



Memorandum

To: VT Real Estate Holdings 1 LLC - Shaftsbury
Solar
Project File

Date: May 1, 2023

Project #: 58071.01

From: Stephanie Wyman, PE, Civil Engineer

Re: Section 248 Primary Agricultural Soils Assessment

Executive Summary

- VHB has utilized existing NRCS soils mapping to identify soils considered at Primary Agricultural Soils ("PAS") within the Project footprint.
- Of the 106.2 acres within the Project limits of work, approximately 59 acres are considered PAS.
- There will be 20.3 acres of direct impact to PAS, including for staging, trenching, equipment location, access roads and stormwater treatment practices.
- Indirect impacts, comprised of 38.7 acres, will include unintended impacts from construction traffic and incidental occurrences.
- All PAS impacts will be fully mitigated following Agency of Agriculture, Food, and Markets ("AAFM") guidelines, so VHB concludes that the Project will not result in any reduction in the agricultural potential of the PAS, as further described herein.

Introduction

At the request of Petitioner, VT Real Estate Holdings 1 LLC (to be referred to as "Shaftsbury Solar"), VHB has prepared this technical memorandum concerning the Shaftsbury Solar Project ("SSP" or "Project"), a proposed 20 MW (AC) solar electric generation facility that will occupy 83 (+/-) acres on four parcels of land totaling 182 (+/-) acres. The Project site is located off Holy Smoke Road in Shaftsbury, Vermont (Refer to Exhibit SS-RW-2). The content of this technical memorandum presents the results of an assessment of the Project as it relates to the following criteria under 30 V.S.A. § 248(b)(5): Impacts to Primary Agricultural Soils as defined in 10 V.S.A. § 6001. The Vermont Public Utility Commission ("PUC") will apply this criterion in its review of Shaftsbury Solar's request for a Certificate of Public Good ("CPG").

Project Description

The proposed Shaftsbury Solar Project is described in further detail in the pre-filed testimony of Mr. Reed Wills.

The Project will consist of ground-mounted, fixed-tilt solar modules mounted on metal racks arranged in rows running east to west in three distinct areas, or "sub-arrays." The entire Project will be enclosed by perimeter fencing. Shaftsbury Solar has received concept approval from VTrans to utilize a temporary access from US-7 for heavy duty vehicles during construction, and an existing access from Holy Smoke Road to service light duty vehicles during construction and Project operations.

In addition to the solar arrays, the Project will install a Project substation that will interconnect to a new adjacent Green Mountain Power (“GMP”) substation (to be constructed by Shaftsbury Solar as part of the Project), which in turn will interconnect with GMP’s existing 46 kV transmission line on the eastern portion of the site.

To install the Project arrays and other equipment, Shaftsbury Solar will relocate a segment of a municipal waterline owned and operated by the North Bennington Water Department. In addition, the Project will involve construction of new onsite gravel access roads, temporary laydown yards, operational stormwater treatment systems, and landscape berms and plantings.

The Project footprint is largely sited in existing open fields, but tree clearing of field hedgerows and along some forest margins will be necessary to facilitate construction, reduce impacts from shading, and provide areas for stormwater treatment. The Project will involve earth disturbance from tree stump grubbing, as well as limited grading for construction of various Project elements.

Methods

Under 10 V.S.A. § 6001(15), a Primary Agricultural Soil (“PAS”) is defined as:

(A) An important farmland soils map unit that the Natural Resources Conservation Service of the U.S. Department of Agriculture (“NRCS”) has identified and determined to have a rating of prime, statewide, or local importance, unless the (Act 250) District Commission determines that the soils within the unit have lost their agricultural potential. In determining that soils within an important farmland soils map unit have lost their agricultural potential, the Commission shall consider:

(i) impacts to the soils relevant to the agricultural potential of the soil from previously constructed improvements;

(ii) the presence on the soils of a Class I or Class II wetland under chapter 37 of this title;

(iii) the existence of topographic or physical barriers that reduce the accessibility of the rated soils so as to cause their isolation and that cannot reasonably be overcome; and

(iv) other factors relevant to the agricultural potential of the soils, on a site-specific basis, as found by the Commission after considering the recommendation, if any, of the Secretary of Agriculture, Food and Markets.

(B) Soils on the project tract that the District Commission finds to be of agricultural importance, due to their present or recent use for agricultural activities and that have not been identified by the NRCS as important farmland soil map units.

