pore Lining	M=Matrix
	il Indicators:	spiction, i							for Problemati	
nyano oo								Soils ³ :		onyano
□ Histosc	bl (A1)			Sandy Gle	eved Matri	ix (S4)		Red Par	ent Material (TF	2)
	Epipedon (A2)			Sandy Re		<i>(</i> 0)			allow Dark Surfa	
	listic (A3)			Stripped N)			xplain in Remai	
	en Sulfide (A4)			Dark Surf						
	ed Layers (A5)			Loamy Gl				3		
	luck (A10) (LRR N			Depleted					of hydrophytic	
	ed Below Dark Su		1) 🗆	Redox Da					d hydrology mus less disturbed c	
)ark Surface (A12 Mucky Mineral (S		N)	Depleted Redox De				problematic		И
				Iron-Mang			•			
Restrictiv	e Layer (if obser	ved):			,		7			
Туре:		,								
Depth (incl	hes):					Hydric	Soil P	resent? N	<u>o</u>	
Remarks:										
Hydrolog	IV.									
	lydrology Indica	tors:					Soconda	ary Indicato		
	idicators (minimu		is required	t check al	I that ann	1		m of two re		
			_			<u>y) (</u>		ce Soil Crack	. ,	
	e Water (A1) ater Table (A2)	Ĺ		Stained Lea			_		d Concave Surface	(B8)
	ion (A3)	Ĺ		Fauna (B [^] Juatic Plan			<u> </u>	age Patterns		(20)
	Marks (B1)	[en Sulfide	· · ·)	_	Trim Lines (
_	ent Deposits (B2)	[d Rhizospł			Dry-S	eason Water	⁻ Table (C2)	
🗌 Drift De	eposits (B3)	r	_ Roots (0				Crayf	ish Burrows ((C8)	
	at or Crust (B4)	Ĺ		ce of Redu	·		Satur	ation Visible	on Aerial Imagery (C9)
	posits (B5)	l		Iron Redu	ction in Til	lled	Stunt	ed or Stresse	ed Plants (D1)	
	tion Visible From	Aerial	Soils (C				_	orphic Posit		
Imager	у (В7)	L		ick Surface	· · /			ow Aquitard (
		l	☐ Other (E	Explain in F	Remarks)			topographic		
	an ations.						Y FAU-	Neutral Test	(00)	
	ervations: ater Present? No				Donth ((inches)	<u> </u>	0		
	le Present? <u>No</u>	2				(inches)			d Hydrology P	resent?
	Present? (includi	ng capilla	ry frinae)	No		(inches)		0 <u>No</u>	a nyanology i	
	Recorded Data (S	• •				,			, if available:	
	(J ,	J,		, I		,)	,	
Remarks:										

Exhibit 14 Attachment 14.1



WETLAND DETERMINATION DATA FORM Eastern Mountains and Pietuniont

Project/Site: <u>Henderson County Solar</u>	City/County: Henderso	on/Henderson	Date: 07-May-20
Applicant/Owner: <u>Henderson County Solar LLC</u>	· · ·	State: KY	Sampling Point: 2MW14
Investigators: Keith Michalski, Ryan Harris	Sec, Twp, Rng: SNA		
Landform: Flat	Local Relief: Concave		Slope %: <u>1</u>
Subregion: LRR	Lat: 37.79076 N Lo	on: <u>-87.64378 W</u>	/ Datum: Decimal Degrees
Soil Map Unit Name:	NWI Classification: PF	O Area Fi	¹ ² : <u>7,569</u>
Are climatic/hydrologic conditions on this	Remarks (If No):		
site typical for this time of year? Yes			
Are Vegetation , Soil , or Hydrology Signific	antly Disturbed? Ar	re "Normal Circu	ımstances" present: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	ly Problematic? Re	emarks:	
SUMMARY OF FINDINGS Attach site man	showing sampling lo	cations transp	cte imnortant featuree etc

/ ataon one map energy		104(4)00,0(0)
Hydrophytic Vegetation Present? Yes	Is the Sampled Area within a Wetland?	<u>Yes</u>
Hydric Soil Present? <u>Yes</u>		
Wetland Hydrology Present? <u>Yes</u>		
Remarks: Wetland is hillside seep.		

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant <u>Species?</u>	Indicator <u>Status</u>	Dominance Test Worksheet:			
1. Celtis laevigata	20.0	Yes	FACW	Number of Dominant Species that			
2. Quercus imbricaria	15.0	Yes	FAC	are OBL, FACW or FAC: <u>6</u> A			
3. Gleditsia triacanthos	10.0	No	FAC	Total Number of Dominant Species			
4. Carya illinoinensis	10.0	No	FACU	across all Strata: <u>6</u> B			
5.				Percent of Dominant Species that			
	55.0 = T	otal Cover		are OBL, FACW or FAC: <u>100.0</u> A/B			
Sapling/Shrub Stratum Plot Siz	ze: <u>Unit</u>			Prevalence Index Worksheet:			
1. Salix nigra	20.0	Yes	OBL	Total % Cover of: Multiply by:			
2. Populus deltoides	5.0	No	FAC	OBL <u>0</u> x1= <u>0</u>			
3. Celtis laevigata	2.0	No	FACW	FACW <u>0</u> x2= <u>0</u>			
4. Asimina triloba	2.0	No	FAC	FAC <u>0</u> x3= <u>0</u>			
5.				FACU <u>0</u> x4= <u>0</u>			
	29.0 = T	otal Cover		UPL <u>0</u> x5= <u>0</u>			
Herb Stratum Plot Size: Unit				TOTALS			
	20.0	Yes	FAC	(A) <u>0</u> (B) <u>0</u>			
1. Solidago rugosa 2. Panicum virgatum	15.0	Yes	FAC FAC	Prevalence Index = B/A =			
3. Carex blanda	10.0	Yes	FAC	Hydrophytic Vegetation			
4. Dactylis glomerata	8.0	No	FACU	Indicators:			
5. Elymus riparius	8.0	No	FACW	✓ Dominance Test is >50%			
6. Juncus tenuis	5.0	No	FAC	\square Prevalence Index is $\leq 3.0^{1}$			
7. Carex vulpinoidea	5.0	No	OBL	\square Morphologic Adaptations ¹			
8. Erigeron annuus	5.0	No	FACU	Problematic Hydrophytic			
9. Rubus argutus	6.0	No	FACU	Vegetation ¹ (Explain)			
10 Symphoricarpos orbiculatus	4.0	No	FACU				
		otal Cover	17100	¹ Indicators of hydric soil & wetland			
Woody Vine Stratum Plot Size				hydrology must be present, unless disturbed or problematic.			
1.				Hydrophytic Vegetation			
2.				Present? Yes			
	= T	otal Cover		· · · · · · · · · · · · · · · · · · ·			
Remarks:							

					0			xhibit 14 Attac	nment 14.1 196 of 237
SOIL			.141.				Point: 2MV	14 °	
Profile Description: (De Matrix		deptn neede		cument the x Features	e indi	cator o	r confirm t	ne absence	e of indicators.)
Depth Color		Color		_ 1		2			
(inches) (Moist)	<u>%</u>	<u>(Moist)</u>	<u>%</u>	<u>Type¹</u>		oc ²	<u>Texture</u>	<u>Remarks</u>	
0-12 10YR4/2	90	7.5YR4/6	10	С		М	Loamy		
¹ Type: C=Concentration, D	=Depletio	n, RM=Reduced	Matrix, N	VS=Masked	Sand	Grains.			-
Hydric Soil Indicators:							Indicators Soils ³ :	for Proble	matic Hydric
□ Histosol (A1)			Sandy G	leyed Matri	x (S4)		ent Materia	(TF2)
\square Histic Epipedon (A2)				edox (S5)	x (0+)			Surface (TF12)
Black Histic (A3)				Matrix (S6))			xplain in Re	
□ Hydrogen Sulfide (A4)			face (S7)	,		(-		,
Stratified Layers (A5)				leyed Matr	ix (F2	2)			
2 cm Muck (A10) (LR	RN)			Matrix (F3		,	³ Indicators	s of hydroph	ytic vegetation
Depleted Below Dark	Surface			ark Surface			and wetlan	d hydrology	must be
Thick Dark Surface (A	A12)		Depleted	Dark Surfa	ace (F	-7)		less disturb	ed or
Sandy Mucky Mineral	(S1) (L	RR N) 🗌 F	Redox D	epressions	(F8)		problemation	c.	
			ron-Man	iganese Ma	asses	(F12)(L	RR N)		
Restrictive Layer (if obs	served):								
Туре: <u>0</u>	-								
Depth (inches): <u>0</u>					Hydri	ic Soil I	Present? Y	<u>es</u>	
Remarks:									
Hydrology									
Wetland Hydrology Ind	icators:					Secon	dary Indicate	ors	
Primary Indicators (mini		ne is required;	check a	all that apply	V)		um of two re		
Surface Water (A1)		✓ Water Sta				Sur	face Soil Cracl	ks (B6)	
☐ High Water Table (A2		Aquatic F	aineu Le Sauna (B	aves (D9)		 Spa	rsely Vegetate	ed Concave Su	rface (B8)
Saturation (A3)	,	True Aqu		,		Dra	inage Patterns	(B10)	
Water Marks (B1)				Odor (C1)		Mos	s Trim LInes (B16)	
Sediment Deposits (B	32)			heres on L		Dry	-Season Wate	r Table (C2)	
Drift Deposits (B3)	,	Roots (C3					yfish Burrows		
Algal Mat or Crust (B4	4)			uced Iron (C4)		uration Visible	. ,	jery (C9)
□ Iron Deposits (B5)	,			uction in Til			nted or Stresse		
Inundation Visible Fro	m Aerial	Soils (C6)				morphic Posit		
Imagery (B7)		Thin Muc	k Surfac	ce (C7)			llow Aquitard (
		Other (Ex	olain in	Remarks)			rotopographic		
			.prain in	rtomanto)			C-Neutral Test		
Field Observations:									
Surface Water Present?	No			Depth (inche	s)	0.0		
Water Table Present? <u>N</u>				Depth (d Hydrolog	gy Present?
Saturation Present? (incl	uding ca	oillary fringe) <u>Y</u> e	<u>es</u>	Depth (inche	s)	0.0 <u>Yes</u>	-	
Describe Recorded Data	(Stream	gauge, monito	ring well	l, aerial pho	otos, p	previous	inspection)	, if available	e:
Remarks:									



WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Henderson County Solar	City/County: Henderson/	/Henderson	Date: 07-May-20
Applicant/Owner: Henderson County Solar LLC		State: <u>KY</u> S	Sampling Point: <u>2MW14U</u>
Investigators: Keith Michalski, Ryan Harris	Sec, Twp, Rng: <u>S NA</u>		
Landform: <u>Hillslope</u>	Local Relief: Convex		Slope %: <u>4</u>
Subregion: LRR	Lat: <u>37.79076 N</u> Lon	: <u>-87.64378 W</u>	Datum: Decimal Degrees
Soil Map Unit Name:	NWI Classification:	Area Ft ²	2:
Are climatic/hydrologic conditions on this	Remarks (If No):		
site typical for this time of year? Yes			
Are Vegetation , Soil , or Hydrology Signific	antly Disturbed? Are	"Normal Circur	nstances" present: <u>Yes</u>
Are Vegetation , Soil , or Hydrology Natural	y Problematic? Ren	narks:	
SUMMARY OF FINDINGS Attach site man	showing sampling loca	ations transoc	ts important features etc

- Attach site map showing s	Sampling locations, transects, important reatures, etc.
Hydrophytic Vegetation Present? No	Is the Sampled Area within a Wetland? No
Hydric Soil Present? <u>No</u>	
Wetland Hydrology Present? <u>No</u>	
Remarks: Upland is crop field.	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant Species?	Indicator <u>Status</u>	Dominance Test Worksheet:
1.				Number of Dominant Species that
2.				are OBL, FACW or FAC: <u>0</u> A
3.				Total Number of Dominant Species
4.				across all Strata: <u>2</u> B
5.				Percent of Dominant Species that
	= T	otal Cover		are OBL, FACW or FAC: 0.0 A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1.				
2.				OBL <u>8</u> x1= <u>8</u>
3.				FACW <u>0</u> x2= <u>0</u>
4.				FAC <u>0</u> x3= <u>0</u>
5.				FACU <u>20</u> x4= <u>80</u>
	= T	otal Cover		UPL <u>0</u> x5= <u>0</u>
Herb Stratum Plot Size: Unit				TOTALS (A) <u>28</u> (B) <u>88</u>
1. Lamium amplexicaule	20.0	Yes	NI	
2. Capsella bursa-pastoris	10.0	Yes	FACU	Prevalence Index = B/A = <u>3.1</u>
3. Packera glabella	8.0	No	OBL	Hydrophytic Vegetation
4. Poa annua	5.0	No	FACU	Indicators:
5. Geranium maculatum	5.0	No	FACU	□ Dominance Test is >50%
6.				\Box Prevalence Index is $\leq 3.0^{1}$
7.				☐ Morphologic Adaptations ¹
8.				Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				
	48.0 = T	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1.				Hydrophytic Vegetation
2.				Present? No
	= T	otal Cover		
Remarks:				

SOIL						Sar	npling F	oint: <u>2MW</u>	14U Page 199 of 237
Profile De		ribe to d	lepth need				ator or	confirm th	he absence of indicators
D "	<u>Matrix</u>		<u> </u>	Redox	Features	;		-	
Depth (inches)	Color (Moist)	0/2	Color <u>(Moist)</u>	<u>%</u>	Type ¹	Loc	2	<u>Texture</u>	<u>Remarks</u>
· · · · ·	(Moist)	<u>%</u>	<u>(IVIOIST)</u>	<u>-70</u>	Type		<u>,</u>		Remarks
<u>0-4</u> 4-16		<u>100</u> 100						Loamy	
4-10	101 K0/4	100						Loamy	
	oncentration D-C	enletion	RM-Reduce	d Matrix M	IS-Masker	I Sand G	Proine 2	Location:	PL=Pore Lining, M=Matrix.
	il Indicators:	cpiction,							for Problematic Hydric
iyano oo								Soils ³ :	
□ Histosc	ol (A1)			Sandy Gle	eved Matr	ix (S4)		Red Par	ent Material (TF2)
	Epipedon (A2)			Sandy Re		<i>"</i> (01)			allow Dark Surface (TF12
	listic (A3)			Stripped N		5)			xplain in Remarks)
	en Sulfide (A4)			Dark Surf	· · ·				
	ed Layers (A5)			Loamy Gl				3	
	luck (A10) (LRR			Depleted					s of hydrophytic vegetation
	ed Below Dark Su Dark Surface (A12		11) 🗆	Redox Da					d hydrology must be less disturbed or
	Mucky Mineral (S			Depleted Redox De				problematic	
				Iron-Mang					
Restrictiv	e Layer (if obsei	ved):			, 		x		
Type:									
Depth (incl	hes):					Hydric	Soil P	resent? N	<u>0</u>
Remarks:									
Hydrolog	У								
Wetland H	lydrology Indica	tors:						ary Indicato	
Primary In	dicators (minimu	m of one	is required	l; check al	l that appl	ly) (minimu	m of two re	equired)
Surface	e Water (A1)		Water S	tained Lea	aves (B9)		🗌 Surfa	ce Soil Crack	(B6)
🗌 High W	ater Table (A2)			Fauna (B			Spare	ely Vegetate	d Concave Surface (B8)
	ion (A3)		🗌 True Aq	uatic Plan	ts (B14)		_	age Patterns	
_	Marks (B1)			en Sulfide				Trim LInes (
	ent Deposits (B2)			d Rhizospł	neres on L	_ive		eason Water	· · ·
	posits (B3) at or Crust (B4)		Roots (0	e of Redu	ced Iron ((C4)		ish Burrows (ation Visible	on Aerial Imagery (C9)
	posits (B5)			Iron Redu					ed Plants (D1)
	ion Visible From	Aerial	Soils (C			liou		orphic Positi	
Imager				ck Surface	e (C7)		_	ow Aquitard (· · ·
			Other (E	Explain in F	Remarks)			topographic l	
			- (1	/		FAC-	Neutral Test	(D5)
Field Obs	ervations:								
	ater Present? <u>N</u>	<u>o</u>				(inches)			
	le Present? No					(inches)			d Hydrology Present?
	Present? (includ	• •	, ,			(inches)		<u>.0 No</u>	
Describe F	Recorded Data (S	tream ga	luge, monit	oring well,	aerial pho	otos, pr	evious i	nspection)	, if available:
Remarks:									

Exhibit 14 Attachment 14.1



WETLAND DETERMINATION DATA FORM Eastern Mountains Pand Piedmont

Project/Site: Henderson County Solar	City/County: Hender	son/Henderson	Date: <u>27-Oct-20</u>		
Applicant/Owner: <u>Henderson County Solar LLC</u>		State: KY	Sampling Point: <u>2MW30</u>		
Investigators: Keith Michalski	Sec, Twp, Rng: SN	A			
Landform: Flat	Local Relief: Concav	/e	Slope %: 0.25		
Subregion: LRR	Lat: <u>37.79211 N</u>	Lon: -87.62700 W	Datum: Decimal Degrees		
Soil Map Unit Name:	NWI Classification:	PEM Area Ft	² : <u>961</u>		
Are climatic/hydrologic conditions on this	Remarks (If No):				
site typical for this time of year? Yes					
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed?	Are "Normal Circumstances" present: <u>No</u>			
Are Vegetation 🖌, Soil 🗌, or Hydrology 🗌 Naturally Problematic?		Remarks: Mowed			

SUMMARY OF FINDINGS -- Attach site map showing sampling locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes Is the Sampled Area within a Wetland? Yes

Hydric Soil Present? <u>Yes</u> Wetland Hydrology Present? <u>Yes</u>	•	_
Remarks: Mowed driving range field.		

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant Species?	Indicator <u>Status</u>	Dominance Test Worksheet:
1.		-		Number of Dominant Species that
2.				are OBL, FACW or FAC: <u>1</u> A
3.				Total Number of Dominant Species
4.				across all Strata: <u>2</u> B
5.				Percent of Dominant Species that
	= T	otal Cover		are OBL, FACW or FAC: <u>50.0</u> A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: <u>Total % Cover of:</u> Multiply by:
1.				
2.				OBL <u>10</u> $x_{1}^{1} = 10$
3.				FACW 10 $x2= 20$
4.				FAC 45 x3= 135
5.				FACU <u>30</u> x4= <u>120</u>
	= T	otal Cover		UPL <u>0</u> x5= <u>0</u>
Herb Stratum Plot Size: Unit				TOTALS (A) <u>95</u> (B) <u>285</u>
1. Setaria parviflora	30.0	Yes	FAC	
2. Festuca arundinacea	20.0	Yes	FACU	Prevalence Index = B/A = <u>3.0</u>
3. Dactylis glomerata	10.0	No	FACU	Hydrophytic Vegetation
4. Juncus tenuis	10.0	No	FAC	Indicators:
5. Carex frankii	10.0	No	OBL	□ Dominance Test is >50%
6. Cyperus odoratus	5.0	No	FACW	\checkmark Prevalence Index is $\leq 3.0^{1}$
7. Phalaris arundinacea	5.0	No	FACW	☐ Morphologic Adaptations ¹
8. Paspalum laeve	5.0	No	FAC	Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				
	95.0 = T	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1.				Hydrophytic Vegetation
2.				Present? Yes
	= T	otal Cover		
Remarks:				

rofila Das								nt: <u>2MW</u>		5
Ionie Des		ribe to	depth need			e indica	ator or co	nfirm th	ne abser	nce of indicator
Donth	<u>Matrix</u> Color	-	Color	Redo	x Features					
Depth inches)	(Moist)	<u>%</u>	(Moist)	<u>%</u>	Type ¹	Loc	² т	exture	Remar	rke
	. ,		· ·						Itema	<u>K5</u>
0-10		80	7.5YR 4/6	20	С	Ν		<u>pamy</u>		
10-16	10YR 3/1	100					C	layey		
	oncentration, D=D	epletion,	, RM=Reduce	ed Matrix, N	/IS=Masked	Sand G				-
lydric Soi	I Indicators:						Ind Soi		for Prob	olematic Hydric
Histosol	l (A1)			Sandy Gl	leyed Matrix	k (S4)	F	Red Pare	ent Mate	rial (TF2)
Histic E	pipedon (A2)			Sandy Re	edox (S5)			ery Sha	llow Dar	k Surface (TF12
Black H	istic (A3)			Stripped	Matrix (S6)			Other (E	xplain in	Remarks)
🚽 Hydroge	en Sulfide (A4)			Dark Sur	face (S7)					
Stratifie	d Layers (A5)				leyed Matri		0			
	uck (A10) (LRR I				Matrix (F3	,				ophytic vegetatio
	d Below Dark Su		∖ 11) ∐		ark Surface					ogy must be
Thick D	ark Surface (A12	2)		Depleted	Dark Surfa	ace (F7				urbed or
່ Sandy N	Mucky Mineral (S	1) (LR	RN) 📙		epressions		•	plematic		
				Iron-Man	ganese Ma	sses (F	12)(LRR	N)		
epth (inch Remarks:	nes): <u>0</u>					Hydric	Soil Pres	ent? <u>Ye</u>	<u>es</u>	
lydrology	у									
	y ydrology Indica	tors:				S	econdarv	Indicato	rs	
-	ydrology Indica		e is required	l: check a	Il that apply	1.	econdary minimum (
Vetland Hy Primary Inc	ydrology Indica					1.	minimum (of two re	quired)	
Vetland Hy Primary Inc	ydrology Indica dicators (minimu Water (A1)		U Water S	stained Le	aves (B9)	1.	minimum o	of two re Soil Crack	equired) s (B6)	2 Surface (B8)
Vetland Hy Primary Ind Surface	ydrology Indica <u>dicators (minimu</u> Water (A1) ater Table (A2)		□ Water S □ Aquatic	Stained Le Fauna (B	eaves (B9) 13)	<u>/) (I</u>	minimum o Surface S	of two re Soil Crack Vegetate	equired) s (B6) d Concave	e Surface (B8)
Vetland Hy Primary Ind Surface High Wa Saturatio	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3)		☐ Water S ☐ Aquatic ☐ True Aq	Stained Le Fauna (B uatic Plar	eaves (B9) 13) nts (B14)	<u>/) (I</u>	minimum (☐ Surface \$ ☐ Sparsely ✔ Drainage	of two re Soil Crack Vegetate Patterns	equired) s (B6) d Concave (B10)	e Surface (B8)
Vetland Hy Primary Inc Surface High Wa Saturatio Water N	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) /larks (B1)		☐ Water S ☐ Aquatic ☐ True Aq ☐ Hydroge	Stained Le Fauna (B uatic Plar en Sulfide	eaves (B9) 13) nts (B14) Odor (C1)	<u>/) (I</u>	Minimum (Surface S Sparsely ✓ Drainage Moss Tri	of two re Soil Crack Vegetate Patterns m Llnes (I	equired) s (B6) d Concave (B10) 316)	
Vetland Hy Primary Ind Surface High Wa Saturation Water N Sedimer	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) /larks (B1) nt Deposits (B2)		 □ Water S □ Aquatic □ True Aq □ Hydroge □ Oxidized 	Stained Le Fauna (B uatic Plar en Sulfide d Rhizosp	eaves (B9) 13) nts (B14)	<u>,) (I</u> ive	minimum o Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas	of two re Soil Crack Vegetate Patterns m Lines (I	equired) s (B6) d Concave (B10) 316) Table (C2	
Vetland Hy Primary Ind Surface High Wa Saturatio Saturatio Sedimer Sedimer	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3)		☐ Water S ☐ Aquatic ☐ True Aq ☐ Hydroge ☐ Oxidized _ Roots (0	Stained Le Fauna (B uatic Plar en Sulfide d Rhizosp C3)	eaves (B9) 13) nts (B14) Odor (C1) heres on Li	<u>/) (I</u> ive	Minimum of Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas ✓ Crayfish	of two re Soil Crack Vegetate Patterns m Lines (I son Water Burrows (equired) s (B6) d Concave (B10) 316) Table (C2 C8)	2)
Vetland Hy Primary Ind Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)		 □ Water S □ Aquatic □ True Aq □ Hydroge □ Oxidized □ Roots (0 □ Presend 	Stained Le Fauna (B uatic Plar en Sulfide d Rhizosp C3) ce of Redu	eaves (B9) 13) hts (B14) Odor (C1) heres on Li uced Iron ((<u>/) (I</u> ive C4)	minimum of Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas ✓ Crayfish Saturatio	of two re Soil Crack Vegetate Patterns m Lines (I son Water Burrows (n Visible (equired) s (B6) d Concave (B10) 316) Table (C2 C8) on Aerial Ir	e) magery (C9)
Vetland Hy Primary Ind Surface High Wa Saturatio Water W Sedimer Drift Dep Algal Ma	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	<u>m of on</u>	 □ Water S □ Aquatic □ True Aq □ Hydroge □ Oxidized ■ Roots (0 □ Presend □ Recent 	Stained Le Fauna (B uatic Plar en Sulfide d Rhizosp C3) ce of Redu Iron Redu	eaves (B9) 13) nts (B14) Odor (C1) heres on Li	/) (I ive C4) ed	minimum of Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas ✓ Crayfish Saturatio	of two re Soil Crack Vegetate Patterns m Lines (I son Water Burrows (n Visible o or Stresse	equired) s (B6) d Concave (B10) 316) Table (C2 C8) on Aerial Ir d Plants (I	e) magery (C9)
Vetland H Primary Ind Surface High Wa Saturatio Vater N Sedimer Drift Dep Algal Ma Iron Dep Inundatio	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible From J	<u>m of on</u>	 Water S Aquatic True Aq Hydroge Oxidized Roots (0 Presend Recent Soils (C 	Stained Le Fauna (B uatic Plar en Sulfide d Rhizosp C3) ce of Redu Iron Redu 6)	eaves (B9) 13) nts (B14) Odor (C1) heres on Li uced Iron (C uction in Till	/) (I ive C4) ed	minimum of Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas ✓ Crayfish Saturatio Stunted of ✓ Geomorp	of two re Soil Crack Vegetate Patterns m LInes (I son Water Burrows (n Visible or Stresse shic Positi	equired) s (B6) d Concave (B10) 316) Table (C2 C8) on Aerial Ir d Plants (I on (D2)	e) magery (C9)
Vetland Hy Primary Ind Surface High Wa Saturatid Water W Sedimer Drift Dep Algal Ma	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible From J	<u>m of on</u>	 Water S Aquatic True Aq Hydroge Oxidized Roots (C Presend Recent Soils (C Thin Mu 	Stained Le Fauna (B uatic Plar Static Plar Static Plar Static Hon Suffac Static	eaves (B9) 13) ots (B14) Odor (C1) heres on Li uced Iron (C uction in Till ce (C7)	/) (I ive C4) ed	minimum of Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas ✓ Crayfish Saturatio Stunted of ✓ Geomorp Shallow	of two re Soil Crack Vegetate Patterns m LInes (I son Water Burrows (n Visible or Stresse shic Positi Aquitard (I	equired) s (B6) d Concave (B10) 316) Table (C2 C8) on Aerial Ir d Plants (I on (D2) D3)	2) magery (C9) D1)
Vetland Hy Primary Ind Surface High Wa Saturatio Sedimer Sedimer Drift Dep Algal Ma Iron Dep Inundatio	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible From J	<u>m of on</u>	 Water S Aquatic True Aq Hydroge Oxidized Roots (C Presend Recent Soils (C Thin Mu 	Stained Le Fauna (B uatic Plar Static Plar Static Plar Static Hon Suffac Static	eaves (B9) 13) nts (B14) Odor (C1) heres on Li uced Iron (C uction in Till	/) (I ive C4) ed	minimum of Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas ✓ Crayfish Saturatio Stunted of ✓ Geomorp Shallow / Microtop	of two re Soil Crack Vegetate Patterns m LInes (I son Water Burrows (n Visible or Stresse shic Positi Aquitard (I ographic F	equired) s (B6) d Concave (B10) 316) Table (C2 C8) on Aerial Ir d Plants (I on (D2) C3) Reilef (D4)	2) magery (C9) D1)
Vetland Hy Primary Ind Surface High Wa Saturatio Vater N Sedimer Drift Dep Algal Ma Iron Dep Inundatio Imagery	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible From (B7)	<u>m of on</u>	 Water S Aquatic True Aq Hydroge Oxidized Roots (C Presend Recent Soils (C Thin Mu 	Stained Le Fauna (B uatic Plar Static Plar Static Plar Static Hon Suffac Static	eaves (B9) 13) ots (B14) Odor (C1) heres on Li uced Iron (C uction in Till ce (C7)	/) (I ive C4) ed	minimum of Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas ✓ Crayfish Saturatio Stunted of ✓ Geomorp Shallow / Microtop	of two re Soil Crack Vegetate Patterns m LInes (I son Water Burrows (n Visible or Stresse shic Positi Aquitard (I	equired) s (B6) d Concave (B10) 316) Table (C2 C8) on Aerial Ir d Plants (I on (D2) C3) Reilef (D4)	2) magery (C9) D1)
Vetland Hy Primary Ind Surface High Wa Saturatio Water N Sedimer Drift Dep Algal Ma Iron Dep Inundatio Imagery	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible From (B7)	<u>m of on</u> Aerial	 Water S Aquatic True Aq Hydroge Oxidized Roots (C Presend Recent Soils (C Thin Mu 	Stained Le Fauna (B uatic Plar Static Plar Static Plar Static Hon Suffac Static	eaves (B9) 13) ots (B14) Odor (C1) heres on Li uced Iron (C uction in Till ce (C7) Remarks)	<u>,) (</u> ive C4) ed	minimum of Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas ✓ Crayfish Saturatio Stunted of ✓ Geomorp Shallow / Microtop	of two re Soil Crack Vegetate Patterns m LInes (I son Water Burrows (n Visible or Stresse shic Positi Aquitard (I ographic F	equired) s (B6) d Concave (B10) 316) Table (C2 C8) on Aerial Ir d Plants (I on (D2) C3) Reilef (D4)	2) magery (C9) D1)
Vetland Hy Primary Ind Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Inundatio Imagery	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible From (B7) ervations: ater Present? <u>Ne</u>	<u>m of on</u> Aerial	 Water S Aquatic True Aq Hydroge Oxidized Roots (C Presend Recent Soils (C Thin Mu 	Stained Le Fauna (B uatic Plar Static Plar Static Plar Static Hon Suffac Static	eaves (B9) 13) Odor (C1) heres on Li uced Iron (C uction in Till ce (C7) Remarks) Depth (i	<u>r) (</u> ive C4) ed nches)	Minimum of Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas ✓ Crayfish Saturatio Stunted of Geomorp Shallow / Microtop FAC-Neu 0.0	of two re Soil Crack Vegetate Patterns m LInes (I son Water Burrows (n Visible or Stresse shic Positi Aquitard (i ographic F tral Test (equired) s (B6) d Concave (B10) 316) Table (C2 C8) on Aerial Ir d Plants (I on (D2) D3) Reilef (D4) D5)	2) magery (C9) D1)
Vetland Hy Primary Ind Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Inundatio Imagery	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible From (B7) ervations: ater Present? <u>No</u>	<u>m of on</u>	 Water S Aquatic True Aq Hydroge Oxidized Roots (0 Presend Recent Soils (C Thin Mu Other (E 	Stained Le Fauna (B uatic Plar en Sulfide d Rhizosp C3) ce of Redu Iron Redu 6) ck Surfac Explain in	eaves (B9) 13) nts (B14) Odor (C1) heres on Li uced Iron (C uction in Till ce (C7) Remarks) Depth (i Depth (i	<u>()</u> ive C4) ed nches) nches)	minimum of Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas ✓ Crayfish Saturatio Stunted of Stallow / Microtop FAC-Neu 0.0 0.0	Soil Crack Vegetate Patterns m Lines (I n Visible or Stresse shic Positi Aquitard (I ographic F tral Test (equired) s (B6) d Concave (B10) 316) Table (C2 C8) on Aerial Ir d Plants (I on (D2) D3) Reilef (D4) D5)	2) magery (C9) D1)
Vetland Hy Primary Ind Surface Gurface Gurface Saturation Field Obse	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible From (B7) ervations: ater Present? <u>No</u> Present? (includi	<u>m of on</u>	□ Water S □ Aquatic □ True Aq □ Hydroge □ Oxidized Presend □ Recent Soils (C □ Thin Mu □ Other (E	Stained Le Fauna (B uatic Plar en Sulfide d Rhizosp C3) ce of Redu lron Redu 6) ick Surfac Explain in	eaves (B9) 13) nts (B14) Odor (C1) heres on Li uced Iron (C uction in Till ce (C7) Remarks) Depth (i Depth (i	<u>) (</u> ive C4) ed nches) nches)	minimum of Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas ✓ Crayfish Saturatio Stunted of ✓ Geomorp Shallow / Microtop FAC-Neu 0.0 0.0 0.0	Soil Crack Vegetate Patterns m Lines (I son Water Burrows (n Visible o or Stresse shic Positi Aquitard (I ographic F tral Test (Wetlan Yes	equired) s (B6) d Concave (B10) 316) Table (C2 C8) on Aerial Ir d Plants (I on (D2) O3) Reilef (D4) D5) d Hydro	e) magery (C9) D1) D logy Present?
Vetland Hy Primary Ind Surface Gurface Gurface Saturation Field Obse Surface Wa Staturation F	ydrology Indica dicators (minimu Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible From (B7) ervations: ater Present? <u>No</u>	<u>m of on</u>	□ Water S □ Aquatic □ True Aq □ Hydroge □ Oxidized Presend □ Recent Soils (C □ Thin Mu □ Other (E	Stained Le Fauna (B uatic Plar en Sulfide d Rhizosp C3) ce of Redu lron Redu 6) ick Surfac Explain in	eaves (B9) 13) nts (B14) Odor (C1) heres on Li uced Iron (C uction in Till ce (C7) Remarks) Depth (i Depth (i	<u>) (</u> ive C4) ed nches) nches)	minimum of Surface S Sparsely ✓ Drainage Moss Tri Dry-Seas ✓ Crayfish Saturatio Stunted of ✓ Geomorp Shallow / Microtop FAC-Neu 0.0 0.0 0.0	Soil Crack Vegetate Patterns m Lines (I son Water Burrows (n Visible o or Stresse shic Positi Aquitard (I ographic F tral Test (Wetlan Yes	equired) s (B6) d Concave (B10) 316) Table (C2 C8) on Aerial Ir d Plants (I on (D2) O3) Reilef (D4) D5) d Hydro	e) magery (C9) D1) D logy Present?



WETLAND DETERMINATION DATA FORM Eastern Mountains Pand Piedmont

Project/Site: <u>Henderson County Solar</u>	City/County: Henderson/Henderson	Date: <u>27-Oct-20</u>
Applicant/Owner: Henderson County Solar LLC	State: KY	Sampling Point: 2MW30U
Investigators: Keith Michalski	Sec, Twp, Rng: <u>S NA</u>	
Landform: Hillslope	Local Relief: <u>Convex</u>	Slope %: <u>1</u>
Subregion: LRR	Lat: <u>37.79211 N</u> Lon: <u>-87.62700 V</u>	/ Datum: Decimal Degrees
Soil Map Unit Name:	NWI Classification: Area F	t ² :
Are climatic/hydrologic conditions on this	Remarks (If No):	
site typical for this time of year? Yes	· · · · ·	
Are Vegetation , Soil , or Hydrology Signification	antly Disturbed? Are "Normal Circu	ımstances" present: <u>No</u>
Are Vegetation , Soil , or Hydrology Natural	y Problematic? Remarks: Mowed	·

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

Hydrophytic Vegetation Present? <u>No</u>	Is the Sampled Area within a Wetland?	<u>No</u>
Hydric Soil Present? <u>No</u>		
Wetland Hydrology Present? <u>No</u>		
Remarks: Mowed driving range field.		

