A G E N D A
ISLE OF WIGHT COUNTY PLANNING COMMISSION
May 28, 2024

1. CALL TO ORDER

INVOCATION

PLEDGE OF ALLEGIANCE

2. ROLL CALL/DETERMINATION OF A QUORUM

BOBBY BOWSER, CHAIRMAN
THOMAS J. DISTEFANO, VICE-CHAIRMAN
BRIAN CARROLL
CYNTHIA TAYLOR
JAMES FORD
JENNIFER S. BOYKIN
GEORGE RAWLS
RICK SIENKIEWICZ
RAYNARD GIBBS
MATTHEW SMITH

3. ACTION ON REQUESTS TO WITHDRAW OR TABLE PENDING AGENDA ITEMS

4. APPROVAL OF AGENDA

5. CONSENT AGENDA

A. April 18, 2024 Board of Supervisors Action List

B. April 23, 2024 Planning Commission Regular Meeting Minutes

C. May 16, 2024 Board of Supervisors Action List

6. CITIZENS' COMMENTS

7. PUBLIC HEARINGS

A. ZA-3-24 Lytle Conditional Residential Rezoning Request

Application (ZA-3-24) of Curtis D. Lytle and Brandy W. Lytle, property owners, for a change in zoning classification from Rural Agricultural Conservation to Conditional Rural Residential for approximately 5.3 acres located at 5114 West Blackwater Road (Rt. 603) with tax parcel number 51-01-012 to create four single family residential lots

B. CUP-10-23 Moonlight Solar Conditional Use Permit

Application of Moonlight Solar, LLC (CUP-10-23), Applicant, and George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards, LeAnn Ricks Edwards Wait, and Dana Louise Edwards, Property Owners, for a Conditional Use Permit to Establish a Major Utility Service, Specifically a 44 MW Utility-Scale Solar Energy Generation Facility and Substation, on Approximately 523 Acres Located on Moonlight Road (Rte. 627) and Burwells Bay Road (Rte. 621) in the Rural Agricultural Conservation

Zoning District and a Request to Withdraw Approximately 523 Acres from the Moonlight Agricultural/Forestal District

C. CUP-8-23 Sycamore Solar A Conditional Use Permit Request

Application (CUP-8-23) of Sycamore Cross Solar, LLC, applicant, for a Conditional Use Permit for a major utility service, specifically a 214 MW utility-scale solar energy generation facility and a medium voltage line known as Sycamore Cross A, on approximately 1,795 acres located on Mill Swamp (Rte. 621) on tax map numbers 09-01-001, 16-01-002, 16-01-002A, 16-01-003, 16-01-005. 16-01-008, 16-01-009, 17-01-003, 17-01-003C, 17-01-001, 17-01-002, 17-01-011, 27-01-003, and 27-01-004 in the Rural Agricultural Conservation zoning district as well as an associated application to withdraw approximately 860 acres that are part of tax map numbers 09-01-001, 16-01-003, 16-01-008, 16-01-009, 17-01-003C, 27-01-003 and 17-01-011 from the Moonlight Agricultural and Forestal District.

D. CUP-5-24 Sycamore Solar B Conditional Use Permit Request

Application (CUP-5-24) of Sycamore Cross Solar , LLC, applicant, for a for a conditional use permit to allow the expansion of an existing major utility service, specifically a six MW utility-scale solar energy generation facility and associated six medium voltage lines known as Sycamore Cross B, on approximately 240 acres located on tax parcel numbers 10-01-017, 11-01-015, 10-01-023, 10-01-025, 10-01-027, 10-01-028A, 10-01-030, and 11-01-005 located on Jones Drive (Rte. 626), Burwells Bay Road (Rte. 621), Mill Swamp Road (Rte. 621) and James Wilson Way

8. OLD BUSINESS

9. NEW BUSINESS

A. EXC-4-24 Sign Exception Riverside HealthCare Association, Inc.

Request of Riverside Health System Smithfield Hospital for a Sign Exception for Certain Signs as shown on the Coordinated Signage Scheme Plan to be located at Riverside Hospital located at 19339 Benns Grant Boulevard on property with tax map number 32-01-102

B. EXC-2-24 Sign Exception James River Crossing, Inc.

Request of James River Crossings for an exception to allow one sign on either side of Spadea Way, as shown on the Proposed Amended Master Sign Plan, on property with tax map numbers 34-01-070E and 34-01-070D1.

C. COUNTY ATTORNEY'S REPORT

D. PLANNING DIRECTOR'S REPORT

10. CLOSED MEETING

11. ADJOURNMENT

PLANNING REPORT

ATTACHMENTS:

Description	Type	Upload Date
April 18, 2024 Board of Supervisors Action List	Cover Memo	5/22/2024

ACTION LIST
BOARD OF SUPERVISORS
REGULAR MEETING
APRIL 18, 2024

1. APPROVAL OF AGENDA

On motion of Supervisor McCarty, the agenda was adopted unanimously (5-0) as presented.