VHB’s review is limited to the NRCS soil map unit designations, where PAS soils are defined as those soils with a prime agricultural soil rating of 1 (most desirable) through 7 (least desirable) with some soils with a rating of 8 included. Soils of statewide importance have an agricultural value of 7 or less, and soils of local importance consist of selected soil types with an agricultural value of 8 or less. VHB conducted a review of the NRCS soil map data to determine if PAS were present on the Project site and prepared a site plan (see Sheet C2.00 of Exhibit SS-SW-2) that depicts the following:

- Soil unit names, boundaries, and agricultural ratings for Bennington County from the NRCS;

- Proposed impact activity type;
- Primary agricultural soils, provided from the Vermont Center for Geographic Information ("VCGI") and based on NRCS soil data; and,
- 2019 aerial imagery provided by VCGI depicting the existing site conditions.

The Project area, for purpose of this assessment, includes the following components:

- Array (defined by the perimeter fence);
- Project and GMP Substations;
- Access drive;
- Temporary construction access drive;
- Temporary construction staging area;
- Proposed landscaping berms and planting areas;
- Proposed underground power runs;
- Equipment pad locations; and
- Stormwater treatment practices.
- Total Project limits of work ("LOW") = 106.2 acres (±) out of 182 (±) acres within the four parcels

Results

67.5 acres (±) of the Project's 182-acre (±) parcel are mapped as PAS. Soils present within the Project area defined above include the following, which are classified by the NRCS as Prime or Statewide importance, and would therefore meet the PAS definition:

- Stockbridge loam, 2 to 8 percent slopes (Prime, agricultural value 1),
- Stockbridge loam, 8 to 15 percent slopes (Statewide, agricultural value 5),
- Georgia loam, 3 to 8 percent slopes (Prime, agricultural value 3),
- Georgia loam, 8 to 15 percent slopes (Statewide, agricultural value 7),

The Project includes a total of 59 acres of PAS within the limits of work. The PAS map provided in Attachment 1 shows areas of prime agricultural soils within the limits of work. Impacts to PAS fall into two categories:

- (i) Indirect impacts are areas within the Project area LOW which are not intended to be impacted but may be by construction traffic or other incidental operations. The overall potential indirect impacts within the Project limits of work will be 38.7 acres.
- (ii) Direct impacts include known areas of excavation or other work described below. Direct impacts have been further broken down into two categories, temporary and permanent. Temporary direct impacts are those which will be restored at the end of construction. Permanent direct impacts are impacts during the life of the project. Temporary and permanent direct impacts to PAS are described in the bullet points below.

As reflected in Table 1 – PAS Direct Impact Matrix, temporary direct impacts to PAS at the Project site will total approximately 20.3 acres that would be restored following construction, which would include the following elements:

- Staging Area: During construction, approximately one foot of topsoil will be temporarily removed to facilitate a stabilized surface for material staging during construction.

- **Trenching:** Temporary impacts during construction include approximately four-foot-wide trenches within the array site to install underground power runs, as well as approximately six-foot-wide trenches for the relocation of the municipal water line.
- **Temporary Sediment Traps:** During construction, eight temporary sediment traps and associated drainage conveyance will be installed in addition to perimeter controls for erosion and sediment control. Once construction is complete and final stabilization achieved, these sediment traps will be removed and restored to their original condition.

The following Project elements will involve direct impacts for the life of the Project. These soils will be stockpiled on-site consistent with AAFM guidelines and will be restored upon Project decommissioning, as further described in the Mitigation Measures section below ¹:

- **Access Road:** The new access road extending from Holy Smoke Road is proposed to be constructed with a minimum of 18" of gravel material with geotextile fabric. Grading along the sides of the road and installation of culverts is also necessary for drainage.
- **Equipment Locations:** Equipment pads will be installed for transformer and vault/oil containment.
- **Stormwater Treatment:** Four gravel wetlands will be constructed for stormwater treatment of new impervious surfaces.
- **Grading & Soil Stockpiles:** The remaining impacts are associated with the necessary grading for road drainage, substation pad, vegetation removal, and PAS stockpiles/landscaping berms.

Table 1. Prime Agricultural Soils Direct Impacts Matrix.

Impact Type	Direct Impact (acres)
Temporary During Construction	20.3
During Life of Project	18.7

Mitigation Measures

As the Project will involve the direct impacts to PAS, as noted above, during the duration of the Project's operations, consistent with AAFM guidelines that have been applied at solar projects throughout Vermont, the following mitigation measures will be incorporated to avoid a loss in the potential of on-site soils to support or contribute to an economically viable or commercial agricultural operation:

1. Any topsoil necessarily stripped from the staging area during construction as well as soils disturbed from trenching will be placed in designated stockpile locations and restored in accordance with the AAFM Act 250 Procedure: Reclamation of Vermont Agricultural Soils ("AAFM Procedure") and as necessary per best management practices for erosion prevention and sediment control ("EPSC"), including application of a permanent stabilization seed mix per an approved construction stormwater discharge permit authorization.

¹ Plantings will be installed in designated planting areas that will likely involve some excavation for installation of the plant material, which is not included in proposed Project impacts above.