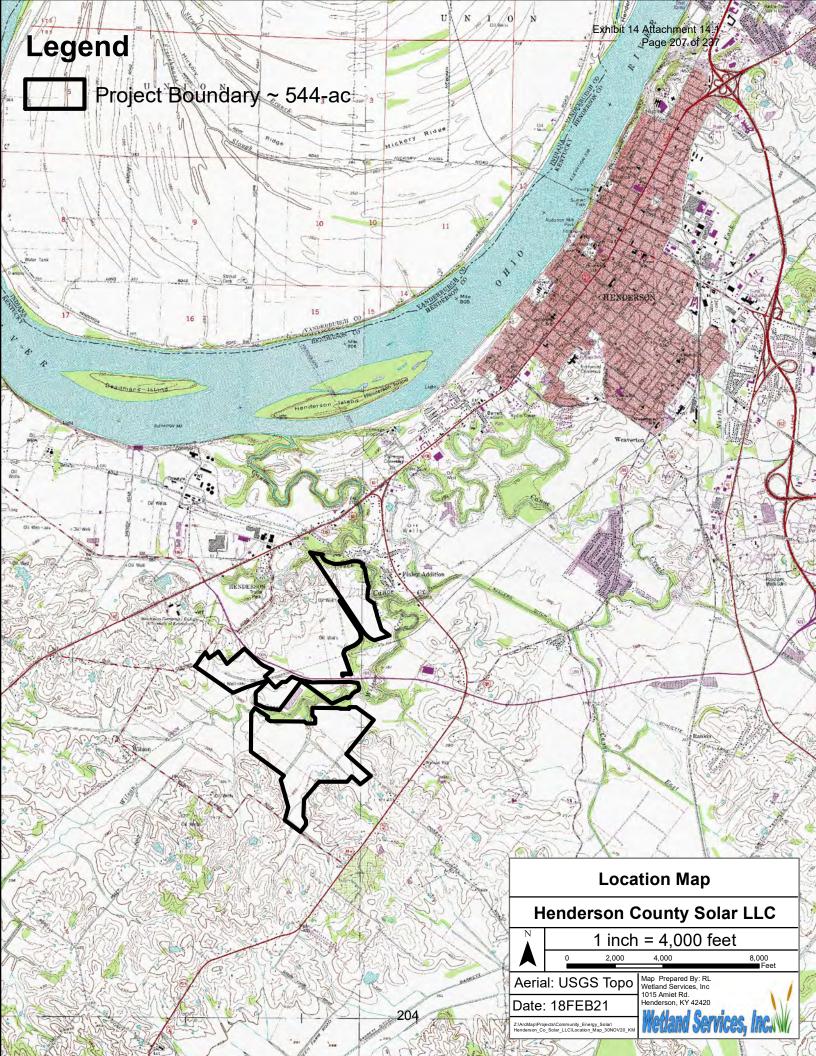
VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute <u>% Cover:</u>	Dominant Species?	Indicator <u>Status</u>	Dominance Test Worksheet:
1.				Number of Dominant Species that
2.				are OBL, FACW or FAC: <u>0</u> A
3.				Total Number of Dominant Species
4.				across all Strata: <u>2</u> B
5.				Percent of Dominant Species that
	= T	otal Cover		are OBL, FACW or FAC: <u>0.0</u> A/B
Sapling/Shrub Stratum Plot Size: Unit				Prevalence Index Worksheet: Total % Cover of: Multiply by:
1.				
2.				$OBL _0 x1= _0$
3.				FACW 0 $x^2 = 0$
4.				FAC 0 x3= 0
5.				FACU <u>90</u> x4= <u>360</u>
	= T	otal Cover		UPL <u>5</u> x5= <u>25</u>
Herb Stratum Plot Size: Unit				TOTALS (A) 95 (B) 385
1. Festuca arundinacea	40.0	Yes	FACU	
2. Dactylis glomerata	30.0	Yes	FACU	Prevalence Index = B/A =4.1
3. Andropogon virginicus	10.0	No	FACU	Hydrophytic Vegetation
4. Plantago lanceolata	5.0	No	UPL	Indicators:
5. Trifolium repens	10.0	No	FACU	□ Dominance Test is >50%
6.				\Box Prevalence Index is $\leq 3.0^{1}$
7.				☐ Morphologic Adaptations ¹
8.				Problematic Hydrophytic
9.				Vegetation ¹ (Explain)
10				
	95.0 = T	otal Cover		¹ Indicators of hydric soil & wetland
Woody Vine Stratum Plot Size: Unit				hydrology must be present, unless disturbed or problematic.
1.				Hydrophytic Vegetation
2.				Present? No
	= T	otal Cover		
Remarks:				

SOIL		Sampling Point: <u>2MW30U Page 205 of 237</u>
		he indicator or confirm the absence of indicators.)
<u>Matrix</u>	Redox Feature	<u>s</u>
Depth Color		
(inches) (Moist) <u>%</u>	(Moist) <u>%</u> Type ¹	<u>Loc² Texture Remarks</u>
0-16 10YR 5/4 100		Loamy
¹ Type: C=Concentration, D=Depletion	n. RM=Reduced Matrix. MS=Maske	d Sand Grains. ² Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:	· · ·	Indicators for Problematic Hydric
		Soils ³ :
☐ Histosol (A1)	\Box Sandy Gleyed Mat	rix (S4) 🛛 🗌 Red Parent Material (TF2)
Histic Epipedon (A2)	\Box Sandy Redox (S5)	
Black Histic (A3)	Stripped Matrix (S	
Hydrogen Sulfide (A4)	Dark Surface (S7)	
Stratified Layers (A5)	📙 Loamy Gleyed Ma	
2 cm Muck (A10) (LRR N)	Depleted Matrix (F	
Depleted Below Dark Surface (
Thick Dark Surface (A12)	Depleted Dark Su	
└┘ Sandy Mucky Mineral (S1) (LF		
		lasses (F12)(LRR N)
Restrictive Layer (if observed):		
Type: Depth (inches):		Hydric Soil Present? <u>No</u>
Remarks:		
Remarks.		
Hydrology		
Wetland Hydrology Indicators:		Secondary Indicators
Primary Indicators (minimum of o	ne is required; check all that ap	(minimum of two required)
Surface Water (A1)		Curferer Call Creative (BC)
\square High Water Table (A2)	☐ Water Stained Leaves (B9 ☐ Aquatic Fauna (B13)) Sparsely Vegetated Concave Surface (B8)
\Box Saturation (A3)	True Aquatic Plants (B14)	Drainage Patterns (B10)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C) Moss Trim LInes (B16)
Sediment Deposits (B2)	Oxidized Rhizospheres on	
Drift Deposits (B3)	Roots (C3)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Presence of Reduced Iron	
☐ Iron Deposits (B5)	Recent Iron Reduction in T	
Inundation Visible From Aerial	Soils (C6)	Geomorphic Position (D2)
Imagery (B7)	☐ Thin Muck Surface (C7)	Shallow Aquitard (D3)
	☐ Other (Explain in Remarks)	
		FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? <u>No</u>		(inches) 0.0 Wetland Undrale mu Present2
Water Table Present? <u>No</u>		(inches) 0.0 Wetland Hydrology Present?
Saturation Present? (including cap		(inches) <u>0.0 No</u>
Describe Recorded Data (Stream	gauge, monitoring well, aerial pl	notos, previous inspection), if available:
Remarks:		

Exhibit 14 Attachment 14.1





S1B-1 1MS10 1MW3 1MS10-1

1MS10

2MS106 2MW30

2MS1B 2MS1

2AS1L3A

2MS1G

Legend

Thillein

Wetland Type

PFO

PSS

PEM

PUBG

Stream Flow Regime

PER

INT

EPH

Surface Connections

Waypoints

Project Boundary ~ 544-ac

-

MW14

ASC1F4

2AS1F1 2AS1F2

amwaa

2MS1L2 IS1L

2MS1L-1

2MS1L4

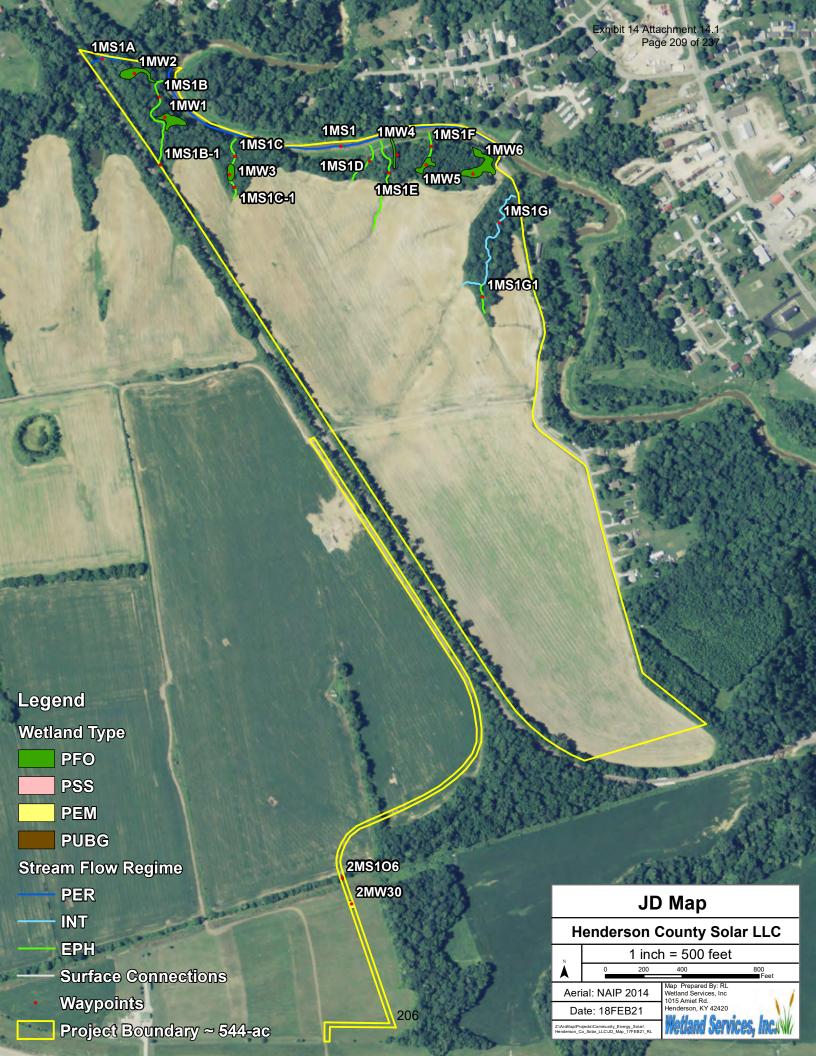
2MS1L5

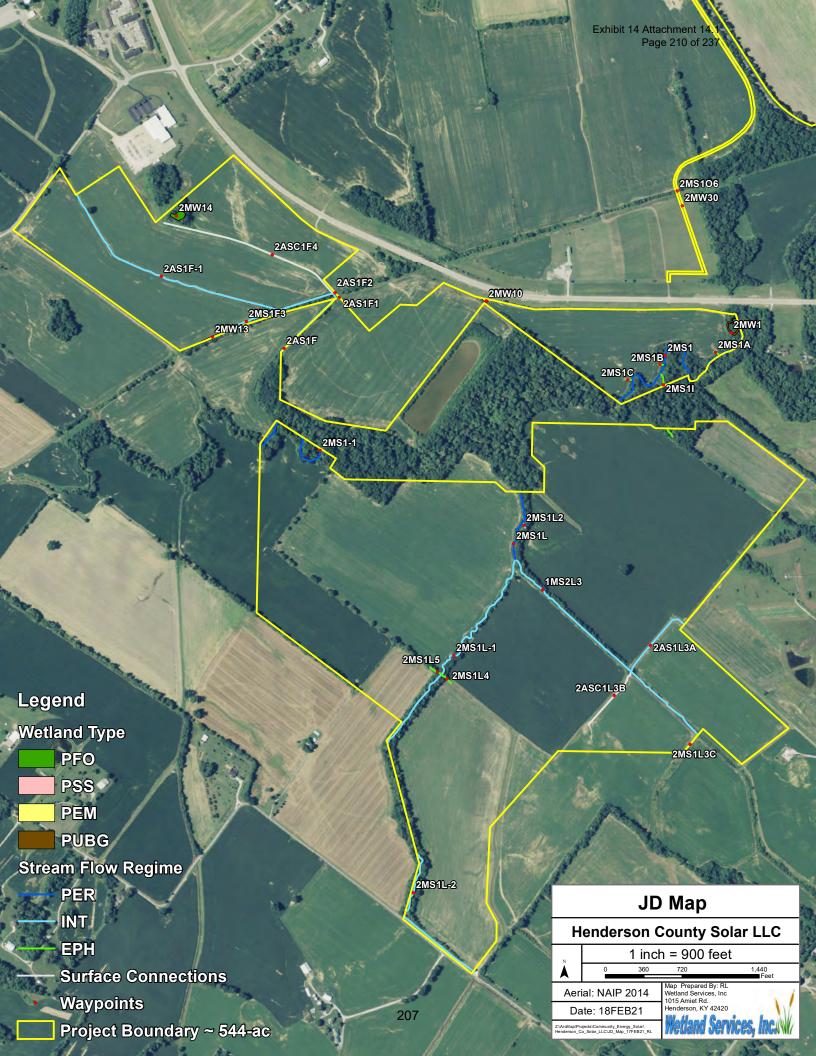
MS2L3

205

and a

JD Map Henderson County Solar LLC 1 inch = 1,250 feet 0 500 1.000 2.000 1 inch = 1,250 feet 0 500 1.000 2.000 Feet Aerial: NAIP 2014 Date: 18FEB21 MapPrepared By: RL MapPrepared By: RL Wetland Services, Inc Henderson, KY 42420 Wetland Services, Inc Date: 18FEB21







U.S. ARMY CORPS OF ENGINEERS REGULATORY PROGRAM APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM) NAVIGABLE WATERS PROTECTION RULE

I. ADMINISTRATIVE INFORMATION

Completion Date of Approved Jurisdictional Determination (AJD): Select. ORM Number: (e.g. HQS-2020-00001-MSW).

Associated JDs: N/A or ORM numbers and identifiers (e.g. HQS-2020-00001-MSW-MITSITE). Review Area Location¹: State/Territory: KY City: Henderson County/Parish/Borough: Henderson

Center Coordinates of Review Area: Latitude 37.78453 Longitude -87.62989

II. FINDINGS

A. Summary: Check all that apply. At least one box from the following list MUST be selected. Complete the corresponding sections/tables and summarize data sources.

- □ The review area is comprised entirely of dry land (i.e., there are no waters or water features, including wetlands, of any kind in the entire review area). Rationale: N/A or describe rationale.
- □ There are "navigable waters of the United States" within Rivers and Harbors Act jurisdiction within the review area (complete table in Section II.B).
- There are "waters of the United States" within Clean Water Act jurisdiction within the review area (complete appropriate tables in Section II.C).
- There are waters or water features excluded from Clean Water Act jurisdiction within the review area (complete table in Section II.D).

B. Rivers and Harbors Act of 1899 Section 10 (§ 10)²

§ 10 Name	§ 10 Size		§ 10 Criteria	Rationale for § 10 Determination
N/A.	N/A.	N/A	N/A.	N/A.

C. Clean Water Act Section 404

Territorial Seas and Traditional Navigable Waters ((a)(1) waters): ³						
(a)(1) Name	(a)(1) Size		(a)(1) Criteria	Rationale for (a)(1) Determination		
N/A.	N/A.	N/A.	N/A.	N/A.		

Tributaries ((a)(2) waters):						
(a)(2) Name	(a)(2) Siz	ze	(a)(2) Criteria	Rationale for (a)(2) Determination		
1MS1	2,000	linear feet	(a)(2) Perennial tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	Point-in-time data sources. Please see attached.		
1MS1A	184	linear feet	(a)(2) Perennial tributary contributes	Point-in-time data sources. Please see attached.		

¹ Map(s)/figure(s) are attached to the AJD provided to the requestor.

² If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.

³ A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD Form.



U.S. ARMY CORPS OF ENGINEERS REGULATORY PROGRAM APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM) NAVIGABLE WATERS PROTECTION RULE

Tributaries ((a)(2) waters	s):		
(a)(2) Name	(a)(2) Si		(a)(2) Criteria	Rationale for (a)(2) Determination
			surface water flow directly or indirectly to an (a)(1) water in a typical year.	
1MS1G	729	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	
2AS1F	770	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	Point-in-time data sources. Please see attached.
2AS1F-1	2,852	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	
2AS1F2	17	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	
2AS1L3A	748	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	Point-in-time data sources. Please see attached.
2MS1	1,987	linear feet	(a)(2) Perennial tributary contributes	Point-in-time data sources. Please see attached.



Tributaries ((a				
(a)(2) Name	(a)(2) Si	ize	(a)(2) Criteria	Rationale for (a)(2) Determination
			surface water flow directly or indirectly to an (a)(1) water in a typical year.	
2MS1-1	780	linear feet	(a)(2) Perennial tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	Point-in-time data sources. Please see attached.
2MS1F3	412	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	Point-in-time data sources. Please see attached.
2MS1L	687	linear feet	(a)(2) Perennial tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	Point-in-time data sources. Please see attached.
2MS1L-1	2,313	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	
2MS1L2	48	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	Point-in-time data sources. Please see attached.
2MS1L-2	1,439	linear feet	(a)(2) Intermittent tributary contributes	Point-in-time data sources. Please see attached.



Tributaries ((a	Tributaries ((a)(2) waters):						
(a)(2) Name	(a)(2) Size		(a)(2) Criteria	Rationale for (a)(2) Determination			
			surface water flow directly or indirectly to an (a)(1) water in a typical year.				
2MS1L3	2,421	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	Point-in-time data sources. Please see attached.			

Lakes and ponds, and impoundments of jurisdictional waters ((a)(3) waters):					
(a)(3) Name	e (a)(3) Size (a)(3) Criteria Rationale for (a)(3) Determination				
N/A.	N/A. N/A. N/A.		N/A.	N/A.	

Adjacent wetl	ands ((a)(4) waters):		
(a)(4) Name	(a)(4) S	ize	(a)(4) Criteria	Rationale for (a)(4) Determination
1MW1	0.14	acre(s)	(a)(4) Wetland inundated by flooding from an (a)(1)-(a)(3) water in a typical year.	Point-in-time data sources. Please see attached.
1MW2	0.14	acre(s)	(a)(4) Wetland inundated by flooding from an (a)(1)-(a)(3) water in a typical year.	Point-in-time data sources. Please see attached.
1MW4	0.04	acre(s)	(a)(4) Wetland abuts an (a)(1)- (a)(3) water.	Point-in-time data sources. Please see attached.
1MW6	0.26	acre(s)	(a)(4) Wetland abuts an (a)(1)- (a)(3) water.	Point-in-time data sources. Please see attached.
2MW1	0.11	acre(s)	(a)(4) Wetland inundated by flooding from an (a)(1)-(a)(3) water in a typical year.	Point-in-time data sources. Please see attached.
2MW13	0.06	acre(s)	(a)(4) Wetland abuts an (a)(1)- (a)(3) water.	Point-in-time data sources. Please see attached.



D. Excluded Waters or Features

Excluded waters ((b)(1) - (b)	(12)):4		
Exclusion Name	Exclusior	n Size	Exclusion ⁵	Rationale for Exclusion Determination
1MS1B	378	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale,	Point-in-time data sources. Please see attached.
1MS1B-1	197	linear feet	gully, rill, or pool. (b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	Point-in-time data sources. Please see attached.
1MS1C	151	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	Point-in-time data sources. Please see attached.
1MS1C-1	105	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	Point-in-time data sources. Please see attached.
1MS1D	239	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	Point-in-time data sources. Please see attached.
1MS1E	507	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	Point-in-time data sources. Please see attached.
1MS1F	131	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	Point-in-time data sources. Please see attached.
1MS1G1	153	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	Point-in-time data sources. Please see attached.
2AS1F1	35	linear feet	(b)(3) Ephemeral feature, including	Point-in-time data sources. Please see attached.

⁴ Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps districts may, in case-by-case instances, choose to identify some or all of these waters within the review area. ⁵ Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1)

exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.



Excluded waters (((b)(1) - (b))	(12)):4		
Exclusion Name	Exclusion		Exclusion ⁵	Rationale for Exclusion Determination
			an ephemeral	
			stream, swale,	
			gully, rill, or pool.	
2MS1A	51	linear	(b)(3) Ephemeral	Point-in-time data sources. Please see attached.
		feet	feature, including	
			an ephemeral	
			stream, swale,	
014040	47	Page 4	gully, rill, or pool.	Drint in the other second Discourse attacked
2MS1B	47	linear	(b)(3) Ephemeral	Point-in-time data sources. Please see attached.
		feet	feature, including	
			an ephemeral stream, swale,	
2MS1C	41	linear	gully, rill, or pool. (b)(3) Ephemeral	Point-in-time data sources. Please see attached.
2101010	41	feet	feature, including	
		ICCL	an ephemeral	
			stream, swale,	
			gully, rill, or pool.	
2MS1I	208	linear	(b)(3) Ephemeral	Point-in-time data sources. Please see attached.
2	200	feet	feature, including	
			an ephemeral	
			stream, swale,	
			gully, rill, or pool.	
2MS1L3C	194	linear	(b)(3) Ephemeral	Point-in-time data sources. Please see attached.
		feet	feature, including	
			an ephemeral	
			stream, swale,	
			gully, rill, or pool.	
2MS1L4	118	linear	(b)(3) Ephemeral	Point-in-time data sources. Please see attached.
		feet	feature, including	
			an ephemeral	
			stream, swale,	
	10.1		gully, rill, or pool.	
2MS1L5	124	linear	(b)(3) Ephemeral	Point-in-time data sources. Please see attached.
		feet	feature, including	
			an ephemeral	
			stream, swale,	
2MS106	188	linear	gully, rill, or pool.	Point-in-time data sources. Please see attached.
21015100	100	linear	(b)(3) Ephemeral	Point-in-time data sources. Please see attached.
		feet	feature, including an ephemeral	
			stream, swale,	
			gully, rill, or pool.	
1MW3	0.07	acre(s)	(b)(1) Non-	Point-in-time data sources. Please see attached.
	0.01	000(0)	adjacent wetland.	
1MW5	0.08	acre(s)	(b)(1) Non-	Point-in-time data sources. Please see attached.
	0.00	000(0)	adjacent wetland.	
	1		aujacent wettand.	



Excluded waters (Excluded waters $((b)(1) - (b)(12))$: ⁴						
Exclusion Name	Exclusior	n Size	Exclusion ⁵	Rationale for Exclusion Determination			
2MW10	0.03	acre(s)	(b)(1) Non- adjacent wetland.	Point-in-time data sources. Please see attached.			
2MW14	0.17	acre(s)	(b)(1) Non- adjacent wetland.	Point-in-time data sources. Please see attached.			
2MW30	0.09	acre(s)	(b)(1) Non- adjacent wetland.	Point-in-time data sources. Please see attached.			
2ASC1F4	1,741	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	Point-in-time data sources. Please see attached.			
2ASC1L3B	644	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	Point-in-time data sources. Please see attached.			

III. SUPPORTING INFORMATION

A. Select/enter all resources that were used to aid in this determination and attach data/maps to this document and/or references/citations in the administrative record, as appropriate.

Information submitted by, or on behalf of, the applicant/consultant: JD Report, Data Sheets, Location/Topo & JD Map

This information Select. sufficient for purposes of this AJD.

Rationale: N/A or describe rationale for insufficiency (including partial insufficiency).

Data sheets prepared by the Corps: Title(s) and/or date(s).

Photographs: Aerial and Other: Google Earth (1993-2019), ESRI World Imagery. NAIP 2014. Also see photos attached to data sheets.

- \Box Corps site visit(s) conducted on: Date(s).
- Previous Jurisdictional Determinations (AJDs or PJDs): ORM Number(s) and date(s).
- Antecedent Precipitation Tool: *provide detailed discussion in Section III.B.*
- USDA NRCS Soil Survey: Web Soil Survey, 8MAY20 & 6OCT20
- USFWS NWI maps: NWI, 30MAY19
- USGS topographic maps: Wilson & Henderson, 1:24,000

Other data sources used to aid in this determination:

Data Source (select)	Name and/or date and other relevant information
USGS Sources	N/A.
USDA Sources	N/A.
NOAA Sources	N/A.
USACE Sources	N/A.
State/Local/Tribal Sources	N/A.
Other Sources	N/A.

B. Typical year assessment(s): See JD Report.



C. Additional comments to support AJD: See JD Report.



DEPARTMENT OF THE ARMY

U.S. ARMY ENGINEER DISTRICT, LOUISVILLE CORPS OF ENGINEERS REGULATORY DIVISION, SOUTH BRANCH 6855 STATE ROAD 66 NEWBURGH, INDIANA 47630

May 18, 2021

Regulatory Division South Branch ID No. LRL-2021-221-tmb

Mr. Chris Killenberg Henderson County Solar LLC Three Radnor Corporate Center, Suite 300 Radnor, PA 19087

Dear Mr. Killenberg:

This is regarding an approved jurisdictional determination request received in this office on March 2, 2021, regarding approximately 544 acres in Henderson, Henderson County, Kentucky. Specifically located at 37.78456 °N Latitude and -87.62980 °W Longitude. A location map is enclosed.

The U.S. Army Corps of Engineers exercises regulatory authority under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) and Section 404 of the Clean Water Act (33 USC 1344) for certain activities in "waters of the United States (U.S.)." These waters include all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce.

Based on the information provided to this office and a site visit conducted on May 13, 2021, the site contains approximately 5,638 linear feet of perennial streams, 11,867 linear feet of intermittent streams, 0.58 acres of palustrine forested wetlands, 0.06 acres of palustrine emergent wetlands and 0.11 acres if palustrine unconsolidated bottom wetlands considered jurisdictional "waters of the U.S." Therefore, the aforementioned resources are subject to regulation under Section 404 of the Clean Water Act.

The below listed aquatic resources are excluded from regulation under Section 404 of the Clean Water Act.

1MS1B	378	Linear feet	(b)(3) Ephemeral feature
1MS1B-1	197	Linear feet	(b)(3) Ephemeral feature
1MS1C	151	Linear feet	(b)(3) Ephemeral feature
1MS1C-1	105	Linear feet	(b)(3) Ephemeral feature
1MS1D	239	Linear feet	(b)(3) Ephemeral feature
1MS1E	507	Linear feet	(b)(3) Ephemeral feature
1MS1F	131	Linear feet	(b)(3) Ephemeral feature
1MS1G1	153	Linear feet	(b)(3) Ephemeral feature
2AS1F1	35	Linear feet	(b)(3) Ephemeral feature
2MS1A	51	Linear feet	(b)(3) Ephemeral feature
2MS1B	47	Linear feet	(b)(3) Ephemeral feature

			Exhibit 14 Attachment 14.
2MS1C	41	Linear feet	(b)(3) Ephemeral feature Page 220 of 23
2MS1I	208	Linear feet	(b)(3) Ephemeral feature
2MS1L3C	194	Linear feet	(b)(3) Ephemeral feature
2MS1L5	124	Linear feet	(b)(3) Ephemeral feature
2MS106	188	Linear feet	(b)(3) Ephemeral feature
1MW3	0.07	Acres	(b)(1) Non-adjacent wetland
1MW5	0.08	Acres	(b)(1) Non-adjacent wetland
2MW10	0.03	Acres	(b)(1) Non-adjacent wetland
2MW14	0.09	Acres	(b)(1) Non-adjacent wetland
2MW30	0.09	Acres	(b)(1) Non-adjacent wetland
2ASC1F4	1,741	Linear feet	(b)(3) Ephemeral feature
2ASC1L3B	644	Linear feet	(b)(3) Ephemeral feature

As such, these resources are not considered to be "waters of the U.S." and are not regulated under Section 404 of the Clean Water Act. However, this determination does not relieve you of the responsibility to comply with applicable State law. We urge you to contact the Kentucky Division of Water, 300 Sower Boulevard, Frankfort, Kentucky 40601 to determine the applicability of State law to the excluded waters mentioned above.

This letter contains an approved jurisdictional determination (JD) for your site. If you object to this JD, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this JD you must submit a completed RFA form to the Lakes and Rivers Division Office at the following address:

U.S. Army Engineer Division, ATTN: Regulatory Appeal Review Officer, CELRD-PD-REG 550 Main Street - Room 10-714 Cincinnati, Ohio 45202-3222 (513) 684-2699

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by July 17, 2021.

This jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revision of the determination before the expiration date. It is not necessary to submit an RFA form to the Division Office if you do not object to the JD in this letter. Our comments on this project area limited to only those effects, which may fall within our area of jurisdiction, and thus does not obviate the need to obtain other permits from State or Local agencies. Lack of comments on other environmental aspects should not be construed as either concurrence or nonconcurrence with stated environmental impacts.

If you have any questions, contact me directly at 812-853-9713 or <u>tre.m.barron@usace.army.mil</u>. Any correspondence on this matter should refer to our ID Number LRL-2021-221-tmb.

Sincerely,

Jre' N Consor

Tré M. Barron Environmental Protection Specialist South Branch

Enclosures

Copy

Kentucky Division of Water 300 Sower Boulevard Frankfort, Kentucky 40601

Mr. Keith Michalski Wetland Services 3880 Trigg-Turner Road Corydon, KY 42406



I. ADMINISTRATIVE INFORMATION

Completion Date of Approved Jurisdictional Determination (AJD): 5/17/2021 ORM Number: LRL-2021-221 Associated JDs: N/A.

Review Area Location¹: State/Territory: KY City: Henderson County/Parish/Borough: Henderson Center Coordinates of Review Area: Latitude 37.78453 Longitude -87.62989

II. FINDINGS

A. Summary: Check all that apply. At least one box from the following list MUST be selected. Complete the corresponding sections/tables and summarize data sources.

- □ The review area is comprised entirely of dry land (i.e., there are no waters or water features, including wetlands, of any kind in the entire review area). Rationale: N/A or describe rationale.
- □ There are "navigable waters of the United States" within Rivers and Harbors Act jurisdiction within the review area (complete table in Section II.B).
- There are "waters of the United States" within Clean Water Act jurisdiction within the review area (complete appropriate tables in Section II.C).
- There are waters or water features excluded from Clean Water Act jurisdiction within the review area (complete table in Section II.D).

B. Rivers and Harbors Act of 1899 Section 10 (§ 10)²

§ 10 Name	§ 10 Size)	§ 10 Criteria	Rationale for § 10 Determination
N/A.	N/A.	N/A	N/A.	N/A.

C. Clean Water Act Section 404

Territorial Seas and Traditional Navigable Waters ((a)(1) waters): ³						
(a)(1) Name	e (a)(1) Size (a)(1) Criteria Rationale for (a)(1) Determination					
N/A.	N/A.	N/A.	N/A.	N/A.		

Tributaries ((a	Tributaries ((a)(2) waters):				
(a)(2) Name	(a)(2) Siz	ze	(a)(2) Criteria	Rationale for (a)(2) Determination	
1MS1	2,000	linear feet	(a)(2) Perennial tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	1MS1 (Canoe Creek) is a stream that has hydrological and physical characteristics of a perennial stream. Flows north west to the Ohio River. Precipitation at time met normal conditions according the Antecedent Precipitation Tool.	
1MS1A	184	linear feet	(a)(2) Perennial tributary contributes	1MS1A is a stream that has hydrological and physical characteristics of a perennial stream. Flows east to Canoe Creek.	

¹ Map(s)/figure(s) are attached to the AJD provided to the requestor.

² If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.

³ A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD Form.



Tributaries ((a)(2) water	s):		
(a)(2) Name	(a)(2) Si	ze	(a)(2) Criteria	Rationale for (a)(2) Determination
			surface water flow directly or indirectly to an (a)(1) water in a typical year.	
1MS1G	729	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	1MS1G is a stream that has hydrological and physical characteristics of an intermittent stream. Flows NE to Canoe Creek.
2AS1F	770	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	and physical characteristics of an intermittent stream. Flows SW to Wilson Creek to Canoe Creek to Ohio River.
2AS1F-1	2,852	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	2AS1F-1 is a channelized stream that has hydrological and physical characteristics of an intermittent stream. Flows SE through tributaries to Wilson Creek.
2AS1F2	17	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	hydrological and physical characteristics of an intermittent stream. Flows SW through tributaries to Wilson Creek.
2AS1L3A	748	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	2AS1L3A is a channelized stream that has hydrological and physical characteristics of an intermittent stream. Flows SW through tributaries to Wilson Creek.
2MS1	1,987	linear feet	(a)(2) Perennial tributary contributes	2MS1 (Wilson Creek) is a stream that has hydrological and physical characteristics of a



Tributaries ((a	<u>,,,,</u>		(a)(2) Critaria	Patianala for $(a)(2)$ Determination		
(a)(2) Name	(a)(2) S	ize	(a)(2) Criteria	Rationale for (a)(2) Determination		
			surface water flow directly or indirectly to an (a)(1) water in a typical year.	perennial stream. Flows NE to Canoe Creek to Ohio River.		
2MS1-1	780	linear feet	(a)(2) Perennial tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	2MS1 (Wilson Creek) is a stream that has hydrological and physical characteristics of a perennial stream. Flows NE to Canoe Creek to Ohio River.		
2MS1F3	412	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	2MS1F3 is a channelized stream that has hydrological and physical characteristics of an intermittent stream. Flows NE through tributaries to Wilson Creek.		
2MS1L	687	linear feet	(a)(2) Perennial tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	2MS1L is a stream that has hydrological and physical characteristics of a perennial stream. Flows north to Wilson Creek.		
2MS1L-1	2,313	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	2MS1L-1 is a stream that has hydrological and physical characteristics of an intermittent stream. Flows north through tributaries to Wilson Creek.		
2MS1L2	48	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	physical characteristics of an intermittent stream. Originates from field tile pipe. Flows north through tributaries to Wilson Creek.		
2MS1L-2	1,439	linear feet	(a)(2) Intermittent tributary contributes	2MS1L-2 is a channelized stream that has hydrological and physical characteristics of an		



Tributaries ((a)(2) waters):				
(a)(2) Name	(a)(2) Siz	ze	(a)(2) Criteria	Rationale for (a)(2) Determination
			surface water flow directly or indirectly to an (a)(1) water in a typical year.	intermittent stream. Flows north through tributaries to Wilson Creek.
2MS1L3	2,421	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	2MS1L3 is a channelized stream that has hydrological and physical characteristics of an intermittent stream. Flows NW through tributaries to Wilson Creek.
2MS1L4	118	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	2MS1L4 is a channelized stream that has hydrological and physical characteristics of an intermittent stream. Flows NW through tributaries to Wilson Creek.

Lakes and ponds, and impoundments of jurisdictional waters ((a)(3) waters):					
(a)(3) Name	(a)(3) Size		(a)(3) Criteria	Rationale for (a)(3) Determination	
N/A.	N/A.	N/A.	N/A.	N/A.	

Adjacent wetla	ands ((a)(4) waters):		
(a)(4) Name	(a)(4) Size		(a)(4) Criteria	Rationale for (a)(4) Determination
1MW1	0.14	acre(s)	(a)(4) Wetland inundated by flooding from an (a)(1)-(a)(3) water in a typical year.	1MW1 met wetland criteria and indicators of annual flooding were observed. Adjacent to Canoe Creek to Ohio River. Precipitation at time met normal conditions according the Antecedent Precipitation Tool.
1MW2	0.14	acre(s)	(a)(4) Wetland inundated by flooding from an (a)(1)-(a)(3) water in a typical year.	1MW2 met wetland criteria and indicators of annual flooding were observed. Adjacent to Canoe Creek to Ohio River.
1MW4	0.04	acre(s)	(a)(4) Wetland abuts an (a)(1)- (a)(3) water.	1MW2 met wetland criteria and is not separated from a tributary by an upland. Has direct hydrological surface connection. Abuts Canoe Creek to Ohio River.



Adjacent wetla	ands ((a)(4) waters):		
(a)(4) Name	(a)(4) Size		(a)(4) Criteria	Rationale for (a)(4) Determination
1MW6	0.26	acre(s)	(a)(4) Wetland abuts an (a)(1)- (a)(3) water.	1MW6 met wetland criteria and is not separated from a tributary by an upland. Has direct hydrological surface connection. Abuts Canoe Creek to Ohio River.
2MW1	0.11	acre(s)	(a)(4) Wetland inundated by flooding from an (a)(1)-(a)(3) water in a typical year.	2MW1 met wetland criteria and indicators of annual flooding were observed. Adjacent to Wilson Creek to Canoe Creek to Ohio River.
2MW13	0.06	acre(s)	(a)(4) Wetland abuts an (a)(1)- (a)(3) water.	2MW13 met wetland criteria and is not separated from a tributary by an upland. Has direct hydrological surface connection. Abuts tributary to Wilson Creek to Canoe Creek to Ohio River.

D. Excluded Waters or Features

Excluded waters (Excluded waters $((b)(1) - (b)(12))$: ⁴					
Exclusion Name	Exclusion	ı Size	Exclusion ⁵	Rationale for Exclusion Determination		
1MS1B	378	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	1MS1B displayed hydrological and physical characteristics of an ephemeral drainage. Flows north to Canoe Creek to Ohio River. Precipitation at time met normal conditions according the Antecedent Precipitation Tool.		
1MS1B-1	197	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	1MS1B displayed hydrological and physical characteristics of an ephemeral drainage. Flows north to Canoe Creek to Ohio River.		
1MS1C	151	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	1MS1C displayed hydrological and physical characteristics of an ephemeral drainage. Flows north to Canoe Creek to Ohio River.		
1MS1C-1	105	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	1MS1C-1 displayed hydrological and physical characteristics of an ephemeral drainage. Flows north to Canoe Creek to Ohio River.		

⁴ Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps districts may, in case-by-case instances, choose to identify some or all of these waters within the review area. ⁵ Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1)

exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.



Excluded waters	<u>((b)(1) – (b)</u>	(12)): ⁴		
Exclusion Name	Exclusior	n Size	Exclusion ⁵	Rationale for Exclusion Determination
1MS1D	239	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	1MS1D displayed hydrological and physical characteristics of an ephemeral drainage. Flows north to Canoe Creek to Ohio River.
1MS1E	507	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	1MS1E displayed hydrological and physical characteristics of an ephemeral drainage. Flows north to Canoe Creek to Ohio River.
1MS1F	131	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	1MS1F displayed hydrological and physical characteristics of an ephemeral drainage. Flows north to Canoe Creek to Ohio River.
1MS1G1	153	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	1MS1G1 displayed hydrological and physical characteristics of an ephemeral drainage. Flows north through tributary to Canoe Creek to Ohio River.
2AS1F1	35	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	1MS1F1 displayed hydrological and physical characteristics of an ephemeral drainage. Flows west through tributary to Wilson Creek to Canoe Creek to Ohio River.
2MS1A	51	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	2MS1A displayed hydrological and physical characteristics of an ephemeral drainage. Flows east to Wilson Creek to Canoe Creek to Ohio River.
2MS1B	47	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	2MS1B displayed hydrological and physical characteristics of an ephemeral drainage. Flows east to Wilson Creek to Canoe Creek to Ohio River.
2MS1C	41	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	2MS1B displayed hydrological and physical characteristics of an ephemeral drainage. Flows east to Wilson Creek to Canoe Creek to Ohio River.
2MS1I	208	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	2MS1I displayed hydrological and physical characteristics of an ephemeral drainage. Flows west to Wilson Creek to Canoe Creek to Ohio River.
2MS1L3C	194	linear feet	(b)(3) Ephemeral feature, including	2MS1L3C displayed hydrological and physical characteristics of an ephemeral drainage. Flows



Excluded waters ((b)(1) - (b)	(12)):4		
Exclusion Name	Exclusion	n Size	Exclusion ⁵	Rationale for Exclusion Determination
			an ephemeral stream, swale, gully, rill, or pool.	NE through tributary to Wilson Creek to Canoe Creek to Ohio River.
2MS1L5	124	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	2MS1L4 displayed hydrological and physical characteristics of an ephemeral drainage. Flows SE through tributary to Wilson Creek to Canoe Creek to Ohio River.
2MS1O6	188	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	2MS1O6 displayed hydrological and physical characteristics of an ephemeral drainage. Flows west through tributary to Wilson Creek to Canoe Creek to Ohio River.
1MW3	0.07	acre(s)	(b)(1) Non- adjacent wetland.	1MW3 met wetland criteria but does not physically abut, nor is inundated by an a(1) – a(3) water in a typical year. Drains north through b(3) to Canoe Creek to Ohio River.
1MW5	0.08	acre(s)	(b)(1) Non- adjacent wetland.	1MW5 met wetland criteria but does not physically abut, nor is inundated by an $a(1) - a(3)$ water in a typical year. Drains north through b(3) to Canoe Creek to Ohio River.
2MW10	0.03	acre(s)	(b)(1) Non- adjacent wetland.	2MW10 met wetland criteria but does not physically abut nor is inundated by an a(1) - (3) water in a typical year. Surrounded by upland.
2MW14	0.17	acre(s)	(b)(1) Non- adjacent wetland.	2MW14 met wetland criteria but does physically abut, nor is inundated by an a(1) - a(3) water in a typical year. Surrounded by upland.
2MW30	0.09	acre(s)	(b)(1) Non- adjacent wetland.	2MW30 met wetland criteria but does not physically abut, nor is inundated by an $a(1) - a(3)$ water in a typical year. Drains west through b(3) to tributary to Wilson Creek to Canoe Creek to Ohio River.
2ASC1F4	1,741	linear feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	2ASC1F4 displayed hydrological and physical characteristics of an ephemeral drainage in the position of a hillside diversion. Flows west through tributary to Wilson Creek to Canoe Creek to Ohio River.
2ASC1L3B	644	linear feet	(b)(3) Ephemeral feature, including an ephemeral	2ASC1L3B displayed hydrological and physical characteristics of an ephemeral drainage. Agricultural gully. Flows north through tributary to Wilson Creek to Canoe Creek to Ohio River.



Excluded waters ((b)(1) – (b)(12)): ⁴					
Exclusion Name	Exclusion Size	Exclusion ⁵	Rationale for Exclusion Determination		
		stream, swale,			
		gully, rill, or pool.			

III. SUPPORTING INFORMATION

A. Select/enter all resources that were used to aid in this determination and attach data/maps to this document and/or references/citations in the administrative record, as appropriate.

