Cover Letter

CEPSOLAR
COMMONWEALTH ENERGY PARTNERS

Albemarle County
Community Development
401 McIntire Road, North Wing
Charlottesville, VA 22902

CEP Solar, LLC
2202 W. Broad St, Suite 200
Tel: 443-642-1280
Email: rob.propes@cepsolar.com

TO: Albemarle County Community Development
FROM: Turkey Knob Solar Farm, LLC

Turkey Knob Solar Farm, LLC ("The Applicant") is pleased to present the following Special Exception request on behalf of Turkey Knob Solar Farm, LLC. The Special Exception request is associated with two development requirements listed in the County Zoning Ordinance § 5.1.66 Energy Facility for a by-right solar project. Specifically, we are requesting exceptions to the following requirements:

i.) § 5.1.66.A.16 to allow an energy facility to disturb more than ten acres in a forest block as identified in the Comprehensive Plan/Biodiversity Action Plan and

ii.) § 5.1.66.A.17 to allow an energy facility to disturb more than ten acres of prime farmland as determined by the United States Department of Agriculture's Natural Resources Conservation Service.

The information used to identify the subject property as a small forest block and the data relied upon by the US Department of Agriculture's Natural Resources Conservation Service to designate areas of prime farmland is outdated and has not been verified through field investigations. We engaged Timmons Group to evaluate the subject property to determine whether the site could be characterized as a small forest block and whether the soils meet the criteria for prime farmland. The results of the field study and laboratory analysis are presented in this application.

If the Planning Staff and Board of Supervisors concur with the empirical evidence presented, we look forward to partnering with Albemarle County to develop one of the first, by-right solar facilities in the County. While the footprint of the proposed by-right solar facility would be small, it will nevertheless generate significant environmental and economic benefits for the citizens of Albemarle County.

If you have questions or require additional information, please do not hesitate to contact us.

Sincerely,

Rob Propes
Rob.Propes@CEPSolar.com
443-642-1280

Project Narrative

Supplement to Application for Special Exception Request

Project Narrative -Table of Contents

1.0 Introduction

Turkey Knob Solar Farm, LLC ("Applicant") is seeking approval of two Special Exceptions per § 5.1.a of the Albemarle County Zoning Ordinance development requirements associated with by-right solar energy facilities: 1) § 5.1.66.A.16 which is the requirement to not disturb more than ten (10) acres in the aggregate of forest blocks, as identified in the Comprehensive Plan/Biodiversity Action Plan; and 2) § 5.1.66.A.17 which is the requirement not to disturb more than ten (10) acres of prime farmland. The ordinance grants the Board of Supervisors the ability to grant a waiver to both of these requirements. In this application, we demonstrate that: 1) the parcel should not be classified as a small forest block per the Comprehensive Plan/Biodiversity Action Plan since the remaining forested areas on the site no longer meet the requirements for listing as a small forest block; and 2) portions of the parcel currently identified as prime farmland by the U.S. Department of Agriculture's Natural Resources Conservation Service should not be classified as such based on empirical analysis of the soils.

2.0 Existing Conditions

The subject property (parcel 10500-00-00-12400) is approximately 200.5 acres located in southeastern Albemarle County, adjacent to Buck Island Road. It is zoned Rural Areas (RA) and is currently undeveloped. Timber was harvested in November 2021 and has not been replanted. Pictures of the site are included in *Exhibit 5*, as well as in the Prime Farmland and Forest Block Assessment report drafted by Timmons Group (*Exhibit 3*). The subject property contains several environmental features, including delineated wetlands and streams, corresponding buffer areas, and a 100-year floodplain, each as shown on the Conceptual Site Plan, *Exhibit 1*.

3.0 Proposed Special Exceptions

3.1 Small Forest Block Special Exception § 5.1.66.A.16

Pursuant to § 5.1.a the Board of Supervisors may modify or waive any such requirement of Section 5 upon a finding that:

1. *Such requirement would not forward the purposes of this chapter or otherwise serve the public health, safety, or welfare; or*
2. *that a modified regulation would satisfy the purposes of this chapter to at least an equivalent degree as the specified requirement*

Per the attached *Exhibit 1*, entitled "Conceptual Site Plan", prepared by Timmons Group, a by-right solar energy facility is proposed to be developed on the property. The Albemarle County Biodiversity Action Plan ("Biodiversity Plan"), dated June 2018, lists four characteristics that were used to describe and assess and ultimately determine forested habitat which include: 1. Edge and interior habitat; 2. Size of habitat areas; 3.

Shape of habitat areas; and 4. Connectivity among areas of habitat. The Biodiversity Plan identified the subject property as a "small forest block". A small forest block is defined as land that contains from 10 acres to 99 acres of interior forest. This designation was applied prior to the timber being harvested by the present landowner in 2021. The Biodiversity Plan identified forest blocks using two datasets, one of which was dated 2009. The Biodiversity Plan notes on p. 9, "the size of a habitat area is generally considered the single most important factor in determining its conservation value". Timmons Group (Timmons) was engaged to conduct a field survey in October 2025. Timmons identified 9.5 acres remaining of mature, fragmented forested area located in narrow corridors within swales and drainage pathways which no longer include edge habitat and all of the identified mature areas are located outside of the area proposed for the solar facility as shown on the Forest Type Overlay Map, *Exhibit 2*. The Biodiversity Plan emphasizes the connectivity of forest areas to support wildlife populations. With the absence of edge habitat, the reduction in size of the forested areas, the reduced size of the forested area, and the absence of a contiguous forested area the subject property no longer possesses the characteristics that support its designation as a small forest block in the Biodiversity Plan and therefore waiving this requirement would not forward the purposes of this chapter or otherwise serve the public health, safety, or welfare.

While the subject property does not meet the standards that were used to identify small forest block areas in the Biodiversity Plan, it can be developed in a manner that attracts and enhances the biodiversity of flora and fauna. The by-right solar facility will be confined to 21 fenced acres, with approximately 2.2 acres associated with the access road, as well as additional acreage for any supplemental vegetative buffering that may be required. The buffer areas located around the solar facility, the wetlands, and streams will consist of open space, vegetative buffers, and pollinator friendly habitat. These features will help prevent further erosion from occurring on the site, and offer habitat to a variety of birds, insects and small mammals. As discussed in the Timmons report, the quality and size of the current forested areas is diminished and has the potential to be improved by developing the solar array in accordance with the county's solar ordinance.

3.2 Prime Farmland Special Exception § 5.1.66.A.17

Pursuant to § 5.1.a the Board of Supervisors may modify or waive any such requirement of Section 5 upon a finding that:

1. *Such requirement would not forward the purposes of this chapter or otherwise serve the public health, safety, or welfare;*
2. *or that a modified regulation would satisfy the purposes of this chapter to at least an equivalent degree as the specified requirement*

As shown in *Exhibit 4*, the subject property includes six (6) non-contiguous areas of prime farmland, totaling 35.1 acres. These areas were identified as prime farmland by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS). This designation was not based on any visual field surveys or soil analysis, but rather relies upon a desktop analysis of slopes, pattern of drainage and kinds of crops planted on a site. The NRCS constructs maps of major land resource areas that share common characteristics related to

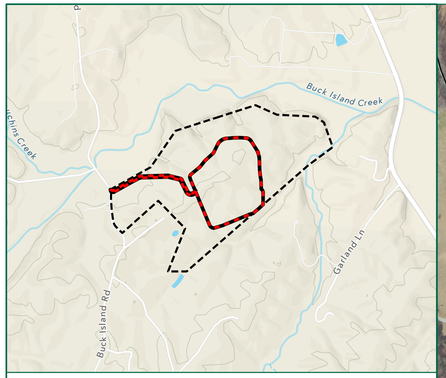
physiology, geology, climate, water resources, soils, and land uses. In the absence of soil samples, conclusions are drawn to predict the likelihood that prime farmland soils exist at one location because it shares common characteristics of areas where prime farmland has been identified.

To ground-truth the areas designated as prime farmland by the NRCS, the Applicant engaged Timmons Group to conduct a soils analysis of these areas. Using the criteria outlined in the Title 7 Code of Federal Regulations (7 CFR) Part 657 to evaluate the pH level of the soils and permeability, Timmons obtained 19 soil samples from six boring located across the subject property in areas designated as prime farmland. The soil borings were advanced to a depth of 40 inches. The pH level of the soil samples were evaluated by Waypoint Analytical in Richmond, Virginia. Four infiltration tests were conducted on site to a depth of 20 inches. This test evaluated the rate at which water drained through the bore hole over time.

Based on the field investigation and lab results Timmons concluded that the soils designated as prime farmland within NRCS Web Soil Survey mapping do not meet the qualifications of prime farmland as defined in 7 CFR Part 657 and therefore waiving this requirement would not forward the purposes of this chapter or otherwise serve the public health, safety, or welfare. Timmons' conclusions and lab results are included in *Exhibit 3*.

Exhibits

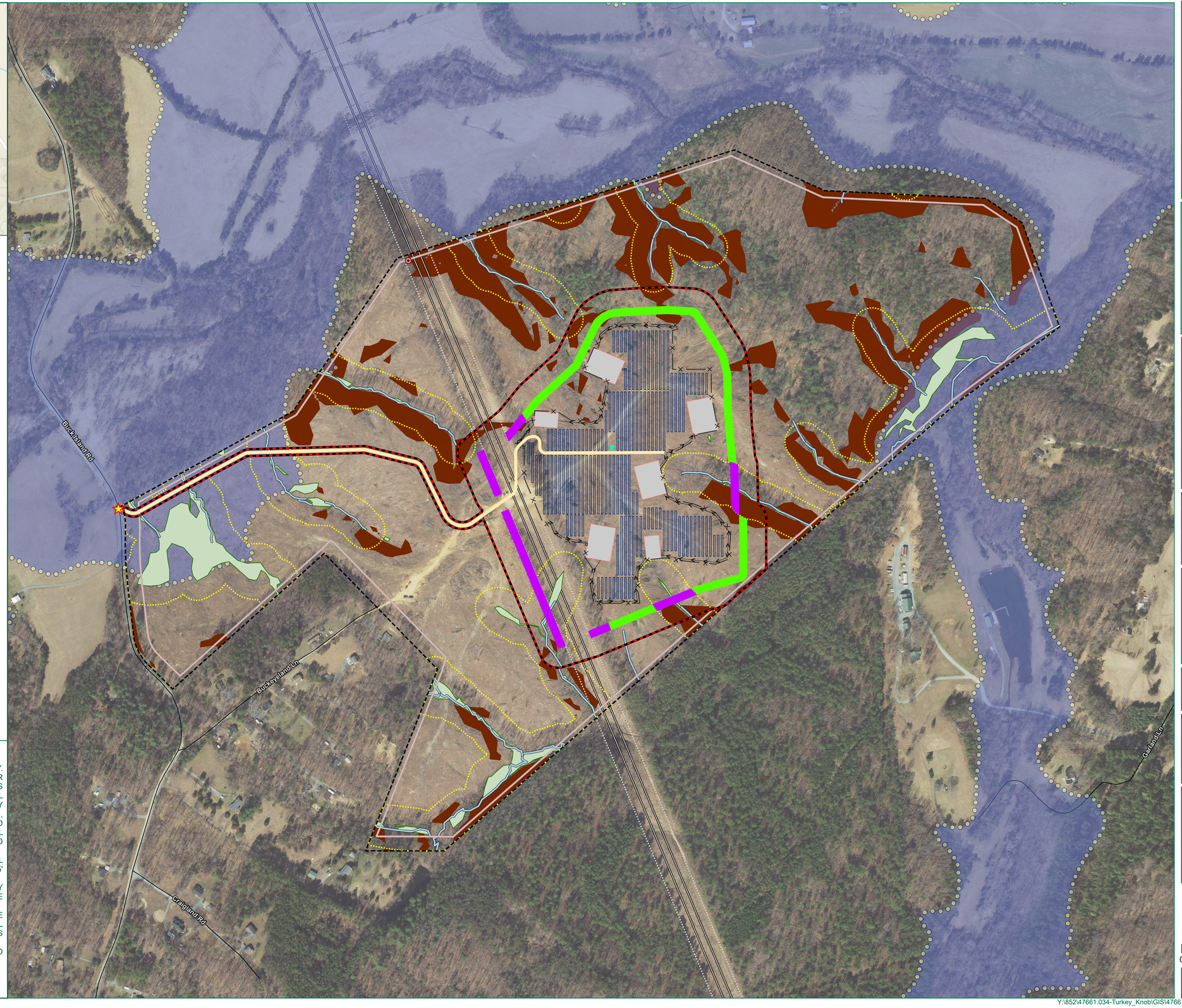
Exhibit 1 - Conceptual Site Plan



Legend

- Project Limits - 53.5 Acres
- Parcel Limits - 200.5 Acres
- Property Setbacks (see notes for details)
- Entrance
- Point of Interconnection
- Electric Transmission Lines
- Delineated Streams
- Preliminary Ditch
- Solar Panels
- Fence - 21 Acres
- Inverter
- Internal Road
- Preliminary Stormwater Basins
- Proposed Vegetative Buffer
- Retained Vegetative Buffer
- Delineated Wetlands
- FEMA Flood Zone
- Riparian Buffer Setback - 100'
- Transmission Line Easement
- Steep Slopes Overlay

NOTES:
1. PROJECT LIMITS FROM SURVEY.
2. PRELIMINARY LAYOUT IS FOR CONCEPTUAL PURPOSES ONLY. NOT FOR CONSTRUCTION. THE LAYOUT IS BEING SUBMITTED FOR LAND USE APPROVAL PURPOSES ONLY. THE MATERIALS PROVIDED WITHIN ARE PROVIDED TO ILLUSTRATE A GENERAL SITE LAYOUT AND FEASIBILITY OF THE SOLAR ENERGY FACILITY ON THE SUBJECT PROPERTY. NO ELECTRICAL DESIGN, ENGINEERING, OR TECHNICAL SPECIFICATIONS ARE PROVIDED OR IMPLIED AS PART OF THIS SUBMISSION. FINAL ELECTRICAL SYSTEM DESIGN WILL BE DEVELOPED BY QUALIFIED PROFESSIONALS AT A LATER STAGE IN DEVELOPMENT.
3. SETBACKS FROM ALBEMARLE COUNTY ORDINANCE. ALL PROJECT IMPROVEMENTS ARE SETBACK 75' FROM THE FRONT, 35' FROM THE REAR, AND 25' FROM THE SIDES.
4. WETLANDS AND STREAMS HAVE BEEN DELINEATED BY TIMMONS GROUP AND ARE PENDING CONFIRMATION FROM THE ACOE.
5. WATER PROTECTION ORDINANCE BUFFERS ARE FROM THE ALBEMARLE COUNTY ORDINANCE AND ARE 100' FROM ALL PERENNIAL OR INTERMITTENT STREAMS AND CONTIGUOUS WETLANDS.
6. FLOOD ZONE DATA FROM FEMA'S NATIONAL FLOOD HAZARD LAYER.
7. STEEP SLOPE DATA FROM ALBEMARLE COUNTY GIS.
8. TRANSMISSION LINE DATA FROM ESRI.
9. AERIAL IMAGERY FROM VGIN.



