

Exhibit F

Desktop Geotechnical

Analysis Letter

September 18, 2018

Ms. Patti Shorr
Hecate Energy Highland LLC
621 Randolph Street
Chicago, Illinois 60661
614-205-3798
PShorr@HecateEnergy.com

Re: Desktop Geotechnical Evaluation
Proposed Highland Solar Farm
State Route 138 and Highland County Road 5
Approximately 3,300 acres
Buford, Highland County, Ohio
Terracon Project No. 49187638

Dear Ms. Shorr:

Terracon Consultants, Inc. (Terracon) appreciates the opportunity to provide Hecate Energy Highland LLC with the following Desktop Geotechnical Evaluation for the above-referenced project. This project was performed in accordance with Terracon's Master Service Agreement with Hecate Energy LLC and the Task Order Agreement, updated on August 31, 2018. This letter report provides a preliminary evaluation of subsurface conditions beneath the Project based on a review of readily available desktop resources and information.

Existing Site Conditions

Based on review of aerial photography, the site consists of predominately open farm land with some wooded areas. A few farm houses and storage structure are visible on the site. An on-site reconnaissance should be performed in conjunction with future geotechnical investigation to locate and map surface disruptions.

Regional Geology

According to online public data from the Ohio Geological survey and the USGS Geologic map of Ohio, the subsurface conditions at the Project consist of poorly drained soils formed in loess and Illinon-age glacial till averaging 30 feet thick, over Lower Silurian (Dayton Limestone, Noland Formation, and Brassfield Undivided) and Upper Ordovician (Drakes Formation and Waynesville Formation) shale and limestone bedrock.

Geotechnical and geologic considerations

Geotechnical and geologic considerations such as flood inundation, shallow groundwater, erosion, landslides, debris flows, rock fall, shrink swell soils, collapse-prone soils, sinkholes, earthquake shaking, fault rupture, liquefaction, seiches, can be of major concern when evaluating a site.



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Based on review of geologic maps and the geographical location of the property, it is our opinion that geologic hazards such as those listed pose little risk to the site. Relevant considerations for this site are discussed below.

Seismic Hazards

The project is in an area of the U.S. having low seismic activity. The Project is assumed to classify as a Seismic Site Class D based upon the 2012/15 IBC, Section 1613.5.6.

Groundwater

The NRCS soil survey data suggests that the depth to groundwater for the mapped soil units at the site typically varies from ½ to greater than 6½ feet below the ground surface. Depth to groundwater is affected by several factors and a subsurface investigation, together with a groundwater monitoring program, would be necessary to establish these depths.

Shrink-Swell and Collapsible Soils

Due to physical and chemical properties of some clay soil types, swelling and shrinking can occur with changes in water content. Sand and silt soil types are susceptible to collapse with changes in water content. These hazards are not easily identifiable without field investigations and engineering lab testing. The NRCS identifies liquid limit and plasticity index for each soil type at the site. Based on our experience and relationships between liquid limit and plasticity index shown in the attached table, the site soils are expected to have a moderate to high potential for shrink-swell and a low potential for collapse.

Frost Heave Potential

The NRCS soil survey indicates no frost action is anticipated. Based upon our experience, NRCS data, the climate at the site location, and frost depth mapping, the onsite soils are considered to have moderate to high potential for frost heave.

Soil Corrosivity

The NRCS mapped site soils generally have a low to high potential for corrosion to concrete and a moderate to high potential for corrosion to unprotected steel. Until site-specific testing and evaluation is performed by a corrosion engineer, we recommend that for planning purposes the onsite soils be considered severely corrosive to concrete and buried ferrous metals.

Excavation

Based upon the local geology and soil survey data, the restrictive layer is generally anticipated to be encountered at depths ranging from 0.75 to depths greater than 6.5 feet at the site. The soil survey data lists shallow excavation ratings of "somewhat limited" to "very limited" for the mapped soil units at the site, based primarily upon the soils being unstable excavation walls and depth to the saturated zone.

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**Soil Survey Mapping**Information about key features of the surficial soil units mapped by NRCS are summarized below.¹**Summary of Site Soil Types**