Information submitted by, or on behalf of, the applicant/consultant: JD Report, Data Sheets,

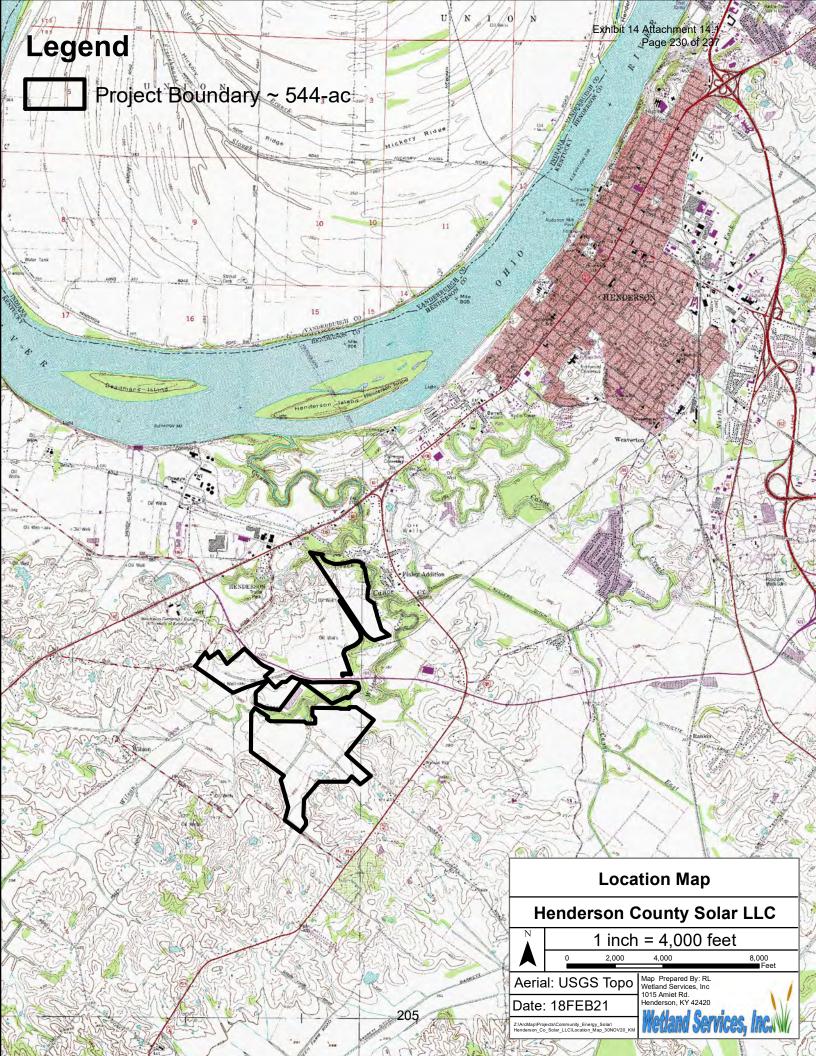
Location/Topo & JD Map

- This information Select. sufficient for purposes of this AJD. Rationale: N/A or describe rationale for insufficiency (including partial insufficiency).
- Data sheets prepared by the Corps: Title(s) and/or date(s).
- Photographs: Aerial and Other: Google Earth (1993-2019), ESRI World Imagery. NAIP 2014. Also see photos attached to point in time data sheets.
- Corps site visit(s) conducted on: 13May2021
- Previous Jurisdictional Determinations (AJDs or PJDs): ORM Number(s) and date(s).
- Antecedent Precipitation Tool: *provide detailed discussion in Section III.B*.
- USDA NRCS Soil Survey: Web Soil Survey, 8MAY20 & 6OCT20
- USFWS NWI maps: USFWS NWI (Wetland Mapper), 30MAY19
- USGS topographic maps: Wilson & Henderson, 1:24,000

Other data sources used to aid in this determination:

Data Source (select)	Name and/or date and other relevant information				
USGS Sources	N/A.				
USDA Sources	N/A.				
NOAA Sources	N/A.				
USACE Sources	N/A.				
State/Local/Tribal Sources	N/A.				
Other Sources	N/A.				

- **B.** Typical year assessment(s): The Antecedent Precipition Tool indicates that determinations were made during a time frame of normal conditions. Weather was typical for the season upon determination. See JD Report for a more detailed description of location conditions.
- **C.** Additional comments to support AJD: See JD report, point in time data collection and adjoining JD maps.



That

Wetland Type

PFO

PSS PEM

PUBG

Stream Flow Regime

INT

EPH

Surface Connections

12300

2MW14

2AS1F-1

2AS1F2

2MIWA10

2MS1L2

Waypoints

Project Boundary ~ 544-ac

JD Map Henderson County Solar LLC 1 inch = 1,250 feet 0 500 1,000 2,000 4 1 inch = 1,250 feet 0 500 1,000 2,000 Aerial: NAIP 2014 Map Prepared By: RL Wettand Services, Inc Date: 18FEB21 Map Prepared By: RL Wettand Services, Inc Henderson, KY 42420

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rojects\Community_Energy_Solar\ Co_Solar_LLC\JD_Map_17FEB21_RL

xhibit 14 Attachment 1 Page 231 of 2

M910-1

2MS106 2MW30

2AS1L3A

MS1L30

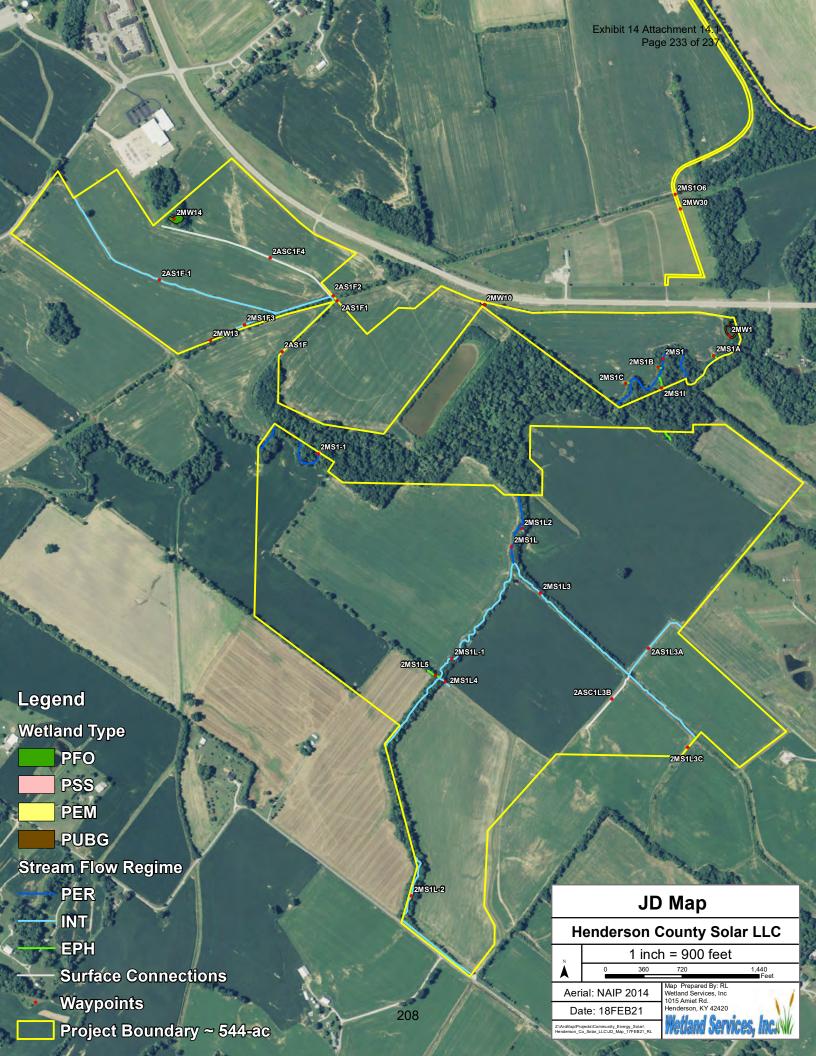
2MS1L

2MS1L5

1151L-2







Summary Tables

Stream	Latitude	Longitude	Perennial Linear Feet	Intermittent Linear Feet	Excluded Waters ((b)(1) - (b)(12)) Linear Feet	Class of Aquatic Resource
1MS1	37.80201	-87.62741	2,000	0	0	Non-Section 10, non-tidal
1MS1A	37.80330	-87.63178	184	0	0	
1MS1B	37.80176	-87.63108	0	0	378	
1MS1B-1	37.80141	-87.63081	0	0	197	
1MS1C	37.80191	-87.62975	0	0	151	
1MS1C-1	37.80158	-87.62979	0	0	105	
1MS1D	37.80190	-87.62732	0	0	239	
1MS1E	37.80192	-87.62695	0	0	507	
1MS1F	37.80213	-87.62621	0	0	131	
1MS1G	37.80106	-87.62496	0	729	0	
1MS1G1	37.80000	-87.62523	0	0	153	
2AS1F	37.78741	-87.64021	0	770	0	
2AS1F1	37.78876	-87.63840	0	0	35	
2AS1F-1	37.78918	-87.64422	0	2,852	0	
2AS1F2	37.78894	-87.63835	0	17	0	
2AS1L3A	37.77994	-87.62812	0	748	0	
2ASC1F4	37.78978	-87.64062	0	0	1,741	
2ASC1L3B	37.77863	-87.62927	0	0	644	
2MS1	37.78741	-87.62783	1,987	0	0	
2MS1-1	37.78518	-87.63714	780	0	0	
2MS1A	37.78752	-87.62620	0	0	51	
2MS1B	37.78720	-87.62802	0	0	47	
2MS1C	37.78675	-87.62907	0	0	41	
2MS1F3	37.78805	-87.64140	0	412	0	
2MS1I	37.78629	-87.62774	0	0	208	
2MS1L	37.78248	-87.63264	687	0	0	
2MS1L-1	37.77949	-87.63468	0	2,313	0	
2MS1L2	37.78302	-87.63232	0	48	0	
2MS1L-2	37.77345	-87.63566	0	1,439	0	
2MS1L3	37.78131	-87.63165	0	2,421	0	
2MS1L3C	37.77743	-87.62680	0	0	194	
2MS1L4	37.77897	-87.63469	0	118	0	
2MS1L5	37.77918	-87.63500	0	0	124	
2MS106	37.79183	-87.62699	0	0	22	
	Total		5,638	11,867	4,968	

Exhibit 14 Attachment 14.1 Page 235 of 237

Wetland	Latitude	Longitude	Cowardin Class	Adjacent Wetland Acres	Excluded Waters (b)(1)-(b)(12)) Acres	Class of Aquatic Resource
1MW1	38.80247	-87.63102	PFO	0.14	0	Non-Section 10, Non-Tidal
1MW2	37.80309	-87.63149	PFO	0.14	0	
1MW3	37.80167	-87.62983	PFO	0	0.07	
1MW4	37.80200	-87.62681	PFO	0.04	0	
1MW5	37.80187	-87.62629	PFO	0	0.08	
1MW6	37.80175	-87.62544	PFO	0.26	0	
2MW1	37.00000	87.62570	PUBG	0.11	0	
2MW10	37.78871	-87.63366	PSS	0	0.03	
2MW13	37.78765	-87.64251	PEM	0.06	0	
2MW14	37.79076	-87.64378	PFO	0	0.17	
2MW30	37.79211	-87.62700	PEM	0	0.02	
		Total		0.75	0.37	

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REOUEST FOR APPEAL

	in generation of the second se				
Appli		File Number:	Date:		
	erson County Solar LLC	LRL-2021-221	May 18, 2021		
Attac	hed is: INITIAL PROFFERED PERMIT (Standard Pern		See Section below		
	A				
	PROFFERED PERMIT (Standard Permit or Letter of permission)				
	PERMIT DENIAL		С		
Х	APPROVED JURISDICTIONAL DETERMINA		D		
	PRELIMINARY JURISDICTIONAL DETERM	INATION	E		
decisi Corps	TION I - The following identifies your rights and op on. Additional information may be found at http://w regulations at 33 CFR Part 331.	www.usace.army.mil/CECW/Pages/r			
A: IN	NITIAL PROFFERED PERMIT: You may accept of	or object to the permit.			
au sig	CCEPT: If you received a Standard Permit, you may sign the thorization. If you received a Letter of Permission (LOP), yo gnature on the Standard Permit or acceptance of the LOP mea appeal the permit, including its terms and conditions, and app	u may accept the LOP and your work is ns that you accept the permit in its entire	authorized. Your ty, and waive all rights		
the Ye to me the	• OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.				
B: Pl	ROFFERED PERMIT: You may accept or appeal the second secon	ne permit			
au sig	• ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.				
ma fo	• APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.				
by con	C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.				
D: A	PPROVED JURISDICTIONAL DETERMINATIO	DN: You may accept or appeal the	approved JD or		
• A	de new information. CCEPT: You do not need to notify the Corps to accept an app this notice, means that you accept the approved JD in its entir				
Aj by	• APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.				
	E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an				

regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTION	ONS TO AN INITIAL PRO	FFERED PERMIT
REASONS FOR APPEAL OR OBJECTIONS: (Describ initial proffered permit in clear concise statements. You may attac or objections are addressed in the administrative record.)		
ADDITIONAL INFORMATION: The appeal is limited to a review		
record of the appeal conference or meeting, and any supplemental clarify the administrative record. Neither the appellant nor the Con-		
you may provide additional information to clarify the location of in		
POINT OF CONTACT FOR QUESTIONS OR INFOR		
If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regard also contact:	ding the appeal process you may
U.S. Army Corps of Engineers	U.S. Army Engineer Division,	
Attn: Ms. Tre M. Barron Newburgh Regulatory Office	ATTN: Regulatory Appeal Revie 550 Main Street - Room 10-714	ew Officer, CELRD-PD-REG
6855 State Road 66	Cincinnati, Ohio 45202-3222	
Newburgh, IN 47630	TEL (513) 684-7261	
812-853-9713		
RIGHT OF ENTRY: Your signature below grants the right of entry		
consultants, to conduct investigations of the project site during the notice of any site investigation, and will have the opportunity to pa		1 will be provided a 15 day
	Date:	Telephone number:
Signature of appellant or agent.		

EXHIBIT 14 ATTACHMENT 14.2



Phase I Environmental Site Assessment of the proposed Henderson County Solar Site, Henderson Kentucky

Prepared for: Community Energy Solar, LLC Henderson County Solar LLC

Project Number: 60632959

June 2020

Quality information

Prepared by

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Approved by

Revision History

Revision	Revision date	Details	Authorized	Name	Position
Distribution	List				
# Hard Copies	CD Required	Association /	Company Name		

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Executive Summary

Community Energy Solar, LLC, on behalf of Henderson County Solar LLC, contacted AECOM to perform a Phase I Environmental Site Assessment (ESA) at the site of a proposed solar energy facility to be located between United States Highway (US HWY) 41A, County Route 425 (Henderson Bypass), and US HWY 60 southeast from Henderson, Kentucky. The Phase I ESA was performed in general conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Standard Practice Designation E 1527-13 for ESAs. Exceptions to, or deletions from, this practice are described in this report.

Property A is 625 acres and Property B encompasses approximately 94 acres. Both areas are situated within a predominantly agricultural district with heavy and light industrial zonings.

The subject properties are bordered to the north, east, south, and west by a mixture of light industrial, heavy industrial, agricultural, highway commercial, single family residential, two family residential, and general business district zoning. The historical land use for both subject properties has been, and currently remains, for agricultural purposes.

No recognized environmental conditions (RECs), controlled RECs (CRECs), or historical RECs (HRECs) were identified during this assessment.

1. Introduction

Community Energy Solar, LLC, on behalf of Henderson County Solar LLC (HCS), contracted AECOM to perform a Phase I Environmental Site Assessment (ESA) at the proposed Henderson County Solar sites located at 620 Lovers Lane and 3001 Wilson Station Road in Henderson, Henderson County, Kentucky (subject properties). The Phase I ESA was performed in general conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Standard Practice Designation E 1527-13 for ESAs. Exceptions to, or deletions from, this practice are described in this report.

1.1 Purpose

The Phase I ESA was performed pursuant to AECOM's written proposal. The purpose of the Phase I ESA is to provide HCS with information for use in evaluating recognized environmental conditions (RECs) associated with the subject property.

Per the ASTM standard, potential findings can include RECs, historical RECs (HRECs), controlled RECs (CRECs), and *de minimis* conditions. A REC is defined by the ASTM standard as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment." The term includes hazardous substances or petroleum products even under conditions in compliance with laws. HRECs are past releases of any hazardous substances or petroleum products that have occurred in connection with the property and have been addressed to the satisfaction of the applicable regulatory authority or meet unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. CRECs are recognized environmental conditions resulting from past releases of hazardous substances or petroleum products that have been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. de minimis conditions are those situations that do not present a material risk of harm to public health or the environment and generally would not be subject to enforcement action if brought to the attention of the regulating authority.

This assessment is based on a review of existing conditions, reported pre-existing conditions, and observed operations at the subject property and adjacent properties.

1.2 Scope of Work

The Phase I ESA included a site visit, regulatory research, historical review, and environmental database analysis of the subject property. In conducting the Phase I ESA, AECOM assessed the subject property for visible signs of potential contamination and researched public records for the subject property and adjacent properties (as applicable).

This project was performed in general accordance with ASTM Standard Practice Designation E 1527-13. Conclusions reached in this report are based upon the assessment performed and are subject to limitations set forth in Sections 1.3, 1.4, and 1.5 below.

1.3 Study Limitations

This report describes the results of AECOM's Phase I ESA to identify the presence of contamination-related liabilities materially affecting the subject properties. In the conduct of this assessment, AECOM assessed the presence of such problems within the limits of the established scope of work described in the proposal.

As with any due diligence assessment, there is a certain degree of dependence upon oral information provided by facility or site representatives, which is not readily verifiable through visual observations or supported by any available written documentation. AECOM shall not be held responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed by facility or site representatives at the time this assessment was performed. In addition, the findings and opinions expressed in this report are subject to certain conditions and assumptions, which are noted in the report. Any party reviewing the findings of the report must carefully review and consider all such conditions and assumptions.

This report, all field data, and notes were gathered and/or prepared by AECOM in accordance with the agreed upon scope of work and generally accepted engineering and scientific practice in effect at the time of AECOM's assessment of the subject property. The statements, findings, and opinions contained in this report are only intended to give approximations of the environmental conditions at the subject properties.

As specified in the ASTM standard (referred to below as "this practice"), it is incumbent on the client and any other parties who review and rely upon this report to understand the following inherent conditions surrounding any Phase I ESA:

- Uncertainty Not Eliminated: No ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with a property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for REC in connection with a property, and this practice recognizes reasonable limits of time and costs (Section 4.5.1 of the ASTM standard).
- Not Exhaustive: "All appropriate inquiry" does not mean an exhaustive assessment of a clean property. There is a point at which the cost of information obtained outweighs the usefulness of the information and, in fact, may be a material detriment to the orderly completion of transactions. One of the purposes of this practice is to identify a balance between the competing goals of limiting the costs and time demands inherent in performing an ESA and the reduction of uncertainty about unknown conditions resulting from additional information (Section 4.5.2 of the ASTM Standard).
- **Comparison with Subsequent Inquiry**: ESAs must be evaluated based on the reasonableness of judgments made at the time and under the circumstances in which they were made. Subsequent ESAs should not be considered valid standards to judge the appropriateness of any prior assessment based on hindsight, new information, use of developing technology or analytical techniques, or other factors (Section 4.5.4 of the ASTM Standard).

This report was prepared pursuant to an agreement between Community Energy Solar, LLC and AECOM and is for the exclusive use of Community Energy Solar, LLC and Henderson County Solar LLC. No other party is entitled to rely on the conclusions, observations, specifications, or data contained herein without first obtaining AECOM's written consent and provided any such party signs an AECOM-generated Reliance Letter. A third party's signing of the AECOM Reliance Letter and AECOM's written consent are conditions precedent to any additional use or reliance on this report.

The passage of time may result in changes in technology, economic conditions, site variations, or regulatory provisions, which would render the report inaccurate. Reliance on this report after the date of issuance as an accurate representation of current site conditions shall be at the user's sole risk.

1.4 Site-Related Limiting Conditions

The following site-specific limitations were encountered during this assessment:

During the site visit, AECOM did not have contact with any facility or site representative. AECOM's
evaluation of the subject properties therefore solely relies on due diligence and the accuracy of the
site visit, regulatory research, historical review, and environmental database analysis of the subject
properties. This site-related limiting condition is not expected to impact the results of this assessment.

1.5 Data Gaps/Data Failure

The following data failure/data gaps were encountered during this assessment:

- As specified in the agreed upon scope of work, a title search and environmental lien search were not conducted as part of this ESA. However, based upon historical data collected from other sources, this data gap is not expected to impact the results of this assessment. In addition, the user was not aware of environmental liens or activity use limitations that have been placed on the subject property.
- Per ASTM, past owners, operators, and occupants of the subject property who are likely to
 have material information regarding the potential for contamination at the subject property
 shall be contacted to the extent that they can be identified and that the information likely to be
 obtained is not duplicative of information already obtained from other sources. AECOM was
 unable to interview past owners and operators at the subject property. However, based upon
 historical data collected from other sources, this data gap is not expected to impact the results
 of this assessment.

2. Site Description

2.1 Site Location and Parcel Description

The subject properties, Property A and Property B, are located between United States Highway (US HWY) 41A, County Route 425 (Henderson Bypass), and US HWY 60 southeast from Henderson, Kentucky. Property A, the larger of the two subject properties, is approximately 625 acres and Property B encompasses approximately 94 acres. Both areas are situated within a predominantly agricultural district with heavy and light industrial zonings.

According to the Henderson City-County office, Property A is comprised of seven (7) land parcels listed in **Table 1**. Wilson Station Road, a two-lane asphalt paved road, serves as the southern property border. Property A is bordered to the north-west by Old Corydon Road, a two-lane gravel paved road; north-east by Henderson Bypass, a two-lane asphalt paved road; and south-east by US HWY 41A, a two-lane asphalt paved road. Property A is accessed by easement bridges constructed over the culvert separating the agricultural land and Wilson Station Road. Many of the access points are primarily used for agricultural equipment.

Property B is made up of one parcel of land designated as Henderson County parcel number 46-19.2 (93.98 acres). Property B is an agricultural field with an access road to the Illinois Central Railroad (ICRR) running east to west through the middle of the field. Canoe Creek and singlefamily residences make up the eastern border of the subject property.

Property A Comprising County Parcels				
County Parcel Number	Parcel Size (acres)			
39-2-66	107.70			
39-2-66	40.93			
46-20	13.55			
46-19.2	29.05			
46-39	31.91			
46-42	46.33			
47-3	389.47			

The approximate location of the subject properties is illustrated on Figure 1.

2.2 Site Ownership

The ownership of the parcels which comprise Property A, according to the Henderson City-County Geographic Information System (GIS) Records, is detailed in Table 2.

Table 1

Property A Parcel Ownership					
County Parcel Number					
39-2-66	107.70				
39-2-66	40.93	Tommy D Tapp			
46-20	13.55				
46-19.2	29.05	Beth Ann and Jeff Francis			
46-39	31.91	Richard N and Lynn Payne			
46-42	46.33	Debra J. Crooks			
47-3	389.47	Margarete E Sutton and Charles R McCollom III			

Table 2

According to the Henderson City-County GIS Records, Property B is owned by Beth Ann and Jeff Francis of Henderson, Kentucky.

2.3 Site Visit

Mr. Niels Heidner, Geologist I with AECOM's Franklin, Tennessee office, visited the subject property on May 13, 2020. During the site visit, Mr. Heidner accessed the subject properties via access points generally used for agricultural equipment. Site related limiting conditions encountered during this assessment are summarized in Section 1.4.

The site visit methodology consisted of walking over accessible areas of the subject properties, including the perimeter and interior of each individual parcel. Each parcel was first traversed around its perimeter then the interior of the parcel was inspected. The following sections summarize the results of the site visit.

2.3.1 Site Description

The subject property contains approximately 753 acres of agricultural land zoned for light industrial, heavy industrial, agricultural, highway commercial, single family residential, two family residential, and general business districts. Individual fields are separated by drainage culverts, intermittent streams, berms, and barbed-wire fences. The runoff from the culverts and intermittent streams form a drainage network that runs into Wilson Creek, a perennial stream. Canoe Creek, another perennial stream which drains much of Property B. The subject properties have historically been utilized for agriculture. During the site visit the acreage comprising the subject properties was cultivated and plowed or sewn. The most heavily forested areas were located around Wilson Creek. Few trees were observed within the agriculturally active fields which made up much of the acreage on subject property A and B. Wild vegetation and mature trees were concentrated along property boundaries and along the floodplain of Wilson and Canoe Creeks. Stand-up drains were seen in the low-lying areas to the southeast. Crop drains were present to prevent water accumulation or flooding.

During the site visit, no visual evidence of potable water wells, monitoring wells, dry wells, clarifiers, septic tanks, or leach fields was observed on the subject parcels. No visual evidence of discolored

soil, water, or unusual vegetative conditions or odors were detected during the site visit. Representative site photographs are provided in **Appendix A**.

2.3.2 Surrounding Properties

The adjacent properties to the north of Property A, located across from Old Corydon Road and County Route 425, are agricultural fields. Kenergy Corporation Headquarters is located at the intersection of Old Corydon Road and County Route 425. The east adjacent properties for Property A, located across County Route 425, are occupied by agricultural land and By-Pass Golf Driving Range. The east adjacent properties, on the interior of the intersection of County Route 425 and US HWY 41A are occupied by single-family residences, agricultural fields, two retention ponds, and a broadcasting tower. To the south-east, located across US HWY 41A, single-family residences and agricultural fields comprise the surrounding parcels of Property A. The adjacent properties on the interior of the intersection of US HWY 41A and Wilson Station Road are occupied by agricultural fields and single-family residences. The adjacent properties to the west of Property A, on both sides of Wilson Station Road and north to Old Corydon Road are occupied by agricultural fields and single-family residences.

The adjacent property to the north of subject Property B is occupied by an electrical substation at 2239 South Green Street. The adjacent properties to the north, across Canoe Creek; and the adjacent properties to the east are occupied by single family or duplex residences. Subject property B is bordered to the south and west by two branches of the ICRR. Past the ICRR, the agricultural fields exist.

AECOM did not observe any gasoline service stations or dry cleaners within one half mile of the subject property. In addition, no day care centers, schools, or hospitals are located adjacent to the subject property. Based on AECOM's site reconnaissance of the surrounding neighborhood, no off-site sources of concern were identified.

2.3.3 Petroleum Products, Hazardous Waste, and Hazardous Materials

No hazardous waste or hazardous materials were observed at the subject property.

2.3.4 Polychlorinated Biphenyls

Polychlorinated biphenyl (PCB)-containing dielectric fluids have been widely used as coolants and lubricants in transformers, capacitors, and other electric equipment due to their insulating and nonflammable properties.

AECOM observed multiple pole-mounted transformers situated across both subject properties. No damage or leaks were observed from the transformers. No PCB-free labeling was observed on the transformer; however, they appeared to be constructed after 1979.

2.3.5 Storage Tanks (Aboveground and Underground)

Aboveground storage tanks (ASTs), and underground storage tanks (UST's), were not identified during the site visit.

2.3.6 Solid Waste

No evidence of inappropriate disposal activities by the current property owners or soil staining was observed during the site visit.

2.3.7 Water

The properties are not connected to public water supplies. One residential water well, identified by the University of Kentucky, Kentucky Geological Survey (KGS) Groundwater Wells Search (GWS) as AKGWA_NUMBER 60001277, may be associated with county parcel number 46-39, owned by Richard and Lynn Payne and located on Property A. According to the KGS GWS the well was drilled to an unknown total depth but contacted bedrock at 33 feet below the ground surface. The water well was not observed during the site walk through and based on a review of maps from the KGS Geologic Map Information Service (GMIS) website; the water well is associated with an adjacent residential home.

2.3.8 Stormwater

Stormwater at the subject properties infiltrates the bare soil into the subsurface. If flooded, the ground surface is expected to flow off-site as sheet flow towards Wilson Creek. Wilson Creek, which drains both Property A and B flows into the Ohio River to the north.

3. Environmental Setting

3.1 Topography

According to the United States Geological Survey historic topographic maps of the subject property area (Wilson 7.5" quadrangle and Henderson 7.5" quadrangle), the elevation of subject property located A is approximately 380 feet above mean sea level (MSL). The elevation of subject property B is approximately 380 feet above MSL. Subject property A has an approximate maximum topographic elevation of 445 ft above MSL at the southeast corner of the subject property near the intersection of Wilson Station Road and US HWY 41A. Subject property A has an approximate minimum topographic elevation of 325 ft above MSL where Wilson Creek crosses County Route 425. Subject property B has an approximate maximum topographic elevation of 345 ft above MSL at Canoe Creek, the northern property boundary.

3.2 Site Soil and Geology

According to the Department of the Interior, United States Geological Survey, Geologic Map of Part of the Wilson Quadrangle, Henderson County, Kentucky (1973), the subject properties are underlain by alluvial sediment which is intermixed Quaternary Alluvium, and Quaternary Loess. The alluvium has a local thickness up to 190 feet. The aeolian loess has a regional occurrence between 0-50 feet in thickness. These two formations are characterized by clay, silt, sand, and gravel.

3.3 Groundwater and Hydrogeology

Site-specific hydrologic information was not identified during this assessment. Based on the surface topography of subject property A, the groundwater flow direction drains from the north and south into Wilson Creek. Wilson Creek trends from west to east across subject property A. Based on the surface topography of subject property B, the groundwater flow direction is to the east-southeast towards Canoe Creek. Canoe Creek, which joins Wilson Creek, drains the subject properties into the Ohio River. The actual depth and flow direction of groundwater beneath the subject properties cannot be determined without site-specific groundwater monitoring well data but is assumed to regionally trend north towards the Ohio River.

4. Site and Area History

Historical information for the subject property and surrounding properties is based on AECOM's review and analysis of the following historical sources provided by Environmental Data Resources, Inc. (EDR):

- Aerial photographs dated 1940, 1950, 1958, 1970, 1973, 1983, 1998, 2008, 2012, and 2016.
- Historic topographic maps dated 1914, 1916, 1952, 1959, 1971, 1980, 1981, 1993, and 2013.
- City directories for the years 1963, 1966, 1992, 1995, 2000, 2005, 2010, 2014, and 2017.

In addition, according to EDR, Sanborn® Fire Insurance Map coverage is not available for the subject property. Refer to **Appendix B** for the historical sources, which include the historical aerial photographs, topographic maps, and city directories.

4.1 Subject Property

Based on a review of aerial photographs and historical topographic maps the subject properties have been used as agricultural land since 1940. According to the 1914 historical topographic map, Wilson Station Road, the ICRR, Madisonville Road which would later become US HWY 41A, and Old Corydon Road were established. Between the historical topographic map for 1916 and the 1950 aerial photograph additional construction occurred on the ICRR. Between 1981 and 1993, County Route 425 was constructed to form the property border for subject property A. Between 1981 and 1993, the historical topographic maps highlight the excavation of the borrow pit on county parcel number 46-20 on subject property A, and the construction of a gravel road which bisects subject property B from east to west. Between the 1983 and 1998, aerial photographs reveal the construction of Kenergy Corporation Headquarters located at the intersection of Old Corydon Road and County Route 425.

City directories for the years 1963, 1966, 1992, 1995, 2000, 2005, 2010, 2014, and 2017 were provided by EDR. Addresses for the subject properties were listed in the city directories for the year 1992 as 5872 Highway 425 for the subject property located at 3001 Wilson Station Road; and 648, 654, 904, 910, 914, 1008, 1018, 1026, and 5806 Lovers Lane for the property located at 620 Lovers Lane. None of the addresses were formerly owned by non-private individuals.

4.2 Adjacent Properties

Based on a review of aerial photographs and historical topographic maps, the adjacent properties have been used as agricultural land since at least 1940. The first major land-use changes occurred between the 1916 historical topographic map and the 1950 aerial photograph. Over this 34-year time span a branch of the ICRR that makes up the current western border of subject property B was added to its main line. With the addition of the railroad line, small residential buildings were constructed to the north and east of subject property B. Further construction of small, single family and multi-family residential structures were built around the adjacent property B across Canoe Creek.

No historical off-site sources of concern in the surrounding properties were identified in the city directories reviewed for this report.

4.3 Interviews

During the site visit, no interviews with current or previous landowners were conducted. In accordance with the scope of work and ASTM 1527-13, the property owners were contacted to provide information regarding their property, and the surrounding properties. Based on the responses of the property owners, this assessment revealed no RECs, CRECs, or HRECs in connection with the properties.

Refer to Appendix B for the landowner completed questionnaires.

4.4 **Previously Prepared Environmental Reports**

AECOM inquired about existing environmental reports associated with the subject property. Previously prepared environmental reports were not identified during this assessment. The client indicated that there were no previous environmental assessments or reports associated with the subject property.

5. Database and Records Review

5.1 User Provided Information

Section 6 of ASTM E1527-13 states that certain tasks, which will help to determine the possibility of RECs associated with the subject property, are generally conducted by the Phase I ESA report user. This includes the following: reviewing title records for environmental liens or activity and land use limitations and considering awareness of any specialized knowledge (e.g., information about previous ownership or environmental litigation), experience related to RECs at the subject property, or significant reduction in the purchase price of the subject property. Per the agreed scope-of-work, information related to these items should be provided by the Phase I ESA report user to AECOM.

5.2 Title Records/Environmental Liens

Per the agreed upon scope of work, a chain-of-title and an environmental lien search were not performed as part of this assessment.

5.3 Database Information

In accordance with the scope of work and ASTM E1527-13, a search of various governmental databases was conducted by EDR. The site-specific environmental database report was reviewed to evaluate if soil and/or groundwater from on-site and/or off-site sources of concern has the potential to impact the subject property. The database abbreviations are provided in the site-specific environmental database report.

The database report includes various reports detailing database information for each of the sites identified or geocoded within the specified radius. Additional sites were identified within the database report; however, EDR was not able to map them to specific locations due to insufficient or contradicting address information. These sites were included in the database report as "orphan" sites. Based upon AECOM's review, there does not appear to be any significant concerns associated with any of the orphan sites. A summary of AECOM's review and analysis of the site-specific environmental database report is presented below. A copy of the database report is provided in **Appendix C**.

5.3.1 Subject Property

The subject property is identified in the following databases:

- The State Spills (SPILLS) database; and
- The Underground Injection Control (UIC) wells database.

The UIC database is a listing of wells identified as underground injection wells in the Kentucky Oil & Gas industry. The database indicated an underground injection well was located on the subject property. The database stated the well was installed on August 2, 1982 and the well was plugged and abandoned on June 19, 1990. The well was located on a property previously owned by A. G. Pritchett. A permit was issued for the well under the Kentucky Division of Oil and Gas under permit number 50735.

The spills database is a listing of spills and/or releases related incidents from the state of Kentucky Department of Environmental Protection (DEP). An open dumping report exists for subject property A at 7248 Old Corydon Road. The substance of the solid waste was not reported in the database. The report was closed with a remark indicating that the incident had been "closed-managed".

5.3.2 Surrounding Sites

Additional sites, including State and tribal sites, were identified within the respective ASTM E1527-13 or EDR search distances from the subject property. Based on AECOM's review of the database listings, none of the sites are expected to present a REC to the subject property based on their distance and topographic gradient from the subject site. Therefore, no impact from the adjacent properties to the subject properties was concluded at the time of the Phase I ESA.

5.4 Vapor Encroachment Screening

No on-site sources of vapor encroachment (e.g., UST, contaminated soil, groundwater plume, etc.) were identified during this assessment. A review of the EDR database indicated that no impacted sites are located within 0.25 mile of the subject property. Based on the EDR information, and observations made during the site visit a vapor encroachment issue due to an on-site source does not appear to exist for the subject property.

5.5 Agency File Review

5.5.1 Local

AECOM submitted Freedom of Information Act (FOIA) requests to the City of Henderson Fire Department to determine if they have files related to historical hazardous materials releases that may have occurred at the subject property. As of the date of this report, a response to AECOM's FOIA request has not been received. Based on AECOM's research, AECOM does not anticipate the response (if any) from the City of Henderson Fire Department to the FOIA request will significantly alter the conclusions or recommendations of this report. However, if information is received from this FOIA request that significantly impacts the conclusions of this report, this information will be forwarded upon receipt.

5.5.2 County

AECOM reviewed the Henderson City-County geographic information systems (GIS) database for records pertaining to the subject property's physical and parcel addresses. Data obtained from the records is used to designate parcels that make-up the subject areas in this report.

5.5.3 State

In addition, AECOM submitted a FOIA request to the KGS Oil and Gas Records for information pertaining to exploration wells previously drilled on the property. AECOM has not received information pertaining to the subject properties or adjacent properties. Based on AECOM's research and observations made while on-site, it is not likely that any information received from the State would significantly impact the conclusions made herein. However, if information is received from this FOIA request that significantly impacts the conclusions of this report, this information will be forwarded upon receipt.

6. Findings and Opinions

AECOM performed a Phase I ESA of the subject property in conformance with the scope and limitations of ASTM E1527-13, which meets the requirements of Title 40, Code of Federal Regulations Part 312 and is intended to constitute *all appropriate inquiry* for purposes of the landowner liability protections. Any exceptions to, or deletions from, this practice are described in Section 1.3 through 1.5 of this report.

The following sections summarize the findings and opinions of this Phase I ESA of the subject property.

6.1 Recognized Environmental Conditions

Based on the above-described activities, no RECs were identified in connection with the subject property.

6.2 Controlled Recognized Environmental Conditions

Based on the above-described activities, no CRECs were identified in connection with the subject property.

6.3 Historical Recognized Environmental Conditions

Based on the above-described activities, no HRECs were identified in connection with the subject property

6.4 Vapor Encroachment Conditions

Based on the above-described activities, no VECs were identified in connection with the subject property.

6.5 De Minimis Conditions

Based on the above-described activities, no DMC's were identified in connection with the subject property.

7. Conclusions

AECOM performed a Phase I ESA in conformance with the scope and limitations of ASTM Standard Practice Designation E 1527-13 of the subject properties located in Henderson County, Kentucky. Any exception to, or deletions from, this practice are described in Sections 1.3 through 1.5 of this report. This assessment has revealed no RECs, CRECs, or HRECs in connection with the properties.

8. Environmental Professional Statement

Mr. Dennis Mihalek was the Environmental Professional (EP) for this project. Mr. Mihalek's EP statement is below, and his resume is provided in **Appendix D**:

I declare that, to the best of my professional knowledge and belief, I meet the definition of an EP as defined in §312.10 of 40 Code of Federal Regulations (CFR) and that I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Signature:

J.N. run 7.

Date: August 24, 2020

9. **References**

9.1 Agencies Contacted

Record and parcel information, reviewed for Henderson County, Kentucky at http://hendkygis.maps.arcgis.com/

City of Henderson Fire Department, 332 Washington Street, (270) 831-1270. Contacted by Mr. Heidner with AECOM on June 12, 2020 for information on potential hazardous materials releases that may have occurred at the subject property.

University of Kentucky, Kentucky Geological Survey, Oil and Gas Records, 1401 Corporate Circuit, Henderson, Kentucky 42420, (270) 827-3414. Contacted by Mr. Heidner with AECOM on June 12, 2020 for information on wildcat wells previously drilled on the subject property. Also at https://kgs.uky.edu/kygeode/services/oilgas/

9.2 Documents Reviewed

ASTM E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, dated November 2013. www.astm.org

ASTM E2600-15, Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions, dated October 2015. www.astm.org

EDR 7.5 Minute Topographic Maps, prepared for Henderson County, Kentucky, dated May 14, 2020. Inquiry number 6063350.5. Topographic Maps 1914, 1916, 1952, 1959, 1971, 1980, 1981, 1993, and 2013. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, <u>www.edrnet.com</u>.