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2201 W Broad St, Suite 200
Richmond, VA 23220

PROJECT NAME & LOCATION
TURKEY KNOB SOLAR
ALBEMARLE COUNTY - VIRGINIA

DATE 11/24/2025
PROJECT NUMBER 47661.034
PROJECT NAME TURKEY KNOB SOLAR
DESIGNED BY / DRAWN BY J. STICKLEY

NOTES

REVISIONS

#	MM/DD/YY	DESCRIPTION

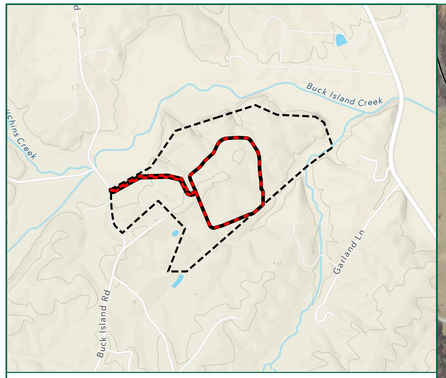
DRAWING DESCRIPTION
PRELIMINARY SITE PLAN

SCALE (FEET)
0 250 500
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H: 1" = 250'	1

Y:\852\47661.034-Turkey_Knob\GIS\47661.034-CUP\47661.034-CUP.aprx

Exhibit 2 – Forest Block Overlay Map



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- Steep Slopes Overlay

Forest Type

- Early-Successional
- Mid-Successional
- Mature
- Timbered Area

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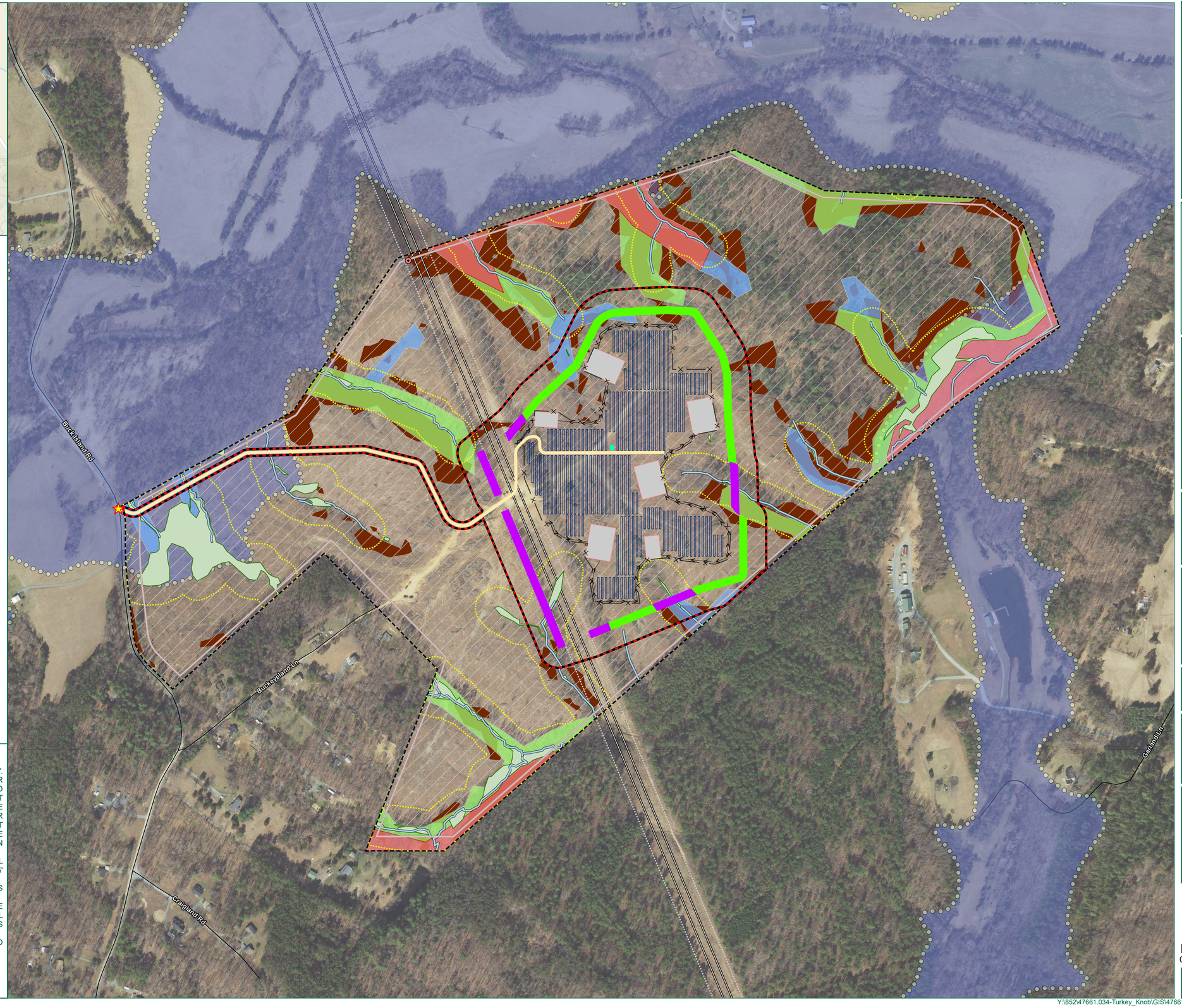

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Exhibit 3 - Prime Farmland & Forest Block Assessment

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November 7, 2025

CEP Solar, LLC
2201 West Broad Street, Suite 200
Richmond, VA 23220

Re: Prime Farmland Soil Evaluation and Forest Block Assessment
Turkey Knob Solar
Albemarle County, Virginia

Dear CEP Solar,

A field investigation was performed by Timmons Group on October 28 and 30, 2025 to evaluate soils within prime farmland and assess conditions for an onsite forest block within the Turkey Knob Solar project boundaries in Albemarle County, VA. Six (6) soil borings were completed within the areas depicted as prime farmland within Natural Resource Conservation Service (NRCS) Web Soil Survey mapping to evaluate for the presence of a seasonal high-water table (SHWT) and restrictive layers, collect samples, and determine feasibility of infiltration. Locations for the borings are included in Figure 1: Infiltration Test and Borehole Location Map.

Background Information

The purpose of this assessment was to investigate areas depicted as prime farmland within NRCS Web Soil Survey mapping and inspect current site conditions to assess its performance as a forest block at the Turkey Knob Solar site (Site). The Site is located off Buckeyeland Lane approximately 7 miles southeast of Charlottesville, Virginia.

Preparatory desktop analysis was conducted for the Site prior to field investigation. Preliminary evaluation utilized the NRCS Web Soil Survey desktop application to identify the existing soil series within the project boundaries. Out of the 14 soil series identified, four were depicted as prime farmland: Meadowville silt loam, 2 to 7 percent slopes (1B); Danripple loam, 2 to 7 percent slopes (53B); Buffstat silt loam, 2 to 7 percent slopes (62B); and Littlejoe silt loam, 2 to 7 percent slopes (80B). A full description of the soil series is included as Appendix A: Soil Series Information.

Desktop soil evaluation suggested that the native soils depicted as prime farmland are moderately well drained (1B) to well drained (53B, 62B, 80B) with depths to water tables of approximately 24 to 42 inches (1B) and over 80 inches (53B, 62B, 80B). The native soils have a hydrologic soil group rating of “C” (1B) and “B” (53B, 62B, 80B). The 1B, 62B, and 80B soil series are described as having a very low to high capacity to transmit water in the most limiting layer (K_{SAT} 0.00 – 1.98 in/hr), and the 53B series are described as having a moderately high to high capacity to transmit water in the most limiting layer (K_{SAT} 0.57 – 1.98 in/hr).

According to the Virginia Department of Conservation and Recreation (DCR), the forest conservation values (FCV) indicate high to outstanding forest in the northeastern half of the Site and average to very high forest in the southwestern half of the Site (see Figure 2: DCR Forest Conservation Values Map). The FCV model was designed by the Virginia Department of Forestry to identify the highest priority forests for conservation in Virginia and uses six components:

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forested blocks, forest management potential, connectivity, watershed integrity, threat of conversion, and significant forest communities and diminished tree species.

The Albemarle County Biodiversity Action Plan (BAP) defines a large forest block as "forests containing 100 acres or more of interior forest." Forest blocks were identified and mapped using 2009 land cover data. The plan shows the site does not fall within any mapped large forest blocks (see Figure 3: Ranking the Conservation Value of Large Forest Blocks Map) and was mapped as a small forest block based on 2009 land cover data (see Figure 4: Forest Blocks and Tree Cover in Albemarle County Map). BAP identifies geographic areas of focus as areas that "stand out as having significant conservation value"; these areas "should be a focus of conservation efforts during the next five years." The Site does not fall under any conservation focus areas, as seen on Figure 5: Conservation Focus Area – Rivanna River Corridor Map. According to the current landowner, forested areas onsite were timbered in November 2021.

Field Investigation – Prime Farmland

The prime farmland soil evaluation was compared to the criteria outlined in the Title 7 Code of Federal Regulations (7 CFR) Part 657. The specifications require that "the soils have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches (1 meter) or in the root zone if the root zone is less than 40 inches deep" and "have a permeability rate of at least 0.06 inch (0.15 cm) per hour in the upper 20 inches (50 cm)".

Four infiltration tests were conducted to determine saturated hydraulic conductivity (K_{SAT}) and infiltration rates in representative prime farmland soils, including one in 53B, one in 62B, and two in 80B. All were conducted at 20 inches below ground surface (BGS). Soil boring profiles and seasonal high-water table estimates were collected for each boring location. SHWT was estimated by observing soil profiles with low chroma matrix colors and redoximorphic concentrations characteristic of anaerobic conditions. The K_{SAT} results and SHWT depths can be found in Table 1: Boring SHWT and Infiltration Rates. The full K_{SAT} data can be found in Appendix B: Soil Infiltration Glover Sheets, and the full soil descriptions can be found in Appendix C: Soil Boring Profiles and SHWT Estimates.

Table 1: Boring SHWT and Infiltration Rates

Boring Name	SHWT (inches BGS)	Infiltration Rate (in/hr)
BH-1B	>35	N/A
BH-53B	0	N/A
IF-53B	14	0.05
BH-62B-1	>32	N/A
BH-62B-2	>27	N/A
IF-62B	>20	0.01
BH-80B-1	>40	N/A
IF-80B-1	>20	0.02
BH-80B-2	>40	N/A
IF-80B-2	>20	0.39

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19 total samples were taken from prime farmland soils in all horizons within a depth of 40 inches or in the root zones in cases of auger refusal shallower than 40 inches. BH-1B, BH-62B-1, and BH-62B-2 were not sampled to 40 inches due to auger refusal from root-restrictive saprolite. These samples were sent to Waypoint Analytical to determine the pH of each horizon. The results can be found in Table 2: Soil Sample pH. The full report can be found in Appendix D: Soil Analysis Report.

Table 2: Soil Sample pH

Boring Name	Horizon Depth (inches BGS)	pH
BH-1B	0-7	4.7
	7-11	4.8
	11-35	5.0
BH-53B	0-8	4.4
	8-19	5.0
	19-33	5.2
	33-40	5.2
BH-62B-1	0-4	5.1
	4-13	4.9
	13-21	5.0
	21-32	5.3
BH-62B-2	0-9	4.8
	9-27	4.7
BH-80B-1	0-5	4.6
	5-13	4.7
	13-40	5
BH-80B-2	0-8	4.5
	8-15	4.9
	15-40	5.3

Field Investigation – Forest Block

Current mature forested areas extend to the edge of the project boundaries from neighboring properties and follow the floodplain of larger perennial streams onsite. These habitats include *Acer rubrum* (red maple) trees and saplings, *Quercus alba* (white oak) trees, and *Carpinus caroliniana* (American hornbeam) trees with a moderate understory stratum dominated by ferns. Tributaries of the larger perennial streams onsite are surrounded by early- to mid-successional forests that are impacted by the clearing of surrounding forests four years ago. The vegetation in the mid-successional forests includes white oak trees, saplings, and shrubs; red maple trees and saplings; and *Liriodendron tulipifera* (tulip poplar) trees and saplings. These forests have a denser understory stratum dominated by woody vines and ferns. Early-successional habitats include tulip poplar, American hornbeam, and red maple saplings and shrubs. These forests have a dense understory dominated by *Rubus pensilvanicus* (Pennsylvania blackberry). All other areas were timbered four years ago and are dominated by red maple, white oak, and tulip poplar shrubs with a dense Pennsylvania blackberry understory. See Appendix E: Forest Block Assessment Photo Log for representative photographs. The Site consists primarily of timbered areas, with a total acreage of 166.42 acres. Mature forests take up 9.50 acres, mid-successional forests occupy

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18.18 acres, and early-successional forests hold 6.39 acres. See Figure 6: Forest Types Map for locations and acreage of the different forest types.