2. CLOSED MEETING

Following the return to open meeting, Supervisor McCarty moved that the agenda be amended to include an item under New Business concerning the Cost Allocation Agreement related to the construction of the Carrollton Forest Pump Station, force main and Archer Mead pump station. The motion was unanimously adopted (5-0).

3. CITIZENS' COMMENTS

A. David Hundley of Smithfield, Director of the 1750 Courthouse, thanked the Board for its past and continued financial support. He extended an invitation to visit the 1750 Courthouse and experience a walkaround of the site, a presentation on the County's history as encapsulated by this unique courthouse building and an overview of current and upcoming projects. He acknowledged community volunteers and supporters for their work on projects and programs.

B. Peter Economon of the Public Defender's office addressed the Board regarding the services rendered by that office.

C. Herb DeGroft of District 5 addressed the Board regarding reimbursement to enlisted serving in the military reserve. He then inquired when the Nike Park Missile site will be completed and concluded his remarks with a request for the installation of a freshwater cooler and direction to staff to allow the local food pantry to provide fresh wholesome fruit and produce throughout the week.

D. Sam McAdoo of Lawnes Pointe inquired about the archeological easements being done at the Lawnes Point Subdivision. He advised that he believes his Lot 58 and 59 have incorrect historical easements.

Following an overview by County Administrator Keaton, the below Consent Agenda was adopted unanimously (5-0) as presented on motion of Supervisor McCarty:

A. Resolution to Amend the FY2023-24 Capital Projects Budget and Appropriate Interest Earnings for Carrollton Volunteer Fire Department Tanker Purchase ($299,701)

   Assignment: Wells

B. Resolution to Amend the FY2023-24 Capital Project Budget and Appropriate Funds for the Extension of William A. Gwaltney Way ($825,000)

   Assignment: Wells

C. Resolution to Amend the FY2023-24 Operating Budget and Appropriate Funding for Replacement of a Sheriff's Office Vehicle ($37,874)

   Assignment: Wells

D. Execution of a Broadband Infrastructure Grant Agreement with Charter Communications, Inc. ($318,750)

   Assignment: Jones

E. Memorandum of Understanding with the Town of Smithfield for Building Code Enforcement Service

   Assignment: Jones

F. Dominion Energy Easement for Relocation of the Overhead Powerline at the Public Works Complex

   Assignment: Jones

G. Minutes of March 7, 2024 Work Session

   Assignment: Storm

5. REGIONAL AND INTER-GOVERNMENTAL REPORTS

A. Hampton Roads Military Federal Facility Alliance: Vice-Chairman Rosie reported on items discussed at the most recent meeting of the Alliance.

B. Hampton Roads Workforce Council: Supervisor Rountree reported on items discussed at the most recent meeting of the Council related to maritime trade to assist our ports.

C. Southeastern Public Service Authority: County Administrator Keaton reported on items concerning the regional landfill.

6. APPOINTMENTS

A. Chamber of Commerce: Supervisor Rountree moved that Assistant County Administrator Robertson be reappointed to serve on the Chamber of Commerce. The motion was unanimously (5-0) adopted.

Assignment: Storm

B. Southeastern Tidewater Opportunity Project: Supervisor Jefferson moved that Arleen Picott be reappointed to serve on the Southeastern Tidewater Opportunity Project. The motion was unanimously (5-0) adopted.

Assignment: Storm

7. SPECIAL PRESENTATION

An update of the County's Emergency Operations Plan was provided by Will Drewery, the County's Emergency Management Coordinator.

8. COUNTY ATTORNEY'S REPORT

No report was offered.

9. PUBLIC HEARINGS

A. Public Hearing on the Proposed Operating and Capital Budgets for Fiscal Year 2024-25, Related Ordinances, and the FY2025-34 Capital Improvements Program: Per the *Code of Virginia*, the Board is required to wait at least seven days following its

public hearing before acting on the proposed FY2023-24 Operating and Capital Budget which includes an advertised General Fund Operating Budget of $108,987,352 and a Capital Budget of $14,900,000.

Assignment: Robertson

B. Application (ZA-1-24) of Robert T. Jones, Property Owner, for a Change in Zoning Classification from Rural Agricultural Conservation (RAC) to Conditional Rural Residential (C-RR) for Approximately 5.3 Acres Located at 13356 Jones Town Road (Rt. 637) with Tax Parcel Number 17-01-045 for the Purpose of Creating One Single Family Residential Lot Around an Existing Dwelling: Supervisor Rountree moved that the application be approved which was unanimously adopted (5-0).