EDR Aerial Photos Decade Package prepared for Henderson County, Kentucky, dated May 15, 2020. Inquiry number 6063350.8. Aerial photographs dated1940, 1950, 1958, 1970, 1973, 1983, 1998, 2008, 2012, and 2016. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, <u>www.edrnet.com</u>.

EDR City Directories Image Report prepared for Henderson County, Kentucky, dated May 18, 2020. Inquiry number 6063350.9. City directories reviewed included 1963, 1966, 1992, 1995, 2000, 2005, 2010, 2014, and 2017. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, <u>www.edrnet.com</u>.

EDR Area/ Corridor Map, prepared for Henderson County, Kentucky, dated May 14, 2020. Inquiry number 6063350.10s. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, <u>www.edrnet.com</u>.

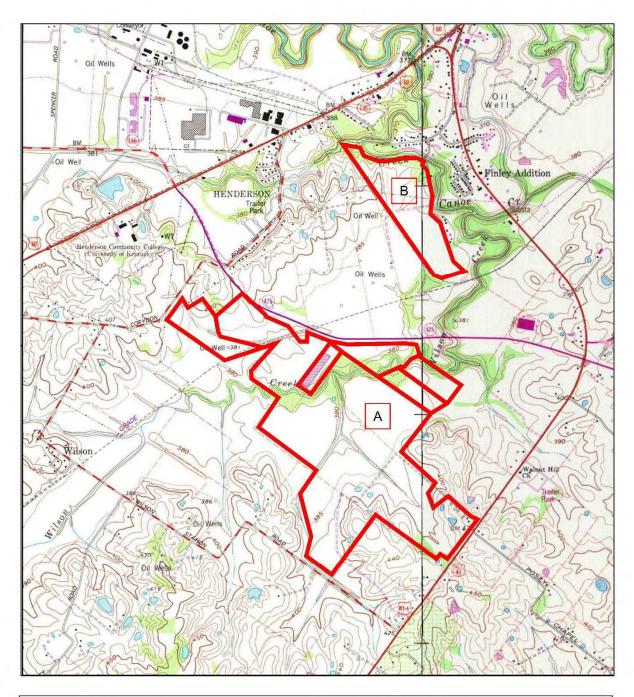
EDR Sanborn Map Report, prepared for Henderson County, Kentucky, dated May 15, 2020. Inquiry number 6063350.6. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, <u>www.edrnet.com</u>.

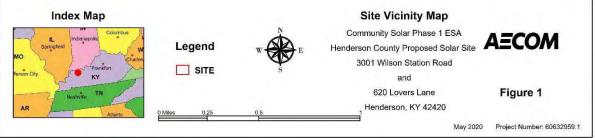
Google Earth website, <u>www.google.earth.com</u>. This information was reviewed online by Mr. Heidner with AECOM on May 15, 2020.

U.S. Environmental Protection Agency, Technical Guide for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites dated June 2015, https://www.epa.gov/sites/production/files/2015-06/documents/pvi-guide-final-6-10-15.pdf

Web Soil Survey. U.S. Department of Agriculture, Natural Resources Conservation Service website - <u>http://websoilsurvey.nrcs.usda.gov/app/</u>

Figure 1







Phase I Environmental Site Assessment of The Proposed Solar Site (Additional Properties) Henderson, Kentucky

Prepared for: Community Energy Solar, LLC Henderson County Solar LLC

Project Number: 60632959

January 2021

Phase I Environmental Site Assessment of Henderson County Kentucky Proposed Solar Site (Additional Properties)

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Phase I Environmental Site Assessment of Henderson County Kentucky Proposed Solar Site (Additional Properties)

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1. Site Location Map

Executive Summary

Community Energy Solar, LLC (CES), on behalf of Henderson County Solar LLC, contracted AECOM to perform a Phase I Environmental Site Assessment (ESA) at three rural land areas located southwest of Henderson, Kentucky. The land areas are located at 2230 Highway 60 West (Area #1); 6300 Highway 425 (Area #2); and 1173 and 2517 Wilson Station Road (Area #3) in Henderson, Henderson County, Kentucky (subject properties). The Phase I ESA was

performed in general conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Standard Practice Designation E 1527-13 for ESAs. Exceptions to, or deletions from, this practice are described in this report.

The largest of the three subject properties (Area #3), at approximately 36.75 acres, is situated approximately 5,000 feet northwest of the intersection of US Highway 41A and Wilson Station Road. The second subject property (Area #2), at approximately 21.25 acres, is situated approximately 5,000 feet west of the intersection of US Highway 41A and Kentucky Route 425 (Henderson Bypass). The smallest of the three subject properties (Area #1), at approximately 6.88 acres, is situated approximately 500 feet southwest of the intersection of U.S. Route 60 and Old Corydon Road. The subject properties are in a predominantly agricultural district with scattered heavy industrial and light industrial zonings. The smallest of the three subject properties is classified as exempt city.

The subject properties are bordered to the north, east, south, and west by a mixture of light industrial, heavy industrial, agricultural, highway, commercial, single family residential, two family residential, and general business district zoning. The historical land use for the two largest subject properties has been, and currently remains, for agricultural purposes. The historical land use for the smallest subject property, currently the location of a substation, was undeveloped land.

No recognized environmental controls (RECs), controlled RECs (CRECs), or historical RECs (HRECs) were identified during this assessment.

1. Introduction

Community Energy Solar, LLC (CES), on behalf of Henderson County Solar LLC, contracted AECOM to perform a Phase I Environmental Site Assessment (ESA) at three rural land areas located southwest of Henderson, Kentucky. The land areas are located at 2230 Highway 60 West (Area #1); 6300 Highway 425 (Area #2); and 1173 and 2517 Wilson Station Road (Area #3) in Henderson, Henderson County, Kentucky (subject properties). The Phase I ESA was performed in general conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Standard Practice Designation E 1527-13 for ESAs. Exceptions to, or deletions from, this practice are described in this report.

1.1 Purpose

The Phase I ESA was performed pursuant to AECOM's written proposal. The purpose of the Phase I ESA is to provide CES with information for use in evaluating recognized environmental conditions (RECs) associated with the subject property.

Per the ASTM standard, potential findings can include RECs, historical RECs (HRECs), controlled RECs (CRECs), and de minimis conditions. A REC is defined by the ASTM standard as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment." The term includes hazardous substances or petroleum products even under conditions in compliance with laws. HRECs are past releases of any hazardous substances or petroleum products that have occurred in connection with the property and have been addressed to the satisfaction of the applicable regulatory authority or meet unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. CRECs are recognized environmental conditions resulting from past releases of hazardous substances or petroleum products that have been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. de minimis conditions are those situations that do not present a material risk of harm to public health or the environment and generally would not be subject to enforcement action if brought to the attention of the regulating authority.

This assessment is based on a review of existing conditions, reported pre-existing conditions, and observed operations at the subject property and adjacent properties.

1.2 Scope of Work

The Phase I ESA included a site visit, regulatory research, historical review, and environmental database analysis of the subject property. In conducting the Phase I ESA, AECOM assessed the subject property for visible signs of potential contamination and researched public records for the subject property and adjacent properties (as applicable).

This project was performed in general accordance with ASTM Standard Practice Designation E 1527-13. Conclusions reached in this report are based upon the assessment performed and are subject to limitations set forth in Sections1.3,1.4, and 1.5 below.

1.3 Study Limitations

This report describes the results of AECOM's Phase I ESA to identify the presence of contamination-related liabilities materially affecting the subject properties. In the conduct of this assessment, AECOM assessed the presence of such problems within the limits of the established scope of work described in the proposal.

As with any due diligence assessment, there is a certain degree of dependence upon oral information provided by facility or site representatives, which is not readily verifiable through visual observations or supported by any available written documentation. AECOM shall not be held responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed by facility or site representatives at the time this assessment was performed. In addition, the findings and opinions expressed in this report are subject to certain conditions and assumptions, which are noted in the report. Any party reviewing the findings of the report must carefully review and consider all such conditions and assumptions.

This report, all field data, and notes were gathered and/or prepared by AECOM in accordance with the agreed upon scope of work and generally accepted engineering and scientific practice in effect at the time of AECOM's assessment of the subject property. The statements, findings, and opinions contained in this report are only intended to give approximations of the environmental conditions at the subject properties.

As specified in the ASTM standard (referred to below as "this practice"), it is incumbent on the client and any other parties who review and rely upon this report to understand the following inherent conditions surrounding any Phase I ESA:

- Uncertainty Not Eliminated: No ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with a property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for REC in connection with a property, and this practice recognizes reasonable limits of time and costs (Section 4.5.1 of the ASTM standard).
- Not Exhaustive: "All appropriate inquiry" does not mean an exhaustive assessment of a clean property. There is a point at which the cost of information obtained outweighs the usefulness of the information and, in fact, may be a material detriment to the orderly completion of transactions. One of the purposes of this practice is to identify a balance between the competing goals of limiting the costs and time demands inherent in performing an ESA and the reduction of uncertainty about unknown conditions resulting from additional information (Section 4.5.2 of the ASTM Standard).
- **Comparison with Subsequent Inquiry**: ESAs must be evaluated based on the reasonableness of judgments made at the time and under the circumstances in which they were made. Subsequent ESAs should not be considered valid standards to judge the appropriateness of any prior assessment based on hindsight, new information, use of developing technology or analytical techniques, or other factors (Section 4.5.4 of the ASTM Standard).

This report was prepared pursuant to an agreement between Community Energy Solar, LLC, Henderson County Solar, LLC, and AECOM and is for the exclusive use of CES and HCS. No other party is entitled to rely on the conclusions, observations, specifications, or data contained herein without first obtaining AECOM's written consent and provided any such party signs an AECOMgenerated Reliance Letter. A third party's signing of the AECOM Reliance Letter and AECOM's written consent are conditions precedent to any additional use or reliance on this report.

The passage of time may result in changes in technology, economic conditions, site variations, or regulatory provisions, which would render the report inaccurate. Reliance on this report after the date of issuance as an accurate representation of current site conditions shall be at the user's sole risk.

1.4 Site-Related Limiting Conditions

The following site-specific limitations were encountered during the course of this assessment:

- During the site visit, AECOM did not have contact with any facility or site representative. AECOM's evaluation of the subject properties therefore solely relies on due diligence and the accuracy of the site visit, regulatory research, historical review, and environmental database analysis of the subject properties. This site-related limiting condition is not expected to impact the results of this assessment.
- Due to the property size and thick vegetation on portions of the subject property, it was not possible to traverse all areas of the subject properties during the site reconnaissance. AECOM traversed and visually observed the perimeter of the subject properties and interior portions of the subject properties. Based on the current state of the subject properties (primarily agricultural land), this particular site-related limiting condition is not expected to have a significant impact to the results of this assessment.

1.5 Data Gaps/Data Failure

The following data failure/data gaps were encountered during this assessment:

- As specified in the agreed upon scope of work, a title search and environmental lien search were not conducted as part of this ESA. However, based upon historical data collected from other sources, this data gap is not expected to impact the results of this assessment. In addition, the user was not aware of environmental liens or activity use limitations that have been placed on the subject property.
- Per ASTM, past owners, operators, and occupants of the subject property who are likely to
 have material information regarding the potential for contamination at the subject property
 shall be contacted to the extent that they can be identified and that the information likely to be
 obtained is not duplicative of information already obtained from other sources. AECOM was
 unable to interview past owners and operators at the subject property. However, based upon
 historical data collected from other sources, this data gap is not expected to impact the results
 of this assessment.
- A limitation was encountered in determining the historical use of the subject property. The earliest source of historical information reasonably ascertainable within the time frame of this report in which usage could be determined was an aerial photograph from 1916. At the time of the photograph, the subject property appeared to be agricultural land (a developed use per ASTM E1527-13) and a portion of railway line. Therefore, the ASTM E1527-133 requirement

to determine all obvious uses of the property from the present back to the 1940, whichever is earlier, could not be achieved.

2. Site Description

2.1 Site Location and Parcel Description

Three rural land areas located approximately 4 miles southwest of the town of Henderson, Kentucky comprise the focus of the Phase I ESA. The land areas, made up of four designated parcels, are located at 2230 Highway 60 West (Area #1); 6300 Highway 425 (Area #2); and 1173 and 2517 Wilson Station Road (Area #3) in Henderson, Henderson County, Kentucky (subject properties).

Area #1 is an irregular shaped, 6.88-acre property owned by the City of Henderson Utility Department. The Henderson County Geographic Information Systems (GIS) Department lists the property as parcel number 46-84 in plat book 007, page 63. The property class is listed as exempt city. Area #1 is located along Highway 60, a four-lane all-purpose asphalt surface road, which forms the north property boundary. The property boundary to the south is marked by an area of dense deciduous trees, and the property boundary to the east is marked by residential homes. A railroad marks the property boundary to the west. An electrical substation, Conex container, and overhead power lines are located on the parcel.

Area #2, located approximately 0.25 miles southeast from Area #1, is an irregular shaped, 21.25acre property. Area #2 is a section of the greater 212.59-acre parcel listed as parcel number 46-19.2 in plat book 010, page 44 of the Henderson County Tax Assessor records as indicated by the Henderson County GIS Department. The property is located adjacent to 6300 Highway 425, a twolane all-purpose asphalt surface road, which is located adjacent to the south property boundary. The north and west areas are unmarked, and the east property boundary is indicated by a railroad and areas of dense deciduous vegetation. The property is undeveloped with a farmland property class.

Area #3 is located approximately 1 mile southwest of Area #2 and approximately 0.25 miles northeast of Wilson Station Road, a one-lane, residential road. Area #3 is comprised of segments of two land parcels, parcel number 39-2-64, a 219.55-acre area; and parcel 39-2-53, a 77.90-acre parcel; both with farmland property classes. The segments that comprise Area #3 form an irregular shaped, 36.75-acre, undeveloped area. The north area boundaries are delineated by Wilson Creek, a perennial creek which flows from west to east at the property. The south property boundaries are marked by an unnamed intermittent tributary to Wilson Creek, and a fence. The east property boundaries are marked by a fence, and the west property boundary is unmarked.

The approximate location of the subject properties is shown on **Figure 1**.

2.2 Site Ownership

AECOM attained ownership information for the subject properties from Henderson County GIS records. The following table lists the parcel number, parcel size, and parcel owner for the land parcels that form Areas #1, 2, and 3.

Parcel Ownership					
Subject Area	County Parcel Number	Parcel Size (Acres)	Subject Area Size (Acres)	Ownership	
Area #1	46-84	6.88	6.88	City of Henderson	
Area #2	46-19.2	212.59	21.25	Beth Ann and Jeff Francis	
Area #3	39-2-64	219.55	20.75	Gary H. Thomas	
	39-2-53	77.90	36.75	David Vetal Dossett	

The parcel boundaries for each area are depicted on Figure 1.

2.3 Site Visit

Mr. Niels Heidner, Geologist I with AECOM's Franklin, Tennessee office, visited the subject property on December 14, 2020. Mr. Heidner inspected the interior areas and perimeters of the subject properties on foot. The site visit methodology consisted of walking over accessible areas of the subject properties, including the perimeter and interior of each individual parcel. The following sections summarize the results of the site visit.

Site related limiting conditions encountered during this assessment are summarized in Section 1.4.

2.3.1 Site Description

2.3.1.1 Area #1

The subject property contains approximately 6.88 acres of class exempt city land. A City of Henderson substation is located onsite, and any liability associated with the onsite utility-owned transformers and power poles would be the responsibility of the City of Henderson. The electrical substation is located near the northwest corner of the property adjacent to Highway 60 and the railroad. A gravel access road, entering the property from Highway 60, runs across the north and east side of the substation, terminating in line with the southern-perimeter fence; which encircles the substation. Much of the property is made up of a flat lying grass field; however, the property abruptly drops off at the southwest corner along Canoe Creek. According to the historical topographic maps, the elevation change is approximately 30 feet. Canoe Creek, a perennial sediment loaded stream, drains all of Area #1. The majority of the trees observed at Area #1 were concentrated along the south property boundary and along the terraced flood plain on and below the slope break. Prior to a time between 1983 and 1998 the historical use of the land was primarily utilized for agriculture starting at least by 1940.

2.3.1.2 Area #2

The subject property contains approximately 21.25 acres of undeveloped land classed as farmland. Observations made in the field, aligning with historic topographic depictions, located abandoned structures of a former railroad line which previously transected the subject property from west to east. Approximately 50 feet north of the former rail line is a barbed wire fence that runs west to east dividing the subject property. The located structures appeared to be supports to elevate the railway over the low-lying wetland, and stream which runs north to south through the subject property. The stream makes up much of the subject property's eastern property boundary south of the relict

railway structures. North of the abandoned railway structure, the subject property is primarily composed of an agricultural field with deciduous vegetation present along the active rail line. South of the previous transecting rail line the subject property is composed of deciduous vegetation and undeveloped land. South of the former rail line, the west property boundary is unmarked and is currently used as a golf driving-range. Upon review of historic topographic maps, the abandoned section of railway line was in place as early as 1914 as the Illinois Central Railroad and was abandoned between 1981 and 1993. The northern railway, still in use, was constructed between 1916 and 1952. According to historic aerial photographs, the subject property has been used: to the north; as agricultural land, and to the south; as mixed agricultural land and undeveloped, deciduous vegetated land. According to the historic topographic maps Highway 425, the south property boundary, was constructed between 1983 and 1998.

2.3.1.3 Area #3

The subject property contains approximately 36.75 acres of land classed as farmland. Area 3 is comprised of two agricultural fields separated by a fence. The runoff from the fields drain the properties into Wilson Creek. Wilson Creek, a perennial sediment loaded stream, is deeply immured within its banks with evidence of engineered shoring in place to prevent evulsion or meandering. The subject properties have historically been utilized for agriculture. During the site visit the acreage comprising the subject properties was cultivated and plowed or sewn. The most heavily forested areas were located around Wilson Creek. Few trees were observed within the agriculturally active fields which made up the majority of the acreage on area #3. Wild vegetation and mature trees were concentrated along property boundaries and along the floodplain of Wilson Creek.

During the site visit, no visual evidence of potable water wells, monitoring wells, dry wells, clarifiers, septic tanks, or leach fields was observed on the subject properties. No visual evidence of discolored soil, water, or unusual vegetative conditions or odors were detected during the site visit. Representative site photographs are provided in **Appendix A**.

2.3.2 Surrounding Properties

2.3.2.1 Area #1

Commercial, industrial, residential, and agricultural areas are located around Area #1. The adjacent properties to the north, located across Highway 60, are occupied by Safety & Environmental Technologies, Inc. and Gibbs Die Casting. The south adjacent property is marked by an area of deciduous trees and Canoe Creek, a perennial water body. The east adjacent properties are occupied by residential dwellings and Old Corydon Road, a two-lane asphalt surface road. A residential home, located across the railroad, occupies the west adjacent property.

2.3.2.2 Area #2

Area #2 is surrounded primarily by agricultural land; however, Highway 425 is located immediately south of the southern adjacent property and a railroad is located immediately adjacent to the east side of the area and on the eastern adjacent property. The general area is designated as agricultural land.

2.3.2.3 Area #3

The subject properties comprising Area #3 are surrounded entirely by agricultural land; however, an unpaved road and two, one-story storage barns are located on the adjacent property to the south. The structures were previously identified in a previous Phase I ESA completed by AECOM in May 2020. Refer to **Appendix C** for additional details concerning the storage barns.

AECOM did not observe any gasoline service stations or dry cleaners within 500 ft of the subject properties. In addition, no day care centers, schools, or hospitals are located adjacent to the subject properties. Based on AECOM's site reconnaissance of the surrounding neighborhood, no off-site sources of concern were identified.

2.3.3 Petroleum Products, Hazardous Waste, and Hazardous Materials

No hazardous waste or hazardous materials were observed at the subject properties. Approximately 20 new telephone poles, treated with creosote, were staged at Area #1, between the substations east perimeter fence and the gravel access. The creosote coating applied to the telephone poles is a category of carbonaceous chemicals formed by the distillation of various tars and pyrolysis of plant-derived material, such as wood or fossil fuel and are typically used as preservatives or antiseptics. Any liability associated with the onsite utility-owned power poles would be the responsibility of the City of Henderson.

2.3.4 Polychlorinated Biphenyls

Polychlorinated biphenyl (PCB)-containing dielectric fluids have been widely used as coolants and lubricants in transformers, capacitors, and other electric equipment due to their insulating and nonflammable properties.

AECOM observed multiple pole-mounted and pad-mounted transformers situated across Area #1. No damage or leaks were observed from the transformers. No PCB-free labeling was observed on the transformers; however, they appeared to be constructed after 1979. Any liability associated with the onsite utility-owned transformers would be the responsibility of the City of Henderson.

2.3.5 Storage Tanks (Aboveground and Underground)

Aboveground storage tanks (ASTs) and underground storage tanks (UST's) were not identified during the site visit.

2.3.6 Solid Waste

No evidence of inappropriate disposal activities by the current property owners and no soil staining was observed during the site visit.

2.3.7 Water

No facilities with water access were identified during the site visit. No potable water wells were identified at the subject property at the time of AECOM's site visit.

2.3.8 Stormwater

Stormwater at the subject properties infiltrates the bare soil and infiltrates the subsurface. If flooded, the ground surface is expected to flow off-site as sheet flow towards Wilson Creek, or a tributary of Wilson Creek. Wilson Creek, which drains Areas #1, 2, and 3 into the Ohio River to the north.

3. Environmental Setting

3.1 Topography

AECOM analyzed the United States Geological Survey (USGS) Wilson and Henderson topographic quadrangles to topographically assess the subject areas. The topography for each area is described in the following subsections.

3.1.1.1 Area #1

Surface elevation at Area #1 is 388 feet above mean sea level (MSL) as indicated by a USGS benchmark located adjacent to Highway 60. The site's surface is relatively level throughout with a slight decrease toward the southwest. The site is covered primarily with natural grass. Near the southwest side of the property the surface elevation decreases with a very steep slope toward Canoe Creek, located immediately adjacent to the property. The elevation at Canoe Creek is 370 feet above MSL. Canoe Creek is a perennial creek with surface water flow to the east below Area #1. Deciduous vegetation consisting of trees and brush is located at the Area #1 southern property boundary.

3.1.1.2 Area #2

Surface elevation at Area #2 is 385 feet above MSL as indicated by USGS historical topographic maps. The site's surface is relatively level throughout with a slight decrease near the center of the property along an un-named tributary of Wilson Creek. North of the tributary, the site was cultivated and plowed or sewn. South of the tributary, the site is covered with deciduous vegetation consisting of trees and brush and undeveloped land covered with natural grass. The elevation of the Wilson Creek tributary is approximately 370 feet above MSL.

3.1.1.3 Area #3

Surface elevation at Area #3 is 380 feet above MSL as indicated by USGS historical topographic maps. The site's surface is relatively level throughout with a slight decrease towards the north along Wilson Creek. The site was cultivated and plowed or sewn. Near the north side of the property, the surface elevation decreases with a very steep, near vertical, slope toward Wilson Creek, located immediately adjacent to the property. The elevation at Wilson Creek is 370 feet above MSL. Wilson Creek, a perennial sediment loaded stream, is deeply immured within its banks with evidence of engineered shoring in place to prevent evulsion or meandering.

3.2 Site Soil and Geology

According to the Department of the Interior, United States Geological Survey, Geologic Map of the Wilson Quadrangle, Henderson County, Kentucky (1973), the subject properties are underlain by alluvial sediment which is intermixed Quaternary Alluvium and Quaternary Loess. The alluvium has a local thickness up to 190 feet. The aeolian loess has a regional occurrence between 0-50 feet in thickness. These two formations are characterized by clay, silt, sand, and gravel.

3.3 Groundwater and Hydrogeology

Site-specific hydrologic information was not identified during this assessment. Based on the surface topography of Area #1, the groundwater flow direction drains from the northwest into Canoe Creek. Based on the surface topography of Area #2, the groundwater flow direction is to the east towards Canoe Creek. Based on the surface topography of Area #3, the groundwater flow direction drains to the north-northeast towards Wilson Creek. Canoe Creek, which joins Wilson Creek, drains the subject properties into the Ohio River. The actual depth and flow direction of groundwater beneath the subject properties cannot be determined without site-specific groundwater monitoring well data but is assumed to regionally trend north towards the Ohio River.

4. Site and Area History

Historical information for the subject property and surrounding properties is based on AECOM's review and analysis of the following historical sources provided by Environmental Data Resources, Inc. (EDR):

- Aerial photographs dated 1940 (partial), 1950, 1958, 1970, 1973, 1983, 1998, 2008, 2012, and 2016.
- Historic topographic maps dated 1914, 1916, 1952, 1959, 1971, 1980, 1981, 1993, and 2013.
- City directories for the years 1963, 1966, 1992, 1995, 2000, 2005, 2010, 2014, and 2017.

In addition, according to EDR, Sanborn® Fire Insurance Map coverage is not available for the subject property. Refer to **Appendix D** for the historical sources, which include the historical aerial photographs, topographic maps, city directories, and property record cards.EDR reports were initially obtained in May 2020 for the Phase 1 ESA conducted on 'the original parcels' associated with the Henderson County Solar site (see Appendices B and C for 'Previously Prepared Reports'). Because of the proximity of Areas #1-3 to the original parcels, and the buffer integrated into the EDR reports, Areas #1-3 are included in the EDR search radius and thus there are no separate EDR reports for Areas #1-3.

4.1 Subject Property

Based on a review of aerial photographs and historical topographic maps the subject properties have been used as predominantly agricultural land since at least 1940. According to the 1914 historical topographic map, Wilson Station Road, the Illinois Central Railroad (ICRR), Madisonville Road which would later become US Highway 41A, and Old Corydon Road were established. Between the historical topographic map for 1916 and the 1950 aerial photograph additional construction occurred on the ICRR. Between 1981 and 1993, Kentucky Route 425 was constructed and forms the south property border for Area #2. According to historic topographic maps and aerial photographs, Area #1 was an undeveloped plot with dispersed deciduous vegetation. According to the aerial photographs, construction of the substation at Area #1 occurred between 1983 and 1998. The substation is not present on the 1993 historic topographic map.

City directories for the years 1963, 1966, 1992, 1995, 2000, 2005, 2010, 2014, and 2017 were provided by EDR. The land areas are located at 2230 Highway 60 West; 6300 Highway 425; and 1173 and 2517 Wilson Station Road in Henderson, Henderson County, Kentucky.

4.2 Adjacent Properties

Based on a review of aerial photographs and historical topographic maps, the adjacent properties have been used as agricultural land since at least 1940. The first major land-use changes occurred between the 1916 historical topographic map and the 1950 aerial photograph. Over this 34-year time span a branch of the ICRR that makes up the current eastern border of Area #2 was added to its main line. With the addition of the railroad line, small residential buildings were constructed to the north and east of Area #1. Further construction of small, single family and multi-family residential structures were built around the adjacent properties between 1952 and 1981. The concentration of this construction occurred to the east of Area #1.

No historical off-site sources of concern in the surrounding properties were identified in the city directories reviewed for this report.

4.3 Interviews

During the site visit, no interviews with current or previous landowners were conducted. In accordance with the scope of work and ASTM 1527-13, the property owners were contacted to provide information regarding their property, and the surrounding properties. Based on the responses of the property owners, this assessment revealed no RECs, CRECs, or HRECs in connection with the properties.

Refer to Appendix B for the landowner completed questionnaire.

4.4 **Previously Prepared Environmental Reports**

A previously prepared environmental report was provided for AECOM's review during this assessment. The provided environmental data from the subject property included the 2020 Phase I Environmental Site Assessment Report.

- Community Energy Solar, LLC (CES), on behalf of Henderson County Solar LLC, contacted AECOM to perform a Phase I Environmental Site Assessment (ESA) at the subject properties located in Henderson County, Kentucky. The subject properties are located at 620 Lovers Lane, Henderson, Kentucky; and, 3001 Wilson Station Road, Henderson, Kentucky. The Phase I ESA was performed in general conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Standard Practice Designation E 1527-13 for ESAs. Exceptions to, or deletions from, this practice are described in this report.
- The larger of the two subject properties, at approximately 625 acres, is situated approximately 3,000 feet northeast of the intersect of US Highway 41A and Wilson Station Road. The smaller of the two subject properties, at approximately 94 acres, is situated approximately 800 feet south-southwest of the intersection of Collier Road and Lovers Lane. Both subject properties are situated within a predominantly agricultural district with scattered heavy industrial and light industrial zonings.
- The subject properties are bordered to the north, east, south, and west by a mixture of light industrial, heavy industrial, agricultural, highway commercial, single family residential, two family residential, and general business district zoning. The historical land use for both subject properties has been, and currently remains, for agricultural purposes.
- No recognized environmental controls (RECs), controlled RECs (CRECs), or historical RECs (HRECs) were identified during this assessment.

A review of this report indicated that the site history and regulatory research contained within this report is consistent with AECOM's own independent research and analysis. Refer to **Appendix C** for the previously prepared environmental report.

5. Database and Records Review

5.1 User Provided Information

Section 6 of ASTM E1527-13 states that certain tasks, which will help to determine the possibility of RECs associated with the subject property, are generally conducted by the Phase I ESA report user. This includes the following: reviewing title records for environmental liens or activity and land use limitations and considering awareness of any specialized knowledge (e.g., information about previous ownership or environmental litigation), experience related to RECs at the subject property, or significant reduction in the purchase price of the subject property. Per the agreed scope-of-work, information related to these items should be provided by the Phase I ESA report user to AECOM.

5.2 Title Records/Environmental Liens

Per the agreed upon scope of work, a chain-of-title and an environmental lien search were not performed as part of this assessment.

5.3 Database Information

In accordance with the scope of work and ASTM E1527-13, a search of various governmental databases was conducted by EDR. The site-specific environmental database report was reviewed to evaluate if soil and or groundwater from on-site and/or off-site sources of concern has the potential to impact the subject property. The database abbreviations are provided in the site-specific environmental database report.

The database report includes various reports detailing database information for each of the sites identified or geocoded within the specified radius. Additional sites were identified within the database report; however, EDR was not able to map them to specific locations due to insufficient or contradicting address information. These sites were included in the database report as "orphan" sites, or sites without clear locations or addresses within the EDR radius. Based upon AECOM's review, there does not appear to be any significant concerns associated with any of the orphan sites. A summary of AECOM's review and analysis of the site-specific environmental database report is presented below. A copy of the database report is provided in **Appendix D**.

5.3.1 Subject Property

The subject property is not identified in the EDR Area / Corridor Report databases. The EDR Area / Corridor Report database includes information such as UIC wells databases and The State Spills (SPILLS) database. To not be identified in the EDR Area / Corridor Report database implies no reports have been submitted at the state or federal level associated with the subject properties.

5.3.2 Surrounding Sites

Additional sites, including State and tribal sites, were identified within the respective ASTM E1527-13 or EDR search distances from the subject property. Based on AECOM's review of the database listings, none of the sites are expected to present a REC to the subject property based on their distance and topographic gradient from the subject site.

5.4 Vapor Encroachment Screening

No on-site sources of vapor encroachment (e.g., UST, contaminated soil, groundwater plume, etc.) were identified during this assessment. A review of the EDR database indicated that no impacted sites are located within 0.25 mile of the subject property. Based on the EDR information, and observations made during the site visit a vapor encroachment condition due to an off-site source does not appear to exist for the subject property.

5.5 Agency File Review

5.5.1 Local

AECOM submitted Freedom of Information Act (FOIA) requests to the City of Henderson Fire Department to determine if they have files related to historical hazardous materials releases that may have occurred at the subject property. No records were on file for the subject property.

5.5.2 County

AECOM reviewed the Henderson City-County GIS database for records pertaining to the subject property's physical and parcel addresses. Data obtained from the records is used to designate parcels that make-up the subject areas in this report.

5.5.3 State

In addition, AECOM submitted a FOIA request to the KGS Oil and Gas Records for information pertaining to the exploration wells previously drilled Area #2. The wells, including an injection well, were drilled on the main property of a previously prepared environmental report:

• The Underground Injection Control (UIC) database is a listing of wells identified as underground injection wells in the Kentucky Oil & Gas industry. The database indicated an underground injection well was located on the subject property. The database stated the well was installed on August 2, 1982 and the well was plugged and abandoned on June 19, 1990. The well was located on a property previously owned by A. G. Pritchett. A permit was issued for the well under the Kentucky Division of Oil and Gas under permit number 50735.

AECOM has not received information pertaining to the subject properties or adjacent properties. Based on AECOM's research, and observations made while on-site, it is not likely that any information received from the state would significantly impact the conclusions made herein.

6. Findings and Opinions

AECOM performed a Phase I ESA of the subject property in conformance with the scope and limitations of ASTM E1527-13, which meets the requirements of Title 40, Code of Federal Regulations Part 312 and is intended to constitute *all appropriate inquiry* for purposes of the landowner liability protections. Any exceptions to, or deletions from, this practice are described in Section 1.3 through 1.5 of this report.

The following sections summarize the findings and opinions of this Phase I ESA of the subject property.

6.1 Recognized Environmental Conditions

Based on the above-described activities, no RECs were identified in connection with the subject property.

6.2 Controlled Recognized Environmental Conditions

Based on the above-described activities, no CRECs were identified in connection with the subject property.

6.3 Historical Recognized Environmental Conditions

Based on the above-described activities, no HRECs were identified in connection with the subject property

6.4 Vapor Encroachment Conditions

Based on the above-described activities, no VECs were identified in connection with the subject property.

6.5 **De Minimis Conditions**

Based on the above-described activities, no DMC's were identified in connection with the subject property.

7. Conclusions

AECOM performed a Phase I ESA in conformance with the scope and limitations of ASTM Standard Practice Designation E 1527-13 of the subject properties located in Henderson County, Kentucky. Any exception to, or deletions from, this practice are described in Sections 1.3 through 1.5 of this report. This assessment has revealed no RECs, CRECs, or HRECs in connection with the property.

8. Environmental Professional Statement

Mr. Dennis Mihalek, Jr. was the Environmental Professional (EP) for this project. Mr. Mihalek's EP statement is below, and his resume is provided in **Appendix E**:

I declare that, to the best of my professional knowledge and belief, I meet the definition of an EP as defined in §312.10 of 40 Code of Federal Regulations (CFR) and that I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Signature:

Date: January 20, 2021

9. **References**

9.1 Agencies Contacted

Record and parcel information, reviewed for Henderson County, Kentucky at http://hendkygis.maps.arcgis.com/

City of Henderson Fire Department, 332 Washington Street, (270) 831-1270. Contacted by Mr. Heidner with AECOM on January 11, 2021 for information on potential hazardous materials releases that may have occurred at the subject property.

University of Kentucky, Kentucky Geological Survey, Oil and Gas Records, 1401 Corporate Circuit, Henderson, Kentucky 42420, (270) 827-3414. Contacted by Mr. Heidner with AECOM on January 12, 2021 for information on wildcat wells previously drilled near the subject property. Also, at https://kgs.uky.edu/kygeode/services/oilgas/

9.2 **Documents Reviewed**

ASTM E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, dated November 2013. www.astm.org

ASTM E2600-15, Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions, dated October 2015. www.astm.org

EDR 7.5 Minute Topographic Maps, prepared for Henderson County, Kentucky, dated May 14, 2020. Inquiry number 6063350.5. Topographic Maps 1914, 1916, 1952, 1959, 1971, 1980, 1981, 1993, and 2013. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, <u>www.edrnet.com</u>.

EDR Aerial Photos Decade Package prepared for Henderson County, Kentucky, dated May 15, 2020. Inquiry number 6063350.8. Aerial photographs dated1940, 1950, 1958, 1970, 1973, 1983, 1998, 2008, 2012, and 2016. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, <u>www.edrnet.com</u>.

EDR City Directories Image Report prepared for Henderson County, Kentucky, dated May 18, 2020. Inquiry number 6063350.9. City directories reviewed included 1963, 1966, 1992, 1995, 2000, 2005, 2010, 2014, and 2017. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, <u>www.edrnet.com</u>.

EDR Area/ Corridor Map, prepared for Henderson County, Kentucky, dated May 14, 2020. Inquiry number 6063350.10s. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, <u>www.edrnet.com</u>.

EDR Sanborn Map Report, prepared for Henderson County, Kentucky, dated May 15, 2020. Inquiry number 6063350.6. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, <u>www.edrnet.com</u>.

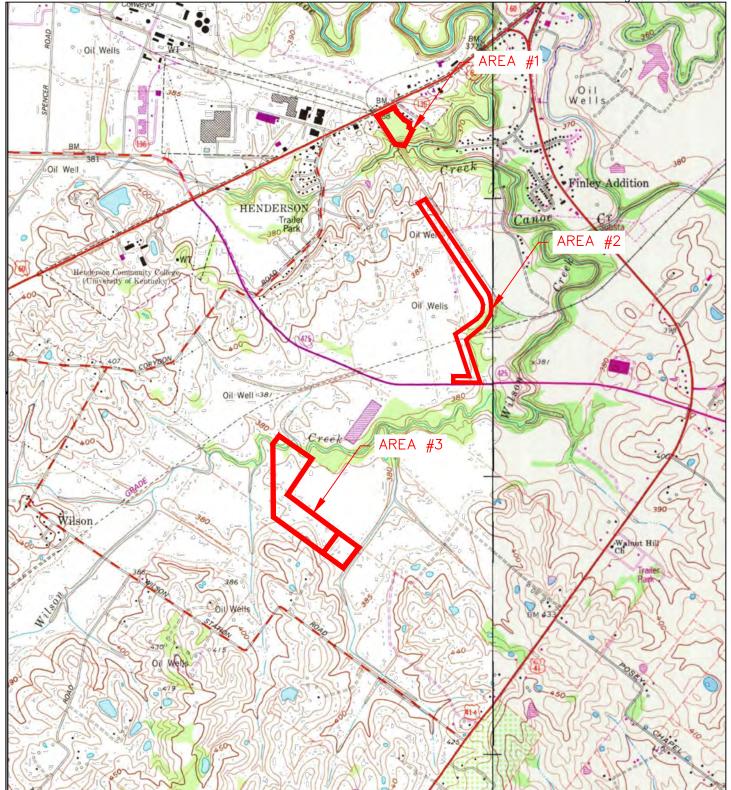
Google Earth website, <u>www.google.earth.com</u>. This information was reviewed online by Mr. Heidner with AECOM on January 15, 2021.

U.S. Environmental Protection Agency, Technical Guide for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites dated June 2015, https://www.epa.gov/sites/production/files/2015-06/documents/pvi-guide-final-6-10-15.pdf

Web Soil Survey. U.S. Department of Agriculture, Natural Resources Conservation Service website - <u>http://websoilsurvey.nrcs.usda.gov/app/</u>

Figure

Exhibit 14 Attachment 14.2 Page 51 of 51



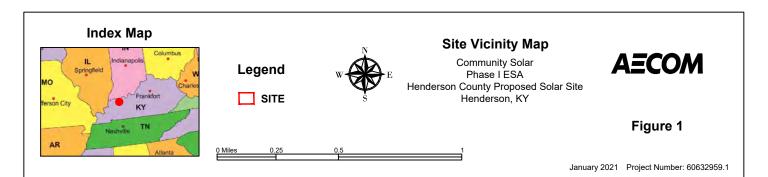


EXHIBIT 14 ATTACHMENT 14.3



VIA ELECTRONIC MAIL

April 19, 2021

Community Energy Solar, LLC Henderson County Solar LLC

Subject: Cultural Resources Desktop Review and Field Assessments Henderson County Solar Site in Henderson County, Kentucky

To Whom it May Concern:

AECOM Technical Services, Inc. (AECOM) conducted a cultural resources desktop review and two field assessments for the proposed Henderson County Solar Project Site in Henderson County, Kentucky (the "Project Site") in May and December 2020. As detailed herein, these reviews and assessments were undertaken to identify potential cultural resources issues associated with the future development of two Project Site locations, and to provide an outline for additional work that may be required under applicable federal or state law. This effort represents an environmental due diligence review and is not intended to coordinate compliance with Section 106 of the National Historic Preservation Act of 1996; the discussion of specific cultural resources detailed within this volume and the associated mapping is considered privileged and confidential information, and not intended for public disclosure. In the event that a federal or state nexus is identified for the Henderson County Solar Project at a future time, elements of this desktop review and assessment can be used as the basis for correspondence designed to initiate Section 106 consultation with appropriate federal or state agencies.