Conclusion

Based on the results of the field investigation, it is Timmons Group's professional opinion that the soil series depicted as prime farmland within NRCS Web Soil Survey mapping do not meet the qualifications of prime farmland as defined in 7 CFR Part 657. Two infiltration tests were run within soil series 80B (IF-80B-1 and IF-80B-2), one approximately 30 feet from a dirt road onsite (IF-80B-1) and one on the edge of the soil series boundary (IF-80B-2). While the test conducted at IF-80B-1 resulted in an infiltration rate of 0.02 inches per hour, IF-80B-2 had an infiltration rate of 0.39 inches per hour. The high infiltration rate observed at IF-80B-2 is believed to be an anomaly, as the majority of this soil unit has been compacted due to timbering and the construction of a logging road and associated laydown yards. This infiltration rate result is inconsistent with site observations and not representative of the soil unit. Consequently, soil series 80B is excluded from classification as prime farmland. All other series investigated had an infiltration rate of less than 0.06 inches per hour. In addition, series 53B had a horizon with a pH less than 4.5.

Following the extensive clearing of forests across the majority of the site, DCR's map of forest conservations values, along with forest block maps in Albemarle County's BAP, are outdated and do not reflect current conditions. The site is now dominated by timbered areas; remaining forest stands are limited to narrow corridors within swales and drainage pathways that convey runoff offsite, reflecting a fragmented pattern of regrowth rather than intact forest habitat. It is Timmons Group's professional opinion that the 24.57 combined acres of early- and mid-successional forested areas onsite are not mature enough to perform as a forest block. The mature forests onsite must exceed 10 acres of interior forest to qualify for a small forest block, as defined on Figure 4. The mature forests onsite are fragmented and only have a combined acreage of 9.50; therefore, no forest blocks are present onsite.

Please feel free to contact Taryn Payne at taryn.payne@timmons.com or 804-200-6377 if you need any additional information.

Sincerely,
Timmons Group

Madison Norris, WPIT
Environmental Scientist I

Taryn Payne, PWD, PSW, ISA-CA
Project Manager

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Enclosure
CC:

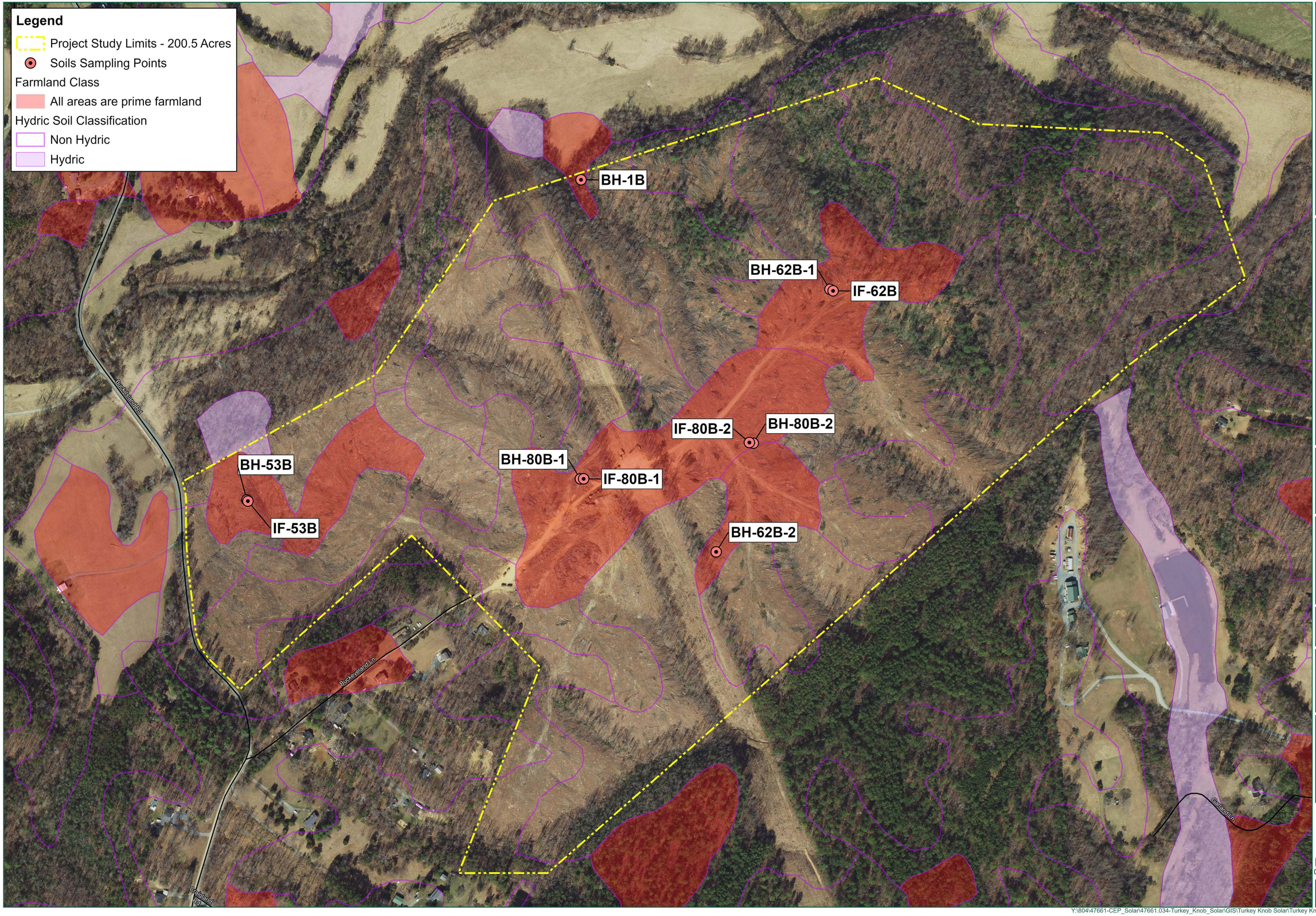
- Taryn Payen, PWD, PWS, ISA-CA, Timmons Group
- Jillian Stickley, Timmons Group

FIGURES

APPENDICES

FIGURES

Figure 1: Infiltration Test and Borehole Location Map



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PROJECT NAME & LOCATION
TURKEY KNOB SOLAR
ALBEMARLE COUNTY, VIRGINIA

DATE 10/03/2025
PROJECT NUMBER 47661.034
PROJECT NAME Turkey Knob Solar
DESIGNED BY / DRAWN BY B. HARDY

NOTES:
Project Limits are approximate.
Soils data from SSURGO.
Aerial imagery from VGIN.

REVISIONS

#	MM/DD/YY	DESCRIPTION

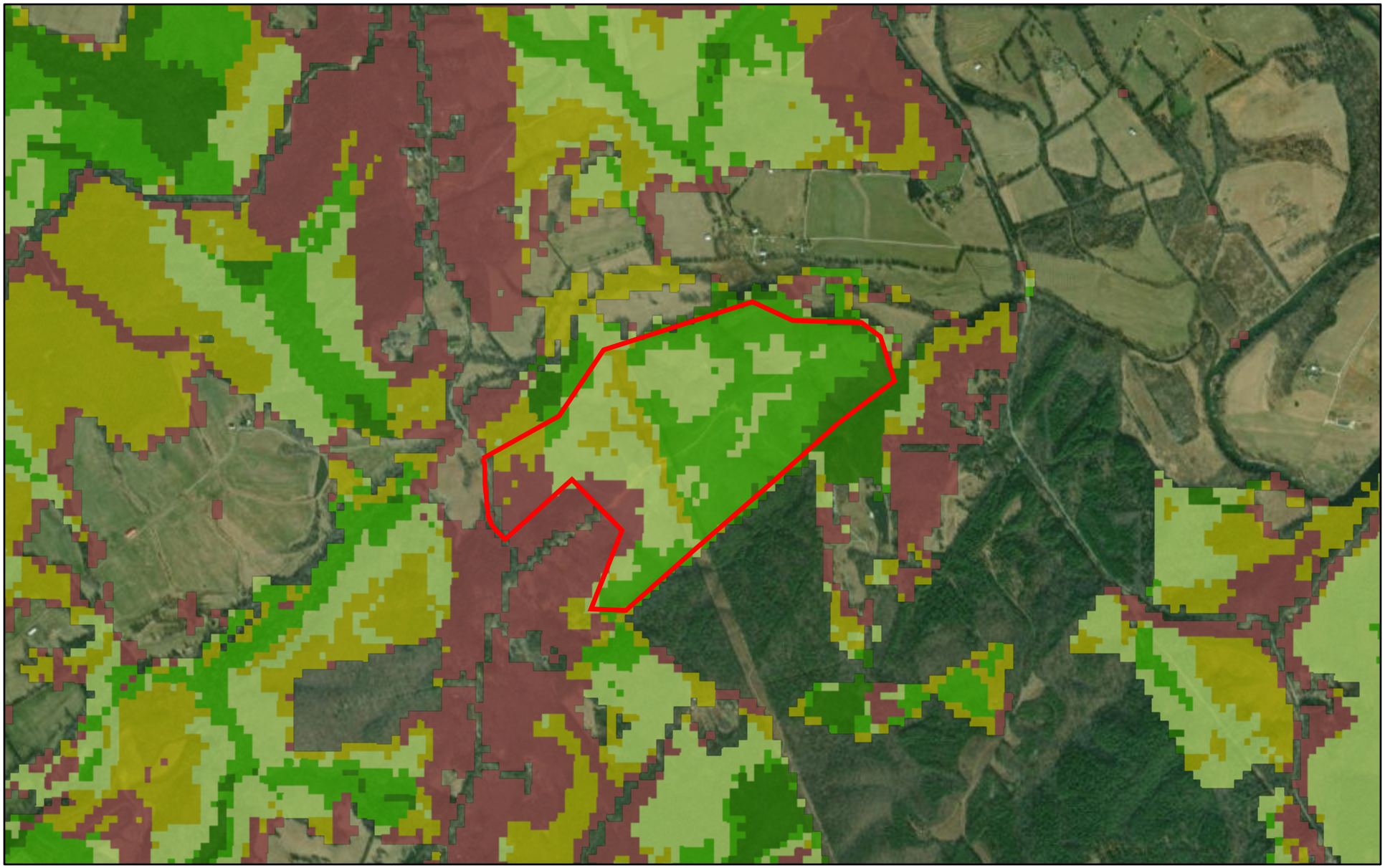
DRAWING DESCRIPTION
SOIL SAMPLING MAP

SCALE (FEET)
0 200 400
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
1" = 200'	1

Y:\804\47661-CEP_Solar\47661.034-Turkey_Knob_Solar\GIS\Turkey Knob Solar\Turkey Knob Solar.aprx \\ FIGURE 3 - EIM

Figure 2: DCR Forest Conservation Values Map



November 3, 2025

Forest Conservation Values

5: Outstanding

4: Very High

3: High

2: Moderate

1: Average

Approximate Project Limits

1:24,921

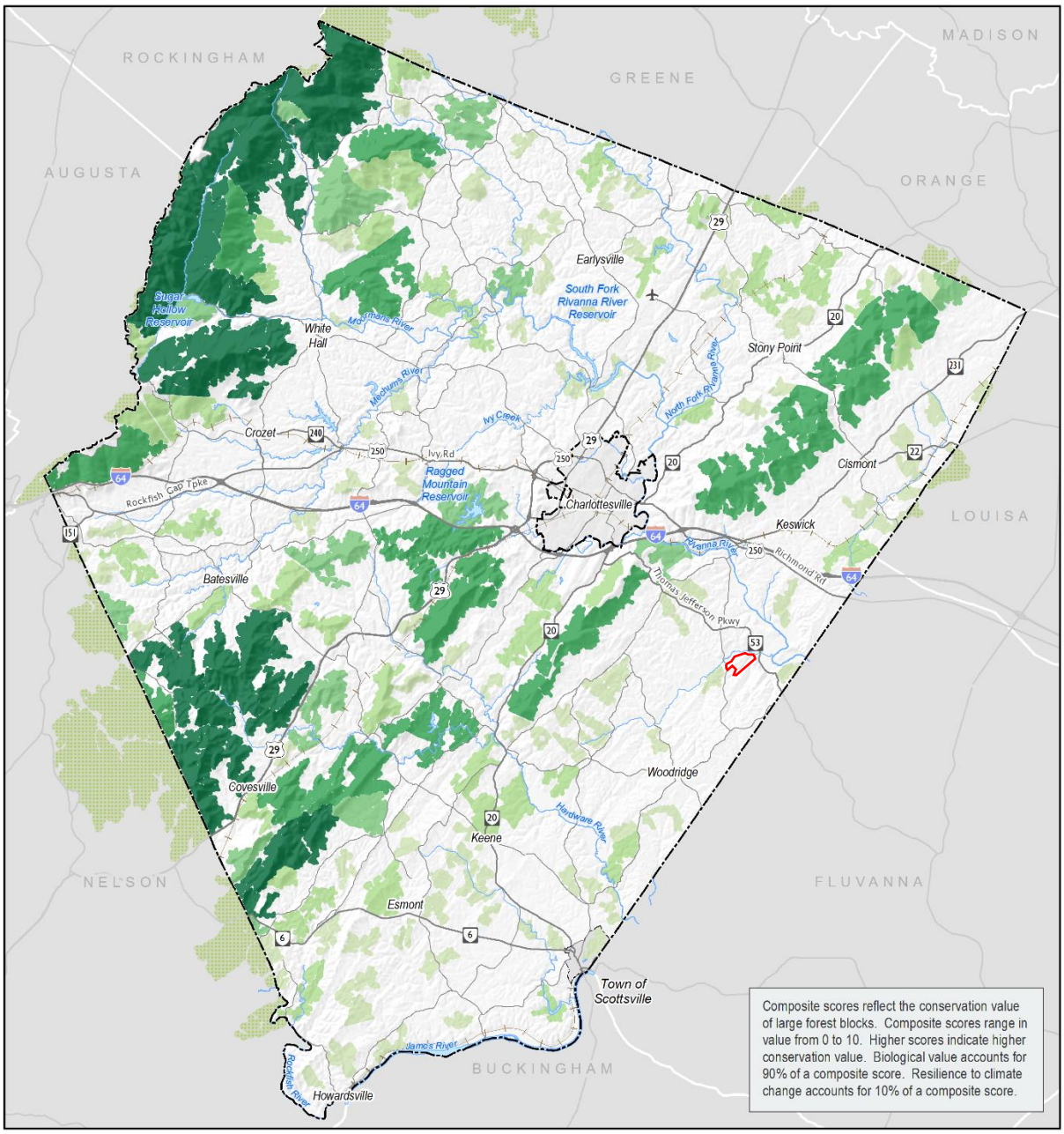
0 0.15 0.3 0.6 mi

0 0.28 0.55 1.1 km

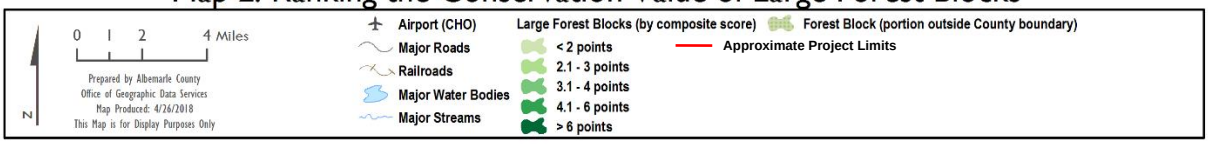
Vantor

This map is based off the FCV model and is not indicative of current site conditions