Summary of Site Soil Types											
Map Unit Symbol	Map Unit Name	Approx. Acres	Percent of Area	Building Site Development		Soil Qualities and Features				Water Features	
				Corrosion of Concrete ¹	Corrosion of Steel ¹	Frost Action ¹	Liquid Limit ²	Plasticity Index ²	Depth to Restrictive Feature (Feet)	Range of Depth to Water Table (feet)	Frequency of Ponding ³
Highland County											
Ag	Algiers silt loam	135.7	1.8%	Low	High	High	28.6	7.4	>6.67	0.5-1.5	None
AtB	Atlas silt loam, 2 to 6 percent slopes	30.4	0.4%	Mod	High	Mod	52.1	25.8	>6.67	0.5-1.5	None
AtB2	Atlas silt loam, 2 to 6 percent slopes, moderately eroded	58.1	0.8%	Mod	High	Mod	52.1	25.8	>6.67	0.5-1.5	None
AtC2	Atlas silt loam, 6 to 12 percent slopes, moderately eroded	35.1	0.5%	Mod	High	Mod	52.1	25.8	>6.67	0.5-1.5	None
Cle1A	Clermont silt loam, 0 to 1 percent slopes	3,864.6	50.4%	High	High	High	36.1	13.9	>6.67	0-0.5	Frequent
Ee	Eel silt loam, 0 to 2 percent slopes, occasionally flooded	78.4	1.0%	Low	High	Mod	34.1	16.1	>6.67	3-6	None
FcA	Fitchville silt loam, 0 to 2 percent slopes	17.1	0.2%	Mod	High	High	35.3	11.5	>6.67	0-1	None
HkC2	Hickory silt loam, 6 to 12 percent slopes, moderately eroded	29.4	0.4%	Mod	Mod	High	34.8	19.8	>6.67	>6.67	None
HyC3	Hickory clay loam, 6 to 12 percent slopes, severely eroded	7.8	0.1%	Mod	Mod	High	36.0	22.5	>6.67	>6.67	None
HyD3	Hickory clay loam, 12 to 18 percent slopes, severely eroded	72.6	0.9%	Mod	Mod	High	36.0	22.5	>6.67	>6.67	None
JoR1B1	Jonesboro-Rossmoyne silt loams, 2 to 6 percent slopes	173.7	2.3%	Mod	High	High	35.9	11.9	>6.67	1.5-3	None

¹ United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey, <http://websoilsurvey.sc.egov.usda.gov/>

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**Summary of Site Soil Types**

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				Corrosion of Concrete ¹	Corrosion of Steel ¹	Frost Action ¹	Liquid Limit ²	Plasticity Index ²	Depth to Restrictive Feature (Feet)	Range of Depth to Water Table (feet)	Frequency of Ponding ³
JoR1B2	Jonesboro silt loams, 2 to 6 percent slopes, eroded	109.6	1.4%	Mod	High	High	42.2	17.9	>6.67	1.5-3	None
	Rossmoyne silt loams, 2 to 6 percent slopes, eroded								1.5-2.5	1.5-2.5	None
RpC2	Rossmoyne silt loam, 6 to 12 percent slopes, moderately eroded	211.2	2.8%	Mod	High	Mod	34.3	10.5	1.5-2.5	3-6	None
RsC3	Rossmoyne silty clay loam, 6 to 12 percent slopes, severely eroded	8.7	0.1%	Mod	High	Mod	34.3	14.0	1.5-2.5	3-6	None
Sn	Sloan silt loam	34.0	0.4%	Low	High	High	30.2	10.0	>6.67	0-1	None
WsS1A1	Westboro silt loams, 0 to 2 percent slopes	2,463.7	32.1%	High	High	High	36.7	12.8	>6.67	0.5-1.5	None
	Schaffer silt loams, 0 to 2 percent slopes								0.75-2.6	0.5-1.5	None
WsS1B1	Westboro silt loams, 2 to 4 percent slopes	232.2	3%	Mod	High	High	36.4	11.6	> 6.67	0.5-1.5	None
	Schaffer silt loams, 2 to 4 percent slopes								2-3	0.5-1.5	None

1. Rating level low, moderate (mod), or high.

2. Values shown are weighted averages at depths between 0 and 5 feet.

3. Flooding and ponding are identified separately in NRCS system.

The following factors may affect the foundation design for the development of the site as a solar plant:

- Presence of soils corrosive to unprotected concrete and steel
- Areas of shallow groundwater

Based on the information reviewed, the site is suitable for development of photovoltaic solar electric arrays provided the above factors are accounted for in the design and cost estimating for the proposed project.

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To evaluate the concerns above and to qualify the types and extent of soils present at the Project, a design-level geotechnical evaluation, including exploratory borings and/or tests pits in conjunction with laboratory testing, should be performed in order to characterize the subsurface conditions and evaluate engineering qualities. Subsurface explorations for the solar arrays may need to be performed to depths of at least 20 feet below ground surface (bgs) depending on the information obtained during field work. The responsible geotechnical engineering consultant should determine the exploration frequency. Sampling should be performed for laboratory determination for soil index, strength parameters and for corrosivity and resistivity values. The design-level evaluation should include a final report that includes parameters for foundation design and detailed discussion and engineering analyses for load testing of posts.

This scope of services is completely preliminary in nature. It is performed solely from a review of available public information. Normally, interviews are not conducted, regulatory agency personnel are not contacted or consulted, a site reconnaissance is not performed, samples are not obtained, and no form of site or laboratory testing is completed. Therefore, the term "Desktop" strictly applies. However, Terracon may contact the local agency having jurisdiction concerning land use and permitting schedule questions. This should be considered a screening exercise to aid in the site selection process only. No warranty, expressed or implied, is made and use of this report is subject to the terms, including reliance, expressed in the contractual agreement between the client and Terracon.

Terracon appreciates the opportunity to provide this letter report to Hecate Energy Highland LLC. Should you have questions, please feel free to contact us.

Sincerely,

Terracon Consultants, Inc.

Sushanta Bhusal
Senior Staff Geotechnical Engineer

Emily Kosmalski
Environmental Group Manager

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Summary: Application Exhibit F electronically filed by Ms. Karen A. Winters on behalf of Hecate Energy Highland LLC