Project Site Location and Setting

The Project Site consists of several potential properties in Henderson, Kentucky, situated across primarily rural agrarian fields and scattered woodlots. The larger Project Site area is located approximately 914 meters (3000 feet) northeast of the intersection formed by US Highway 41A and Wilson Station Road. This area is bordered by agricultural land to the east, west and south, with residential and commercial property to the north, particularly along State Highway 60. Rural route 425 is located on the north side of the Project with State Highway 41 to the south. The smaller Project Site area is located to the north, approximately 243 meters (800 feet) south of the intersection of Collier Road and Lovers Lane. This section is situated on a terrace of Canoe Creek and is largely surrounded by wooded lots and treelines, with cultivated fields beyond the trees to the west and south, and a modern residential development on the opposite side of the Creek to the east. Wilson Creek flows west to east through this area, and confluences with Canoe Creek on the east side of the Project. A small tributary to Wilson Creek flows from south to north to Wilson Creek on the east side of the Project.

The Project Site is shaded in red on the mapping provided as **Attachment A** to this desktop report. The potential Project limits utilized during the two field reconnaissance visits in 2020 are color-coded for ease of reference on the mapping, with the May 2020 areas indicated in teal outline, and the additional areas examined in December 2020 outlined in blue.

The topography across this portion of Henderson County is primarily flat, ranging between 134 meters (440 feet) above mean sea level (AMSL) on the rolling hills which form the southern extent of the Project, to approximately 110 meters (360 feet) AMSL in the narrow drainage valley along the Wilson Creek bottom. Most of the northern extent of the Project occurs at approximately 117 meters (385 feet) AMSL, situated across a broad natural terrace of Canoe Creek.

Current land-use within the Project Site is primarily seasonal agriculture, with smaller areas of wood lots and pasture present. The Project Site is situated in Kentucky Ecoregion 72, the Interior River Lowland, characterized by wide, level to nearly level lowlands and terraced valleys, covered in the modern era by large tracts agricultural fields and pasture. The underlying geological composition of this area is primarily carboniferous sedimentary rock, overlain with alluvium, loess, and lacustrine deposits.

Soils present across the Project Site are primarily classified within the Uniontown-Dekoven-Henshaw association, which are typically found on landforms associated with creeks (particularly level or nearly level terraces and bottom lands or floodplains). Terraces can extend for up to 3.6 kilometers (2.0 miles) in width adjacent to creek bottoms. The 1967 *Soil Survey of Henderson County, Kentucky* indicates that most of this soil association in Henderson County had been cleared at that time of trees and was turned over to seasonal cultivation for a wide variety of different crops (including corn and soybeans, but also tobacco and small grains). These soils are generally prone to flooding, particularly along bottom lands;



the terraces are noted as occurring above the annual flood level (which would be the case for most of the Project Site). The following table provides the list of the soils present within the proposed Project Site, ordered by the overall percentage of the Project Site area.

Soil ID	Soil Name/ Description	Extent within the Project Site	Percentage of the Project Site
He	Henshaw silt loam	48.2 hectares	17.1%
De	Dekoven silt loam	41.4 hectares	14.7%
uWPoA	Wakeland-Patton overwash, silt loams, 0 to 2 percent slopes, occasionally flooded	39.0 hectares	13.8%
Dk	Dekoven silty clay loam	26.2 hectares	9.3%
uUnB	Uniontown silt loam, 2 to 6 percent slopes	21.9 hectares	7.8%
uWilA	Wilbur silt loam	19.8 hectares	7.0%
uHosB2	Hosmer silt loam, 2 to 6 percent slopes, eroded	16.0 hectares	5.7%
uUnA	Uniontown silt loam, 0 to 2 percent slopes	12.9 hectares	4.6%
uWakA	Wakeland silt loam	9.5 hectares	3.4%
uAlfB	Alford silt loam, 2 to 6 percent slopes	6.4 hectares	2.3%
uBelA	Belknap silt loam, 0 to 2 percent slopes, occasionally eroded	5.8 hectares	2.1%
Pa	Patton silt loam	5.8 hectares	2.1%
uUnC2	Uniontown silt loam, 6 to 12 percent slopes, eroded	5.6 hectares	2.0%
uAlfB2	Alford silt loam, 2 to 6 percent slopes, eroded	5.1 hectares	1.8%
uHosB	Hosmer silt loam, 2 to 6 percent slopes	4.6 hectares	1.6%
uUtE	Uniontown silt loams, 12 to 35 percent slopes	4.0 hectares	1.4%
uHosC3	Hosmer silt loam, 6 to 12 percent slopes, severely eroded	3.8 hectares	1.4%
uUoC3	Uniontown silty clay loam, 6 to 12 percent slopes, severely eroded	2.0 hectares	0.7%
uUnB2	Uniontown silt loam, 2 to 6 percent slopes, eroded	1.7 hectares	0.6%
uShaA	Sharon silt loam, 0 to 2 percent slopes, occasionally flooded	1.1 hectares	0.4%
W	Wet	0.8 hectares	0.3%
uAlfC2	Alford silt loam, 6 to 12 percent slopes, eroded	0.7 hectares	0.2%

Table 1. Soils	Listed Within	the Proposed	Project Site
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Desktop Archival Research

AECOM conducted the Section 106 archival research and records check for the Project Site in May 2020, by obtaining the information from the Office of State Archaeology (OSA) in Lexington and Kentucky Heritage Council (KHC) in Frankfort. The parameters of this record check involved examination of the OSA and KHC-inventoried cultural resources and surveys within a 2.0-kilometer (1.2-mile) buffer from the proposed Project Site location, as required by Kentucky. This record check therefore included the National Register of Historic Places (NRHP), archaeological sites, above ground resources, cemeteries, and cultural resources management (CRM)-related surveys and reports on-file with the OSA and KHC. The following table quantifies the data collected from the archival research within 2.0 kilometers (1.2 miles) of the Project. The associated mapping is provided as **Attachment A** to this document.

Archival Data	Within 2.0 Kilometers (1.2 Miles)	Within 1.0 Kilometer (0.6 Miles)	Within 150 Meters (500 Feet)	Within
NRHP-Listed Properties	1	0	0	0
OSA-Listed Archaeological Sites	29	14	2	0
KHC-Listed Aboveground Resources	41	21	6	2
Cemetery	2	0	0	0
Previous CRM-Related Reports	20	14	4	2

Table 2. Inventoried Cultural Resources and Reporting Within 2.0 Kilometers (1.2 Miles) of the Project Site

As indicated in the table above, a total of 73 inventoried resources are noted in the KY OSA and KHC archival data as occurring within 2.0 kilometers (1.2 miles) of the Project Site. That total, however, includes several resources which have been cross-listed in two of the inventories consulted for the Project Site (such as the Fairmount Cemetery, which represents both a KHC aboveground resource and an OSA archaeological site). In summary, these data indicate that within the 2.0-kilometer (1.2-mile) desktop study area:

- One property, the Barrett-Keach Farm, has been listed in the NRHP;
- A total of 41 aboveground resources have been inventoried with the KHC, two of which partially occur within the Project;
- A total of 29 archaeological sites have been inventoried with the OSA, the most proximal of which is located 89.9 meters (294.6 feet) from the Project;
- Two historic cemeteries have been inventoried with the KHC; and,
- The OSA has 20 reports on-file which detail prior cultural resources survey investigations, including two which extend within the proposed Project Site limits.

The two previously inventoried resources which occur within the Project Site, both historic-age farmsteads listed in the KHC (HE 013 and HE 014), have been documented as large properties which extend within the proposed limits of the southern elements of the Project Site. Neither of these resources has been assessed for NRHP eligibility. The following section outlines the results of the archival research by resource type, followed by a discussion and review of available historic-era mapping and aerial photography of the Project Site.

National Register of Historic Places Properties

There is one NRHP property listed within the 1.2-mile (2-kilometer) study area considered for this desktop review. This property, the Barrett-Keach Farm (KHC# HE31), is located approximately 816 meters (2679.9 feet) northwest of the Project and is also inventoried in the KHC inventory as resource #HE31. Also known as "The Elms", this property is historically significant for its contributions to agricultural development in Henderson County between 1852 and 1958. The farm has multiple contributing structures including the Barrett-Keach house, constructed in 1852, which exhibits both Federal and Italianate styles, and its two service structures, the Smokehouse and the Kitchen, in addition to nine other contributing structures spread across 165 acres of farmland. The resource also includes the Keach Tenant House (inventoried with the KHC as resource #HE 67) built in 1900. Given the intervening distance and topography between the Project Site and this NRHP property, it is unlikely that any new aboveground infrastructure would be directly visible from the Barrett-Keach Farm.

KY OSA-Listed Archaeological Resources

There are 29 previously inventoried archaeological resource sites present within 1.2-miles (2 kilometers) of the Project. Of these 29 sites, 16 are exclusively prehistoric in character, seven are historic, and five contained both prehistoric and historic components. One of these sites, an historic cemetery inventoried as site He864, is considered eligible for the NRHP, and is situated 1210 meters (3968 feet) northeast of the Project Site. The most proximal site to the Project, He992, is located approximately 89.9 meters (294.6 feet) to the southwest; as this resource was recorded with the OSA in July 2019, the site is noted as "preliminary" in the archive and no further data regarding the nature or context of this resource, apart from the spatial location, was available at the time of this desktop review. The following table lists all 29 archaeological sites recorded within 2.0 kilometers (1.2 miles) of the Project Site.

AECOM

Henderson County Solar Site April 19, 2021

Table 3. Archaeological Inventory Resources Within 2.0 kilometers (1.2 miles) of the Project

-		Resources within 2.0 kilometers		
Site ID	Temporal Period/ Cultural Affiliation	Site Type	NRHP Status	Distance from the Project
He992	Not noted	Not noted	Not noted	294.6 feet (89.9 meters)
He453	Prehistoric: Indeterminate; Historic	Open habitation without mounds	Not assessed	363.5 feet (110.8 meters)
He452	Prehistoric: Indeterminate; Historic	Open habitation without mounds	Not assessed	681.9 feet (207.8 meters)
He452	Prehistoric: Indeterminate; Historic	Open habitation without mounds	Not assessed	996.6 feet (303.8 meters)
He186	Prehistoric: Early Archaic, Middle Woodland	Undetermined	Inventory site	2387.9 feet (727.8 meters)
He185	Prehistoric: Indeterminate	Undetermined	Not assessed	2392.0 feet (729.1 meters)
He184	Prehistoric: Indeterminate	Undetermined	Not assessed	2845.5 feet (867.3 meters)
He187	Prehistoric: Indeterminate	Undetermined	Inventory site	2866.0 feet (873.5 meters)
He168	Prehistoric: Late Woodland	Undetermined	Not assessed	3063.8 feet (933.8 meters)
He948	Historic: Euro-American	Historic farm/ residence	Inventory site	3169.9 feet (966.2 meters)
He170	Prehistoric: Early Archaic	Undetermined	Inventory site	3195.4 feet (974.0 meters)
He8	Prehistoric	Earth Mound	Not assessed	3202.3 feet (976.1 meters)
He449	Historic: Euro-American	Open habitation without mounds	Not assessed	3232.8 feet (985.3 meters)
He830	Historic: Euro-American	Historic farm/ residence	Inventory site	3241.5 feet (988.0 meters)
He949	Prehistoric: Indeterminate	Open habitation without mounds	Inventory site	3362.5 feet (1024.9 meters)
He449	Historic: Euro-American	Open habitation without mounds	Not assessed	3647.3 feet (1111.7 meters)
He947	Historic: Euro-American	Historic farm/ residence	Inventory site	3841.9 feet (1171.0 meters)
He864	Historic: Euro-American	Cemetery	Eligible for NRHP	3968.3 feet (1209.6 meters)
He475	Prehistoric: Archaic	Open habitation without mounds	Not assessed	4184.1 feet (1275.3 meters)
He478	Prehistoric: Mississippian	Open habitation without mounds	Not assessed	4293.3 feet (1308.3 meters)
He169	Prehistoric: Indeterminate	Undetermined	Inventory site	4734.8 feet (1443.2 meters)
He198	Historic: Euro-American	Historic farm/ residence	Inventory site	5213.1 feet (1588.9 meters)
He199	Prehistoric: Indeterminate; Historic: Euro-American	Other/ Not noted	Inventory site	5388.1 feet (1642.3 meters)
He197	Prehistoric: Early Woodland; Historic: Euro-American	Other/ Not noted	Inventory site	5480.7 feet (1670.5 meters)
He194	Prehistoric: Indeterminate	Open habitation without mounds	Inventory site	5547.5 feet (1690.9 meters)
He195	Prehistoric: Late Woodland	Open habitation without mounds	Inventory site	5746.9 feet (1751.6 meters)



Site ID	Temporal Period/ Cultural Affiliation	Site Type	NRHP Status	Distance from the Project
He196	Prehistoric: Indeterminate	Open habitation without	Inventory site	5797.0 feet
116190	Frenisione. Indeterminate	mounds	inventory site	(1766.9 meters)
He193	Prehistoric: Indeterminate	Open habitation without	Inventory site	6108.7 feet
116193	Frenisione. Indeterminate	mounds		(1861.9 meters)
He238	Prehistoric: Indeterminate Isolated find	Isolated find	Inventory site	6265.6 feet
116230	Frenisione. Indeterminate		Inventory site	(1909.8 meters)

KHC-Listed Aboveground Historic Resources

A total of 41 historic aboveground resources have been inventoried by the KHC within 2.0 kilometers (1.2 miles) of the Project Site, spread adjacent to the road network surrounding the proposed Project Site locations. Of this total inventory, two resources, HE 014 and HE 013, represent farmsteads whose properties extend into the Project Site limits; the associated structures on both properties, however, are situated outside Project Site. **Table 4** provides additional detail on these resources.

Table 4. KHC-Listed Historic Properties and Resources Within 2.0 Kilometers (1.2 Miles) of the Project

KHC ID	Name	Architectural Style	Historic Use	Date of Significance	NRHP Eligibility	Distance from the Project
HE 014	Marshall- Mccollum Farm (see HE 33)	N/A	N/A	N/A	Undetermined	Within
HE 013	Carroll-Dossett Farm (see HE 32)	N/A	Single Dwelling	1875-1899	Undetermined	Within
HE 75	House	N/A	Single Dwelling	1875-1899	Undetermined	145.9 feet (136.2 meters)
HE 33	Marshall Foreman House	Craftsman	Single Dwelling	1900-1924	Undetermined	307.90 feet (93.9 meters)
HE 77	House	Craftsman	Single Dwelling	1925-1949	Undetermined	433.36 feet (132.1 meters)
HE 13	Moseley House	Federal	Single Dwelling	1825-1849	Demolished	446.8 feet (136.2 meters)
HE 80	House	N/A	Single Dwelling	1950-1974	Undetermined	744.2 feet (226.9 meters)
HE 79	House	Queen Anne	Single Dwelling	1875-1899	Undetermined	1150.8 feet (350.8 meters)
HE 32	Frank Carroll House	N/A	Single Dwelling	1875-1899	Undetermined	1167.9 feet (356.0 meters)
HE 013	Carroll-Dossett Farm (see HE 32)	N/A	Single Dwelling	1875-1899	Undetermined	1172.2 feet (357.3 meters)
HE 78	House	Craftsman	Single Dwelling	1925-1949	Undetermined	1678.7 feet (511.7 meters)
HE 74	Church	N/A	Church/religious struct	1925-1949	Undetermined	1724.9 feet (525.8 meters)
HE 81	House	N/A	Single Dwelling	1925-1949	Undetermined	1779.2 feet (542.3 meters)
HE 73	House	Gothic Revival	Single Dwelling	1850-1874	Undetermined	2222.1 feet (677.3 meters)
HEH 225	The Point	N/A	Agricultural fields		Undetermined	2361.4 feet (719.8 meters)

KHC ID	Name	Architectural Style	Historic Use	Date of Significance	NRHP Eligibility	Distance from the Project
HE 012	Barrett-Keach Farm (The Elms; see HE 31, HE 62)	Federal	Single Dwelling	1850-1874	NRHP-Listed Property	2578.4 feet (785.9 meters)
HE 76	House	N/A	Single Dwelling	1850-1874	Undetermined	2589.6 feet (789.3 meters)
HEH 521	House	Craftsman	Single Dwelling	1925-1949	Undetermined	2636.4 feet (803.6 meters)
HE 67	Keach Tenant House	N/A	Single Dwelling	1900-1924	NRHP-Listed Property	2868.6 feet (874.4 meters)
HEH 522	House	Tudor Revival	Single Dwelling	1925-1949	Undetermined	2941.8 feet (896.7 meters)
HE 72	House	Craftsman	Single Dwelling	1925-1949	Undetermined	2974.4 feet (906.6 meters)
HE 71	House	Craftsman	Single Dwelling	1925-1949	Undetermined	3198.7 feet (975.0 meters)
HE 31	Barrett-Keach House (The Elms), Farmstead and Outbuildings	Federal (House) Single Dwelling 1850-1874		NRHP-Listed Property	3300.0 feet (1005.8 meters)	
HEH 532	Dairy Farm	Italianate	Food storage	1950-1974	Undetermined	3497.8 feet (1066.1 meters)
HEH 520	House (Now Commercial Building/ Restaurant)	Craftsman	Single Dwelling	1925-1949	Undetermined	3563.8 feet (1086.2 meters)
HEH 227	The Elms (Towles-Barret Farm; A H Keach Estate)	Not Reported/Applic able	Agri complex/farm	1850-1874	Undetermined	3667.9 feet (1118.0 meters)
HEH 523	Mt Zion Cemetery	N/A	Cemetery, general	1900-1924	Undetermined	4316.86 feet (1315.8 meters)
HEH 519	Fairmont Cemetery	N/A	Cemetery, general	1925-1949	Undetermined	4517.14 feet (1376.8 meters)
HE 215	House (Struck by Falling Tree)	N/A	Single Dwelling	1925-1949	Undetermined	4712.2 feet (1436.2 meters)
HE 214	House	N/A	Single Dwelling	1925-1949	Undetermined	4822.8 feet (1470.0 meters)
HEH 524	House	Italianate	Single Dwelling	1875-1899	Undetermined	4875.8 feet (1486.1 meters)
HE 213	House	N/A	Single Dwelling	1925-1949	Undetermined	5016.5 meters (1529.0 meters)
HE 015	Konsler-Thomas Farm (see HE 34)	N/A	Single Dwelling	1875-1899	Undetermined	5044.6 feet (meters 1537.6)
HE 212	House	N/A	Single Dwelling	1875-1899	Undetermined	5478.0 feet (1667.7 meters)
HE 211	House	N/A	Single Dwelling	1925-1949	Undetermined	5771.7 feet (1759.2 meters)
HE 210	House	N/A	Single Dwelling	1925-1949	Undetermined	5934.4 feet (1808.8 meters)

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KHC ID	Name	Architectural Style	Historic Use	Date of Significance	NRHP Eligibility	Distance from the Project
HEH 529	House	Craftsman	Single Dwelling	1925-1949	Undetermined	5952.3 feet (1814.3 meters)
HEH 530	House	Italianate	Single Dwelling	1900-1924	Undetermined	6021.5 feet (1835.4 meters)
HE 209	Motel	N/A	Hotel/ Inn	1925-1949	Undetermined	6049.8 feet (1844.0 meters)
HEH 531	House	Italianate	Single Dwelling	1875-1899	Undetermined	6128.2 feet (1867.9 meters)
HEH 533	House	Italianate	Single Dwelling	1875-1899	Undetermined	6174.2 feet (1881.9 meters)

The majority of the KHC-listed historic resources represent single dwelling residential structures, dating from the last quarter of the nineteenth century and first half of the twentieth century. Several larger farmsteads are also present within this data set, in addition to two cemeteries, a church and a motel. Apart from the NRHP-listed elements of the Barrett-Keach Farm (inventoried with the KHC as HE 12, HE 31 and HE 67), none of the other KHC resources have been assessed previously for NRHP eligibility.

Cemeteries

There are two historic cemeteries, the Mount Zion Cemetery (1900-1924) and the Fairmont Cemetery (1925-1949), inventoried with the KHC within the 2.0-kilometer (1.2-mile) study area considered for this desktop review. The Mount Zion Cemetery (KHC HEH 523) is located 1315.8 meters (4316.8 feet) from the Project, while the Fairmont Cemetery (KHC HEH 519) is located 1376.8 meters (4517.4 feet) from the Project. The Fairmount Cemetery is also inventoried by the OSA as archaeological site He864; while the KHC data lists this cemetery's NRHP status as "undetermined", the OSA file for the archaeological site classifies it as "eligible" for the NRHP. The oldest internment is John Davis, with recorded death of Jan. 13, 1827, and the cemetery is still in use to this day.

Prior CRM Survey Reporting

There are twenty reports currently on file with the OSA detailing cultural resources work conducted within 2.0 kilometers (1.2 miles) of the Project Site. Of these reports, two describe fieldwork which extend into the Project, including survey of the Henderson By-Pass (OSA report 051-005) conducted in 1976 and located adjacent to Project boundary, and 2002 survey conducted for a cellular communications tower (OSA report 051-113) located in the southwest section of the Project. The following table lists all of the prior reports filed with the OSA within 2.0 kilometers (1.2 miles) of the Project Site.

OSA ID	Authors	Date	Report Title	Surveyed Area	Distance to the Project
051- 005	Foster, Gary, et al	1976	An Archaeological Survey for the Proposed Construction of the Henderson By-Pass, Henderson County, Kentucky	38 acres (1.52 hectares)	0 feet (0 meters)
051- 113	Fishel, Devin and Robert McCullough	2002	Records Review and Phase 1a Archaeological Reconnaissance for a Proposed Cellular Communications Tower in Henderson County, Kentucky	0 acres (0 hectares)	0 feet (0 meters)
051- 093	Carstens, Kenneth	2003	A Phase I Archaeological Reconnaissance of the Kenergy Office Property, Henderson (Henderson County), Kentucky	8 acres (0.32 hectares)	96.1 feet (29.3 meters)
051- 005	Foster, Gary et al	1976	An Archaeological Survey for the Proposed Construction of the Henderson By-Pass, Henderson County, Kentucky	106 acres (4.24 hectares)	178 feet (54.3 meters)

Table 5. Previous CRM-Related Surveys Within 2.0 Kilometers (1.2 Miles) of the Project



OSA ID	Authors	Date	Report Title	Surveyed Area	Distance to the Project
051- 081	Carstens Kenneth and Nancy Carstens	2000	A Phase I Archaeological Reconnaissance of a 100 x 100 Square Foot Cell Tower, Henderson County, Kentucky	0 acres (0 hectares)	607.2 feet (185.1 meters)
051- 079	Davis, Daniel and Don Linebaugh	2000	A Phase I Archaeological Survey of Two Cellular Telephone Tower Parcels (Divine Tower sites EV018-A and EV031-A), Henderson County, Kentucky	0 acres (0 hectares)	613.7 feet (187 meters)
051- 085	Moldenhauer, David and Steven Creasman	2001	An Archaeological Survey of the Proposed Upgrade of US 60 from the Intersection of KY 425 to the Intersection of US 60	67 acres (2.68 hectares)	680.4 feet (207.4 meters)
051- 064	Evans, Mark	1996	Phase I Archaeological Reconnaissance of the Gibbs Diecasting Pipeline Project in Henderson County, Kentucky	7 aces (0.28 hectares)	797 feet (242.9 meters)
051- 065	Evans, Mark	1966	Phase I Archaeological Reconnaissance of the Proposed Texas Gas Gibb's Meter Station in Henderson County, Kentucky	1 acre (0.04 hectares)	900.8 feet (274.6 meters)
051- 119	Bundy, Paul and Steven Creasman	2006	A Summary of Archaeological Investigations Conducted for the U.S. 60 Reconstruction Project in Union and Henderson Counties, Kentucky and an Assessment of the Archaeological Potential of Alternates 4-6 and 5-6	552 acres (20.88 hectares)	2432.4 feet (741.4 meters)
051- 073	Richmond, Michael and Derek Wingfield	1999	An Archeological Reconnaissance of the Proposed Upgrade of U.S. 60 from the Waverly Bypass to the Henderson Bypass in Union and Henderson Counties, Kentucky	176 acres (7.04 hectares)	2548.9 feet (776.9 meters)
051- 096	King, Biran and James Kirkwood	2003	Additional Archaeological Survey of the Proposed Upgrade of U.S. 60 in Union and Henderson Counties, Kentucky	236 acres (9.44 hectares)	2598.4 feet (792 meters)
051- 108	Bundy, Paul and Lori O'Connor	2006	An Archaeological Survey Targeting Areas of High Archaeological Potential Within the Proposed Alternates 4, 5, and 6 for the U.S. 60 Reconstruction in Union and Henderson Counties, Kentucky	259 acres (10.36 hectares)	2610.4 feet (795.7 meters)
051- 074	Schock, Jack	1977	An Archaeological Survey for the Third Year Channel Improvements Along Canoe Creek in Henderson County, Kentucky	330 acres (13.2 hectares)	3161.1 feet (963.5 meters)
051- 090	Carstens, Kenneth and Nancy Carstens	2002	A Phase I Archaeological Reconnaissance of an Elevated Water Tank Site in Henderson County, Kentucky	1 acre 0.04 hectares)	3500.5 feet (1067 meters)
051- 020	Robinson, Kenneth	1982	A Cultural Resource Assessment of the Tri- State Synfuels Project Areas	364 acres (14.56 hectares)	4560.6 feet (1390.1 meters)
051- 069	Schock, Jack	1998	A Cultural Reconnaissance of Approximately 15 Acres for the Proposed Senior Cottages of Henderson in Henderson County, Kentucky	10 acres (0.4 hectares)	4841.9 feet (1475.8 meters)
051- 092	Koeppel Christopher and Cally Lance	2002	Phase I Cultural Resources Investigation of the Proposed Canoe Creek Wastewater Interceptor and Lift Station, Henderson County, Kentucky	108 acres (4.32 hectares)	4875.4 feet (1486 meters)

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OSA ID	Authors	Date	Report Title	Surveyed Area	Distance to the Project
051-	Harth, Aaron	0040	A Cultural Resource Survey of the Proposed	29 acres	5397.4 feet
155	/////	2012	Canoe Creek Pump Station and Sewer Line Improvements in Henderson County, Kentucky	(1.16 hectares)	(1645.1 meters)
051-			An Archaeological Survey of Four Acres for a	3 acres	6221.7 feet
128	Schock, Jack	2008	Soil Borrow Pit for Henderson U.S. 60 in	(0.12	(1896.4
120			Henderson, Kentucky	hectares)	meters)

Historic Mapping and Aerial Photography Review

Concurrent with review of the data obtained from the KHC and the OSA, AECOM also examined available historic-era images, including maps and topographic quadrangles, to define areas of potential historic activity (and therefore increased potential for archaeological deposits) within the proposed Project. Also, available aerial mapping was examined to better define historic activity. The following table provides the inventory of historic-era maps and aerials examined for the Project Site.

Table 0. Thistoric Mapping and Aenals Examined for the Project							
Date	Reference	Title					
1880	D.J. Lake and Company	An Illustrated Historical Atlas of Henderson and Union Counties, Kentucky					
1950-2016	online historic aerials	NETRonline historicaerials.com					
1914-2016	online historic topographic quadrangle	NETRonline historicaerials.com					

Table 6. Historic Mapping and Aerials Examined for the Project

The earliest available historic mapping for this area dates to 1880. The *Illustrated Historical Atlas of Henderson and Union Counties, Kentucky* indicates that most of the Project Site area at that time was owned by W. T. Barret. There are several other landowners and houses depicted on the map on the north side of Canoe Creek, J. H. Barrel, T. Graves, and Mrs. L. Towles. It is unclear if any of these structures are within the Project Site.

The earliest available U.S. Geological Survey (USGS) topographic quadrangle for the northern extent of the Project dates to 1914, and depicts roadways, railroads, and structures. The alignment of Lover's Lane Road is evident on the map in the same general location as the current road, but no structures are shown along this road on the 1914 map. A second road extended to the west and across the Project, and two structures are present along that road which may have been situated within the current northern extent of the Project limits in 1914. A third structure is shown to the north of this road that may have been located either within or immediately adjacent to the Project. Subsequent USGS mapping up to the 1930s remains constant in the vicinity of the Project.

The 1953 USGS topographic map indicates several changes along Lover's Lane. One structure is depicted on the east side of the road, outside of the Project boundaries. Another structure is depicted at the southern end of the area, just outside of the Project. The structure indicated on the earlier mapping to the north of the unnamed road is not present on the 1953 topographic map. No structures are depicted on the unnamed road extending to the west off of Lover's Lane. A further increase of structures can be seen on the 1969 topographic map. Approximately four structures are depicted along Lover's Lane adjacent to the Project Site. Also, the structure depicted at the southern end of the Project is no longer shown on the 1973 topographic map. Two additional structures are depicted along Lover's Lane on the 1981 topographic map, although none are shown within the Project Site.

The available online historic aerials, dating from the 1950s through the modern era, also show the development along Lover's Lane adjacent to the Project that likely occurred between the 1950s and early 1980s, along with an absence of any visual evidence for sustained occupations within the Project over the second half of the twentieth century. The available aerials from 1958 and 1950 show a structure adjacent to the Project but is no longer visible in the 1970 aerial. These images, and the contemporaneous USGS quadrangle mapping, indicate that the northern portions of the Project have almost certainly been used as an agricultural field since at least the 1950s.

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The southern extent of the Project is also evident on USGS quadrangles starting in 1914; this 1914 topographic quad labels the southeast portion of the Project as "Marshall Corner". This label generally coincides with the archival research obtained from the KHC, which has recorded a large historic property and house known as the Marshall-McCollum Farm (KHC# 14) across the southeastern portion of the Project. There are two structures and a church depicted on the 1914 map along the western side of Madisonville Road (today known as US Hwy 41A) in close proximity to the Project Site. While the exact location of the church is unclear (due to the scale of the mapping), it appears to have been located just within the Project limits There is an unnamed road that extends from Madisonville Road and heads northwest to join with Corydon Road. There is just one other structure depicted along this unnamed road located to the north of Wilson Creek. A small road with a structure at the end extending off of the unnamed road to the north of Marshall Corner is also depicted on the 1914 topo.

The next available topographic maps of 1916, 1925, and 1932 depict the same general landscape as that evident on the 1914 mapping, with no new structures or roads depicted within or near the southern extent of the Project. The next available quadrangle, published in 1960, shows no structures within the southern portion of the Project, with the exception of the one structure located to the north of the area labeled previously as "Marshall Corner"; this structure is still shown on the 1969 topographic quad. The Marshall Corner label and (likely) associated structures and church are not present on the 1960 map. Subsequent topographic mapping published from 1981 to 2016 suggests that very little development occurred across this portion of the Project during the modern era, with a majority of the Project utilized for seasonal crop agriculture during this period.

The available aerials for the southern extent of the Project date from 1950 to 2016. As with the northern portions of the Project, the Project elements to the south have been agricultural fields and small wood lots since the 1950s, with a scattering of farmhouses adjacent to the Project along US Hwy 41. The only portion in the southern extent of the Project which has experienced development appears to have been near the Kenergy Corporate Headquarters adjacent to the Project. The aerials indicate that this headquarters was built sometime between 1983 and 1998. There is also a small pond within the Project near Wilson Creek that does not appear on aerial imagery until 1998. The aerial imagery from 1950 and 1958 indicate that there was a farmhouse at the approximate location of the Kenergy Coporate Headquarters, however this farmhouse does not appear to be on the 1970 imagery. The historic aerials suggest that this portion of the Project between 1970 and 1998 was primarily agricultural fields and wood lots.

In summary, the available historic aerials and topographic map depict the Project Site within a rural agricultural setting, largely absent extensive modern development. There is some evidence for historic-period sustained occupations within the northern and southern extent of the Project Site, although both locations appear to have been largely turned over to seasonal crop agriculture by at least the 1950s, which suggests these landforms have been systematically cultivated over the past seven decades. Historic-age structures are evident along the road network in close proximity to the southern portion of the Project, the majority of which appear to coincide with structures inventoried previously by the KHC (see **Table 4**, above). The built environment in the vicinity of the northern extent of the Project is significantly less pronounced and appears to be centered on a small area of residential development along Lover's Lane Road.

Cultural Resources Field Assessment- May 2020

In May 2020, AECOM conducted a preliminary cultural resources field assessment of the proposed Project Site, to further define the potential for the presence of inventoried and undocumented cultural resources within and close to the Project Site. This informal field visit was also designed to identify potential red flags with regard to cultural resources, in light of the archival data obtained from the KY OSA and KHC outlined above. The results of this field assessment are provided below, by Project Site area.

Southern Extent of the Project (South of the Bypass)

The May 2020 field reconnaissance conducted on the southern portions of the Project indicated that a majority of the proposed Project limits extend across actively cultivated agricultural properties, alternating between tilled and no-till fields. Ground surface visibility levels at the time of the field visit varied considerably, with several fields displaying effectively no surface visibility while others were recently tilled and provided relatively high visibility. While the field inspection was not designed to collect any archaeological materials, several isolated prehistoric specimens (lithic debitage and tool fragments) were visually observed sporadically across the Project. An historic-era farmstead was also identified in the far eastern



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corner of the Project, adjacent to US 41A, and historic debris was observed across the adjoining cultivated field (likely associated with the farmstead). Several wetland-type environments were encountered within the wooded portions of the Project. Given the identification of multiple prehistoric resources across these landforms, and the presence of Wilson Creek through the center of the Project Site, there appears to be a heightened potential for the presence of prehistoric archaeological deposits at these locations. The extent of historic-era activity across this portion of the county also suggests an increased potential for historic archaeological deposits.

With regard to the surrounding viewshed, there are at least 12 extant historic-age structures inventoried with the KHC which are directly visible from the southern extent of the Project, situated primarily within 300 meters (1,000 feet) to the south and east. The preliminary recon confirmed the presence of these resources, in addition to multiple undocumented structures, particularly along the US 41A corridor, which are visible from the Project limits and may also represent historic-age structural resources.

North Extent of the Project Site (North of the Bypass)

The field reconnaissance of Project elements located north of the Bypass confirmed that nearly all of this portion of the Project is situated across a large tilled agricultural field on a terrace directly above Canoe Creek. At the time of the field reconnaissance, vegetation obscured the surface across most of this field, providing generally low levels of visibility and preventing any systematic pedestrian reconnaissance. While no archaeological specimens were observed on the ground surface during this walkover, the poor surface visibility conditions were likely a contributing factor, particularly given the proximity of this landform to a permanent water source (as Canoe Creek generally forms the eastern boundary of the site). As with southern extent of the Project, the northern portions are most appropriately characterized as displaying a heightened potential for the presence of prehistoric resources. The potential for historic archaeological deposits is significantly lower, as the historic road network (visible on the mapping and aerials consulted for the Project Site, as discussed earlier in this document) did not extend directly adjacent to the northern extent of the Project.

The preliminary field assessment of the northern Project Site indicated that most of this area is surrounded by mature wood lots, which would significantly reduce the potential for visual impacts to historic-age aboveground structures. Further, none of the KHC-listed aboveground resources present within 2.0 kilometers (1.2 miles) of the Project Site are currently visible from these elements of the Project, and would likely not be directly visible even in the absence of the adjoining wood lots (due to intervening topography and modern infrastructure). A modern subdivision is present on the opposite side of Canoe Creek to the east of the Project, nearly all of which is not visible due to wood lots. Several residences are located along the eastern side of Lovers Lane, directly opposite the Project; review of historic aerials suggests that at least one or two of these residences were constructed in the 1950s, with the majority dating to the 1970s-1980s.

Cultural Resources Field Assessment- December 2020

In December 2020, AECOM conducted additional cultural field assessment of three additional locations at the proposed Project Site, to further define the potential for the presence of inventoried and undocumented cultural resources within and close to the Project Site. These three areas are outlined in blue on the attached map set. This informal field visit was also designed to identify potential red flags with regard to cultural resources, in light of the archival data obtained from the KY OSA and KHC outlined above. For ease of reference, these three additional areas were numbered 2-1, 2-2 and 2-3, to clearly delineate each from the areas examined previously in May 2020. Of these three additional areas, only Area 2-3, located along the southern extent of the Project, remains within the current Project location. The results of this field assessment are provided below, by Project Site area.

Area 2-1 (Adjacent to the South Side of US-60)

The December 2020 field reconnaissance conducted at Area 2-1 identified modern disturbance associated with an electrical substation at the northwest corner of the workspace, along with disturbances adjacent to US-60 (South Green Street). The remaining portion of Area 2-1 was situated within a grass field displaying no almost ground surface visibility at the time of the field visit. The location of the workspace adjacent to Canoe Creek, as well as the minimal amount of ground disturbance depicted on historic aerials, may allow for the presence of intact prehistoric resources. The numerous residences shown in historic mapping situated adjacent to the work area suggests the potential for subsurface historic artifacts, as well.



With regard to the surrounding viewshed, there has been significant residential and commercial development of the area since the mid-1950s. The majority of structures visible in historic mapping are likely no longer extant, with the exception of a pre-1950 residence near the western boundary of Area 2-1. There are also a few extant post-1950 structures along Old Corydon Road to the east of the work area and to the north of US-60.

Area 2-2 (Between Henderson Bypass and Railroad)

The proposed construction footprint of Area 2-2, located between Henderson Bypass and the CRX railroad, covers multiple agricultural fields and pastures that displayed minimal ground surface visibility at the time of field reconnaissance. A previously recorded prehistoric site is located near the northern part of Area 2-2, but no archaeological specimens were observed on the ground surface during the walkover of this workspace. However, there is still a heightened potential for prehistoric resources at this location, due to its proximity to permanent water sources. While there are no known historic structures or roadways within Area 2-2, a section of the Central Illinois railroad was present in the proposed Project footprint from at least 1914 through the modern era. The section of rail that traversed the Project area appears to have been removed between 1981 and 1993. The potential for historic archaeological deposits is low, but still possible, due to the former railroad and surrounding farmsteads.

The preliminary field assessment of Area 2-2 indicated that mature wood lots surround the northern, eastern, and southern boundaries, which would significantly reduce the potential for visual impacts to historic-age aboveground structures. However, the western side of Area 2-2 is relatively exposed to the surrounding landscape. It appears, however, that none of the KHC-listed aboveground resources present within 2.0 kilometers (1.2 miles) of the Project Site are currently visible from Area 2-2, and would likely not be directly visible even in the absence of the adjoining wood lots (due to intervening topography and modern infrastructure). Several residences are located along the eastern side of Lovers Lane, directly opposite the southeastern corner of the North Site; review of historic aerials suggests that at least one or two of these residences were constructed in the 1950s, with the majority dating to the 1970s-1980s.