Figure 3: Ranking the Conservation Value of Large Forest Blocks Map

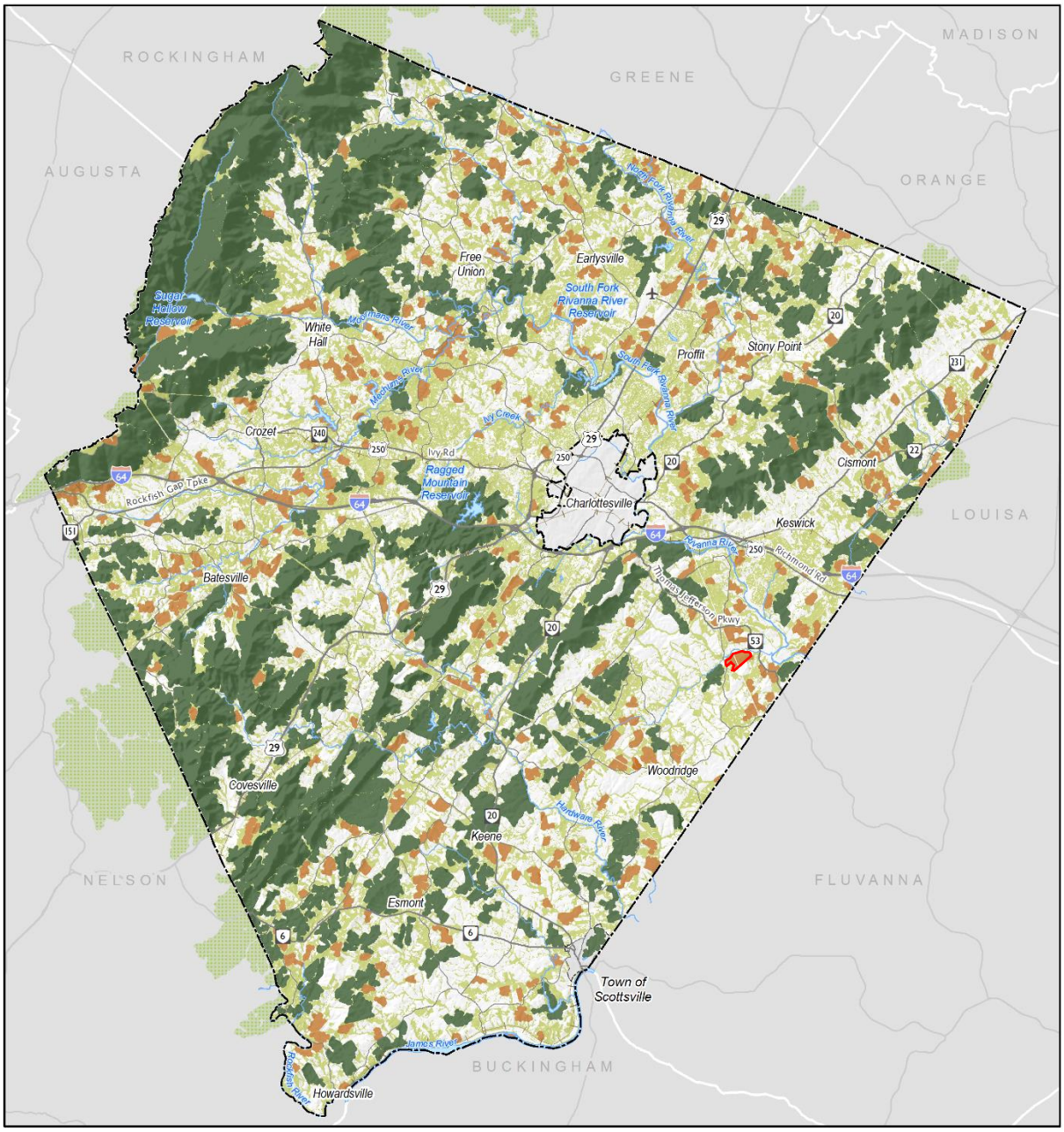


Map 2: Ranking the Conservation Value of Large Forest Blocks

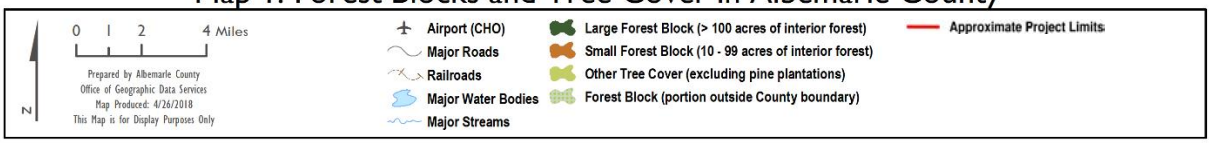


Map 2 illustrates the composite scores of large forest blocks (blocks containing 100 or more acres of interior forest). Forest blocks were identified using 2009 land cover data.

Figure 4: Forest Blocks and Tree Cover in Albemarle County Map

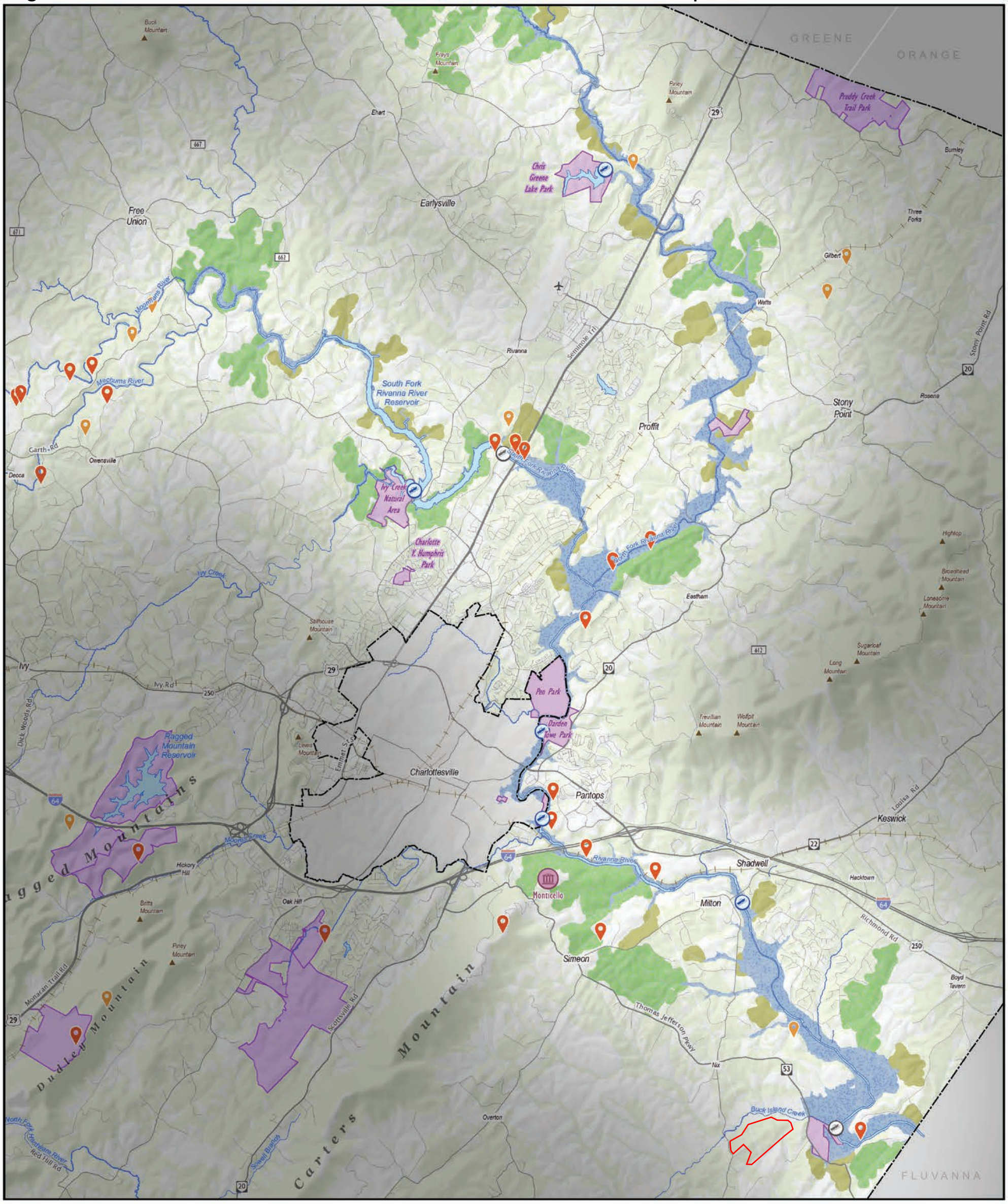


Map 1: Forest Blocks and Tree Cover in Albemarle County



Map 1 illustrates forested areas and tree cover in Albemarle County based on 2009 land cover data. Pine plantations were not included as forest or tree cover in this analysis.

Figure 5: Conservation Focus Area - Rivanna River Corridor Map



Map 7: Conservation Focus Area - Rivanna River Corridor

Map 7 provides a detailed view of the Rivanna River Corridor in Albemarle County, a conservation focus area.

Figure 6: Forest Types Map

Y:\804\47661-CEP_Solar\47661.034-Turkey_Knob_Solar\GIS\Turkey Knob Solar\Turkey Knob Solar.aprx \\ FOREST TYPES