Assignment: Ring

C. Application (SUB-18-24) of Tracy Gramajo, Applicant, and John D. Eure Jr. and Bellamy F. Eure, Property Owners, to Vacate the "Recreation Area" Lot of Cherry Grove Acres Section Two to Allow Single Family Residential Use of the Parcel: that the application be approved contingent upon approval of a well and wastewater system. Chairman Acree moved that the application be denied. The motion was unanimously adopted (4-1) with Supervisor Jefferson voting against the motion.

Assignment: Ring

D. Application CUP-1-24 of Robert M. and Hollis G. Bridges, Property Owners, for a Conditional Use Permit to Operate a Commercial Kennel on 10.34 Acres Located at 24030 Ennis Mill Road in the Rural Agricultural Conservation (RAC) Zoning District: Chairman Acree moved that the application be approved as conditioned by the owner and all necessary permits being obtained prior to the Certificate of Occupancy being issued. The motion was unanimously adopted (5-0).

10. <u>COUNTY ADMINISTRATOR'S REPORT</u>

A. 2023 Annual Report for the Economic Development Authority: For the Board's information.

B. Matters for the Board's information were highlighted by County Administrator Keaton, as follows: Incidents by Zone data/March 2024; Incidents by zone map – March 2024; Station Activity Report – March 2024; and, Museum Report – March 2024.

11. NEW BUSINESS

A. Application (EXC-1-24) of Isle of Wight County, Property Owner, for an Exception to Section 6-1010.A.5 and A.11 of the Highway Corridor Overlay (HCO) District Requirements for the Route 10 Waterline Booster Pump Station on 1.01 Acres Located at 10200 Old Stage Highway (Rte. 10): Supervisor Rountree moved that the applicant's request for the HCO requirement for the windows be denied; that the exception request of the HCO be denied, and the request for the bob-wire.The motion was adopted (4-1) with Chairman Acree voting against the motion.

Assignment: Ring

B. Discussion on cost allocation agreement regarding the construction of the Carrollton Forest pump station, force main and Archer Mead pump station: Supervisor McCarty moved to authorize the County Administrator to enter into the cost allocation agreement between the County and Whitman development group for the purpose of the replacement of the Carrollton Forest pump station, the force main sewer running between the new Carrollton pump station and the new Archer Mead pump station. The motion was adopted unanimously (5-0).

PLANNING REPORT

ATTACHMENTS:

Description	Type	Upload Date
April 23, 2024 Planning Commission Regular Meeting Minutes	Cover Memo	5/22/2024

MINUTES OF THE MEETING OF THE ISLE OF WIGHT COUNTY PLANNING COMMISSION HELD ON THE TWENTY-THIRD DAY OF APRIL IN THE YEAR TWO THOUSAND AND TWENTY-FOUR

CALL TO ORDER

Bobby Bowser, Chairman, called the Isle of Wight County Planning Commission meeting to order at 6:00 PM on April 23, 2024, at the Isle of Wight Couty General District Court, located at 17000 Josiah Parker Circle, Isle of Wight, Virginia 23397

INVOCATION

James Ford delivered the invocation.

PLEDGE OF ALLEGIANCE

Chairman Bowser invited everyone present to join in the Pledge of Allegiance.

ROLL CALL/DETERMINATION OF A QUORUM

PRESENT
Bobby Bowser, Chairman
Thomas Distefano, Vice-Chairman
Brian Carrol
Cynthia Taylor
James Ford
Jennifer Boykin
George Rawls
Rick Sienkiewicz
Raynard Gibbs

ABSENT
Matthew Smith

A quorum was determined.

ALSO IN ATTENDANCE
Mandy Rogers, Substitute Council to the Planning Commission
Don Robertson, Assistant County Administrator
Amy Ring, Community Development Director
Sandy Robinson, Planner II
Caleb Kitchen, Planner I
Amanda Landrus, Secretary

ACTION ON REQUESTS TO WITHDRAW OR TABLE PENDING AGENDA ITEMS

Chairman Bowser asked if there were any requests to table or withdrawal agenda items. Amy Ring, Community Development Director, stated there were no requests.

APPROVAL OF AGENDA

Chairman Bowser called for a vote to approve the agenda. Commissioner Rawls made the motion to approve the agenda. Commissioner Taylor seconded the motion. Chairman Bowser asked for all in favor to signify by saying aye. The motion passed unanimously.

APPROVAL OF CONSENT AGENDA

Chairman Bowser called for a vote to approve the consent agenda. Commissioner Rawls made a motion to approve the consent agenda. Commissioner Boykin seconded the motion. Chairman Bowser asked for all in favor to signify by saying aye. The motion passed unanimously.

CITIZENS' COMMENTS

There being no comments, Chairman Bowser closed citizens' comments.