Area 2-3 (Between Henderson Bypass and Wilson Station Road)

Area 2-3 is primarily located within agricultural fields between Kentucky Route 425 (Henderson Bypass) and Wilson Station Road. At the time of the field reconnaissance, there was limited ground surface visibility within these agricultural fields, due to recent crop harvesting. The northern terminus of this proposed workspace falls within a wood line adjacent to Wilson Creek, while the southern extent is tree line next to a tributary of the creek. As with the previous proposed workspaces, this area contains at least a moderate potential for prehistoric resources, due to its proximity to permanent water sources. The likelihood of historic resources within Area 2-3 is relatively low, as there have been no documented structures within the proposed footprint.

While Area 2-3 is located in an open agricultural field, it is surrounded by woodlots and tree lines, and is at least partially obscured by a hillside, which likely prevents visual impacts to any nearby historic-age structures. None of the KHC-listed aboveground resources present within 2.0 kilometers (1.2 miles) of the proposed workspace are currently visible from Area 2-3.

Potential for the Presence of Archaeological Sites and Aboveground Resources

Prehistoric Archaeological Sites and Aboveground Resources

Review of the prehistoric sites archived with the KY OSA, both within 2.0 kilometers (1.2 miles) of the Project Site and from across the general region, suggests that prehistoric occupations tend to be situated adjacent to extant waterways and documented sources of lithic materials. Based on analysis of the various factors described in this desktop review, both the northern extent of the Project Site and several landforms across the southern portions of the Project can most appropriately be characterized as displaying at least a moderate potential for the presence of prehistoric resources. The northern portion of the Project is located on a natural terrace above and adjacent to Canoe Creek, a waterway which confluences with the southern side of the Ohio River just over 2.0 kilometers (1.2 miles) north of the Project Site. While no prehistoric resources were observed as a result of the 2020 field reconnaissance or previously inventoried with the OSA, this type of landform setting is highly conducive for the presence of prehistoric archaeological deposits (and given ground surface conditions in

May 2020, the absence of prehistoric materials should not be viewed as a mitigating factor against the presence of prehistoric resources at this location). For the southern extent of the Project Site, the presence of Wilson Creek across this area suggests an increased potential for prehistoric resources, similar to that observed for all of the northern elements of the Project Site. Given the proximity of the Ohio River, and location of the Project Site areas on uplands directly above that large watershed, there is the potential for prehistoric deposits dating to any of the recognized temporal periods for this portion of western Kentucky, as sites diagnostic to every major cultural and temporal period have been identified in similar settings from across the region.

Historic Archaeological Sites and Aboveground Resources

Whereas the potential for prehistoric sites is based on distribution patterns of documented prehistoric occupations and observations as to landform and topography, the potential for historic archaeological sites can be more effectively defined through review of additional data sources, particularly historic maps, aerial photography and county histories. Historic archaeological sites generally have excellent surface visibility because they are usually either not buried as deeply as prehistoric sites, contain extant aboveground elements, or are clearly depicted on maps or visible on aerial photographs. These resources are often associated with surface features, such as wells, cisterns, and buildings, and frequently contain a much higher frequency of materials. Historic sites tend to be located on uplands, near historic transportation routes and/or water resources (such as streams, springs and wells).

As indicated in the review of available maps and aerial photographs outlined in this document, there has been a general consistency in the road network and land-use patterns from the late nineteenth/early twentieth century into the modern era, which suggests that historic deposits are most likely to be encountered adjacent to, and within 60 meters (200 feet) of modern roads. Portions of the Project Site situated within or near to the locations of structures depicted on the historic archaeological deposits, particularly along the margins of the Project Site to the south, and the southeastern corner of the northern extent of the Project. Further, should any aboveground facilities be proposed within the Project Site, there is a high probability for the presence of extant mid-late nineteenth and twentieth century structures (most likely residential dwellings, barns and farmstead outbuildings) within the viewshed of the Project Site is screened by adjoining wood lots and trees and, with the exception of several possible mid-twentieth century residential structures adjacent to the Project on the Project on the Project on the project side to be visible from any historic-age structures.

Summary

As indicated in the sections above, the Project Site locations display the potential for the presence of both archaeological deposits within the proposed limits of construction and extant aboveground historic-age resources in the surrounding viewshed. While no archaeological sites have been inventoried within either Project Site area, the preliminary field assessment encountered both prehistoric and historic archaeological specimens within the southern extent of the Project, and the characteristics of landforms in the northern portion of the Site appear conducive for the presence of prehistoric archaeological sites. The viewshed surrounding the Project to the south contains multiple inventoried historic structures which have not been formally assessed for the NRHP and are likely directly visible from the Project Site. The viewshed surrounding the northern portion is significantly more limited, due to the presence of mature woodlots around most of that location (although several mid-twentieth century structures are likely extant directly across Lovers Lane from the Project Site).

Should Section 106 consultation be required for the Project Site, the KY SHPO will likely request some level of field investigations to consider the potential for impacts to both archaeological and aboveground resources. Recent experience suggests that the KY SHPO would expect full application of their cultural resources survey guidelines on any areas proposed for ground disturbance, which would require a Phase I archaeological field reconnaissance at a 20-meter (67.4-foot) testing interval, and documentation and assessment of any extant historic-age structures visible within at least 0.8 kilometers (0.5 miles) of the Project Site. Further, if Section 106 consultation is required, coordination with tribal entities which have expressed an interest in this portion of Kentucky would also be anticipated. The results of this desktop review and preliminary field assessment can be utilized as elements of an initial consultation letter with the KY SHPO, in the event a Section 106 path is defined for the Project Site.



AECOM appreciates the opportunity to continue supporting Community Energy and Henderson County Solar on this Project. In the event you have any questions or comments regarding this cultural resources summary, or if you desire additional information regarding the information provided in this document, please contact either myself (as listed below) or Bobbie Hurley at (864) 234-8913, or at <u>bobbie.hurley@aecom.com</u>.

Sincerely,

AECOM Technical Services, Inc.

atthe

Christopher G. Leary Deputy Director, Cultural Resources West Region, IAP Group T: (513) 327-5623 E: <u>christopher.leary@aecom.com</u>

Cc: Bobbie Hurley, AECOM

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> Henderson County Solar Site April 19, 2021

ATTACHMENT A

ARCHIVAL RESEARCH MAPPING

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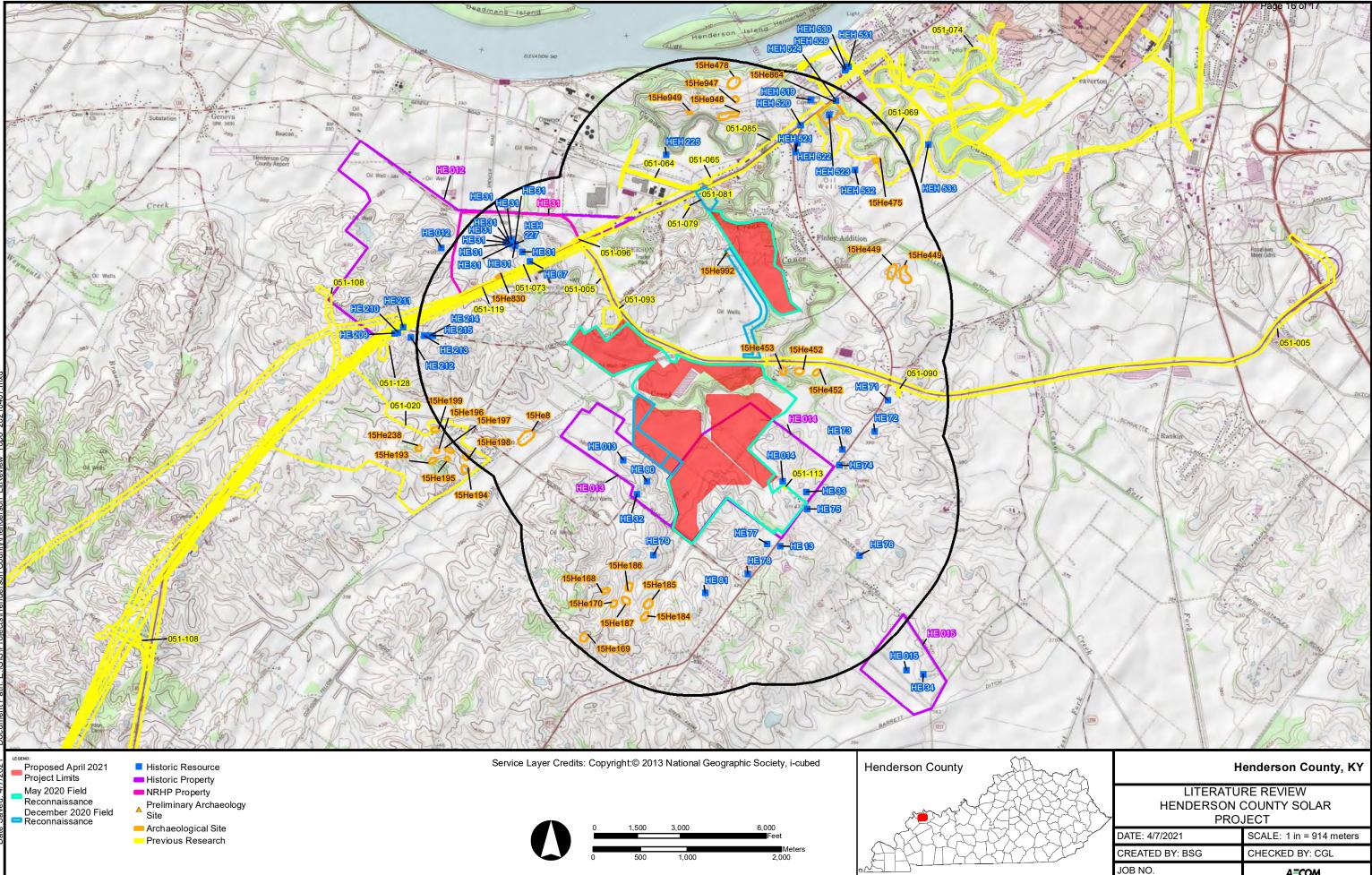
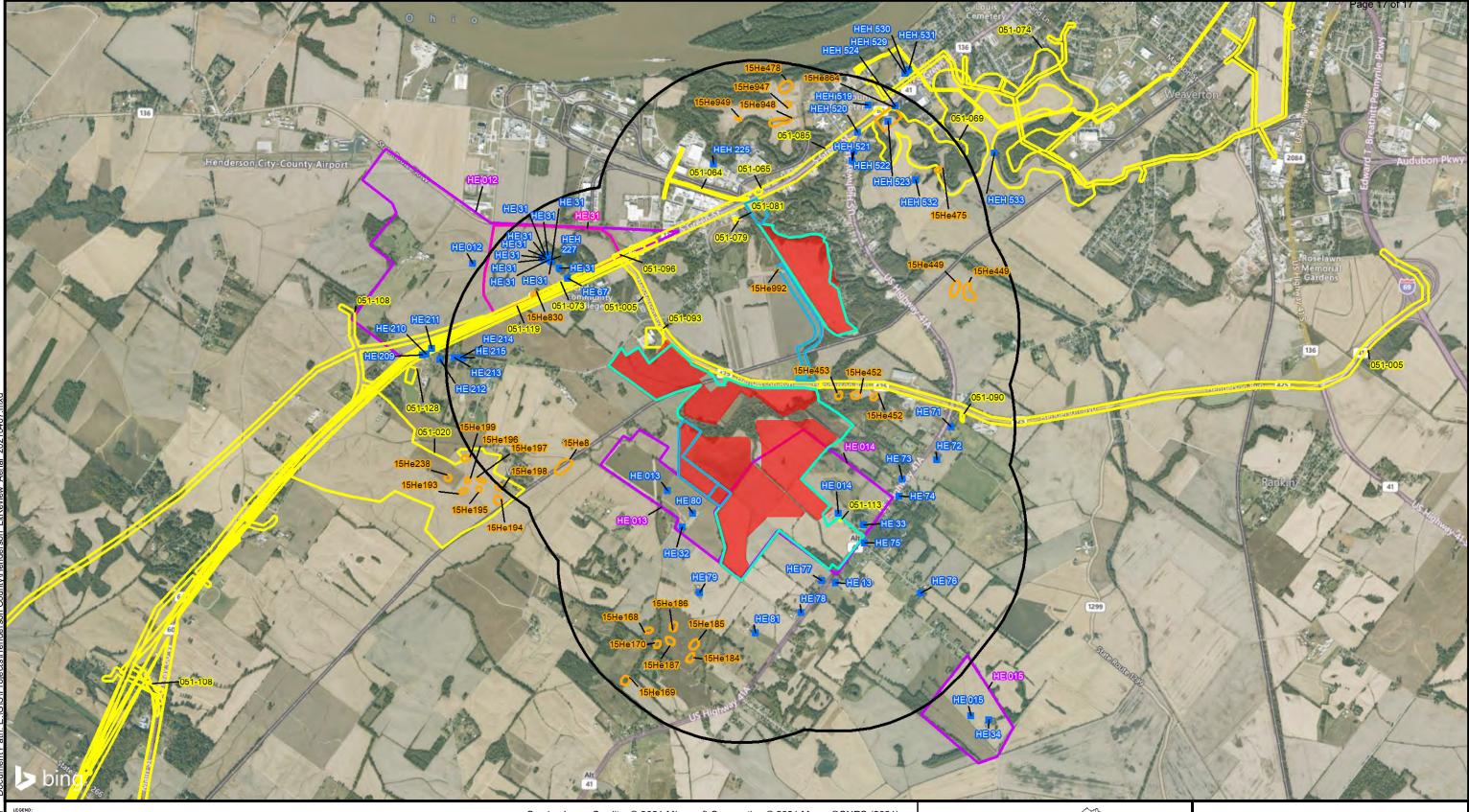




Exhibit 14 Attachment 14.3

7	LITERATURE REVIEW HENDERSON COUNTY SOLAR PROJECT		
	DATE: 4/7/2021	SCALE: 1 in = 914 meters	
	CREATED BY: BSG	CHECKED BY: CGL	
	JOB NO.	AECOM	

CONTAINS PRIVILEGED AND CONFIDENTIAL INFORMATION - DO NOT RELEASE



Proposed April 2021 Project Limits May 2020 Field Reconnaissance December 2020 Field Reconnaissance

Historic Resource Historic Property NRHP Property Preliminary Archaeology Site

Archaeological Site
Previous Research

Service Layer Credits: © 2021 Microsoft Corporation © 2021 Maxar ©CNES (2021) Distribution Airbus DS © 2021 TomTom

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Exhibit 14 Attachment 14.3

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LITERATURE REVIEW			
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DATE: 4/7/2021	SCALE: 1 in = 914 meters		
CREATED BY: BSG	CHECKED BY: CGL		
JOB NO.	AECOM		
	HENDERSON (PRO DATE: 4/7/2021 CREATED BY: BSG		

EXHIBIT 14 ATTACHMENT 14.4



ENDANGERED SPECIES ASSESSMENT Of the Proposed Henderson County Solar Site Henderson County, Kentucky

July 2020



Prepared for: Community Energy Solar, LLC Henderson County Solar LLC

Prepared by:

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Table 1.Federal and State Listed Threatened and Endangered Species with the Potentialto Occur at or near the Proposed Project Site in Henderson County, Kentucky

1. Introduction

AECOM was contracted to conduct an ecological survey to include an endangered species review associated with the Proposed Henderson County Solar Project Site ("site") near Henderson in Henderson County, Kentucky (**Figure 1**). The site is located on the southwest side of Henderson, which is located near the Ohio River. The survey included land located in two sites of approximately 625 and 94 acres, for a total area of approximately 719 acres.

The purpose of the survey was to identify the potential for endangered or other protected species and/or their habitat to be present at the site and evaluate the possibility that they might be impacted by future construction activities. The site on which the survey was conducted consisted mostly of agricultural land with no buildings present.

The potential footprint of the project would cover approximately 719 acres, all of which are outside of the city limits. This includes agricultural fields, vegetated areas (woodlands) along Wilson Creek and Canoe Creek, and small farm ponds.

Searches of publicly available information were conducted, including:

- · Aerial photography;
- U.S. Geological Survey (USGS) quadrangle maps;
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) soil survey;
- U.S. Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI) maps;
- USFWS, Information for Planning and Consultation (IPaC) online reports;
- Kentucky Department of Fish and Wildlife Resources (KDFWR), Natural Heritage Database.

There are two figures and four attachments associated with this report. Figures include:

- Figure 1 Site Location Map
- Figure 2 Potential Bat Roost Trees, 94 Ac Site
- Figure 3 Potential Bat Roost Trees, 625 Ac Site

Attachments include:

- Attachment 1 Photo log
- Attachment 2 USFWS IPaC Report and State-listed Species for the Henderson Quadrangle
- Attachment 3 Potential Bat Roost Tree Data Forms.

2. Literature Review

The USFWS IPaC report (USFWS 2020), accessed May 8, 2020, and the KDFWR Natural Heritage website (<u>KDFWR 2020</u>), accessed May 8, 2020, as well as topographic mapping, aerial survey, soils, geology, and other information were reviewed to determine the potential presence of endangered species. The potential for certain birds protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act to utilize habitat at the site also was considered. Following review of the available literature, a field survey and habitat characterization were performed in accordance with standard habitat inspection and wildlife survey methods as well as Indiana Bat Survey Guidelines (FWS 2019).

The survey included visual observation of the site and characterization of the vegetation, land use, crops, water bodies, and other features to determine if habitat for endangered species or other protected species identified by the FWS or state databases was on site. The NRCS website was utilized to determine the soil types present on the site as a potential indicator of hydric soils and wetlands.

Following review of these data, a field survey was conducted of the site on May 14 and 15, 2020. The field team was conducted by Mr. Ben Sadler and Mr. Hayden Orr.

2.1 Site Setting

The site consists of two properties located at 620 Lovers Lane and 3001 Wilson Station Road, Henderson, Kentucky. The larger of the two properties, at approximately 625 acres, is situated approximately 3,000 feet northeast of the intersection of US Highway 41A and Wilson Station Road. The smaller of the two properties, at approximately 94 acres, is situated approximately 800 feet south-southwest of the intersection of Collier Road and Lovers Lane. Both properties are within a predominantly agricultural district with scattered heavy industrial and light industrial zonings.

The site is bordered by agricultural land to the east, west, and south, with more developed residential and commercial property to the north, particularly along State Highway 60. Rural route 425 is located on the north side of the larger site, with State Highway 41 to the south. The smaller site located north and east of the larger tract is bordered by the riparian area of Canoe Creek to the east and agricultural land to the west and south. Wilson Creek flows west to east through the larger site, and its confluence with Canoe Creek is on the east side of the smaller site. A small tributary to Wilson Creek flows from south to north to Wilson Creek on the east side of the larger site.

The topography is primarily flat with some rolling hills on the south side of the larger site with elevations from 440 feet above sea level (ASL) to about 360 feet ASL in the Wilson Creek bottom. There are few undisturbed areas on the site. Most of the site was planted in corn, soybeans or left fallow, with some open grassland, farm ponds and berms. Wilson Creek runs through the middle of the larger site, with all of the site runoff flowing to Wilson Creek and eventually to Canoe Creek and the Ohio River. Neither Wilson nor Canoe Creek are classified in Kentucky as an Exceptional Water.

The site is located in Ecoregion 72 in Kentucky (Shawnee Hills), which is made up of nearly level lowlands that are dominated by agriculture and forested hills. It is characteristically underlain by



carboniferous sedimentary rock and is lithologically distinct from the limestones, calcareous shales, and dolomites of the Interior Plateau (71) and the unconsolidated coastal plain sediments of the Mississippi Valley Loess Plains (74). Broad, low gradient valleys occur and are filled with alluvium, loess, and lacustrine deposits, including the Green River. Drainage conditions and terrain strongly affect land use. Wetlands are common on lowlands and bottomlands. Bottomland deciduous forests and swamp forests were once extensive on poorly drained, nearly level, lowland sites but most have been replaced by cropland and pastureland. Hilly uplands remain mostly forested. Ecoregion 72 includes Kentucky's Western Coal Fields. Extensive surface and underground coal mines occur and have significantly degraded downstream habitat and water quality. Silt and sand dominate lowland channels, while upland streams are rockier. Streams typically have lower nutrient, alkalinity, and hardness levels than Ecoregion 71. Fish assemblages are lowland in character and are rather similar to those found in Ecoregion 74, http://ecologicalregions.info/data/ky/ky_front.pdf.

3. Methods

Data were collected to characterize areas of the site in terms of habitat, including geology, hydrology, dominant plant species, and vegetation type. Specific site features are depicted in **Figures 2** and **3** for the 94 and 625 acre sites, respectively. Photographs were taken of habitats and surrounding areas is provided in **Attachment 1**.

Endangered species were reviewed from the US Fish and Wildlife Service IPaC database and the State of Kentucky listing of Rare Species for the Henderson Quadrangle <u>http://environment-online.state.II.us:8080/pls/enf reports/</u>, accessed May 11, 2020, **Attachment 2.** These species as well as their preferred habitat are summarized in Table 1. The need for a clearance survey of specific species is also summarized in **Table 1**. Coordination with the USFWS would be required prior to site development and additional clearance surveys may be required. In the field, habitats common to the listed species were surveyed for potential presence or absence. Specifically, endangered bat species utilize trees with exfoliated bark, cracks and crevices. Where potential bat roost trees were located, a Phase I bat survey form was completed and photos taken, **Attachment 3**.

4. Field Survey

4.1 Site Habitats

The site includes two main areas. The larger of the two sites (625 ac) is confined by Henderson Bypass to the north, US HWY 41A to the east and Wilson Station road to the south. The smaller of the two sites (94 ac) is accessible by Lovers Lane, which forms the eastern boundary, and is confined by Canoe Creek to the north and a railroad to the west and south. The larger site contains 1.82 miles of Wilson Creek, which runs directly through the center of the property from west to east. In addition to several smaller ponds, a large 5.2-acre pond is located on the south side of Wilson Creek in the larger site and drains into Wilson Creek. Wilson creek is bordered with woods for most of the 1.82 miles that it is on the site. These woods were dominated by oak timber but also exhibit hickory, hackberry, maple, sweetgum, boxelder, and sycamore trees. There are several locations where the agricultural fields come right up to the bank to the creek. Wilson creek features many vertical soil embankments between 5 and 20 feet in height. Additionally, two main drainage ditches drain the fields on the south side of the property and flow into Wilson Creek. These ditches are approximately 10 feet deep and 20 feet wide. Trees growing in the ditches have an average diameter at breast height (dbh) of approximately 8 inches, and hackberry and box elder are the dominant species. During the field investigation, both ditches had flowing water and appeared to be intermittent streams. These two ditches converge and then flow down a natural drain path 1,050 ft to join Wilson Creek.

The longitude and latitude point 37.786107, -87.627591 is the center of a 6.4 acre area of the site that was harvested for timber. There is extensive fallen timber and standing dead wood in this area with few live trees. A coyote burrow with pups was discovered in this area. Adjacent to the east of this area is a 13-acre area centered on the longitude and latitude point 37.785628, -87.624103. This area appears to be maintained to attract whitetail deer. Multiple deer feed stations were spotted; the area had been bush-hogged and allowed to grow back. As of the May site visit the area exhibited dense groves of cottonwood, sweetgum, and sycamore saplings. These are the only two areas of the site that provided wildlife habitat. The remainder of the site was open cropland that was planted in either corn or soybeans or was left fallow.

The smaller 94-acre site exhibited the same characteristics as the majority of the larger site. Open cropland that has not been planted was bordered by hedge rows exhibiting a variety of trees dominated by hackberry and oak. The portion of the site nearest Canoe Creek includes streamside habitats that provide richer wildlife habitat and a greater variety of trees, including sycamore, river birch, sweetgum, and various oak, maple, and hickory species.

4.2 Vegetation

The sites include primarily row crop fields, wooded areas, retention ponds, and some wetlands. The dominant tree species on the property is hackberry (*Celtis occidentalis*), which is found on all field borders. Also present are a variety of black willow (*Salix nigra*), American sycamore (*Plantanus occidentalis*), cottonwood (*Populus deltoides*), boxelder (*Acer negundo*), hickory species (*Carya* sp.), oak species (*Quercus* sp.), American elm (*Ulmus americana*) and sugar maple (*Acer saccharum*). A variety of herbaceous plants and shrubs are located in the open areas, including Johnson grass (*Sorghum halepense*), golden rod (*Solidago* sp.), fescue grass (*Festuca* sp.) and numerous annual weeds.

There are no state-protected plant species listed for the Henderson Quadrangle, and no federallyprotected plant species are potentially located near the site according to the FWS IPaC report.



4.3 Wildlife

Wildlife common to the Shawnee Hills Ecoregion include: whitetail deer (*Odocoileus virginianus*), wild turkey (*Meleagris gallopavo*), cottontail rabbit (*Sylvilagus floridanus*), gray and fox squirrels (*Sciurus* spp.), raccoon (*Procyon lotor*), skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), coyote (*Canis latrans*), and numerous reptiles, amphibians, small mammals, songbirds, raptors, and waterfowl. The site has marginal wildlife value due to the lack of natural areas and dominance of agricultural land. The Wilson and Canoe Creek riparian areas do provide a wildlife corridor and habitat for a number of animal species. Whitetail deer and a variety of birds were observed during the site survey. Protected wildlife species are discussed in the Section 5 - Results.

5. Results

5.1 Federally-Listed Threatened and Endangered Wildlife Species

The USFWS IPaC report for the subject site identifies 15 federally listed endangered or threatened wildlife species with a potential to occur in the project vicinity (**Table 1**). These include three bats (gray bat, Indiana bat, and northern long-eared bat [NLEB]), one bird (least tern), and 11 mussels.

The gray bat is a cave dweller year-round, but the property does not appear to have any caves present; therefore, neither roosting nor wintering habitat for this species is located on site. According to the USFWS IPaC report, designated critical habitat for the Indiana bat is located outside of the project location, and there is no critical habitat designated for the NLEB. However, suitable spring/summer roosting and maternity habitat for the Indiana bat and NLEB potentially could occur on the site. Therefore, the AECOM field team conducted a survey for suitable bat summer roosting habitat. This habitat includes exfoliated bark, cracks, crevices, and hollows in living and dead trees that are at least 10 feet off the ground as well as flaking bark on standing dead trees.

The survey of bat habitat found 38 suitable potential roost trees on the two sites: two on the 94acre site and 36 on the 625-acre site. On the 94-acre site, the trees were in the northern woods along Canoe Creek. They were a standing dead black locust tree, also known as a snag, and a hackberry tree with a suitable hollow. On the larger property, the trees were mostly hackberries (52%), and most were living trees featuring hollows and crevices. The second most common habitat trees were box elder (21%), and these trees were typically snags. The remaining 27% of the habitat trees were spread among six other species. All of the habitat on the 625-acre site is in the woods around Wilson Creek, which is also a forage corridor. The field border along the Wilson Creek riparian area also provides foraging opportunity.

In addition to the bat species that might potentially be impacted by site construction, one bird – least tern, and 11 mussel species are potentially located in the project area. Least tern is a shore bird which nests along large river banks, such as the Ohio River. The sites do not contain suitable habitat for this species. With the exception of two mussel species, clubshell and little spectaclecase, the habitat for mussels species is limited to large rivers or specific river locations indicated in Table 1. In the event impacts to Wilson or Canoe Creeks are planned, consultation with the USFWS is recommended.



Table 1. Federal and State Listed Threatened and Endangered Species with thePotential to Occur at or near the Henderson County Solar Project Sitein Henderson County, Kentucky.

Common Name Scientific Name	Status Fed, State	Habitat	Clearance Survey Recommended if impacts to habitat expected**
Mammals			
Gray bat Myotis grisescens	FE, SE	Cave obligate, frequents forested areas	No
Indiana bat <i>M. sodalis</i>	FE, SE	Hibernates in caves, spring/summer maternity roosts normally under bark of standing trees	Yes
Northern long-eared bat <i>M. septentrionalis</i>	FT, NL	Hibernates in caves or mines, summer roosting under bark or in cavities of trees, rarely roosts in barns or sheds	Yes
Birds			
Least Tern, <i>Sterna antillarum</i>	FE, SE	Sand and gravel pits, agricultural fields	No
American Coot Fulica americana	NL, SE	Ponds, lakes and marshes, Requires shallow marshes for breeding	No
Bald Eagle Haliaeetus leucocephalus	NL, ST	Coastlines, rivers, and large lakes	No
Bank Swallow Riparia riparia	NL, SS	Nests on vertical banks of dirt or sand along rivers or ponds	No
Blue-Winged Teal Spatula discors	NL, ST	Shallow freshwater or brackish marshes	No
Brown Creeper Certhia americana	NL, SE	Woodlands, needs mature forest for breeding	No
Dark-Eyed Junco Junco hymalis	NL, SS	Edges of woodlands by open fields	No
Double-Crested Cormorant Phalacrocorax auritus	NL, ST	Coasts, bays, lakes, rivers	No
Henslow's Sparrow Centronyx henslowii	NL, SS	Weedy fields and meadows with sparse shrubs	No
Hooded Merganser Lophodytes cucullatus	NL, ST	Wooded lakes, ponds, and rivers	No
Northern Harrier Circus hudsonius	NL, ST	Marshes, fields, or prairies	No
Northern Shoveler <i>Spatula</i> <i>clypeata</i>	NL, SE	Marshes and ponds	No
Pied-billed Grebe Podilymbus podiceps	NL, SE	Breeds in dense marshes with little open water	No
Red-brested Nuthatch Sitta canadensis	NL, SE	Conifer trees including spruce, fir and hemlock	No
Red-headed Woodpecker Melanerpes erythrocephalus	NL, SS	Forest edges or open woods	No
Sharp-shinned Hawk Accipiter striatus	NL, SS	Dense forest avoids open country	No
Short-eared Owl Asio flammeus	NL, SE	Prairies, marshes, dunes and tundra	No
Mussels			
Clubshell, Pleurobema clava	FE, ST	Small to medium upland rivers with bedrock or gravel substrate and boulders	Potential
Fanshell, Cyprogenia stegaria	FE, NL	Medium to large rivers, deep sand/gravel bottoms	No
Fat Pocketbook <i>Potamilus capax</i>	FE	Mixed substrate of silt, mud, and sand in large rivers	No

Common Name Scientific Name	Status Fed, State	Habitat	Clearance Survey Recommended if impacts to habitat expected**
Northern Riffleshell <i>Epioblasma</i> torulosa rangiana	FE	Short reaches of the Green River	No
Orangefoot Pimpleback Plethobasus cooperainus	FE	Lower Ohio River	No
Purple Cat's Paw Epioblasma obliquata obliquata	FE	Killbuck Creek, OH	No
Rabbitsfoot Quadrula cylindrica cylindrica	FT	Ohio River, KY	No
Ring Pink Obovaria retusa	FE	Green River, KY	No
Rough Pigtoe Pleurobema plenum	FE	Green River and Barren River, KY	No
Sheepnose Mussel Plethobasus cyphyus	FE, SE	Shallow portions of large rivers in coarse sand and gravel	No
Spectaclecase Cumberlandia monodonta	FE	Sheltered areas of firm mud in large rivers	No
Pocketbook Lampsilis ovata	NL, SE	Large rivers in coarse sand and gravel	No
Little Spectaclecase Villosa lienosa	NL, SS	Silty, clay substrates in tributary streams	Potential
Fish			
Spottail shiner, <i>Notropis</i> hudsonius	NL, SS	Spawn in sandy shoals, tributary streams and lakes, avoids strong currents	No
*F=federal, S=state, E=endangered, T=threatened, NL=Not Listed, S=Special Concern **Clearance survey is recommended if respective habitat is to be disturbed by construction			

5.2 State-Listed Threatened and Endangered Species

Twenty state-protected species were identified by KDFWR for Henderson County (Table 1). These consist of one bat, 15 birds, one fish, and three mussel species. Based on the mature hardwoods in the riparian area of the two streams of the site, the presence of habitat for the bat species is possible. If any of the habitats for bat species would be disturbed during construction, clearance surveys are recommended for these species, as summarized in Table 1. Habitat for all of the other state-listed species does not appear to be present, or is not present in sufficient quantity, to support the species on or adjacent to the site where it could be affected. However, if impacts to Wilson or Canoe Creeks are planned consultation with the Kentucky Department of Fish and Wildlife Resources is recommended.

5.3 Migratory Birds

A migratory bird of conservation concern (BCC) identified in the IPaC report as potentially occurring in or near the site is the red-headed woodpecker (*Melanerpes erythrocephalus*)(see **Attachment 3**). The breeding period for the red-headed woodpecker is May 10 to September 10 (USFWS 2020). This species was not observed during the May 2020 site visit. The IPaC report also noted that the bald eagle (*Haliaeetus leucocephalus*), while not a BCC, warrants attention based on the Bald and Golden Eagle Protection Act.

The migratory bird nesting period in Kentucky is from April 15 to July 31. This time period is critical for migratory bird reproduction. None of these species listed in Table 1 were observed during the May, 2020 site visit.



6.0 Regulatory Requirements

Federal Regulations

Federal permits pertaining to endangered and threatened species may be necessary in the event that these sensitive resources cannot be avoided during the design and construction phase of the project. Consultation with the USFWS should be undertaken to ensure lack of, or minimal impact to, federally listed species. If threatened and endangered species cannot be avoided, a Section 10 incidental take permit may be required. Removal of summer roost trees for the Indiana bat and NLEB is dependent on location related to hibernacula buffers. If the site is within a hibernacula buffer, then the tree clearing dates are from November 15th to March 31st. If the site is not within a buffer, then the window is from October 15th to March 31st. If tree clearing is required, mitigation multipliers are based on habitat type and season (FWS 2016). Based on the maps of known ranges of the Indiana bat and NLEB in Kentucky, the site is potentially located in NLEB known summer roost habitat (FWS 2020) https://www.fws.gov/frankfort/indiana bat procedures.html.

Based on the presence of potential bat roost trees on the site, and location of potential NLEB summer habitat near the project area, consultation with the USFWS is required prior to any tree clearing. Mitigation for tree clearing any time of the year may be required.

The Migratory Bird Treaty Act (MTBA) prohibits taking, attempting to take, capturing, killing, selling/purchasing, possessing, transporting, and importing migratory birds, their eggs, parts, and nests, except when specifically authorized by the USFWS. Nesting periods in Kentucky for migratory birds are from April 15 to July 31. Nest habitat, particularly for the species identified on the IPaC report, was very limited within the project area.

7. References

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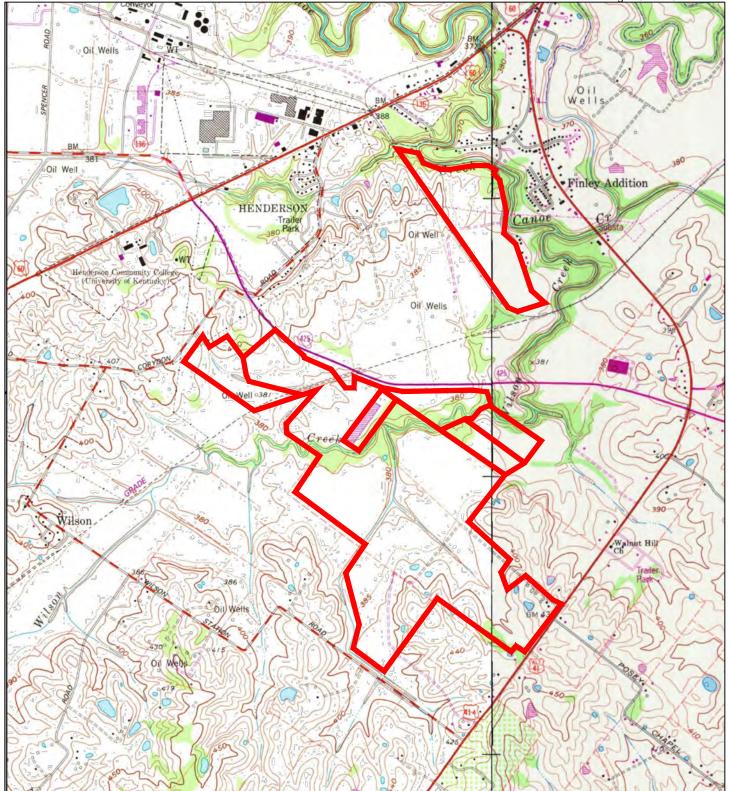
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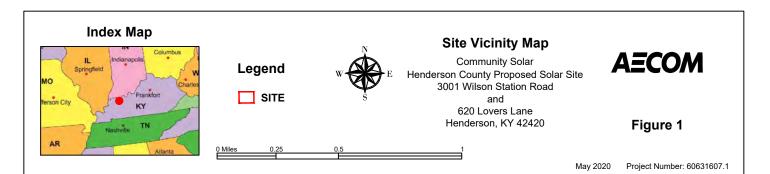
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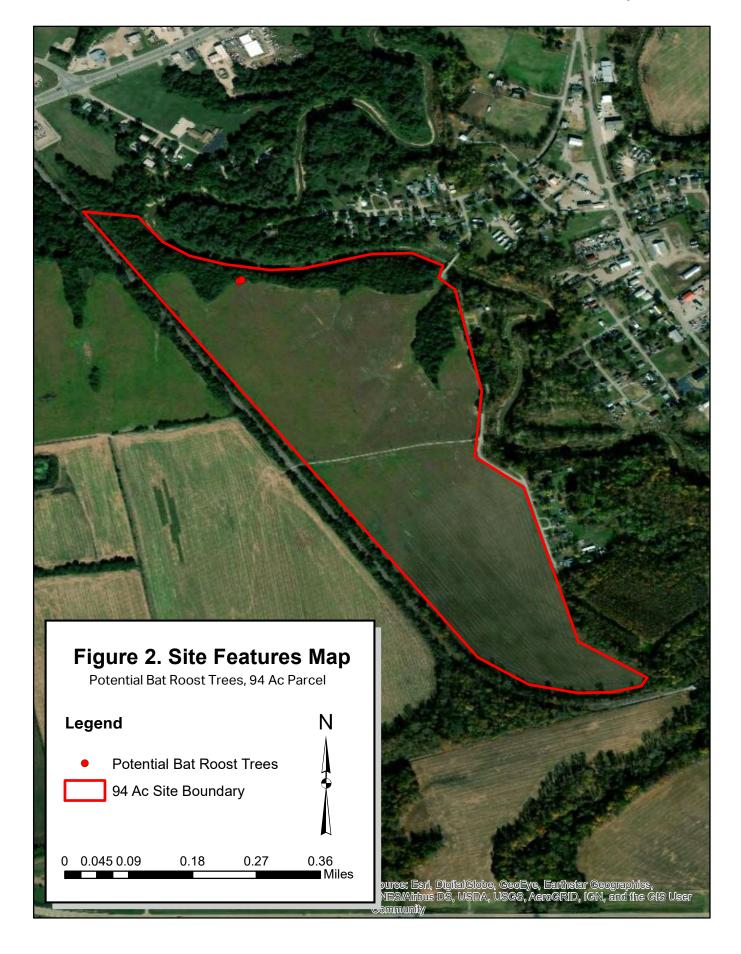
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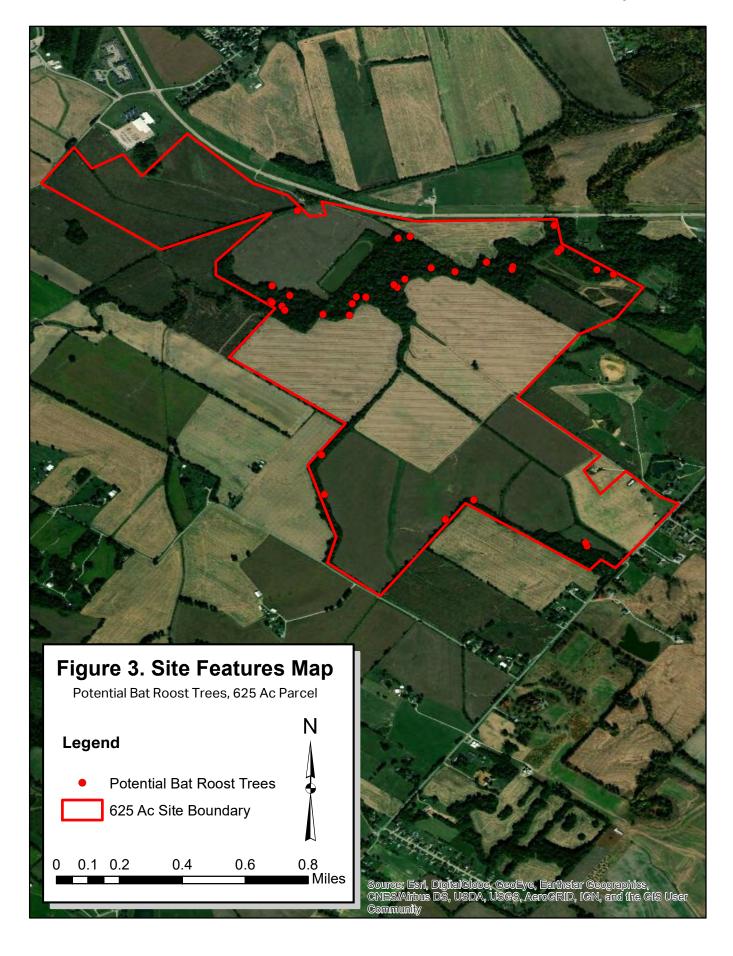


Exhibit 14 Attachment 14.4 Page 15 of 125









Attachment 1 Photo Log



12

Exhibit 14 Attachment 14.4 Page 19 of 125



Client Name: Community Solar

Site Location: Henderson Co, KY

PHOTOGRAPH LOG







Client Name: Community Solar

Site Location: Henderson Co, KY

PHOTOGRAPH LOG

Project No. 60631607.2f



Northern portion of the 94acre parcel. Powerline crisscross the field but it is otherwise open country.