APPENDIX A
SOIL SERIES INFORMATION

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Albemarle County, Virginia

October 27, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

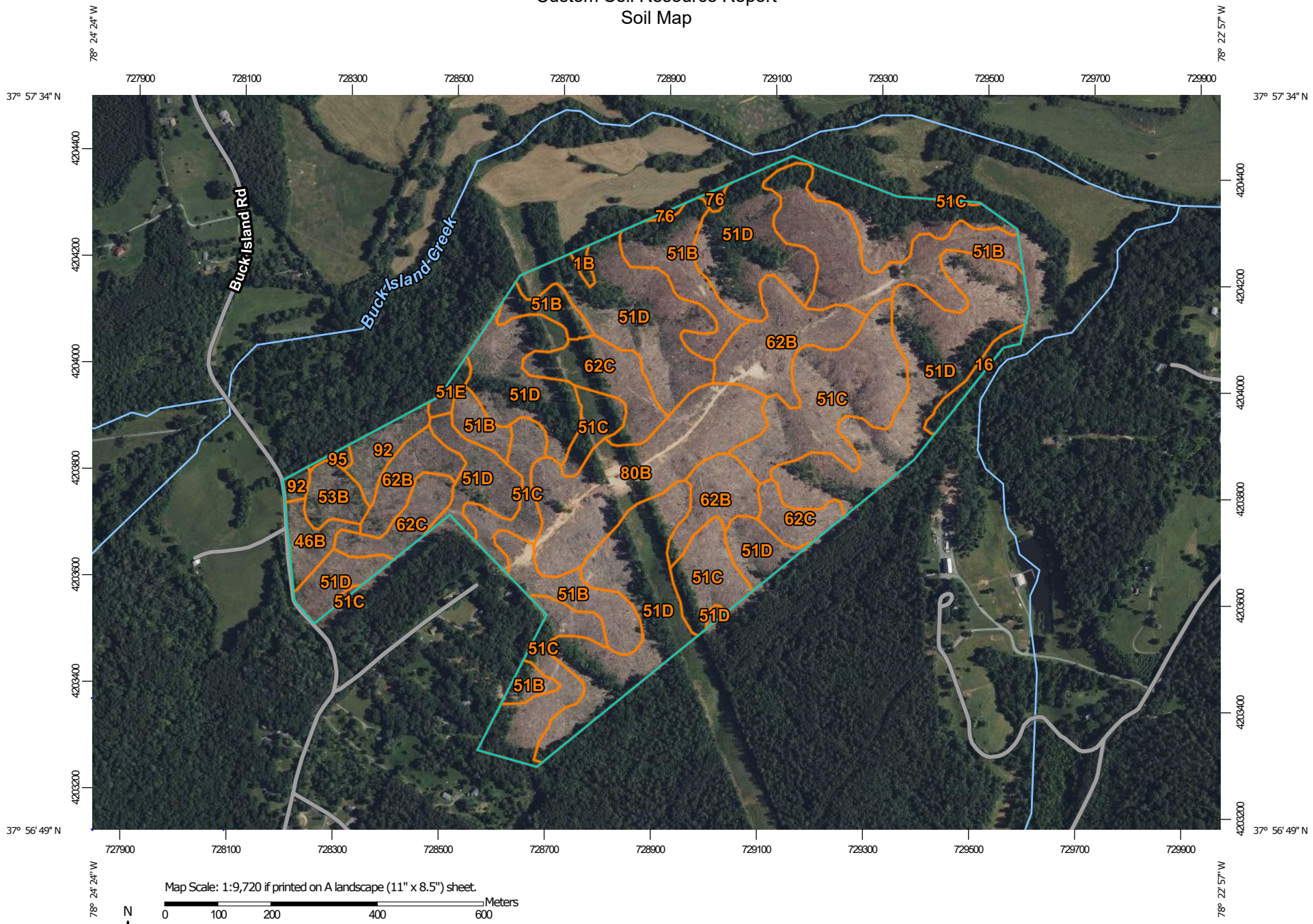
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:9,720 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Albemarle County, Virginia
Survey Area Data: Version 20, Sep 4, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 19, 2022—Jul 1, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1B	Meadowville silt loam, 2 to 7 percent slopes	0.4	0.2%
16	Codorus silt loam, 0 to 2 percent slopes, occasionally flooded	1.5	0.8%
46B	Grassland silt loam, 2 to 7 percent slopes	2.5	1.3%
51B	Bugley channery silt loam, 2 to 7 percent slopes	28.4	14.5%
51C	Bugley channery silt loam, 7 to 15 percent slopes	30.2	15.4%
51D	Bugley channery silt loam, 15 to 25 percent slopes	81.3	41.4%
51E	Bugley channery silt loam, 25 to 45 percent slopes	0.8	0.4%
53B	Danripple loam, 2 to 7 percent slopes	2.7	1.4%
62B	Buffstat silt loam, 2 to 7 percent slopes	16.0	8.2%
62C	Buffstat silt loam, 7 to 15 percent slopes	12.2	6.2%
76	Dan River loam, 0 to 2 percent slopes, occasionally flooded	0.5	0.3%
80B	Littlejoe silt loam, 2 to 7 percent slopes	16.0	8.2%
92	Wate silt loam, 0 to 2 percent slopes, occasionally flooded	3.4	1.7%
95	Hatboro silt loam, 0 to 2 percent slopes, occasionally flooded	0.4	0.2%
Totals for Area of Interest		**196.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some

observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The

pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Albemarle County, Virginia

1B—Meadowville silt loam, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: 2v7hm
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Meadowville and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Meadowville

Setting

Landform: Drainageways
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium derived from igneous rock

Typical profile

A - 0 to 12 inches: silt loam
Bt2 - 12 to 36 inches: clay loam
2C - 36 to 48 inches: clay loam
2Cr - 48 to 79 inches: loam

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: 30 to 60 inches to paralithic bedrock
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F148XY027PA - Moist, Piedmont - felsic, Riparian Zone, Ecotonal Meadow-Shrub-Forest
Hydric soil rating: No

Minor Components

Delila

Percent of map unit: 5 percent
Landform: Drainageways
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Head slope, tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: Yes

16—Codorus silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2v7hp
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Codorus, occasionally flooded, and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Codorus, Occasionally Flooded

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from granite and gneiss

Typical profile

A - 0 to 8 inches: silt loam
BA - 8 to 16 inches: silt loam
Bw1 - 16 to 26 inches: silty clay loam
Bw2 - 26 to 40 inches: silty clay loam
Bw3 - 40 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 8 to 18 inches

Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F148XY027PA - Moist, Piedmont - felsic, Riparian Zone, Ecotonal Meadow-Shrub-Forest
Hydric soil rating: No

Minor Components

Hatboro, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

46B—Grassland silt loam, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: 2v7j8
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Grassland and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Grassland

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from serecite schist

Typical profile

Ap - 0 to 9 inches: silt loam
Bt - 9 to 38 inches: silty clay loam
BC - 38 to 58 inches: channery silt loam
Cr - 58 to 79 inches: bedrock

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Ecological site: F136XY310VA - Mesic temperature regime, acidic upland forest, seasonally wet
Hydric soil rating: No

Minor Components

Delila

Percent of map unit: 5 percent
Landform: Drainageways
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Head slope, tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: Yes

51B—Bugley channery silt loam, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: 2v7jg
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: Not prime farmland

Map Unit Composition

Bugley and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bugley

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from serecite schist

Typical profile

Ap - 0 to 6 inches: channery silt loam
Bw - 6 to 18 inches: very channery silt loam
R - 18 to 79 inches: bedrock

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: 15 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F136XY370VA - Mesic temperature regime, acidic upland woodland, depth restriction, dry
Hydric soil rating: No

51C—Bugley channery silt loam, 7 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2v7jh
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: Not prime farmland

Map Unit Composition

Bugley and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bugley

Setting

Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex

Parent material: Residuum weathered from serecite schist

Typical profile

Ap - 0 to 6 inches: channery silt loam
Bw - 6 to 18 inches: very channery silt loam
R - 18 to 79 inches: bedrock

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F136XY370VA - Mesic temperature regime, acidic upland woodland, depth restriction, dry
Hydric soil rating: No

51D—Bugley channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2v7jj
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: Not prime farmland

Map Unit Composition

Bugley and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bugley

Setting

Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from serecite schist

Typical profile

Ap - 0 to 6 inches: channery silt loam

Bw - 6 to 18 inches: very channery silt loam
R - 18 to 79 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: F136XY370VA - Mesic temperature regime, acidic upland woodland, depth restriction, dry
Hydric soil rating: No

51E—Bugley channery silt loam, 25 to 45 percent slopes

Map Unit Setting

National map unit symbol: 2v7jk
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: Not prime farmland

Map Unit Composition

Bugley and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bugley

Setting

Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from serecite schist

Typical profile

Ap - 0 to 6 inches: channery silt loam
Bw - 6 to 18 inches: very channery silt loam
R - 18 to 79 inches: bedrock

Properties and qualities

Slope: 25 to 45 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: F136XY380VA - Mesic temperature regime, acidic high hills and isolated ridges, depth restriction, dry
Hydric soil rating: No

53B—Danripple loam, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: 2v7jn
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Danripple and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Danripple

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Ancient alluvium derived from igneous rock

Typical profile

Ap - 0 to 7 inches: loam
Bt1 - 7 to 33 inches: clay
Bt2 - 33 to 79 inches: clay loam

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained

Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F136XY320VA - Mesic temperature regime, acidic upland forest, moist
Hydric soil rating: No

62B—Buffstat silt loam, 2 to 7 percent slopes

Map Unit Setting
National map unit symbol: 2v7jt
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Buffstat and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Buffstat

Setting
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from serecite schist

Typical profile
Ap - 0 to 8 inches: silt loam
Bt - 8 to 39 inches: silty clay loam
C - 39 to 50 inches: channery silt loam
R - 50 to 79 inches: bedrock

Properties and qualities
Slope: 2 to 7 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F136XY320VA - Mesic temperature regime, acidic upland forest, moist
Hydric soil rating: No

62C—Buffstat silt loam, 7 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2v7jv
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Buffstat and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Buffstat

Setting

Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from serecite schist

Typical profile

Ap - 0 to 8 inches: silt loam
Bt - 8 to 39 inches: silty clay loam
C - 39 to 50 inches: channery silt loam
R - 50 to 79 inches: bedrock

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F136XY320VA - Mesic temperature regime, acidic upland forest, moist
Hydric soil rating: No

76—Dan River loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2v7jz
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: Prime farmland if protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Dan river, occasionally flooded, and similar soils: 75 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dan River, Occasionally Flooded

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous rock

Typical profile

A - 0 to 12 inches: loam
Bw - 12 to 35 inches: silt loam
C - 35 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: Occasional
Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F148XY027PA - Moist, Piedmont - felsic, Riparian Zone, Ecotonal Meadow-Shrub-Forest
Hydric soil rating: No

Minor Components

Hatboro, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

80B—Littlejoe silt loam, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: 2v7k2
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Littlejoe and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Littlejoe

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from serecite schist

Typical profile

A - 0 to 6 inches: silt loam
Bt - 6 to 42 inches: silty clay
C - 42 to 51 inches: channery silt loam
R - 51 to 79 inches: bedrock

Properties and qualities

Slope: 2 to 7 percent

Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F136XY320VA - Mesic temperature regime, acidic upland forest, moist
Hydric soil rating: No

92—Wate silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2v7k7
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Wate, occasionally flooded, and similar soils: 80 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wate, Occasionally Flooded

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous rock

Typical profile

Ap - 0 to 9 inches: silt loam
Bt - 9 to 40 inches: clay loam
BC - 40 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F136XY150VA - Mesic Temperature Regime, Low Terraces and Drains, Rare Inundation
Hydric soil rating: No

Minor Components

Hatboro, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

95—Hatboro silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2v7kb
Elevation: 360 to 1,540 feet
Mean annual precipitation: 25 to 65 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 195 to 231 days
Farmland classification: Not prime farmland

Map Unit Composition

Hatboro, occasionally flooded, and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hatboro, Occasionally Flooded

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous rock

Typical profile

A - 0 to 10 inches: silt loam
Bg - 10 to 52 inches: silty clay loam
Cg - 52 to 79 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 30 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F148XY030PA - Hydric, Piedmont - felsic, Riparian Zone, Swamp Meadow-Shrub-Forest
Hydric soil rating: Yes

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APPENDIX B
SOIL INFILTRATION GLOVER SHEETS

Constant-Head Borehole Permeameter Test

Solution: R. E. Glover (Deep WT or Impermeable Layer)

File Name….:

Project Name……:	Turkey Knob Solar	**Boring No……:**	IF-53B
Project No……:	47661.034	**Investigators……:**	M. Norris, A. Whitlock
Project Location……:	Albemarle County	**Date……:**	10/28/2025
Boring Depth……:	20 inches **(Specify units)**	**WCU Base Ht. h:**	10.0 **cm*** **
Boring Diameter……:	8.26 **cm**	**WCU Susp. Ht. S:**	12.0 **cm**
Boring Radius r……:	4.13 **cm**	**Const. Wtr. Ht. H:**	22.0 **cm**
Soil Temperature T…:	19 **°C**	**H/r**……:**	5.3 **(H/r > 5.0)**
Dyn. Visc. @ T……:	0.001028 **kg/m·s**	**Dyn. Visc. @ T_B.:**	0.001003 **kg/m·s**

Solution and Terminology (R. E. Glover solution)*

$K_{sat} = Q[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Basic Glover solution]

$K_{satB} = QV[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Temp.-corrected]

K_{satB}: Saturated Hydraulic Conduct. @ base Tmp. T_B °C: 20

Q: Rate of flow of water from the borehole

H: Constant height of water in the borehole

r: Radius of the cylindrical borehole

V: Dynamic viscosity of water @ T °C/Dyn. Visc. of water @ T_B °C

Reservoir Volume (ml)	Time (12 hr) (h:mm:ss A/P)	Volume Out (ml)	Elapsed Time Total (min)	Elapsed Time Interval (min)	Flow Rate (ml/min)	K_{satB} Equivalent Values (µm/sec)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
3,200	10:42:00 AM									
2,250	10:52:00 AM	950	10.00	10.00	95.0	8.2	8.24E-04	71.2	1.17	2.34
1,840	11:02:00 AM	410	20.00	10.00	41.0	3.6	3.56E-04	30.7	0.50	1.01
1,760	11:12:00 AM	80	30.00	10.00	8.0	0.7	6.94E-05	6.0	0.10	0.20
1,700	11:22:00 AM	60	40.00	10.00	6.0	0.5	5.21E-05	4.5	0.07	0.15
1,650	11:32:00 AM	50	50.00	10.00	5.0	0.4	4.34E-05	3.7	0.06	0.12
1,610	11:42:00 AM	40	60.00	10.00	4.0	0.3	3.47E-05	3.0	0.05	0.10
1,590	11:52:00 AM	20	70.00	10.00	2.0	0.2	1.74E-05	1.5	0.02	0.05
1,570	12:02:00 PM	20	80.00	10.00	2.0	0.2	1.74E-05	1.5	0.02	0.05
1,540	12:12:00 PM	30	90.00	10.00	3.0	0.3	2.60E-05	2.2	0.04	0.07
1,500	12:22:00 PM	40	100.00	10.00	4.0	0.3	3.47E-05	3.0	0.05	0.10
1,460	12:32:00 PM	40	110.00	10.00	4.0	0.3	3.47E-05	3.0	0.05	0.10
1,420	12:42:00 PM	40	120.00	10.00	4.0	0.3	3.47E-05	3.0	0.05	0.10

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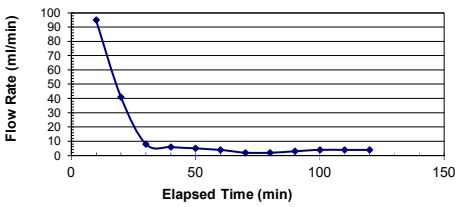
Flow Rate vs Elapsed Time



The Flow Rate vs Elapsed Time Graph can be moved anywhere on the worksheet by left-clicking within the white border area and dragging it to the desired location. It can also be resized by left-clicking on corner and mid-line markers and dragging in the desired direction.