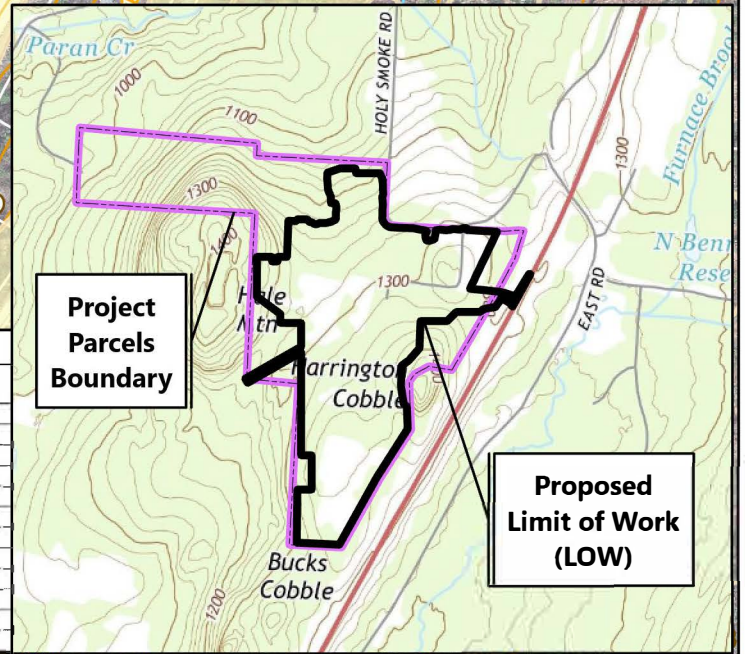
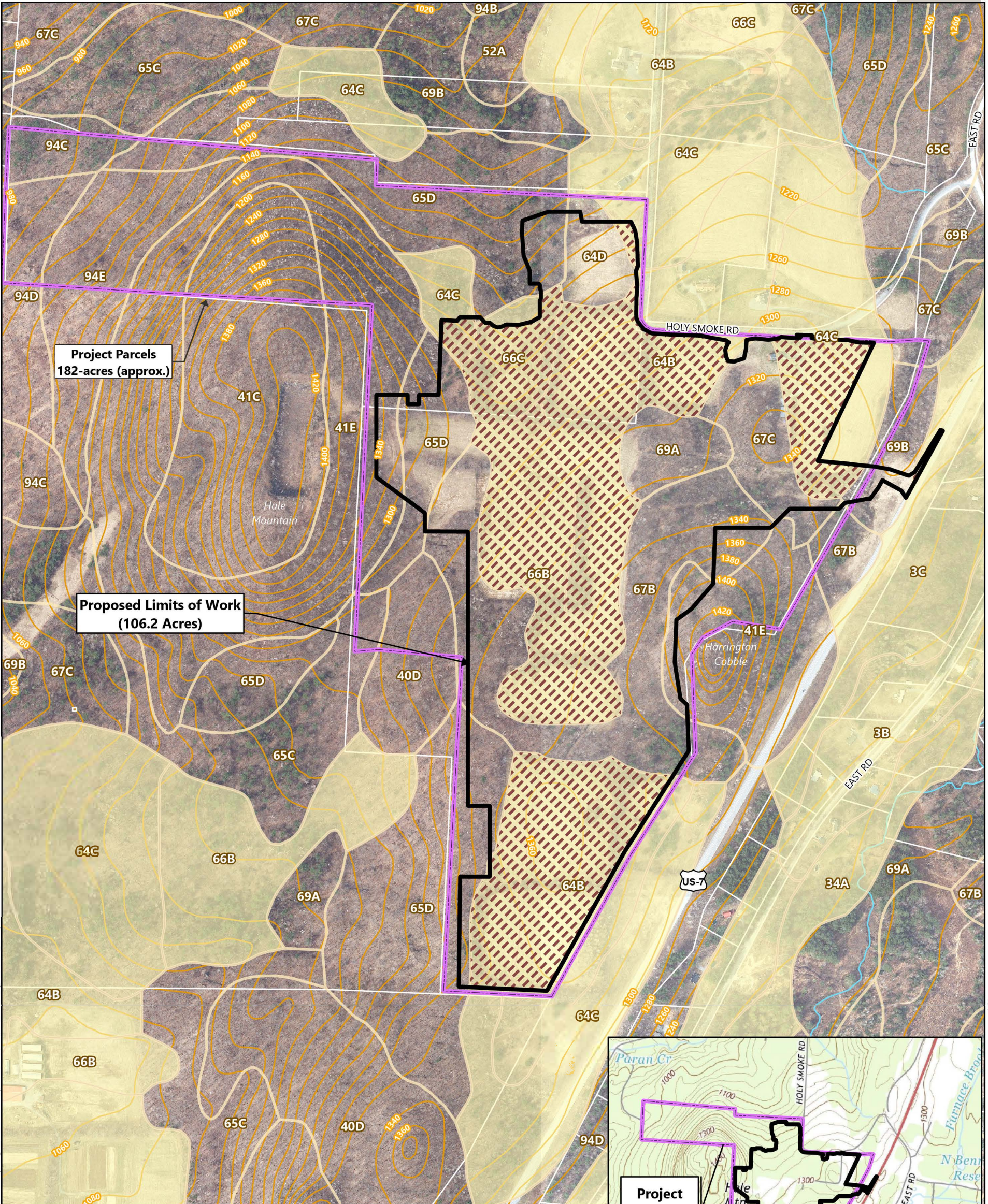
2. The Project will adhere to the requirements of a decommissioning plan, to be submitted with the petition filing, which will include requirements to restore PAS impacted by the Project to pre-construction location and condition and restore any soil that may be indirectly compacted as a result of the Project.
3. PAS excavated from the equipment pad location and access road locations will be stockpiled for the life of the Project by soil type with soil horizon segregation in reverse order of excavation in accordance with the AAFM Procedure. Stockpiled PAS soils will be segregated from any non-PAS soil or other stockpiled material.
4. To mitigate against potential PAS compaction due to the Project, upon removal of Project elements at decommissioning, the areas of Project within PAS that are currently used for agriculture will be tilled with a subsoiler to alleviate any potential soil compaction.
5. The Project will perform pre-construction soil/bulk density sampling as well as reclamation bulk density sampling and compaction mitigation as necessary.