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Client Name: Community Solar

Site Location: Henderson Co, KY

PHOTOGRAPH LOG







Client Name: Community Solar

Site Location: Henderson Co, KY

PHOTOGRAPH LOG



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Exhibit 14 Attachment 14.4 Page 23 of 125



Client Name: Community Solar

Site Location: Henderson Co, KY

PHOTOGRAPH LOG

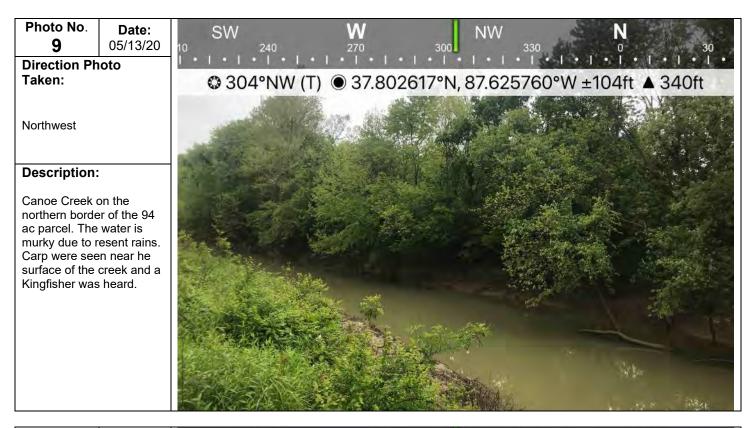




Exhibit 14 Attachment 14.4 Page 24 of 125



Client Name: Community Solar Site Location: Henderson Co, KY PHOTOGRAPH LOG





Exhibit 14 Attachment 14.4 Page 25 of 125



Client Name: Community Solar

Site Location: Henderson Co, KY

PHOTOGRAPH LOG





Exhibit 14 Attachment 14.4 Page 26 of 125



Client Name: Community Solar

Site Location: Henderson Co, KY

PHOTOGRAPH LOG





Exhibit 14 Attachment 14.4 Page 27 of 125



Client Name: Community Solar

Site Location: Henderson Co, KY

PHOTOGRAPH LOG





Exhibit 14 Attachment 14.4 Page 28 of 125



Client Name: Community Solar

Site Location: Henderson Co, KY

PHOTOGRAPH LOG Project No.

60631607.2f

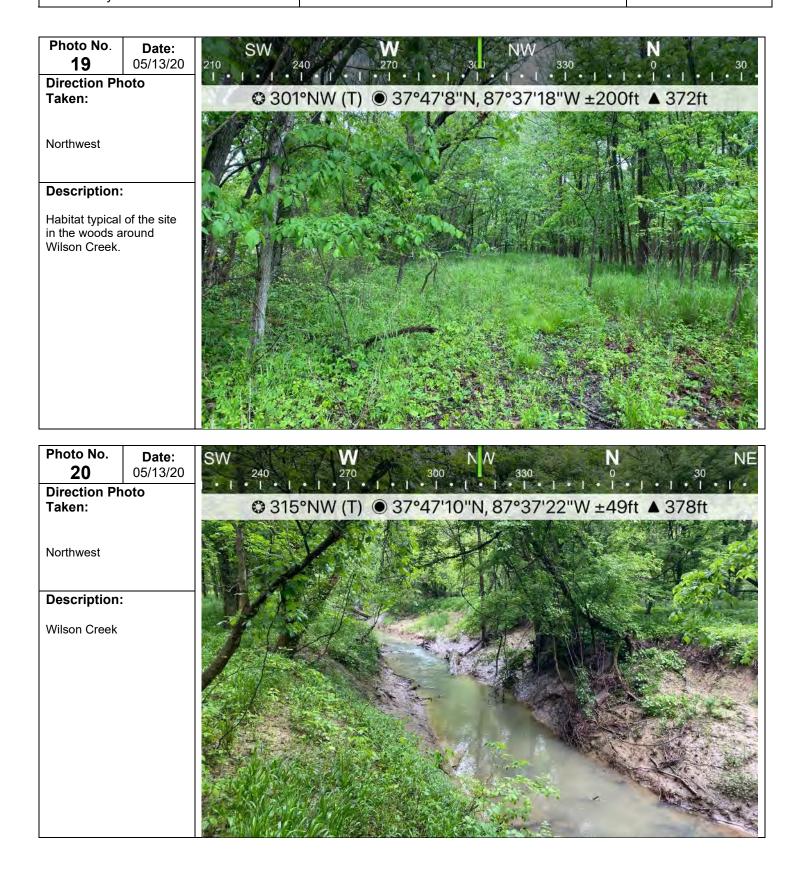


Exhibit 14 Attachment 14.4 Page 29 of 125



Client Name: Community Solar

Site Location: Henderson Co, KY

PHOTOGRAPH LOG Project No.

60631607.2f

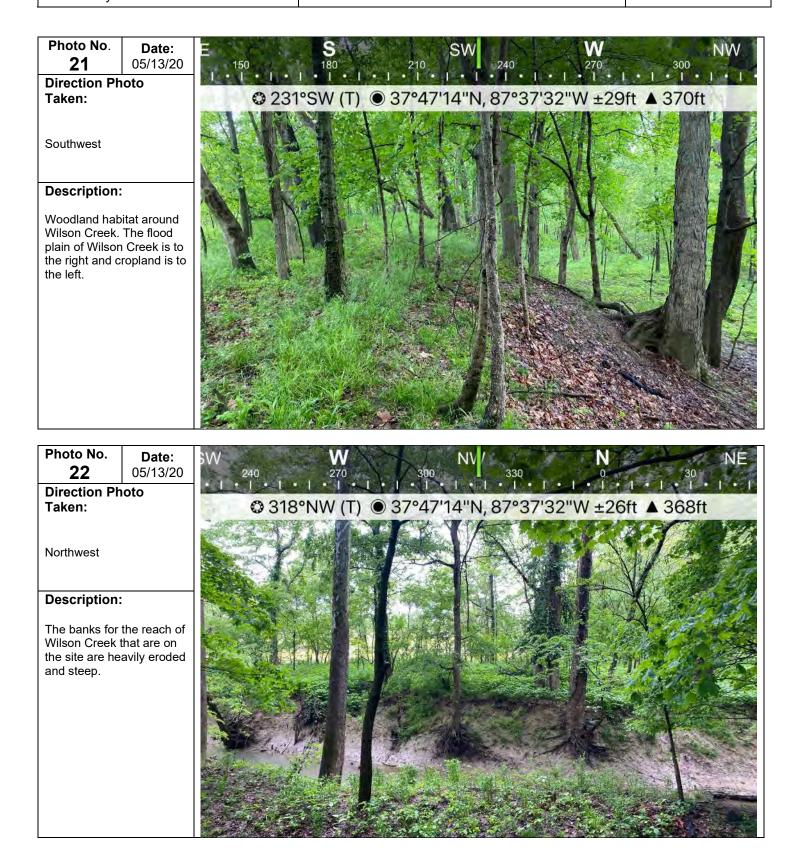


Exhibit 14 Attachment 14.4 Page 30 of 125



Client Name: Community Solar Site Location: Henderson Co, KY **Project No.** 60631607.2f

PHOTOGRAPH LOG

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Looking downs Wilson Creek.	stream on	Image: Contract of the second of th



Exhibit 14 Attachment 14.4 Page 31 of 125



Client Name: Community Solar Site Location: Henderson Co, KY PHOTOGRAPH LOG



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Description:				SAMA A		
Wilson Creek ı habitat	riparian					
				1 -3		Henderson T&E

Attachment 2 USFWS IPaC Report and State Listed Species for the Henderson County





IPaC

Exhibit 14 Attachment 14.4 Page 33 of 125 U.S. Fish & Wildlife Service

IPaC resource list 🔁

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

ocation	
Henderson County, Kentucky	
Henderson County, Kentucky	NSU

Local office

Kentucky Ecological Services Field Office

€ (502) 695-0468
■ (502) 695-1024

J C Watts Federal Building, Room 265 330 West Broadway Frankfort, KY 40601-8670

http://www.fws.gov/frankfort/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

- 1. Draw the project location and click CONTINUE.
- 2. Click DEFINE PROJECT.
- 3. Log in (if directed to do so).
- 4. Provide a name and description for your project.
- 5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the <u>Ecological Services Program</u> of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact <u>NOAA</u> <u>Fisheries</u> for <u>species under their jurisdiction</u>.

- 1. Species listed under the <u>Endangered Species Act</u> are threatened or endangered; IPaC also shows species that are threatened; IPaC also shows species that are threaten
- 2. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
 Gray Bat Myotis grisescens This species only needs to be considered if the following condition applies: The project area includes potential gray bat habitat. 	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6329	- TIU.
Indiana Bat Myotis sodalis	Endangered
 This species only needs to be considered if the following condition applies: The project area includes 'potential' habitat. All activities in this location should consider possible effects to this species. 	
There is final critical habitat for this species. Your location is outside the critical habitat. <u>https://ecos.fws.gov/ecp/species/5949</u>	
Northern Long-eared Bat Myotis septentrionalis	Threatened
This species only needs to be considered if the following condition applies:	
The specified area includes areas in which incidental take would not be prohibited	
under the 4(d) rule. For reporting purposes, please use the "streamlined	
consultation form," linked to in the "general project design guidelines" for the	
species.	
No critical habitat has been designated for this species.	
https://ecos.fws.gov/ecp/species/9045	

3/2020	IPaC: Explore Location	Exhibit 14 Attachment 14.4 Page 37 of 125
Birds		U
NAME	STATUS	
 Least Tern Sterna antillarum This species only needs to be considered if t This species should be addressed if the a sparse to no vegetation (e.g., sand and g would occur during the nesting season (a) 	action area includes bare open areas with gravel pits, agricultural fields) and the action	gered
No critical habitat has been designated for th https://ecos.fws.gov/ecp/species/8505	his species.	
Clams		10
NAME	STATUS	~~~
 Clubshell Pleurobema clava This species only needs to be considered if t The species may be affected by projects indirectly, the following rivers: Barren, G No critical habitat has been designated for the https://ecos.fws.gov/ecp/species/3789 	that significantly impact, directly or reen, Licking, or Ohio.	gered
 Fanshell Cyprogenia stegaria This species only needs to be considered if t The species may be affected by projects indirectly, the following rivers: Barren, G Tennessee. 	that significantly impact, directly or	gered
No critical habitat has been designated for th https://ecos.fws.gov/ecp/species/4822	his species.	

Fat Pocketbook Potamilus capax

This species only needs to be considered if the following condition applies:

• The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Clarks, Cumberland, Green, Mississippi, Ohio, Tradewater, or Tennessee.

No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/2780</u>

Northern Riffleshell Epioblasma torulosa rangiana

This species only needs to be considered if the following condition applies:

• The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Green, Licking, or Ohio.

No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/527</u>

Orangefoot Pimpleback (pearlymussel) Plethobasus cooperianus

This species only needs to be considered if the following condition applies:

• The species may be affected by projects that significanlty impact, directly or indirectly, the following rivers: Green, Ohio, Salt, or Tennessee.

No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/1132</u>

Purple Cat's Paw (=purple Cat's Paw Pearlymussel) Epioblasma obliquata obliquata

This species only needs to be considered if the following condition applies:

• The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Green, Licking, or Ohio.

No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/5602</u>

Endangered

Endangered

Endangered

Endangered

Rabbitsfoot Quadrula cylindrica cylindrica

This species only needs to be considered if the following condition applies:

• The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Cumberland (below the falls), Green, Ohio, Rolling Fork Salt, South Fork Kentucky, or Tennessee.

There is **final** critical habitat for this species. Your location is outside the critical habitat. <u>https://ecos.fws.gov/ecp/species/5165</u>

Ring Pink (mussel) Obovaria retusa

This species only needs to be considered if the following condition applies:

• The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Cumberland (below the falls), Green, Ohio, or Tennessee.

No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/4128</u>

Rough Pigtoe Pleurobema plenum

This species only needs to be considered if the following condition applies:

• The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Green, Licking, or Ohio.

No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/6894</u>

Sheepnose Mussel Plethobasus cyphyus

This species only needs to be considered if the following condition applies:

• The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Green, Kentucky, Licking, Ohio, Salt, or Tennessee.

No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/6903</u>

Threatened

Endangered

Endangered

Endangered

Endangered

Spectaclecase (mussel) Cumberlandia monodonta

This species only needs to be considered if the following condition applies:

• The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Cumberland (below the falls), Green, Little South Fork of the Cumberland, Ohio, or Tennessee.

No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/7867</u>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described <u>below</u>.

- 1. The Migratory Birds Treaty Act of 1918.
- 2. The <u>Bald and Golden Eagle Protection Act</u> of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <u>http://www.fws.gov/birds/management/managed-species/</u> <u>birds-of-conservation-concern.php</u>
- Measures for avoiding and minimizing impacts to birds <u>http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/</u>

conservation-measures.php

 Nationwide conservation measures for birds <u>http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf</u>

The birds listed below are birds of particular concern either because they occur on the <u>USFWS Birds of Conservation Concern</u> (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ <u>below</u>. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the <u>E-bird data mapping tool</u> (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found <u>below</u>.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626

Breeds Sep 1 to Jul 31

Red-headed Woodpecker Melanerpes erythrocephalus

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 10 to Sep 10

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

- 1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
- 2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
- 3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (-)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (I)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

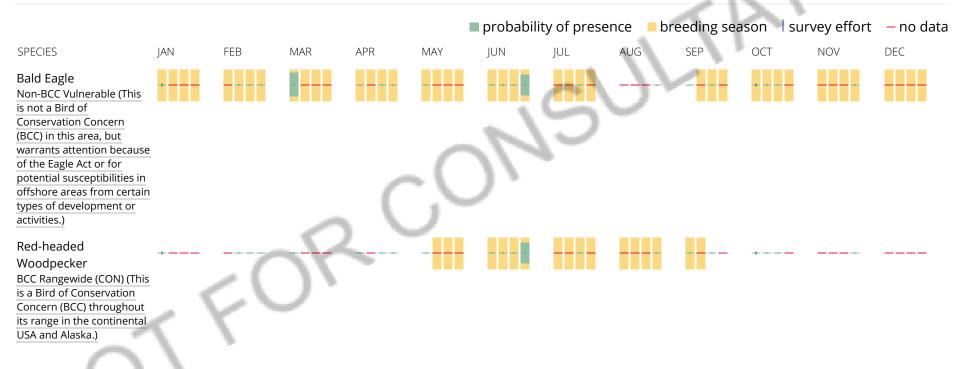
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

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Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round.^{Page 44} of ¹²⁵ Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. <u>Additional measures</u> and/or <u>permits</u> may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS <u>Birds of Conservation Concern (BCC)</u> and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the <u>Avian Knowledge Network (AKN)</u>. The AKN data is based on a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science datasets</u> and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (<u>Eagle Act</u> requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the <u>AKN Phenology Tool</u>.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the <u>Avian Knowledge Network (AKN)</u>. This data is derived from a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science datasets</u>.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: <u>The Cornell Lab of Ornithology All About Birds Bird Guide</u>, or (if you are unsuccessful in locating the bird of interest there), the <u>Cornell Lab of Ornithology Neotropical Birds guide</u>. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

- 1. "BCC Rangewide" birds are <u>Birds of Conservation Concern</u> (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
- 2. "BCC BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
- 3. "Non-BCC Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the <u>Eagle Act</u> requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the <u>Northeast Ocean Data Portal</u>. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the <u>NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf</u> project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the <u>Diving Bird Study</u> and the <u>nanotag studies</u> or contact <u>Caleb Spiegel</u> or <u>Pam Loring</u>.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to <u>obtain a permit</u> to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is

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simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the <u>National Wildlife Refuge</u> system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.



Wetlands in the National Wetlands Inventory

Impacts to <u>NWI wetlands</u> and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the <u>NWI map</u> to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.



Species Information

State Threatened, Endangered, and Special Concern Species observations for selected quads

Linked life history provided courtesy of NatureServe Explorer . **Records may include both recent and historical observations.** US Status Definitions Kentucky Status Definitions

List State Threatened, Endangered, and Special Concern Species observations in 1 selected quad. Selected quad is: Henderson.

Scientific Name and Life History	Common Name and Pictures	Class	Quad	US Status	KY Status	WAP	Reference
Fulica americana	American Coot	Aves	Henderson	Ν	E		Reference
Haliaeetus leucocephalus	Bald Eagle	Aves	Henderson	Ν	Т	Yes	Reference
Riparia riparia	Bank Swallow	Aves	Henderson	Ν	S	Yes	Reference
Spatula discors	Blue-winged Teal	Aves	Henderson	Ν	Т		Reference
Certhia americana	Brown Creeper	Aves	Henderson	Ν	E	Yes	Reference
Junco hyemalis	Dark-eyed Junco	Aves	Henderson	Ν	S		Reference
Phalacrocorax auritus	Double-crested Cormorant	Aves	Henderson	Ν	Т		Reference
Centronyx henslowii	Henslow's Sparrow	Aves	Henderson	Ν	S	Yes	Reference
Lophodytes cucullatus	Hooded Merganser	Aves	Henderson	Ν	Т	Yes	Reference
Villosa lienosa	Little Spectaclecase	Bivalvia	Henderson	Ν	S	Yes	Reference
Circus hudsonius	Northern Harrier	Aves	Henderson	Ν	Т	Yes	Reference

Myotis septentrionalis	Northern Myotis	Mammalia	Henderson	Т	Exhibit 14	Attachment Page 49 of	14.4 1 Reference
Spatula clypeata	Northern Shoveler	Aves	Henderson	Ν	E		Reference
Podilymbus podiceps	Pied-billed Grebe	Aves	Henderson	Ν	E	Yes	Reference
Lampsilis ovata	Pocketbook	Bivalvia	Henderson	Ν	E	Yes	Reference
Sitta canadensis	Red-breasted Nuthatch	Aves	Henderson	Ν	E	Yes	Reference
Accipiter striatus	Sharp-shinned Hawk	Aves	Henderson	Ν	S	Yes	Reference
Plethobasus cyphyus	Sheepnose	Bivalvia	Henderson	E	E	Yes	Reference
Asio flammeus	Short-eared Owl	Aves	Henderson	Ν	E	Yes	Reference
Notropis hudsonius	Spottail Shiner	Actinopterygii	Henderson	Ν	S		Reference

20 species are listed.

Attachment 3 Potential Bat Roost Tree Data Forms



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Project Name Community Solar		_{Date} 5/13/20
Location Henderson/ Lover's Lane Pa	arcelCounty_Henderso	on _{State} KY
Transmission line # (if applicable	Associated Structures (if applicable)	Bat Tree 1
Latitude / Longitude 37.801769/-87.629	123 _{Surveyor} H	HO, BS
-		

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 18

Tree species (if known) Black Locust

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 2

Area of the project site to be cleared 0%

Percent of the project site forested 15%

Dominant canopy tree species in project area Green Ash

Dominant midstory tree species in project area Sweet Gum

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt1 For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Project Name Community Solar		20
Location Henderson/ Lover's Lane Parce	_{County} Henderson	_{State} KY
Transmission line # (if applicable Asso	ciated Structures (if applicable) Bat Tree 2	
Latitude / Longitude 37.801794/-87.629071	_{Surveyor} _HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 24

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 2

Area of the project site to be cleared 0%

Percent of the project site forested 15%

Dominant canopy tree species in project area Green Ash

Dominant midstory tree species in project area Sweet Gum

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt2 For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5/1	3/20
Location Henderson/Wilson Creek	County Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree	3
Latitude / Longitude 37.789029/-87.637	266Surveyor HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 36

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Sycamore

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt3 For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

Project Name Community Solar	Date 5/13	8/20
Location Henderson/ Wilson Creek	County Henderson	_ _{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 4	
Latitude / Longitude 37.785591/-87.638	43 _{Surveyor} HO, BS	
•	·	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 20

Tree species (if known) Oak (Northern Red)

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Sycamore, Red Oak

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt4</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

Project Name Community Solar		/20
Location Henderson/ Wilson Creek	County Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 5	
Latitude / Longitude 37.785145/-87.637	615 Surveyor HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 28

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Sycamore, Red Oak

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt5 For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5/13	/20
Location Henderson/ Wilson Creek	_{County} Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 6	
Latitude / Longitude 37.787778/-87.632	2636 _{Surveyor} HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 14

Tree species (if known) Red Maple

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Green Ash

Dominant midstory tree species in project area Red Maple

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt6 For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar		3/20
Location Henderson/Wilson Creek	_{County} Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 7	,
Latitude / Longitude 37.787851/-87.632	086 _{Surveyor} HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 30

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt7 For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5/13	/20
Location Henderson/Wilson Creek	County Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 8	
Latitude / Longitude 37.788358/-87.625	459 _{Surveyor} HO, BS	
•		

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 30

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Sycamore

Dominant midstory tree species in project area Red maple

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt8 For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5/14	1/20
Location Henderson/ Wilson Creek	_{County} Henderson	_ _{State} KY
Transmission line # (if applicable Assoc	iated Structures (if applicable) Bat Tree 9	
Latitude / Longitude 37.773645/-87.623943	Surveyor HO, BS	
 Pictures documenting project site (Pictures in this a) General picture(s) of the potential habitat (a potential picture(s) of adjacent areas to project site 		

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 30

Tree species (if known) Black Locust

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt9 For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5/1	4/20
Location Henderson/Wilson Creek	County Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree	10
Latitude / Longitude 37.773783/-87.624	006 _{Surveyor} HO, BS	
•	/	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) <u>30</u>

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Osage orange

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt10</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

Project Name Community Solar	Date_5/14	/20
Location Henderson/Wilson Creek	County Henderson	_ _{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 1	1
Latitude / Longitude 37.775758/-87.629	157 _{Surveyor} HO, BS	
•		

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) <u>30</u>

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Osage orange

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt11</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Project Name Community Solar	Date 5/	/14/20		
Location Henderson/ Wilson Creek	County Henderson	_{State} KY		
Transmission line # (if applicable Associated	Structures (if applicable) Bat Tree	12		
Latitude / Longitude <u>37.774857/-87.630463</u>	Surveyor HO, BS			
Pictures documenting project site (Pictures in this section only needed once for each project site) General picture(s) of the potential habitat (a picture of the forest) and the project site				

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) <u>18</u>

Tree species (if known) Sassafras

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Osage orange

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt12</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar		1/20
Location Henderson/ Wilson Creek	_{County} Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 1	3
Latitude / Longitude 37.774857/-87.630	A63 Surveyor HO, BS	
•	,	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) <u>18</u>

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Osage orange

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt13</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date	5/14/20
Location Henderson/Wilson Creek	_{County} Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tre	e 14
Latitude / Longitude 37.776007/-87.636	025 Surveyor HO, BS	
-		

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has **crevices**, **cracks**, or **hollows** 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) <u>12</u>

Tree species (if known) Box Elder

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Box Elder

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt14</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

Project Name Community Solar		
Location Henderson/Wilson Creek	County Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree	15
Latitude / Longitude 37.777814/-87.636	153 Surveyor HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 18

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt15 For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar		_{Date} 5/14/20
Location Henderson/Wilson Creek	_{County} Henders	on _{State} KY
Transmission line # (if applicable	Associated Structures (if applicable)	Bat Tree 16
Latitude / Longitude 37.784874/-87.638	493 Surveyor	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination) _____

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has **crevices**, **cracks**, or **hollows** 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) <u>18</u>

Tree species (if known) Sassafras

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Osage orange

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt16</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar		
Location Henderson/ Wilson Creek	_{County} Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 1	7
Latitude / Longitude 37.784818/-87.638	3431 Surveyor HO, BS	
	,	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 24

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt17 For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

Project Name Community Solar	Date 5/14/20	
Location Henderson/ Wilson Creek	_{County} Henderson S	_{state} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 18	
Latitude / Longitude 37.784654/-87.637	975Surveyor_HO, BS	
Pictures documenting project site (Pictures	in this section only needed once for each project site)	

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status				
	1	2	3	4	
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none	
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark	
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height	

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 24

Tree species (if known) Box Elder

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt18</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

Project Name Community Solar	Date 5/14/20	
Location Henderson/ Wilson Creek	_{County} Henderson s	_{tate} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 19	
Latitude / Longitude 37.784654/-87.637	975 Surveyor HO, BS	
	in this section only needed once for each project site)	

<u>Protocost accumentarity project site</u> (Fictures in this section only needed once for each project site</u>

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has **crevices**, **cracks**, or **hollows** 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 18

Tree species (if known) Box Elder

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt19</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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<u>Dat Habitat Freihinnary</u>	Assessment		
Project Name Community Solar	Date_5/	14/20	
Location Henderson/ Wilson Creek	_{County} Henderson	_{State} KY	
Transmission line # (if applicable Associated Stru	uctures (if applicable) Bat Tree	20	
Latitude / Longitude <u>37.784471/-87.637844</u>	Surveyor HO, BS		
Pictures documenting project site (Pictures in this section only needed once for each project site) ■ General picture(s) of the potential habitat (a picture of the forest) and the project site ■ Picture(s) of adjacent areas to project site			
Pictures for documenting suitability of specific trees			
A picture of the trunk of the tree at eye level			
A picture taken at the base of the tree looking up into	the canopy		
A picture taken capturing the whole tree while standing	g back at a distance		

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1 2		3	4
Branches	<u>80-100%</u>	Eew-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has **crevices**, **cracks**, or **hollows** 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 24

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt20</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Project Name Community Solar	Date 5/14/20	
Location Henderson/Wilson Creek	County Henderson State KY	
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 21	
Latitude / Longitude 37.784471/-87.6378	344Surveyor_HO, BS	
Pictures documenting project site (Pictures i	n this section only needed once for each project site)	

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 20

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Red Oak

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt21 For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5/14/20	
Location Henderson/ Wilson Creek	County Henderson State	_e KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 22	
Latitude / Longitude 37.784265/-87.636		
Pictures documenting project site (Pictures	in this section only needed once for each project site)	

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If enag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) <u>18</u>

Tree species (if known) Box Elder

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Red Oak

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt22</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date_5/14/2	20
Location Henderson/Wilson Creek	_{County} Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 23	
Latitude / Longitude 37.784237/-87.634	869 Surveyor HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has **crevices**, **cracks**, or **hollows** 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 48

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt23</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5/1	4/20
Location Henderson/ Wilson Creek	County Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 2	24
Latitude / Longitude 37.784763/-87.634	757 Surveyor HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 30

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt24For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar		/20
Location Henderson/Wilson Creek	County Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 25)
Latitude / Longitude 37.785078/-87.634	559 _{Surveyor} HO, BS	
•		

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination) _____

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<pre><50 % of height</pre>

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) <u>36</u>

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt25</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

Project Name Community Solar	Date 5/14/20	
Location Henderson/Wilson Creek	County Henderson State KY	,
Transmission line # (if applicable As	ssociated Structures (if applicable) Bat Tree 26	
Latitude / Longitude 37.78506/-87.634113	Surveyor HO, BS	
Pictures documenting project site (Pictures in t	this section only needed once for each project site)	

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has **crevices**, **cracks**, or **hollows** 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) <u>12</u>

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt26</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5/1	14/20
Location Henderson/Wilson Creek	_{County} Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree	27
Latitude / Longitude 37.786105/-87.622	729 Surveyor HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 20

Tree species (if known) Sycamore

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt27</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar		_{Date} 5/14/20	
Location Henderson/ Wilson Creek	_{County} Henderson	_{State} KY	
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 28		
Latitude / Longitude 37.786338/-87.623	3492 Surveyor HO, BS		

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 10

Tree species (if known) Box Elder

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Black Walnut

Dominant midstory tree species in project area Hackberry

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt28 For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5/14/20	
Location Henderson/Wilson Creek	County Henderson Sta	_{te} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 29	
Latitude / Longitude 37.787283/-87.625	156 Surveyor HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has **crevices**, **cracks**, or **hollows** 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 20

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Red Oak

Dominant midstory tree species in project area Red Maple

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt29</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5/14/20	
Location Henderson/Wilson Creek	County Henderson State KY	
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 30	
Latitude / Longitude 37.787144/-87.625	299 Surveyor HO, BS	_

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has **crevices**, **cracks**, or **hollows** 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 20

Tree species (if known) Red Maple

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Red Oak

Dominant midstory tree species in project area Red Maple

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt30</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

Project Name Community Solar	Date 5	/14/20			
Location Henderson/ Wilson Creek	_{County} Henderson	KY			
Transmission line # (if applicable Assoc	Insmission line # (if applicable Associated Structures (if applicable) Bat Tree 31				
Latitude / Longitude 37.786458/-87.627357	Surveyor HO, BS				
 Pictures documenting project site (Pictures in this ■ General picture(s) of the potential habitat (a picture(s) of adjacent areas to project site 		9)			
Pictures for documenting suitability of specific t	rees				
A picture of the trunk of the tree at eye level					

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 24

Tree species (if known) Green Ash

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackbery

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt31 For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

Project Name Community Solar	Date 5/	/14/20	
Location Henderson/ Wilson Creek	_{County} Henderson	_{State} KY	
Transmission line # (if applicable Associated S	Structures (if applicable) Bat Tree	: 32	
Latitude / Longitude 37.786341/-87.627407 HO, BS			
Pictures documenting project site (Pictures in this section	only needed once for each project site	e)	
General picture(s) of the potential habitat (a picture	of the forest) and the project site		
Picture(s) of adjacent areas to project site			
Pictures for documenting suitability of specific trees			

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Eew-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 48

Tree species (if known) Red Oak

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackbery

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt32 For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date_5	5/14/20
Location Henderson/Wilson Creek	_{County} Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree	e 33
Latitude / Longitude 37.786683/-87.628	576 _{Surveyor} HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 20

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackbery

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt33</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5/14/20	
Location Henderson/ Wilson Creek	_{County} Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 34	•
Latitude / Longitude 37.786243/-87.630	0024 _{Surveyor} HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	Overall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Climb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 20

Tree species (if known) Box Elder

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackbery

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt34 For guestions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5/14/20)
Location Henderson/Wilson Creek	County Henderson St.	_{ate} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 35	
Latitude / Longitude 37.786412/-87.631	121 Surveyor HO, BS	
Pictures documenting project site (Pictures	in this section only needed once for each project site)	

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status				
	1	2	3	4	
Branches	<u>80-100%</u>	Few-no branches	Climb stubs to none	none	
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark	
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height	

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has **crevices**, **cracks**, or **hollows** 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 24

Tree species (if known) Box Elder

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackbery

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt35</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

Bat Habitat Preliminary Assessment

Project Name Community Solar	Date 5	/14/20
Location Henderson/ Wilson Creek	_{County} Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree	e 36
Latitude / Longitude 37.785884/-87.632	331 _{Surveyor} HO, BS	
-		

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 36

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackbery

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt36</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar		20
Location Henderson/ Wilson Creek	County Henderson	_{State} KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 37	
Latitude / Longitude 37.785514/-87.632	2671 Surveyor HO, BS	
•	·	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has exfoliating bark 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 30

Tree species (if known) Box Elder

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site 36

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackbery

Note: Include reference so corresponding pictures can be matched correctly with this check sheet Bt37 For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)

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Bat Habitat Preliminary Assessment

Project Name Community Solar		/20
Location Henderson/Wilson Creek	_{County} Henderson	State KY
Transmission line # (if applicable	Associated Structures (if applicable) Bat Tree 38	8
Latitude / Longitude 37.785635/-87.632	B25 Surveyor HO, BS	

Pictures documenting project site (Pictures in this section only needed once for each project site)

General picture(s) of the potential habitat (a picture of the forest) and the project site

Picture(s) of adjacent areas to project site

Pictures for documenting suitability of specific trees

A picture of the trunk of the tree at eye level

A picture taken at the base of the tree looking up into the canopy

A picture taken capturing the whole tree while standing back at a distance

A picture of the surrounding area that includes the tree being documented along with showing the density of the surrounding forest

Check all that apply for specific trees

Live tree

Snag (dead or dying tree still standing)

Description of level of decay if tree is a snag (use following table to make determination)

	<u>Ov</u> erall Decay Status			
	1	2	3	4
Branches	<u>80-100%</u>	Few-no branches	Limb stubs to none	none
Bark Tightness	80-100% remaining	30-80% remaining	If snag has most of height and <u><</u> 30% bark, or if snag has <50% of height and <u>></u> 80% bark	<80% bark
Height	Full-broken top	Broken top	Broken top to 50% height	<50 % of height

Tree has **exfoliating bark** 10 ft high or higher off the ground that allows for bats to roost

Tree has crevices, cracks, or hollows 10 ft high or higher off the ground that allow for bats to roost

The tree is exposed to the sun at some point during the day

Potential roost tree is within 1000 feet of forested area

Needed documentation for specific trees

DBH – diameter of tree at breast height (inches) 36

Tree species (if known) Hackberry

Summary of project site (Section only needs to be filled out once for each project site)

Number of potential roost trees within the project site <u>36</u>

Area of the project site to be cleared 0%

Percent of the project site forested 14%

Dominant canopy tree species in project area Hackberry

Dominant midstory tree species in project area Hackbery

Note: Include reference so corresponding pictures can be matched correctly with this check sheet <u>Bt38</u> For questions contact Liz Burton (865-632-4011) or Holly LeGrand (865-632-4010)



ENDANGERED SPECIES ASSESSMENT Of the Proposed Henderson County Solar Site Henderson County, Kentucky Additional Parcels

April 2021



Prepared for: Community Energy Solar, LLC Henderson County Solar LLC

Prepared by:

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Table 1.Federal and State Listed Threatened and Endangered Species with the Potentialto Occur at or near the CS Additional Sites in Henderson County, Kentucky

1. Introduction

AECOM was contracted to conduct an ecological survey focused on an endangered species review associated with the Proposed Henderson County Solar Project Site ("site") near Henderson in Henderson County, Kentucky in June 2020 (**Figure 1**). The site is located on the southwest side of Henderson, which is located near the Ohio River. The survey included land located in two sites of approximately 625 and 94 acres, for a total area of approximately 719 acres. In December 2020 the site was revisited to include three additional tracts totaling 71 acres, **Figure 2**. The additional property included three new tracts identified as the north tract, 6.7 acres; middle tract 25.4 acres and the south tract 38.9 acres.

The purpose of the survey was to identify the potential for endangered or other protected species and/or their habitat to be present at the site and evaluate the possibility that they might be impacted by future construction activities. The site on which the survey was conducted consisted mostly of agricultural land with no buildings present other than an electric transfer station on the north tract.

The proposed additional footprint of the project would cover approximately 71 additional acres. This includes agricultural fields, vegetated areas (woodlands) along Wilson Creek and Canoe Creek, and the transfer station.

Searches of publicly available information were conducted, including:

- Aerial photography;
- U.S. Geological Survey (USGS) quadrangle maps;
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) soil survey;
- U.S. Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI) maps;
- USFWS, Information for Planning and Consultation (IPaC) online reports;
- Kentucky Department of Fish and Wildlife Resources (KDFWR), Natural Heritage Database.

There are two figures and three attachments associated with this report. Figures include: • Figure 1 - Site Location Map

• Figure 2 - Site Features Map

Attachments include:

- Attachment 1 Photo log
- Attachment 2 USFWS IPaC Report and State-listed Species for the Henderson Quadrangle
- Attachment 3 Potential Bat Roost Tree Data Forms.

2. Literature Review

The USFWS IPaC report (USFWS 2020), accessed December 21, 2020, and the KDFWR Natural Heritage website (KDFWR 2020), accessed December 21, 2020, as well as topographic mapping, aerial survey, soils, geology, and other information were reviewed to determine the potential presence of endangered species. The potential for certain birds protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act to utilize habitat at the site also was considered. Following review of the available literature, a field survey and habitat characterization were performed in accordance with standard habitat inspection and wildlife survey methods as well as Indiana Bat Survey Guidelines (FWS 2019).

The survey included visual observation of the site and characterization of the vegetation, land use, crops, water bodies, and other features to determine if habitat for endangered species or other protected species identified by the FWS or state databases was on site. The NRCS website was utilized to determine the soil types present on the site as a potential indicator of hydric soils and wetlands.

Following review of these data, a field survey was conducted of the site on December 14, 2020. The field team was led by Mr. Niels Hiedner, with support from Mr. Jim Orr.

2.1 Site Setting

The site additional properties consist of three tracts with the north tract abutting Highway 60 on the south, the middle tract abutting Route 425 to the north and the south tract located to the south of Wilson Creek all near Henderson, Kentucky.

The sites are bordered by agricultural land to the east, west, and south, with more developed residential and commercial property to the north, particularly along State Highway 60. The north tract, located north and east of the middle tract is bordered by the riparian area of Canoe Creek to the south and commercial/residential property on all other sides.

The middle tract is a long narrow parcel of land located north of state route 425 (Henderson Bypass) and partially abuts a railway into and out of Henderson. The tract is roughly 4,600 feet long and 200 - 250 wide. Most of this tract is in agricultural field.

The south tract abuts Wilson Creek to the north and a tributary to Wilson Creek to the south. the south tract does not connect directly to any named roadways. The property is primarily agricultural fields with forested areas along the borders between the property line and adjacent to both streams.