Notes:

Constant-Head Borehole Permeameter Test

Solution: R. E. Glover (Deep WT or Impermeable Layer)

File Name….:

Project Name……:	Turkey Knob Solar	**Boring No……:**	IF-62B
Project No……:	47661.034	**Investigators……:**	M. Norris
Project Location……:	Albemarle County	**Date……:**	10/30/2025
Boring Depth……:	20 inches **(Specify units)**	**WCU Base Ht. h:**	10.0 **cm*** **
Boring Diameter……:	8.26 **cm**	**WCU Susp. Ht. S:**	12.0 **cm**
Boring Radius r……:	4.13 **cm**	**Const. Wtr. Ht. H:**	22.0 **cm**
Soil Temperature T…:	19 **°C**	**H/r**……:**	5.3 **(H/r > 5.0)**
Dyn. Visc. @ T……:	0.001028 **kg/m·s**	**Dyn. Visc. @ T_B.:**	0.001003 **kg/m·s**

Solution and Terminology (R. E. Glover solution)*

$K_{sat} = Q[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Basic Glover solution]

$K_{satB} = QV[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Temp.-corrected]

K_{satB}: Saturated Hydraulic Conduct. @ base Tmp. T_B °C: 20

Q: Rate of flow of water from the borehole

H: Constant height of water in the borehole

r: Radius of the cylindrical borehole

V: Dynamic viscosity of water @ T °C/Dyn. Visc. of water @ T_B °C

Reservoir Volume (ml)	Time (12 hr) (h:mm:ss A/P)	Volume Out (ml)	Elapsed Time Total (min)	Elapsed Time Interval (min)	Flow Rate (ml/min)	K_{satB} Equivalent Values (µm/sec)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
3,250	1:04:00 PM									
3,250	1:14:00 PM	0	10.00	10.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
3,240	1:24:00 PM	10	20.00	10.00	1.0	0.1	8.68E-06	0.7	0.01	0.02
3,220	1:34:00 PM	20	30.00	10.00	2.0	0.2	1.74E-05	1.5	0.02	0.05
3,210	1:44:00 PM	10	40.00	10.00	1.0	0.1	8.68E-06	0.7	0.01	0.02
3,210	1:54:00 PM	0	50.00	10.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
3,200	2:04:00 PM	10	60.00	10.00	1.0	0.1	8.68E-06	0.7	0.01	0.02
3,190	2:14:00 PM	10	70.00	10.00	1.0	0.1	8.68E-06	0.7	0.01	0.02
3,180	2:24:00 PM	10	80.00	10.00	1.0	0.1	8.68E-06	0.7	0.01	0.02

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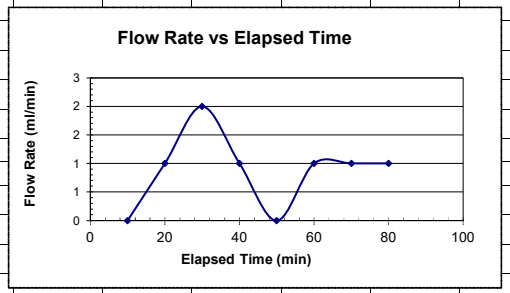


The Flow Rate vs Elapsed Time Graph can be moved anywhere on the worksheet by left-clicking within the white border area and dragging it to the desired location. It can also be resized by left-clicking on corner and mid-line markers and dragging in the desired direction.

Notes:

Constant-Head Borehole Permeameter Test

Solution: R. E. Glover (Deep WT or Impermeable Layer)

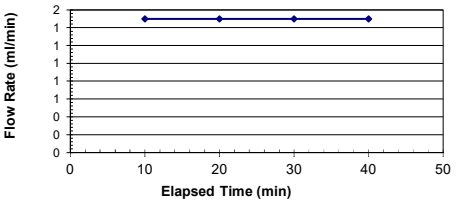
File Name….:

Project Name……:	Turkey Knob Solar	**Boring No……:**	IF-80B-1	**Solution and Terminology (R. E. Glover solution)***	
Project No……:	47661.034	**Investigators……:**	M. Norris	$K_{sat} = Q[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Basic Glover solution]	
Project Location……:	Albemarle County	**Date……:**	10/30/2025	$K_{satB} = QV[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Temp.-corrected]	
Boring Depth……:	20 inches **(Specify units)**	**WCU Base Ht. h:**	10.0 **cm*** **	K_{satB}: Saturated Hydraulic Conduct. @ base Tmp. T_B °C:	20
Boring Diameter……:	8.26 **cm**	**WCU Susp. Ht. S:**	12.0 **cm**	Q: Rate of flow of water from the borehole	
Boring Radius r……:	4.13 **cm**	**Const. Wtr. Ht. H:**	22.0 **cm**	H: Constant height of water in the borehole	
Soil Temperature T…:	19 **°C**	**H/r**……:**	5.3 **(H/r > 5.0)**	r: Radius of the cylindrical borehole	
Dyn. Visc. @ T……:	0.001028 **kg/m·s**	**Dyn. Visc. @ T_B.:**	0.001003 **kg/m·s**	V: Dynamic viscosity of water @ T °C/Dyn. Visc. of water @ T_B °C	

Reservoir Volume (ml)	Time (12 hr) (h:mm:ss A/P)	Volume Out (ml)	Elapsed Time Total (min)	Elapsed Time Interval (min)	Flow Rate (ml/min)	K_{satB} Equivalent Values (µm/sec)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
3,220	9:29:00 AM									
3,205	9:39:00 AM	15	10.00	10.00	1.5	0.1	1.30E-05	1.1	0.02	0.04
3,190	9:49:00 AM	15	20.00	10.00	1.5	0.1	1.30E-05	1.1	0.02	0.04
3,175	9:59:00 AM	15	30.00	10.00	1.5	0.1	1.30E-05	1.1	0.02	0.04
3,160	10:09:00 AM	15	40.00	10.00	1.5	0.1	1.30E-05	1.1	0.02	0.04

Ksat Workbook Table of Contents

Flow Rate vs Elapsed Time



The Flow Rate vs Elapsed Time Graph can be moved anywhere on the worksheet by left-clicking within the white border area and dragging it to the desired location. It can also be resized by left-clicking on corner and mid-line markers and dragging in the desired direction.

Notes:

Constant-Head Borehole Permeameter Test

Solution: R. E. Glover (Deep WT or Impermeable Layer)

File Name….:

Project Name……:	Turkey Knob Solar	**Boring No……:**	IF-80B-2
Project No……:	47661.034	**Investigators……:**	A. Whitlock, K. Winklepleck
Project Location……:	Albemarle County	**Date……:**	10/30/2025
Boring Depth……:	20 inches **(Specify units)**	**WCU Base Ht. h:**	10.0 **cm*** **
Boring Diameter……:	8.26 **cm**	**WCU Susp. Ht. S:**	12.0 **cm**
Boring Radius r……:	4.13 **cm**	**Const. Wtr. Ht. H:**	22.0 **cm**
Soil Temperature T…:	19 **°C**	**H/r**……:**	5.3 **(H/r > 5.0)**
Dyn. Visc. @ T……:	0.001028 **kg/m·s**	**Dyn. Visc. @ T_B.:**	0.001003 **kg/m·s**

Solution and Terminology (R. E. Glover solution)*

$K_{sat} = Q[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Basic Glover solution]

$K_{satB} = QV[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Temp.-corrected]

K_{satB}: Saturated Hydraulic Conduct. @ base Tmp. T_B °C: 20

Q: Rate of flow of water from the borehole

H: Constant height of water in the borehole

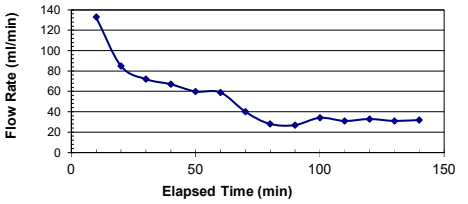
r: Radius of the cylindrical borehole

V: Dynamic viscosity of water @ T °C/Dyn. Visc. of water @ T_B °C

Reservoir Volume (ml)	Time (12 hr) (h:mm:ss A/P)	Volume Out (ml)	Elapsed Time Total (min)	Elapsed Time Interval (min)	Flow Rate (ml/min)	K_{satB} Equivalent Values (µm/sec)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
3,200	9:55:00 AM									
1,870	10:05:00 AM	1,330	10.00	10.00	133.0	11.5	1.15E-03	99.7	1.64	3.27
1,020	10:15:00 AM	850	20.00	10.00	85.0	7.4	7.38E-04	63.7	1.05	2.09
300	10:25:00 AM	720	30.00	10.00	72.0	6.2	6.25E-04	54.0	0.89	1.77
3,000	10:30:00 AM									
2,330	10:40:00 AM	670	40.00	10.00	67.0	5.8	5.81E-04	50.2	0.82	1.65
1,730	10:50:00 AM	600	50.00	10.00	60.0	5.2	5.21E-04	45.0	0.74	1.48
1,140	11:00:00 AM	590	60.00	10.00	59.0	5.1	5.12E-04	44.2	0.73	1.45
740	11:10:00 AM	400	70.00	10.00	40.0	3.5	3.47E-04	30.0	0.49	0.98
460	11:20:00 AM	280	80.00	10.00	28.0	2.4	2.43E-04	21.0	0.34	0.69
190	11:30:00 AM	270	90.00	10.00	27.0	2.3	2.34E-04	20.2	0.33	0.66
3,230	11:31:00 AM									
2,890	11:41:00 AM	340	100.00	10.00	34.0	3.0	2.95E-04	25.5	0.42	0.84
2,580	11:51:00 AM	310	110.00	10.00	31.0	2.7	2.69E-04	23.2	0.38	0.76
2,250	12:01:00 PM	330	120.00	10.00	33.0	2.9	2.86E-04	24.7	0.41	0.81
1,940	12:11:00 PM	310	130.00	10.00	31.0	2.7	2.69E-04	23.2	0.38	0.76
1,620	12:21:00 PM	320	140.00	10.00	32.0	2.8	2.78E-04	24.0	0.39	0.79

Ksat Workbook Table of Contents

Flow Rate vs Elapsed Time



The Flow Rate vs Elapsed Time Graph can be moved anywhere on the worksheet by left-clicking within the white border area and dragging it to the desired location. It can also be resized by left-clicking on corner and mid-line markers and dragging in the desired direction.

Notes:

APPENDIX C
SOIL BORING PROFILES AND SHWT ESITMATE DATA

Appendix C: Soil Boring Profiles and Seasonal High Water Table Estimates

Location: BH-1B	Date: 10/30/2025		Evaluators: K. Winklepleck				Surface Elevation: ~ 290 ft. above mean sea level
	Matrix		Mottle				
Depth (inches)	Color	%	Color	%	Type	Texture	Remarks
0-2	7.5YR 4/1	100				L	GR
2-7	10YR 5/3	100				GrSiCL	SBK
7-11	10YR 5/4	100				SiCL	SBK
11-35	10YR 7/4	95	5Y 7/2	5	DM	SiL	SBK, 5% gravels, auger rejection at 35" due to saprolite restrictive layer

Comments: SHWT = Seasonal High Water Table; Textures: L = Loam, C = Clay, S = Sand, CL = Clay Loam, SiL = Silt Loam, SC = Sandy Clay, SiCL = Silty Clay Loam, SCL = Sandy Clay Loam, LS = Loamy Sand, FSL = Fine Sandy Loam, SL = Sandy Loam, Gr = Gravellly; Mottle Type: C= Concentrations and D = Depletions, and CoM = Additional matrix; Structures: GR = Granular, SBK = Subangular Blocky, ABK = Angular Blocky

Location: BH-53B	Date: 10/28/2025		Evaluators: M. Norris, A. Whitlock				Surface Elevation: ~ 294 ft. above mean sea level
	Matrix		Mottle				
Depth (inches)	Color	%	Color	%	Type	Texture	Remarks
0-8	2.5Y 7/1	90	10YR 6/8	10	CM	SiCL	SBK, SHWT @ 0"
8-19	2.5Y 7/4	55	2.5Y 7/1	30	DM	SiCL	SBK
			10YR 5/8	15	CM		
19-33	10YR 6/4	80	2.5Y 7/2	10	DM	SiC	ABK
			7.5YR 5/8	10	CM		
33-40	2.5Y 8/1	65	10YR 5/8	25	CM	SiC	ABK
	2.5Y 6/4	10			CoM		

Comments: SHWT = Seasonal High Water Table; Textures: L = Loam, C = Clay, S = Sand, CL = Clay Loam, SiL = Silt Loam, SC = Sandy Clay, SiCL = Silty Clay Loam, SCL = Sandy Clay Loam, LS = Loamy Sand, FSL = Fine Sandy Loam, SL = Sandy Loam, Gr = Gravellly; Mottle Type: C= Concentrations and D = Depletions, and CoM = Additional matrix; Structures: GR = Granular, SBK = Subangular Blocky, ABK = Angular Blocky

Location: IF-53B	Date: 10/28/2025		Evaluators: M. Norris, A. Whitlock				Surface Elevation: ~ 294 ft. above mean sea level
	Matrix		Mottle				
Depth (inches)	Color	%	Color	%	Type	Texture	Remarks
0-14	2.5Y 7/1	80	10YR 6/8	20	CM	SiCL	SBK
14-20	10YR 6/4	75	2.5Y 7/2	15	DM	SiC	ABK, SHWT @14"
			7.5YR 5/8	10	CM		

Comments: SHWT = Seasonal High Water Table; Textures: L = Loam, C = Clay, S = Sand, CL = Clay Loam, SiL = Silt Loam, SC = Sandy Clay, SiCL = Silty Clay Loam, SCL = Sandy Clay Loam, LS = Loamy Sand, FSL = Fine Sandy Loam, SL = Sandy Loam, Gr = Gravellly; Mottle Type: C= Concentrations and D = Depletions, and CoM = Additional matrix; Structures: GR = Granular, SBK = Subangular Blocky, ABK = Angular Blocky