Conclusion

Given the above, it is VHB's conclusion that the impacts to PAS due to Project construction and operation have been adequately addressed. Impacted PAS will be stockpiled and restored after construction or at the time the Project is decommissioned, as the case may be. Under the PUC's decommissioning rules, all of the Project infrastructure will be removed from the site and the site will be restored to its pre-Project condition to the extent feasible, ensuring the preservation of agricultural soils over the long-term.

Attachment

Attachment 1 – PAS Map



NRCS Soil Summary for Limit of Work (LOW, April 2023)

Soil Abbreviation	Soil Map Unit	Vermont Farmland Classification	Prime Ag. Soil Ranking	Erodibility Ranking	Forest Soil Rating	Area (acres)
3C	Copake gravelly fine sandy loam, 8 to 15 percent slopes	5	Statewide	Potentially highly erodible	5	0.1
41E	Galway-Farmington complex, 25 to 50 percent slopes, very rocky	11	NPSL	Highly erodible	11	2.9
64B	Stockbridge loam, 2 to 8 percent slopes	1	Prime	Potentially highly erodible	1	30.1
64C	Stockbridge loam, 8 to 15 percent slopes	5	Statewide	Highly erodible	5	10.2
64D	Stockbridge loam, 15 to 25 percent slopes	8	NPSL	Highly erodible	8	3.1
65B	Stockbridge loam, 15 to 25 percent slopes, very stony	9	NPSL	Highly erodible	9	9.0
66B	Georgia loam, 3 to 8 percent slopes	3	Prime	Potentially highly erodible	3	14.0
66C	Georgia loam, 8 to 15 percent slopes	7	Statewide	Highly erodible	7	4.8
67B	Georgia loam, 3 to 8 percent slopes, very stony	9	NPSL	Potentially highly erodible	9	20.8
67C	Georgia loam, 8 to 15 percent slopes, very stony	9	NPSL	Highly erodible	9	6.3
69A	Massena silt loam, 0 to 3 percent slopes, very stony	9	NPSL	Not highly erodible	9	4.2
69B	Massena silt loam, 3 to 8 percent slopes, very stony	9	NPSL	Potentially highly erodible	9	0.8



VT Real Estate Holdings 1 LLC - Shaftsbury Solar | Shaftsbury, Vermont

- Legend
- Proposed Limits of Work (LOW) (VHB, April 2023)
 - Impacted Primary Agricultural Soils (NRCS/ VCGI)
 - NRCS Soil Boundary (NRCS/ VCGI)
 - Prime Agricultural Soils (NRCS/VCGI)
 - VHD Stream (VCGI)
 - VHD Waterbody (VCGI)
 - Parcel Boundary (VCGI)
 - Project Parcels (VCGI)
 - 20 ft. Contour (VCGI)

Primary Agricultural Soils (PAS) Map

Sources:
Background Imagery by VCGI (2022)
ANR (Vermont Agency of Natural Resources - Various Dates)
FWD (Vermont Fish and Wildlife Department - Various Dates)
NRCS (Natural Resources Conservation Service - Various Dates)
VCGI (Vermont Center for Geographic Information - Various Dates)
VTrans (Vermont Agency of Transportation - 2022)
VHB - 2018-2023