The topography of all tracts is primarily flat with some rolling hills with elevations from 440 feet above sea level (ASL) to about 360 feet ASL in the Wilson Creek bottom. There are few undisturbed areas on the sites as they are primarily farmed land. Most of the sites were planted in corn, soybeans or left fallow, with some open grassland. Wilson Creek runs north of the south, with all of the runoff from the sites flowing to Wilson Creek and eventually to Canoe Creek and the Ohio River or directly to Canoe Creek. Neither Wilson nor Canoe Creek are classified in Kentucky as an Exceptional Water.

The sites are located in Ecoregion 72 in Kentucky (Shawnee Hills), which is made up of nearly level lowlands that are dominated by agriculture and forested hills. It is characteristically underlain



by carboniferous sedimentary rock and is lithologically distinct from the limestones, calcareous shales, and dolomites of the Interior Plateau (71) and the unconsolidated coastal plain sediments of the Mississippi Valley Loess Plains (74). Broad, low gradient valleys occur and are filled with alluvium, loess, and lacustrine deposits, including the Green River. Drainage conditions and terrain strongly affect land use. Wetlands are common on lowlands and bottomlands. Bottomland deciduous forests and swamp forests were once extensive on poorly drained, nearly level, lowland sites but most have been replaced by cropland and pastureland. Hilly uplands remain mostly forested. Ecoregion 72 includes Kentucky's Western Coal Fields. Extensive surface and underground coal mines occur and have significantly degraded downstream habitat and water quality. Silt and sand dominate lowland channels, while upland streams are rockier. Streams typically have lower nutrient, alkalinity, and hardness levels than Ecoregion 71. Fish assemblages are lowland in character and are rather similar to those found in Ecoregion 74, http://ecologicalregions.info/data/ky/ky_front.pdf.

3. Methods

Data were collected to characterize areas of the site in terms of habitat, including geology, hydrology, dominant plant species, and vegetation type. Specific site features are depicted in **Figure 2** for the three tracts. Photographs were taken of the bat trees, habitats and surrounding areas is provided in **Attachment 1**.

Endangered species were reviewed from the US Fish and Wildlife Service IPaC database and the State of Kentucky listing of Rare Species for the Henderson Quadrangle http://environmentonline.state.II.us:8080/pls/enf_reports/, accessed December, 2020, Attachment 2. These species as well as their preferred habitat are summarized in Table 1. The need for a clearance survey of specific species is also summarized in Table 1. Coordination with the USFWS would be required prior to site development and additional clearance surveys may be required. In the field, habitats common to the listed species were surveyed for potential presence or absence. Specifically, endangered bat species utilize trees with exfoliated bark, cracks and crevices. Where potential bat roost trees were located, a Phase I bat survey form was completed and photos taken, Attachment 3.

4. Field Survey

4.1 Site Habitats

The additional sites include three tracts. The south tract is the only tract bordered by water. Wilson Creek is located on the northeast corner of the south tract and has a narrow forested riparian area. These woods were dominated by oak timber but also exhibit hickory, hackberry, maple, sweetgum, boxelder, and sycamore trees. Wilson Creek features many vertical soil embankments between 5 and 20 feet in height. The north tract has a drainage on the southwest corner that drains to Canoe Creek.

The middle tract is a long narrow piece of land bordering the railroad. Most of the land is crop or pasture land with a narrow strip of hardwoods bordering the railway.

4.2 Vegetation

The additonal sites include primarily by crop fields, wooded areas, retention ponds, and some wetlands. The dominant tree species on the properties is hackberry (*Celtis occidentalis*), which is found on all field borders. Also present are American sycamore (*Plantanus occidentalis*), cottonwood (*Populus deltoides*), boxelder (*Acer negundo*), hickory species (*Carya sp.*), oak species (*Quercus sp.*), American elm (*Ulmus americana*) and sugar maple (*Acer saccharum*). A variety of herbaceous plants and shrubs are located in the open areas, including Johnson grass (*Sorghum halepense*), golden rod (*Solidago sp.*), fescue grass (*Festuca sp.*) and numerous annual weeds.

There are no state-protected plant species listed for the Henderson Quadrangle, and no federallyprotected plant species are potentially located near the site according to the FWS IPaC report.

4.3 Wildlife

Wildlife common to the Shawnee Hills Ecoregion include: whitetail deer (*Odocoileus virginianus*), wild turkey (*Meleagris gallopavo*), cottontail rabbit (*Sylvilagus floridanus*), gray and fox squirrels (*Sciurus* spp.), raccoon (*Procyon lotor*), skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), coyote (*Canis latrans*), and numerous reptiles, amphibians, small mammals, songbirds, raptors, and waterfowl. The site has marginal wildlife value due to the lack of natural areas and dominance of agricultural land. The Wilson and Canoe Creek riparian areas do provide a wildlife corridor and habitat for a number of animal species. Whitetail deer and a variety of birds were observed during the site survey. Protected wildlife species are discussed in the Section 5 – Results.

5. Results

5.1 Federally-Listed Threatened and Endangered Wildlife Species

The USFWS IPaC report for the subject site identifies 15 federally listed endangered or threatened wildlife species with a potential to occur in the project vicinity (**Table 1**). These include three bats (gray bat, Indiana bat, and northern long-eared bat [NLEB]), one bird (least tern), and 11 species of mussels.

The gray bat is a cave dweller year-round, but the property does not appear to have any caves present; therefore, neither roosting nor wintering habitat for this species is located on site.

According to the USFWS IPaC report, designated critical habitat for the Indiana bat is located outside of the project location, and there is no critical habitat designated for the NLEB. However, suitable spring/summer roosting and maternity habitat for the Indiana bat and NLEB potentially could occur on the site. Therefore, the AECOM field team conducted a survey for suitable bat summer roosting habitat. This habitat includes exfoliated bark, cracks, crevices, and hollows in living and dead trees that are at least 10 feet off the ground as well as flaking bark on standing dead trees.



The survey of bat habitat found 2 suitable potential roost trees one of the north tract and one on the south tract. Both trees were standing dead, one American elm and one red oak. Much of the middle and south tracts included fields bordered by forest, which is typical feeding habitat for Indiana bat and NLEB.

In addition to the bat species that might potentially be impacted by site construction, one bird – least tern, and 11 mussel species were listed in the IPaC report for the project area. Least tern is a shore bird which nests along large river banks, such as the Ohio River. The sites do not contain suitable habitat for this species. With the exception of two mussel species, clubshell and little spectaclecase, the habitat for mussels species is limited to large rivers or specific river locations indicated in **Table 1**. In the event impacts to Wilson or Canoe Creeks are planned, consultation with the USFWS is recommended.

Table 1. Federal and State Listed Threatened and Endangered Species with thePotential to Occur at or near the Additonal Sites in Henderson County, Ken-
tucky.

Common Name Scientific Name	Status Fed, State	Habitat	Clearance Survey Recommended if impacts to habitat expected**
Mammals			
Gray bat Myotis grisescens	FE, SE	Cave obligate, frequents forested areas	No
Indiana bat <i>M. sodalis</i>	FE, SE	Hibernates in caves, spring/summer maternity roosts normally under bark of standing trees	Yes
Northern long-eared bat <i>M. septentrionalis</i>	FT, NL	Hibernates in caves or mines, summer roosting under bark or in cavities of trees, rarely roosts in barns or sheds	Yes
Birds			
Least Tern, <i>Sterna antillarum</i>	FE, SE	Sand and gravel pits, agricultural fields	No
American Coot Fulica americana	NL, SE	Ponds, lakes and marshes, Requires shallow marshes for breeding	No
Bald Eagle Haliaeetus leucocephalus	NL, ST	Coastlines, rivers, and large lakes	No
Bank Swallow Riparia riparia	NL, SS	Nests on vertical banks of dirt or sand along rivers or ponds	No
Blue-Winged Teal Spatula discors	NL, ST	Shallow freshwater or brackish marshes	No
Brown Creeper Certhia americana	NL, SE	Woodlands, needs mature forest for breeding	No
Dark-Eyed Junco Junco hymalis	NL, SS	Edges of woodlands by open fields	No
Double-Crested Cormorant Phalacrocorax auritus	NL, ST	Coasts, bays, lakes, rivers	No

Common Name Scientific Name	Status Fed, State	Habitat	Clearance Survey Recommended if impacts to habitat expected**
Henslow's Sparrow Centronyx henslowii	NL, SS	Weedy fields and meadows with sparse shrubs	No
Hooded Merganser Lophodytes cucullatus	NL, ST	Wooded lakes, ponds, and rivers	No
Northern Harrier Circus hudsonius	NL, ST	Marshes, fields, or prairies	No
Northern Shoveler Spatula clypeata	NL, SE	Marshes and ponds	No
Pied-billed Grebe <i>Podilymbus</i> podiceps	NL, SE	Breeds in dense marshes with little open water	No
Red-brested Nuthatch Sitta canadensis	NL, SE	Conifer trees including spruce, fir and hemlock	No
Red-headed Woodpecker Melanerpes erythrocephalus	NL, SS	Forest edges or open woods	No
Sharp-shinned Hawk Accipiter striatus	NL, SS	Dense forest avoids open country	No
Short-eared Owl Asio flammeus	NL, SE	Prairies, marshes, dunes and tundra	No
Mussels			
Clubshell, Pleuroberna clava	FE, ST	Small to medium upland rivers with bedrock or gravel substrate and boulders	Potential
Fanshell, Cyprogenia stegaria	FE, NL	Medium to large rivers, deep sand/gravel bottoms	No
Fat Pocketbook Potamilus capax	FE	Mixed substrate of silt, mud, and sand in large rivers	No
Northern Riffleshell Epioblasma torulosa rangiana	FE	Short reaches of the Green River	No
Orangefoot Pimpleback Plethobasus cooperainus	FE	Lower Ohio River	No
Purple Cat's Paw Epioblasma obliquata obliquata	FE	Killbuck Creek, OH	No
Rabbitsfoot Quadrula cylindrica cylindrica	FT	Ohio River, KY	No
Ring Pink Obovaria retusa	FE	Green River, KY	No
Rough Pigtoe <i>Pleurobema</i> plenum	FE	Green River and Barren River, KY	No
Sheepnose Mussel Plethobasus cyphyus	FE, SE	Shallow portions of large rivers in coarse sand and gravel	No
Spectaclecase Cumberlandia monodonta	FE	Sheltered areas of firm mud in large rivers	No
Pocketbook Lampsilis ovata	NL, SE	Large rivers in coarse sand and gravel	No
Little Spectaclecase Villosa lienosa	NL, SS	Silty, clay substrates in tributary streams	Potential
Fish			
Spottail shiner, Notropis hudsonius	NL, SS	Spawn in sandy shoals, tributary streams and lakes, avoids strong currents	No
		, NL=Not Listed, S=Special Concern habitat is to be disturbed by construction	

5.2 State-Listed Threatened and Endangered Species

Twenty state-protected species were identified by KDFWR for Henderson County (Table 1). These consist of one bat, 15 birds, one fish, and three mussel species. Based on the mature hardwoods in the riparian area of the two streams of the site, the presence of habitat for the bat species is possible. If any of the habitats for bat species would be disturbed during construction, clear-ance surveys are recommended for these species, as summarized in Table 1. Habitat for all of the other state-listed species does not appear to be present, or is not present in sufficient quantity, to support the species on or adjacent to the site where it could be affected. However, if impacts to Wilson or Canoe Creeks are planned consultation with the Kentucky Department of Fish and Wildlife Resources is recommended.

5.3 Migratory Birds

A migratory bird of conservation concern (BCC) identified in the IPaC report as potentially occurring in or near the site is the red-headed woodpecker (*Melanerpes erythrocephalus*)(see **Attachment 2**). The breeding period for the red-headed woodpecker is May 10 to September 10 (USFWS 2020). This species was not observed during the May or December 2020 site visits. The IPaC report also noted that the bald eagle (*Haliaeetus leucocephalus*), while not a BCC, warrants attention based on the Bald and Golden Eagle Protection Act.

The migratory bird nesting period in Kentucky is from April 15 to July 31. This time period is critical for migratory bird reproduction. None of these species listed in Table 1 were observed during the May or December 2020 site visits.

6. Regulatory Requirements

Federal Regulations

Federal permits pertaining to endangered and threatened species may be necessary in the event that these sensitive resources cannot be avoided during the design and construction phase of the project. Consultation with the USFWS should be undertaken to ensure lack of, or minimal impact to, federally listed species. If threatened and endangered species cannot be avoided, a Section 10 incidental take permit may be required. Removal of summer roost trees for the Indiana bat and NLEB is dependent on location related to hibernacula buffers. If the site is within a hibernacula buffer, then the tree clearing dates are from November 15th to March 31st. If the site is not within a buffer, then the window is from October 15th to March 31st. If tree clearing is required, mitigation multipliers are based on habitat type and season (FWS 2016). Based on the maps of known ranges of the Indiana bat and NLEB in Kentucky, the site is potentially located in NLEB known summer roost habitat (FWS 2020) https://www.fws.gov/frankfort/indiana bat procedures.html.

Based on the presence of potential bat roost trees on the site, and location of potential NLEB summer habitat near the project area, consultation with the USFWS is required prior to any tree clearing. Mitigation for tree clearing any time of the year may be required.

The Migratory Bird Treaty Act (MTBA) prohibits taking, attempting to take, capturing, killing, selling/purchasing, possessing, transporting, and importing migratory birds, their eggs, parts, and nests, except when specifically authorized by the USFWS. Nesting periods in Kentucky for migratory birds are from April 15 to July 31. Nest habitat, particularly for the species identified on the IPaC report, was very limited within the project area.



7. References

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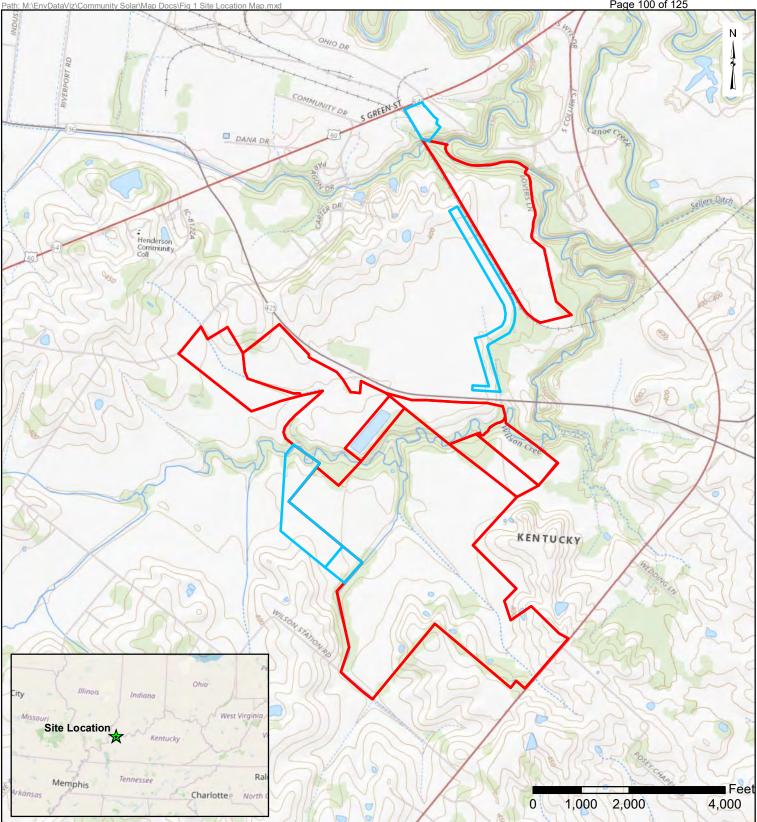
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Figures



LEGEND

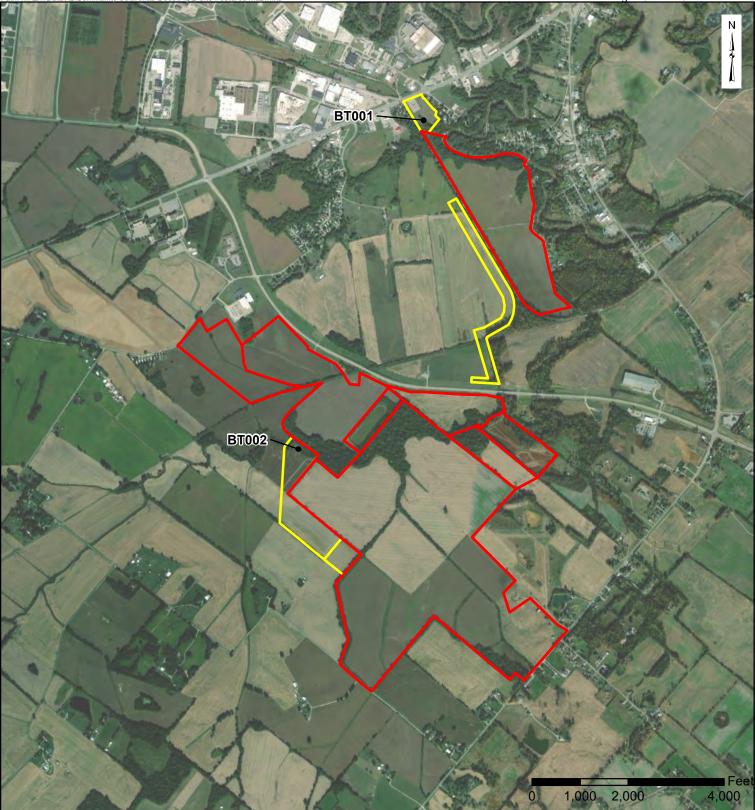
- Original Study Areas
- Additional Study Areas

SOURCE: USGS TOPOGRAPHIC BASEMAP SERVICE

Community Solar Henderson County Proposed Solar Site 3001 Wilson Station Road and 620 Lovers Lane Henderson, KY 42420

SITE LOCATION MAP





LEGEND



Original Study Areas Additional Study Areas

SOURCE: USGS TOPOGRAPHIC BASEMAP SERVICE

Community Solar Henderson County Proposed Solar Site 3001 Wilson Station Road and 620 Lovers Lane Henderson, KY 42420

Project No.: 60632959 Date: 1/5/2021

SITE FEATURES MAP



Attachment 1 – Photo Log

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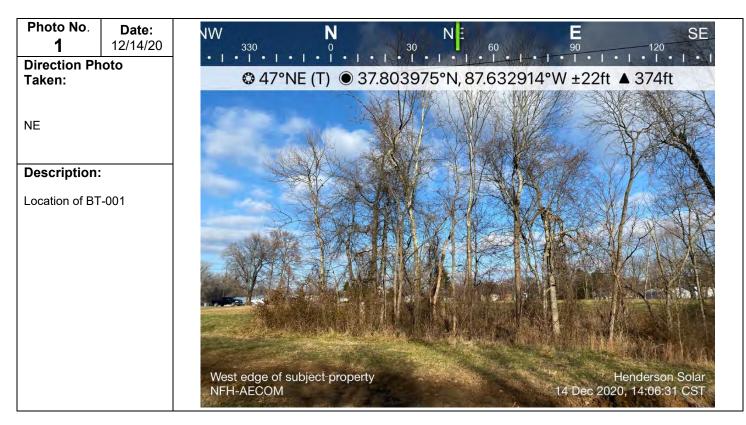


Client Name:

Henderson County Solar LLC

Site Location: Henderson Co, KY PHOTOGRAPH LOG

Project No. 60631607.2f







Client Name: Henderson County Solar LLC Site Location: Henderson Co, KY PHOTOGRAPH LOG

Project No. 60631607.2f





Attachment 2 - USFWS IPaC Report

and State Listed Species for the Henderson County **IPaC**

Exhibit 14 Attachment 14.4 Page 106 of 125 U.S. Fish & Wildlife Service

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Henderson County, Kentucky



Local office

Kentucky Ecological Services Field Office

€ (502) 695-0468
■ (502) 695-1024

J C Watts Federal Building, Room 265 330 West Broadway Frankfort, KY 40601-8670

http://www.fws.gov/frankfort/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

- 1. Draw the project location and click CONTINUE.
- 2. Click DEFINE PROJECT.
- 3. Log in (if directed to do so).
- 4. Provide a name and description for your project.
- 5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the <u>Ecological Services Program</u> of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact <u>NOAA</u> <u>Fisheries</u> for <u>species under their jurisdiction</u>.

- 1. Species listed under the <u>Endangered Species Act</u> are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the <u>listing status page</u> for more information.
- 2. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
 Gray Bat Myotis grisescens This species only needs to be considered if the following condition applies: The project area includes potential gray bat habitat. 	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6329	
 Indiana Bat Myotis sodalis This species only needs to be considered if the following condition applies: The project area includes 'potential' habitat. All activities in this location should consider possible effects to this species. 	Endangered
There is final critical habitat for this species. Your location is outside the critical habitat. <u>https://ecos.fws.gov/ecp/species/5949</u>	
 Northern Long-eared Bat Myotis septentrionalis This species only needs to be considered if the following condition applies: The specified area includes areas in which incidental take would not be prohibited under the 4(d) rule. For reporting purposes, please use the "streamlined consultation form," linked to in the "general project design guidelines" for the species. 	Threatened
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	

4/28/2020

Birds		Fage 110 01 125
NAME	STATUS	
 Least Tern Sterna antillarum This species only needs to be considered if the following condition applies: This species should be addressed if the action area includes bare open areas with sparse to no vegetation (e.g., sand and gravel pits, agricultural fields) and the action would occur during the nesting season (April - August). No critical habitat has been designated for this species. 	Endangered	
https://ecos.fws.gov/ecp/species/8505		
Clams		
NAME	STATUS	
 Clubshell Pleurobema clava This species only needs to be considered if the following condition applies: The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Green, Licking, or Ohio. 	Endangered	
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3789		
 Fanshell Cyprogenia stegaria This species only needs to be considered if the following condition applies: The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Green, Licking, Ohio, Rolling Fork Salt, or Tennessee. 	Endangered	
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4822		

 Fat Pocketbook Potamilus capax This species only needs to be considered if the following condition applies: The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Clarks, Cumberland, Green, Mississippi, Ohio, Tradewater, or Tennessee. 	Endangered
No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/2780</u>	
 Northern Riffleshell Epioblasma torulosa rangiana This species only needs to be considered if the following condition applies: The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Green, Licking, or Ohio. 	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/527	
 Orangefoot Pimpleback (pearlymussel) Plethobasus cooperianus This species only needs to be considered if the following condition applies: The species may be affected by projects that significanlty impact, directly or indirectly, the following rivers: Green, Ohio, Salt, or Tennessee. 	Endangered
No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/1132</u>	
 Purple Cat's Paw (=purple Cat's Paw Pearlymussel) Epioblasma obliquata obliquata This species only needs to be considered if the following condition applies: The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Green, Licking, or Ohio. 	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5602	

 Rabbitsfoot Quadrula cylindrica cylindrica This species only needs to be considered if the following condition applies: The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Cumberland (below the falls), Green, Ohio, Rolling Fork Salt, South Fork Kentucky, or Tennessee. 	Threatened
There is final critical habitat for this species. Your location is outside the critical habitat. <u>https://ecos.fws.gov/ecp/species/5165</u>	
 Ring Pink (mussel) Obovaria retusa This species only needs to be considered if the following condition applies: The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Cumberland (below the falls), Green, Ohio, or Tennessee. 	Endangered
No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/4128</u>	
 Rough Pigtoe Pleurobema plenum This species only needs to be considered if the following condition applies: The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Green, Licking, or Ohio. 	Endangered
No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/6894</u>	
 Sheepnose Mussel Plethobasus cyphyus This species only needs to be considered if the following condition applies: The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Green, Kentucky, Licking, Ohio, Salt, or Tennessee. 	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6903	

Endangered

Spectaclecase (mussel) Cumberlandia monodonta

This species only needs to be considered if the following condition applies:

• The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Cumberland (below the falls), Green, Little South Fork of the Cumberland, Ohio, or Tennessee.

No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/7867</u>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act^{1} and the Bald and Golden Eagle Protection Act^{2} .

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described <u>below</u>.

- 1. The <u>Migratory Birds Treaty Act</u> of 1918.
- 2. The <u>Bald and Golden Eagle Protection Act</u> of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <u>http://www.fws.gov/birds/management/managed-species/</u> <u>birds-of-conservation-concern.php</u>
- Measures for avoiding and minimizing impacts to birds <u>http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/</u>

conservation-measures.php

Nationwide conservation measures for birds
 <u>http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf</u>

The birds listed below are birds of particular concern either because they occur on the <u>USFWS Birds of Conservation Concern</u> (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ <u>below</u>. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the <u>E-bird data mapping tool</u> (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found <u>below</u>.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAMEBREEDING SEASON (IF A BREEDING
SEASON IS INDICATED FOR A BIRD ON
YOUR LIST, THE BIRD MAY BREED IN YOUR
PROJECT AREA SOMETIME WITHIN THE
TIMEFRAME SPECIFIED, WHICH IS A VERY
LIBERAL ESTIMATE OF THE DATES INSIDE
WHICH THE BIRD BREEDS ACROSS ITS
ENTIRE RANGE. "BREEDS ELSEWHERE"
INDICATES THAT THE BIRD DOES NOT
LIKELY BREED IN YOUR PROJECT AREA.)Bald Eagle Haliaeetus leucocephalus
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention
because of the Eagle Act or for potential susceptibilities in offshore areas from certainBreeds Sep 1 to Jul 31

types of development or activities.

https://ecos.fws.gov/ecp/species/1626

Red-headed Woodpecker Melanerpes erythrocephalus

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA

Breeds May 10 to Sep 10

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (

and Alaska.

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

- 1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
- 2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
- 3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (=)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

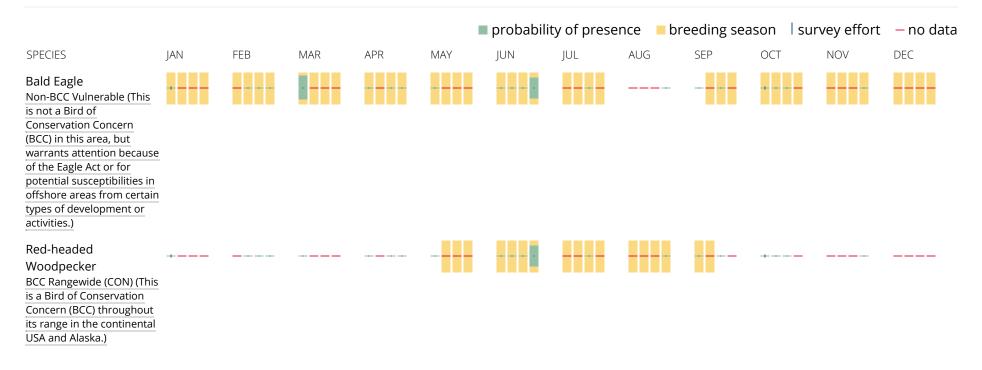
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

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Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year found. ^{Page 117} of ¹²⁵ Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. <u>Additional measures</u> and/or <u>permits</u> may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS <u>Birds of Conservation Concern (BCC)</u> and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the <u>Avian Knowledge Network (AKN</u>). The AKN data is based on a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science datasets</u> and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (<u>Eagle Act</u> requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the <u>AKN Phenology Tool</u>.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the <u>Avian Knowledge Network (AKN)</u>. This data is derived from a growing collection of <u>survey, banding, and citizen science datasets</u>.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: <u>The Cornell Lab of Ornithology All About Birds Bird Guide</u>, or (if you are unsuccessful in locating the bird of interest there), the <u>Cornell Lab of Ornithology Neotropical Birds guide</u>. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

- 1. "BCC Rangewide" birds are <u>Birds of Conservation Concern</u> (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
- 2. "BCC BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
- 3. "Non-BCC Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the <u>Eagle Act</u> requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the <u>Northeast Ocean Data Portal</u>. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the <u>NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf</u> project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the <u>Diving Bird Study</u> and the <u>nanotag studies</u> or contact <u>Caleb Spiegel</u> or <u>Pam Loring</u>.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to <u>obtain a permit</u> to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is

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simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the <u>National Wildlife Refuge</u> system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to <u>NWI wetlands</u> and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local <u>U.S. Army Corps of Engineers District</u>.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the <u>NWI map</u> to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.



Species Information

State Threatened, Endangered, and Special Concern Species observations for selected quads

Linked life history provided courtesy of NatureServe Explorer . **Records may include both recent and historical observations.** US Status Definitions Kentucky Status Definitions

List State Threatened, Endangered, and Special Concern Species observations in 1 selected quad. Selected quad is: Henderson.

Scientific Name and Life History	Common Name and Pictures	Class	Quad	US Status	KY Status	WAP	Reference
Fulica americana	American Coot	Aves	Henderson	Ν	E		Reference
Haliaeetus leucocephalus	Bald Eagle	Aves	Henderson	Ν	Т	Yes	Reference
Riparia riparia	Bank Swallow	Aves	Henderson	Ν	S	Yes	Reference
Spatula discors	Blue-winged Teal	Aves	Henderson	Ν	Т		Reference
Certhia americana	Brown Creeper	Aves	Henderson	Ν	E	Yes	Reference
Junco hyemalis	Dark-eyed Junco	Aves	Henderson	Ν	S		Reference
Phalacrocorax auritus	Double-crested Cormorant	Aves	Henderson	Ν	Т		Reference
Centronyx henslowii	Henslow's Sparrow	Aves	Henderson	Ν	S	Yes	Reference
Lophodytes cucullatus	Hooded Merganser	Aves	Henderson	N	Т	Yes	Reference
Villosa lienosa	Little Spectaclecase	Bivalvia	Henderson	N	S	Yes	Reference
Circus hudsonius	Northern Harrier	Aves	Henderson	N	Т	Yes	Reference

Myotis septentrionalis	Northern Myotis	Mammalia	Henderson	т		Attachment Page 122 o	14.4 f 1 Reference
Spatula clypeata	Northern Shoveler	Aves	Henderson	Ν	E		Reference
Podilymbus podiceps	Pied-billed Grebe	Aves	Henderson	Ν	E	Yes	Reference
Lampsilis ovata	Pocketbook	Bivalvia	Henderson	Ν	E	Yes	Reference
Sitta canadensis	Red-breasted Nuthatch	Aves	Henderson	Ν	E	Yes	Reference
Accipiter striatus	Sharp-shinned Hawk	Aves	Henderson	Ν	S	Yes	Reference
Plethobasus cyphyus	Sheepnose	Bivalvia	Henderson	E	E	Yes	Reference
Asio flammeus	Short-eared Owl	Aves	Henderson	Ν	E	Yes	Reference
Notropis hudsonius	Spottail Shiner	Actinopterygii	Henderson	Ν	S		Reference

20 species are listed.

Attachment 3 - Potential Bat Roost Tree Data Forms

	Bat	Habitat Prelimina	any Assessment		
Project Name	derson solar	Trabitat Provintina		te 2020-12-15	٦
Location Jouth Para		FH-002	County Herderson	State K	
Transmission line # (if a		·	ructures (if applicable)		4
Latitude / Longitude		63986	Surveyor K	FL	4
	10 (10) 01	05.00			
Pictures documenting	project site (pic	tures in this sectio	n only needed once for each pro	oject site)	
General picture	(s) of the potentia	al habitat (a picture	e of the forest) and the project sit	te	
Picture(s) of ad	jacent areas to pr	roject site			
Distance for d					
Pictures for document					
	trunk of the tree a	•			
		e tree looking up in			
			ding back at a distance		
A picture of the	surrounding area	including the tree			
Documentation for sp	ecific trees	/			
			d		
-		ů 广	se following table to make deter	mination)	
	of level of decay				
	1	2	erall Decay Status 3	4	
Branches	80-100%	Few-no branches	Limb stubs to none	none	
Branches Bark Tightness	80-100% 80-100% remaining	Few-no branches	If snag has most of height and \leq 30% bark, or if snag has <50% of	none <80% bark	
	80-100%		If snag has most of height and <		
Bark Tightness Height	80-100% remaining Full-broken top	30-80% remaining Broken top	If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height	<80% bark <50 % of height	
Bark Tightness Height Tree has exfoli	80-100% remaining Full-broken top ating bark 10 ft h	30-80% remaining Broken top	If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height e ground that allows for bats to	<80% bark <50 % of height roost	
Bark Tightness Height Tree has exfoli	80-100% remaining Full-broken top ating bark 10 ft h ces, cracks, or ho	30-80% remaining Broken top high or higher off th bliows 10 ft high o	If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height ne ground that allows for bats to r higher off the ground that allow	<80% bark <50 % of height roost	
Bark Tightness Height Tree has exfolic Tree has crevic The tree is expo	80-100% remaining Full-broken top ating bark 10 ft h ces, cracks, or ho osed to the sun at	30-80% remaining Broken top high or higher off th ollows 10 ft high o some point during	If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height he ground that allows for bats to r higher off the ground that allow the day	<80% bark <50 % of height roost	
Bark Tightness Height Tree has exfoli Tree has crevic The tree is expo Potential roost t	80-100% remaining Full-broken top ating bark 10 ft h ces, cracks, or ho osed to the sun at ree is within 1000	30-80% remaining Broken top high or higher off th ollows 10 ft high o some point during	If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height he ground that allows for bats to r higher off the ground that allow the day	<80% bark <50 % of height roost	
Bark Tightness Height Tree has exfoli Tree has crevic The tree is expo Potential roost t Percent solar exposure	80-100% remaining Full-broken top ating bark 10 ft h ses, cracks, or ho osed to the sun at ree is within 1000	30-80% remaining Broken top high or higher off th bllows 10 ft high o some point during b feet of forested an	If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height the ground that allows for bats to r higher off the ground that allow the day rea	<80% bark <50 % of height roost	
Bark Tightness Height Tree has exfolie Tree has crevic The tree is expo Potential roost t Percent solar exposure Roost Tree Quality:	80-100% remaining Full-broken top ating bark 10 ft h ces, cracks, or ho osed to the sun at ree is within 1000	30-80% remaining Broken top high or higher off th bllows 10 ft high o some point during feet of forested an Medium	If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height the ground that allows for bats to r higher off the ground that allow the day rea	<80% bark <50 % of height roost	5
Bark Tightness Height Tree has exfolie Tree has crevic The tree is expo Potential roost t Percent solar exposure Roost Tree Quality: DBH (inches)	80-100% remaining Full-broken top ating bark 10 ft h ces, cracks, or ho osed to the sun at ree is within 1000	30-80% remaining Broken top high or higher off th collows 10 ft high o some point during feet of forested an Medium	If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height the ground that allows for bats to r higher off the ground that allow the day rea High ecies (if known)	<80% bark <50 % of height roost v for bats to roost	5
Bark Tightness Height Tree has exfolie Tree has crevic The tree is expo Potential roost t Percent solar exposure Roost Tree Quality:	80-100% remaining Full-broken top ating bark 10 ft h ses, cracks, or ho osed to the sun at ree is within 1000	30-80% remaining Broken top high or higher off th bllows 10 ft high o some point during feet of forested an Medium	If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height the ground that allows for bats to r higher off the ground that allow the day rea	<80% bark <50 % of height roost v for bats to roost	50
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Bark Tightness Height Tree has exfolia Tree has crevic The tree is expo Potential roost t Percent solar exposure Roost Tree Quality: DBH (inches)	80-100% remaining Full-broken top ating bark 10 ft h ces, cracks, or ho osed to the sun at ree is within 1000 CO Low CO Low CO CO CO CO CO CO CO CO CO CO CO CO CO	30-80% remaining Broken top high or higher off th billows 10 ft high o some point during feet of forested an Medium Tree spe 26-50%	If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height he ground that allows for bats to r higher off the ground that allow the day rea High bcies (if known)	<80% bark <50 % of height roost v for bats to roost	50
Bark Tightness Height Tree has exfoling Tree has exfoling The tree is exposed Potential roost to Percent solar exposure Roost Tree Quality: DBH (inches)	80-100% remaining Full-broken top ating bark 10 ft h ses, cracks, or ho osed to the sun at ree is within 1000 50 % Low D-25% te (Section only n st trees within the	30-80% remaining Broken top high or higher off th billows 10 ft high o some point during feet of forested an Medium Tree spe 26-50%	If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height he ground that allows for bats to r higher off the ground that allow the day rea High bcies (if known)	<80% bark <50 % of height roost v for bats to roost	5
Bark Tightness Height Tree has exfolie Tree has crevic The tree is export Potential roost t Percent solar exposure Roost Tree Quality: DBH (inches) 30 Percent usable bark: Summary of project sit Number of potential roos	80-100% remaining Full-broken top ating bark 10 ft h ses, cracks, or ho osed to the sun at ree is within 1000 CO Low CO Low CO CO CO CO CO CO CO CO CO CO CO CO CO	30-80% remaining Broken top high or higher off th billows 10 ft high o some point during feet of forested an Medium Tree spe 26-50%	If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height he ground that allows for bats to r higher off the ground that allow the day rea High bcies (if known)	<80% bark <50 % of height roost v for bats to roost	50
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	and the second	Habitat Prelimina	and the second data	
Project Name Hende	45on Solar			Date 2020-12-14
Location Alorthern	Parcel, BT.	-NF+1-001	County HerderSor	State KY
Transmission line # (if a	applicable)	Associated St	tructures (if applicable)	
Latitude / Longitude	7.80432 ,- 9	87.63274	Surveyor N	FH
Pictures documenting	<u>i project site (</u> pic	tures in this section	on only needed once for each	project site)
General picture	e(s) of the potentia	al habitat (a picture	e of the forest) and the project	site
Picture(s) of ad	ljacent areas to pr	roject site		
Pictures for documen	ting suitability o	f snacific traas		
	trunk of the tree			
		·	to the concru	
		e tree looking up ir		
			ding back at a distance	
A picture of the	surrounding area	a including the tree)	
Documentation for sp	ecific trees			
			ad	
		•	ise following table to make del	ermination)
			rerall Decay Status	
			ciali Decay Status	
	1	2	3	4
Branches	80-100%	2 Few-no branches	Limb stubs to none	4 none
Branches Bark Tightness		-		f <80% bark
	80-100% 80-100%	Few-no branches	Limb stubs to none If snag has most of height and <u><</u> 30% bark, or if snag has <50% or	
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Bark Tightness Height Tree has exfol i	80-100% 80-100% remaining Full-broken top fating bark 10 ft h	Few-no branches 30-80% remaining Broken top nigh or higher off th	Limb stubs to none If snag has most of height and ≤ 30% bark, or if snag has <50% or height and ≥ 80% bark Broken top to 50% height ✔	f <80% bark <50 % of height to roost
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Bark Tightness Height Tree has exfol i Tree has crevi The tree is expo	80-100% 80-100% remaining Full-broken top ating bark 10 ft h ces, cracks, or he osed to the sun at	Few-no branches 30-80% remaining Broken top high or higher off th	Limb stubs to none If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height he ground that allows for bats or higher off the ground that al g the day	f <80% bark <50 % of height to roost
Bark Tightness Height Tree has exfol i Tree has crevi The tree is expo	80-100% 80-100% remaining Full-broken top fating bark 10 ft h ces, cracks, or he osed to the sun at tree is within 1000	Few-no branches 30-80% remaining Broken top nigh or higher off th ollows 10 ft high of t some point during	Limb stubs to none If snag has most of height and ≤ 30% bark, or if snag has <50% of height and ≥ 80% bark Broken top to 50% height he ground that allows for bats or higher off the ground that al g the day	f <80% bark <50 % of height to roost
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