Appendix C: Soil Boring Profiles and Seasonal High Water Table Estimates

Location: BH-62B-1	Date: 10/28/2025		Evaluators: M. Norris				Surface Elevation: ~ 395 ft. above mean sea level
	Matrix		Mottle				
Depth (inches)	Color	%	Color	%	Type	Texture	Remarks
0-4	10YR 6/4	100				SiCL	SBK
4-13	7.5YR 5/6	85				SiC	SBK
	2.5YR 5/8	15			CoM		Saprolite
13-21	2.5YR 4/8	90					SBK
	2.5YR 3/2	10			CoM		Saprolite
21-32	5YR 4/4	50				SiC	GR, auger rejection at 32" due to saprolite restrictive layer
	2.5YR 4/3	50			CoM		Saprolite

Comments: SHWT = Seasonal High Water Table; Textures: L = Loam, C = Clay, S = Sand, CL = Clay Loam, SiL = Silt Loam, SC = Sandy Clay, SiCL = Silty Clay Loam, SCL = Sandy Clay Loam, LS = Loamy Sand, FSL = Fine Sandy Loam, SL = Sandy Loam, Gr = Gravellly; Mottle Type: C= Concentrations and D = Depletions, and CoM = Additional matrix; Structures: GR = Granular, SBK = Subangular Blocky, ABK = Angular Blocky

Location: BH-62B-2	Date: 10/28/2025		Evaluators: K. Winklepleck				Surface Elevation: ~ 377 ft. above mean sea level
	Matrix		Mottle				
Depth (inches)	Color	%	Color	%	Type	Texture	Remarks
0-1	10YR 2/2	100				SiCL	GR
1-9	2.5Y 5/6	98				SiL	SBK
	7.5YR 5/8	2			CoM		Saprolite
9-27	10YR 6/6	80				SL	ABK, auger rejection at 27" due to saprolite restrictive layer
	5YR 4/4	15			CoM		Saprolite
	2.5Y 7/8	5			CoM		Saprolite

Comments: SHWT = Seasonal High Water Table; Textures: L = Loam, C = Clay, S = Sand, CL = Clay Loam, SiL = Silt Loam, SC = Sandy Clay, SiCL = Silty Clay Loam, SCL = Sandy Clay Loam, LS = Loamy Sand, FSL = Fine Sandy Loam, SL = Sandy Loam, Gr = Gravellly; Mottle Type: C= Concentrations and D = Depletions, and CoM = Additional matrix; Structures: GR = Granular, SBK = Subangular Blocky, ABK = Angular Blocky

Location: IF-62B	Date: 10/28/2025		Evaluators: M. Norris				Surface Elevation: ~ 395 ft. above mean sea level
	Matrix		Mottle				
Depth (inches)	Color	%	Color	%	Type	Texture	Remarks
0-5	10YR 6/4	80				SiCL	SBK
	10YR 3/2	20			CoM		
5-10	7.5YR 6/6	100				SiC	SBK
10-20	5YR 5/6	70				SiC	ABK
	2.5YR 3/4	30			CoM		Saprolite

Comments: SHWT = Seasonal High Water Table; Textures: L = Loam, C = Clay, S = Sand, CL = Clay Loam, SiL = Silt Loam, SC = Sandy Clay, SiCL = Silty Clay Loam, SCL = Sandy Clay Loam, LS = Loamy Sand, FSL = Fine Sandy Loam, SL = Sandy Loam, Gr = Gravellly; Mottle Type: C= Concentrations and D = Depletions, and CoM = Additional matrix; Structures: GR = Granular, SBK = Subangular Blocky, ABK = Angular Blocky

Appendix C: Soil Boring Profiles and Seasonal High Water Table Estimates

Location: BH-80B-1	Date: 10/28/2025		Evaluators: M. Norris				Surface Elevation: ~ 410 ft. above mean sea level
	Matrix		Mottle				
Depth (inches)	Color	%	Color	%	Type	Texture	Remarks
0-5	10YR 5/6	60				SiCL	SBK
	2.5Y 4/3	40			CoM		
5-13	7.5YR 4/6	75				SiC	ABK
	2.5YR 4/6	25			CoM		Saprolite
13-40	5YR 4/6	65				SiC	SBK
	2.5YR 4/3	20			CoM		Saprolite
	2.5YR 4/6	15			CoM		Saprolite

Comments: SHWT = Seasonal High Water Table; Textures: L = Loam, C = Clay, S = Sand, CL = Clay Loam, SiL = Silt Loam, SC = Sandy Clay, SiCL = Silty Clay Loam, SCL = Sandy Clay Loam, LS = Loamy Sand, FSL = Fine Sandy Loam, SL = Sandy Loam, Gr = Gravellly; Mottle Type: C= Concentrations and D = Depletions, and CoM = Additional matrix; Structures: GR = Granular, SBK = Subangular Blocky, ABK = Angular Blocky

Location: IF-80B-1	Date: 10/28/2025		Evaluators: M. Norris				Surface Elevation: ~ 410 ft. above mean sea level
	Matrix		Mottle				
Depth (inches)	Color	%	Color	%	Type	Texture	Remarks
0-3	2.5Y 4/3	100				SiL	GR
3-7	10YR 5/6	80				SiCL	SBK
	7.5YR 4/6	20			CoM		
7-13	7.5YR 4/6	75				SiC	ABK
	2.5YR 4/3	25			CoM		Saprolite
13-20	5YR 4/6	65				SiCL	SBK
	2.5YR 4/3	20			CoM		Saprolite
	2.5YR 4/6	15			CoM		Saprolite

Comments: SHWT = Seasonal High Water Table; Textures: L = Loam, C = Clay, S = Sand, CL = Clay Loam, SiL = Silt Loam, SC = Sandy Clay, SiCL = Silty Clay Loam, SCL = Sandy Clay Loam, LS = Loamy Sand, FSL = Fine Sandy Loam, SL = Sandy Loam, Gr = Gravellly; Mottle Type: C= Concentrations and D = Depletions, and CoM = Additional matrix; Structures: GR = Granular, SBK = Subangular Blocky, ABK = Angular Blocky

Location: BH-80B-2	Date: 10/28/2025		Evaluators: A. Whitlock				Surface Elevation: ~ 397 ft. above mean sea level
	Matrix		Mottle				
Depth (inches)	Color	%	Color	%	Type	Texture	Remarks
0-3	10YR 4/3	100				SiL	GR
3-8	10YR 6/4	80				SiCL	SBK
	7.5YR 6/6	20			CoM		
8-15	5YR 4/6	90				SiC	SBK
	2.5Y 8/2	10			CoM		Saprolite
15-40	5YR 4/6	50				SiL	
	2.5Y 8/2	50			CoM		Saprolite

Comments: SHWT = Seasonal High Water Table; Textures: L = Loam, C = Clay, S = Sand, CL = Clay Loam, SiL = Silt Loam, SC = Sandy Clay, SiCL = Silty Clay Loam, SCL = Sandy Clay Loam, LS = Loamy Sand, FSL = Fine Sandy Loam, SL = Sandy Loam, Gr = Gravellly; Mottle Type: C= Concentrations and D = Depletions, and CoM = Additional matrix; Structures: GR = Granular, SBK = Subangular Blocky, ABK = Angular Blocky

Location: IF-80B-2	Date: 10/28/2025		Evaluators: A. Whitlock				Surface Elevation: ~ 397 ft. above mean sea level
	Matrix		Mottle				
Depth (inches)	Color	%	Color	%	Type	Texture	Remarks
0-3	2.5Y 7/2	50				SiCL	SBK
	10YR 2/2	50			CoM		
3-7	10YR 7/4	88				SiCL	SBK
	7.5YR 5/6	12			CoM		Saprolite
7-8	5YR 6/8	90				SiC	SBK
	10YR 7/4	10			CoM		
8-20	2.5YR 4/8	100				SiC	SBK

Comments: SHWT = Seasonal High Water Table; Textures: L = Loam, C = Clay, S = Sand, CL = Clay Loam, SiL = Silt Loam, SC = Sandy Clay, SiCL = Silty Clay Loam, SCL = Sandy Clay Loam, LS = Loamy Sand, FSL = Fine Sandy Loam, SL = Sandy Loam, Gr = Gravellly; Mottle Type: C= Concentrations and D = Depletions, and CoM = Additional matrix; Structures: GR = Granular, SBK = Subangular Blocky, ABK = Angular Blocky

APPENDIX D
SOIL ANALYSIS REPORT

Report Number: 25-307-0512
Account Number: 70627

Waypoint ANALYTICAL
7621 Whitepine Road, Richmond, VA 23237
Main 804-743-9401 ° Fax 804-271-6446
www.waypointanalytical.com

"Every acre...Every year."™

Send To: TIMMONS GROUP
Sarah Kern
7053 Celebration Park Ave
Suite 300
Richmond VA 23225

Grower: Timmons Group
Submitted by: Madison Norris

Farm: Turkey Knob

SOIL ANALYSIS REPORT

Analytical Method(s): SMP Buffer pH Mehlich 3 Loss On Ignition Water pH

Date Received: 11/03/2025 **Date Of Analysis:** 11/04/2025 **Date Of Report:** 11/04/2025

Sample ID / Field ID	Lab Number	OM	W/V	ENR	Phosphorus			Potassium	Magnesium	Calcium	Sodium	pH		Acidity	C.E.C
		% Rate	Soil Class	lbs/A	M3 ppm Rate	ppm Rate	ppm Rate	K ppm Rate	Mg ppm Rate	Ca ppm Rate	Na ppm Rate	Soil pH	Buffer Index	H meq/100g	meq/100g
80B1-1	23726	9.4 VH		150	3 VL			73 M	38 M	134 VL		4.6	6.79	1.4	2.6
80B1-2	23728	4.3 M		133	3 VL			63 L	37 M	139 VL		4.7	6.81	1.2	2.4
80B1-3	23729	2.9 M		106	1 VL			38 VL	23 H	73 L		5.0	6.88	0.5	1.2
80B2-1	23730	8.9 VH		150	3 VL			107 H	36 M	118 VL		4.5	6.77	1.6	2.8
80B2-2	23731	4.3 M		133	1 VL			93 H	38 H	88 VL		4.9	6.85	0.8	1.8

Sample ID / Field ID	Percent Base Saturation					Nitrate	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Soluble Salts		
	K %	Mg %	Ca %	Na %	H %	NO_3 N ppm Rate	S ppm Rate	Zn ppm Rate	Mn ppm Rate	Fe ppm Rate	Cu ppm Rate	B ppm Rate	SS ms/cm Rate		
80B1-1	7.2	12.2	25.8		53.8										
80B1-2	6.7	12.8	29.0		50.0										
80B1-3	8.1	16.0	30.4		41.7										
80B2-1	9.8	10.7	21.1		57.1										
80B2-2	13.2	17.6	24.4		44.4										

Values on this report represent the plant available nutrients in the soil. Rating after each value: VL (Very Low), L (Low), M (Medium), H (High), VH (Very High). ENR - Estimated Nitrogen Release. C.E.C. - Cation Exchange Capacity.

Explanation of symbols: % (percent), ppm (parts per million), lbs/A (pounds per acre), ms/cm (milli-mhos per centimeter), meq/100g (milli-equivalent per 100 grams). Conversions: ppm x 2 = lbs/A, Soluble Salts ms/cm x 640 = ppm.

This report applies to sample(s) tested. Samples are retained a maximum of thirty days after testing.

Analysis prepared by: Waypoint Analytical Virginia, Inc.

by: Brandi Watson

Brandi Watson

Report Number: 25-307-0512
Account Number: 70627

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SOIL ANALYSIS REPORT

Analytical Method(s): SMP Buffer pH Mehlich 3 Loss On Ignition Water pH

Date Received: 11/03/2025 **Date Of Analysis:** 11/04/2025 **Date Of Report:** 11/04/2025

Sample ID / Field ID	Lab Number	OM % Rate	W/V Soil Class	ENR lbs/A	Phosphorus M3 ppm Rate	Phosphorus ppm Rate	Phosphorus ppm Rate	Potassium K ppm Rate	Magnesium Mg ppm Rate	Calcium Ca ppm Rate	Sodium Na ppm Rate	pH Soil pH	pH Buffer Index	Acidity H meq/100g	C.E.C meq/100g
80B2-3	23732	1.7 L		83	1 VL			28 VL	25 H	62 L		5.3	6.90	0.3	0.9
1B-1	23733	5.1 H		150	4 VL			46 L	31 H	65 VL		4.7	6.86	0.7	1.4
1B-2	23734	4.0 M		128	3 VL			47 L	34 H	71 VL		4.8	6.86	0.7	1.5
1B-3	23735	1.7 L		81	1 VL			26 VL	99 VH	62 VL		5.0	6.85	0.8	2.0
62B1-1	23736	5.9 H		150	3 VL			128 VH	63 M	285 L		5.1	6.79	1.4	3.7

Sample ID / Field ID	Percent Base Saturation K %	Mg %	Ca %	Na %	H %	Nitrate NO_3 N ppm Rate	Sulfur S ppm Rate	Zinc Zn ppm Rate	Manganese Mn ppm Rate	Iron Fe ppm Rate	Copper Cu ppm Rate	Boron B ppm Rate	Soluble Salts SS ms/cm Rate		
80B2-3	8.0	23.1	34.4		33.3										
1B-1	8.4	18.5	23.2		50.0										
1B-2	8.0	18.9	23.7		46.7										
1B-3	3.3	41.3	15.5		40.0										
62B1-1	8.9	14.2	38.5		37.8										

Values on this report represent the plant available nutrients in the soil. Rating after each value: VL (Very Low), L (Low), M (Medium), H (High), VH (Very High). ENR - Estimated Nitrogen Release. C.E.C. - Cation Exchange Capacity.

Explanation of symbols: % (percent), ppm (parts per million), lbs/A (pounds per acre), ms/cm (milli-mhos per centimeter), meq/100g (milli-equivalent per 100 grams). Conversions: ppm x 2 = lbs/A, Soluble Salts ms/cm x 640 = ppm.

This report applies to sample(s) tested. Samples are retained a maximum of thirty days after testing.

Analysis prepared by: Waypoint Analytical Virginia, Inc.

by: Brandi Watson

Brandi Watson

Report Number: 25-307-0512
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SOIL ANALYSIS REPORT

Analytical Method(s): SMP Buffer pH Mehlich 3 Loss On Ignition Water pH

Date Received: 11/03/2025 **Date Of Analysis:** 11/04/2025 **Date Of Report:** 11/04/2025

Sample ID / Field ID	Lab Number	OM	W/V	ENR	Phosphorus			Potassium	Magnesium	Calcium	Sodium	pH		Acidity	C.E.C
		% Rate	Soil Class	lbs/A	M3 ppm Rate	ppm Rate	ppm Rate	K ppm Rate	Mg ppm Rate	Ca ppm Rate	Na ppm Rate	Soil pH	Buffer Index	H meq/100g	meq/100g
62B1-2	23737	3.5 M		117	2 VL			77 M	31 M	123 L		4.9	6.85	0.8	1.9
62B1-3	23739	3.6 M		120	1 VL			55 L	41 H	112 L		5.0	6.86	0.7	1.7
62B1-4	23740	2.7 M		102	1 VL			54 L	46 H	117 L		5.3	6.88	0.5	1.6
62B2-1	23741	4.1 M		130	2 VL			61 L	20 M	71 VL		4.8	6.87	0.6	1.3
62B2-2	23742	2.6 M		100	1 VL			72 M	18 M	56 VL		4.7	6.87	0.6	1.2

Sample ID / Field ID	Percent Base Saturation					Nitrate	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Soluble Salts		
	K %	Mg %	Ca %	Na %	H %	NO_3 N ppm Rate	S ppm Rate	Zn ppm Rate	Mn ppm Rate	Fe ppm Rate	Cu ppm Rate	B ppm Rate	SS ms/cm Rate		
62B1-2	10.4	13.6	32.4		42.1										
62B1-3	8.3	20.1	32.9		41.2										
62B1-4	8.7	24.0	36.6		31.3										
62B2-1	12.0	12.8	27.3		46.2										
62B2-2	15.4	12.5	23.3		50.0										

Values on this report represent the plant available nutrients in the soil. Rating after each value: VL (Very Low), L (Low), M (Medium), H (High), VH (Very High). ENR - Estimated Nitrogen Release. C.E.C. - Cation Exchange Capacity.

Explanation of symbols: % (percent), ppm (parts per million), lbs/A (pounds per acre), ms/cm (milli-mhos per centimeter), meq/100g (milli-equivalent per 100 grams). Conversions: ppm x 2 = lbs/A, Soluble Salts ms/cm x 640 = ppm.

This report applies to sample(s) tested. Samples are retained a maximum of thirty days after testing.

Analysis prepared by: Waypoint Analytical Virginia, Inc.

by: Brandi Watson

Brandi Watson

Report Number: 25-307-0512
Account Number: 70627

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"Every acre...Every year."™

Send To: TIMMONS GROUP
Sarah Kern
7053 Celebration Park Ave
Suite 300
Richmond VA 23225

Grower: Timmons Group
Submitted by: Madison Norris

Farm: Turkey Knob

SOIL ANALYSIS REPORT

Analytical Method(s): SMP Buffer pH Mehlich 3 Loss On Ignition Water pH

Date Received: 11/03/2025 **Date Of Analysis:** 11/04/2025 **Date Of Report:** 11/04/2025

Sample ID / Field ID	Lab Number	OM	W/V	ENR	Phosphorus			Potassium	Magnesium	Calcium	Sodium	pH		Acidity	C.E.C
		% Rate	Soil Class	lbs/A	M3 ppm	Rate	ppm Rate	ppm Rate	K ppm	Rate	Mg ppm	Rate	Ca ppm	Rate	Na ppm	Rate	Soil pH	Buffer Index	H meq/100g	meq/100g
53B-1	23743	3.1 M		109	4	VL			31	VL	27	M	89	VL			4.4	6.81	1.2	1.9
53B-2	23744	2.4 L		96	1	VL			27	VL	43	VH	72	VL			5.0	6.88	0.5	1.3
53B-3	23745	2.6 M		99	1	VL			25	VL	100	VH	66	VL			5.2	6.87	0.6	1.8
53B-4	23746	2.4 L		94	1	VL			27	VL	176	VH	66	VL			5.2	6.83	1.0	2.9

Sample ID / Field ID	Percent Base Saturation					Nitrate	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Soluble Salts		
	K %	Mg %	Ca %	Na %	H %	NO_3 N ppm Rate	S ppm Rate	Zn ppm Rate	Mn ppm Rate	Fe ppm Rate	Cu ppm Rate	B ppm Rate	SS ms/cm Rate		
53B-1	4.2	11.8	23.4		63.2										
53B-2	5.3	27.6	27.7		38.5										
53B-3	3.6	46.3	18.3		33.3										
53B-4	2.4	50.6	11.4		34.5										

Values on this report represent the plant available nutrients in the soil. Rating after each value: VL (Very Low), L (Low), M (Medium), H (High), VH (Very High). ENR - Estimated Nitrogen Release. C.E.C. - Cation Exchange Capacity.

Explanation of symbols: % (percent), ppm (parts per million), lbs/A (pounds per acre), ms/cm (milli-mhos per centimeter), meq/100g (milli-equivalent per 100 grams). Conversions: ppm x 2 = lbs/A, Soluble Salts ms/cm x 640 = ppm.

This report applies to sample(s) tested. Samples are retained a maximum of thirty days after testing.

Analysis prepared by: Waypoint Analytical Virginia, Inc.

by: Brandi Watson

Brandi Watson

APPENDIX E
FOREST BLOCK ASSESSMENT PHOTO LOG

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Forest Types
2025
Turkey Knob Solar

Photo 1: Mature forest; taken in the eastern corner of the site

(08/04/2025, A. Whitlock)

Photo 2: Mature forest; taken in the lower swales along the northern project boundary

(08/05/2025, M. Norris)

Photo 3: Mature forest; taken in the lower swales along the northern project boundary

(08/05/2025, M. Norris)

Photo 4: Mature forest; taken in the southwestern corner of the site

(08/04/2025, T. Biskup)

Photo 5: Mid-successional forest; taken along the northeastern project boundary

(08/04/2025, M. Norris)

Photo 6: Mid-successional forest; taken in the swale off the northwestern project boundary

(08/05/2025, M. Norris)

Photo 7: Mid-successional forest; taken in the southwest corner of the site

(08/04/2025, T. Biskup)

Photo 8: Mid-successional forest; taken near the eastern corner of the project

(08/04/2025, A. Whitlock)

Photo 9: Early-successional forest; taken near the northwestern project boundary

(08/04/2025, J. Garrett)

Photo 10: Early-successional forest; taken in an upper swale along the northern project boundary

(08/04/2025. M. Norris)

Photo 11: Early-successional forest; taken in an upper swale along the northern project boundary

(08/05/2025, M. Norris)

Photo 12: Early-successional forest; taken along the southeast project boundary

(08/05/2025. A. Whitlock)

Photo 13: Timbered areas; taken in the eastern portion of the site

(10/30/2025, M. Norris)

Photo 14: Timbered areas; taken in the western portion of the site

(08/04/2025, J. Garrett)

Photo 15: Timbered areas; taken in the center of the site in a maintained easement

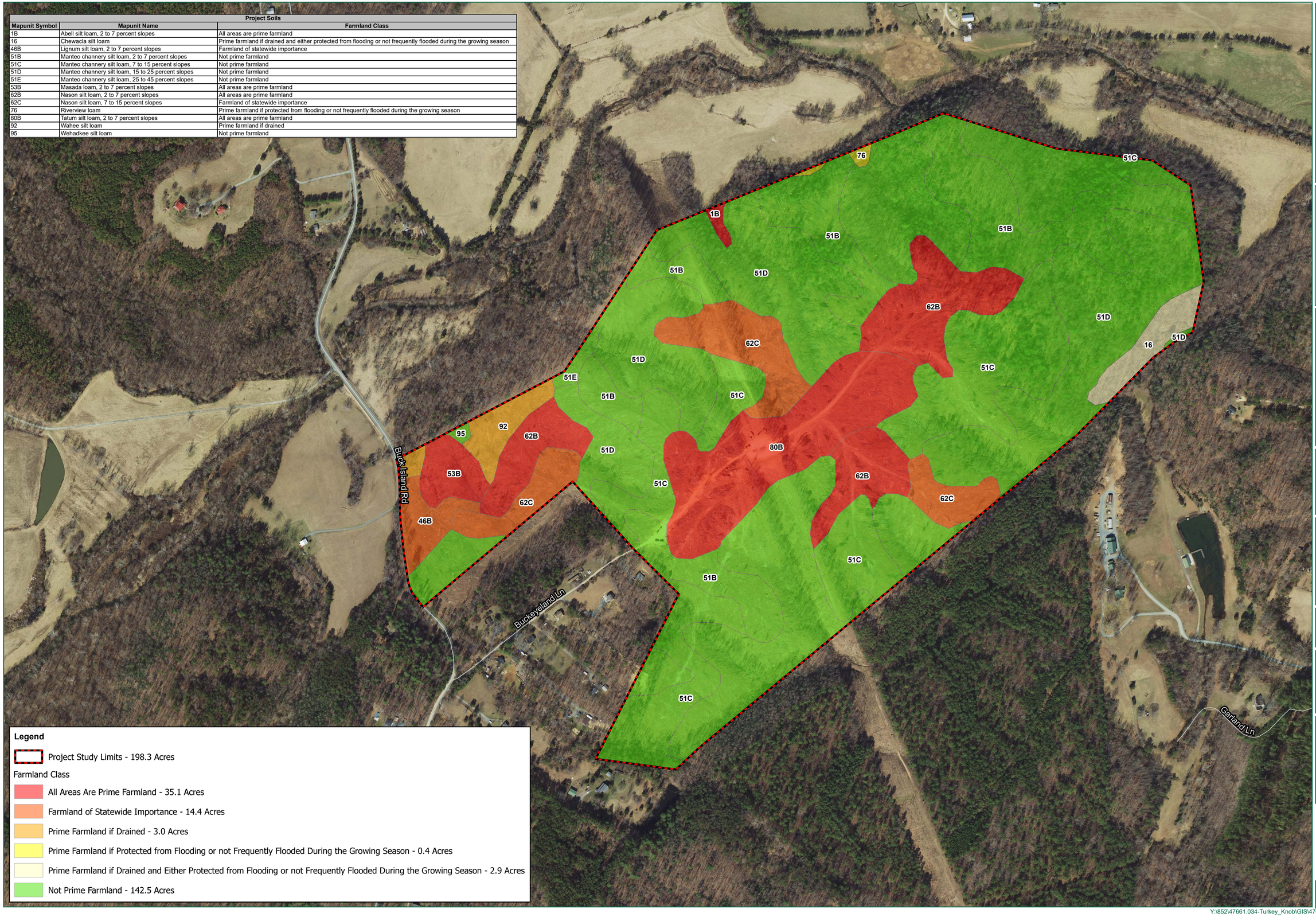
(08/05/2025, A. Whitlock)

Photo 16: Timbered areas; taken in the center of the site

(10/30/2025, A. Whitlock

Exhibit 4 – Prime Farmland Map

Project Soils		
Mapunit Symbol	**Mapunit Name**	**Farmland Class**
1B	Abell silt loam, 2 to 7 percent slopes	All areas are prime farmland
16	Chewacla silt loam	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
46B	Lignum silt loam, 2 to 7 percent slopes	Farmland of statewide importance
51B	Manteo channery silt loam, 2 to 7 percent slopes	Not prime farmland
51C	Manteo channery silt loam, 7 to 15 percent slopes	Not prime farmland
51D	Manteo channery silt loam, 15 to 25 percent slopes	Not prime farmland
51E	Manteo channery silt loam, 25 to 45 percent slopes	Not prime farmland
53B	Masada loam, 2 to 7 percent slopes	All areas are prime farmland
62B	Nason silt loam, 2 to 7 percent slopes	All areas are prime farmland
62C	Nason silt loam, 7 to 15 percent slopes	Farmland of statewide importance
76	Riverview loam	Prime farmland if protected from flooding or not frequently flooded during the growing season
80B	Tatum silt loam, 2 to 7 percent slopes	All areas are prime farmland
92	Wahee silt loam	Prime farmland if drained
95	Wehadkee silt loam	Not prime farmland



Legend

- Project Study Limits - 198.3 Acres

Farmland Class

- All Areas Are Prime Farmland - 35.1 Acres
- Farmland of Statewide Importance - 14.4 Acres
- Prime Farmland if Drained - 3.0 Acres
- Prime Farmland if Protected from Flooding or not Frequently Flooded During the Growing Season - 0.4 Acres
- Prime Farmland if Drained and Either Protected from Flooding or not Frequently Flooded During the Growing Season - 2.9 Acres
- Not Prime Farmland - 142.5 Acres

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PROJECT NAME & LOCATION

TURKEY KNOB SOLAR

ALBEMARLE COUNTY - VIRGINIA

DATE 04/09/2024

PROJECT NUMBER 47661.034

PROJECT NAME TURKEY KNOB SOLAR

DESIGNED BY / DRAWN BY J. STICKLEY

NOTES:
Soils data from SSURGO.
Aerial imagery from VGIN.

REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION

PRIME FARMLAND MAP

SCALE (FEET)

0 250 500

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H:1" = 250'	1

Y:\852\47661.034-Turkey_Knob\GIS\47661.034-DD\47661.034-DD.aprx

Exhibit 5 – Existing Site Conditions