PUBLIC HEARINGS

There being no public hearings, Chairman Bowser moved to the next item on the agenda.

OLD BUSINESS

Chairman Bowser called for consideration of the following old business items:

> Application of Moonlight Solar, LLC (CUP-10-23), Applicant, and George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards, LeAnn Ricks Edwards Wait, and Dana Louise Edwards, Property Owners, for a Conditional Use Permit to Establish a Major Utility Service, Specifically a 44 MW Utility-Scale Solar Energy Generation Facility and Substation, on Approximately 523 Acres Located on Moonlight Road (Rte. 627) and Burwells Bay Road (Rte. 621) in the Rural Agricultural Conservation Zoning District and a Request to Withdraw Approximately 523 Acres from the Moonlight Agricultural/Forestal District.

Caleb Kitchen, Planner I, project manager, gave the following presentation.

Revisions to the Moonlight Solar Energy Generation Facility Major Utility Service Conditional Use Permit Request CUP-10-23

Planning Commission Regular Meeting
April 23, 2024

Site Description

- Tax Map ID#: 11-01-017, 11-01-018, 11-01-023, and 11-01-023A
- Location: Moonlight Road (Rte. 627) and Burwells Bay Road (Rte. 621)
- Current Zoning: Rural Agricultural Conservation (RAC)
- Election District: D5
- Purpose: Establish a 44 MW utility-scale solar energy facility/substation on approximately 523 acres and to withdraw approximately 523 acres from the Moonlight Agricultural/Forestal District

Background

- Planning Commission recommended denial by a vote of 9-0 at the November regular meeting.
- Applicant requested deferral from the Board of Supervisors until the March regular meeting to attempt to mitigate identified weaknesses in the Planning Commission Staff Report.
- Applicant submitted revisions
- Board of Supervisors referred the application back to the Planning Commission for reconsideration.

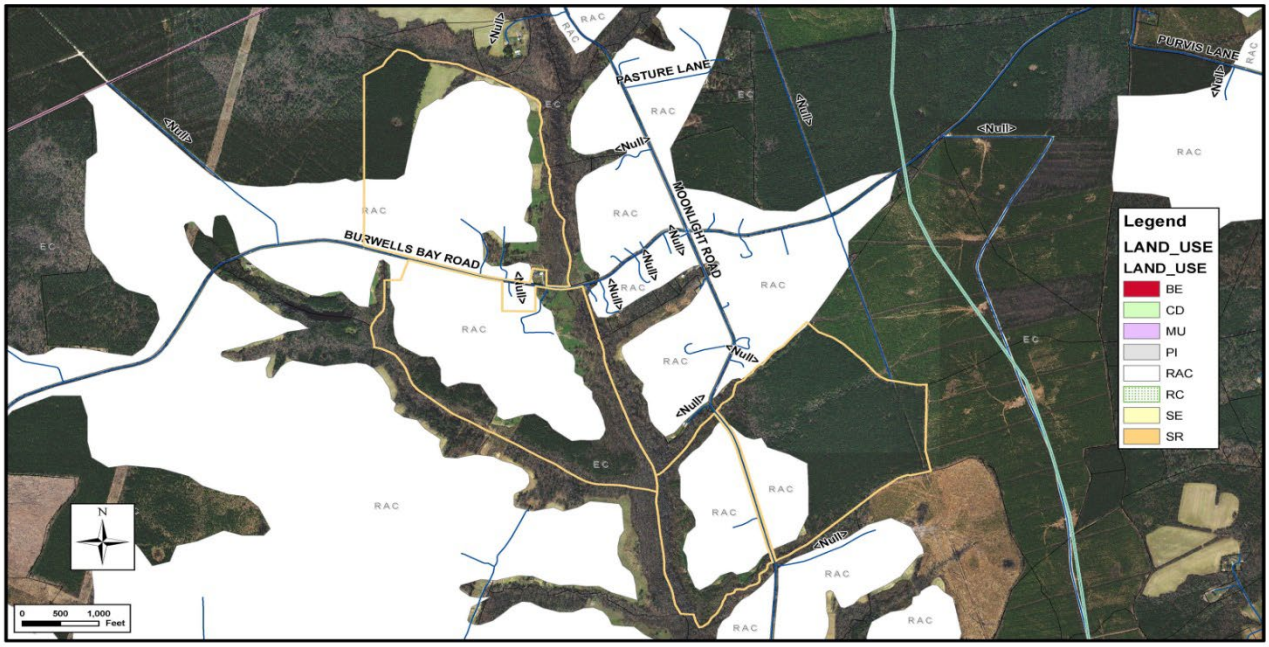
CUP-10-23 Conditional Use Permit Request - Location Map



CUP-10-23 Zoning Map



CUP-10-23 Land Use Map



Applicant Proposed Revisions

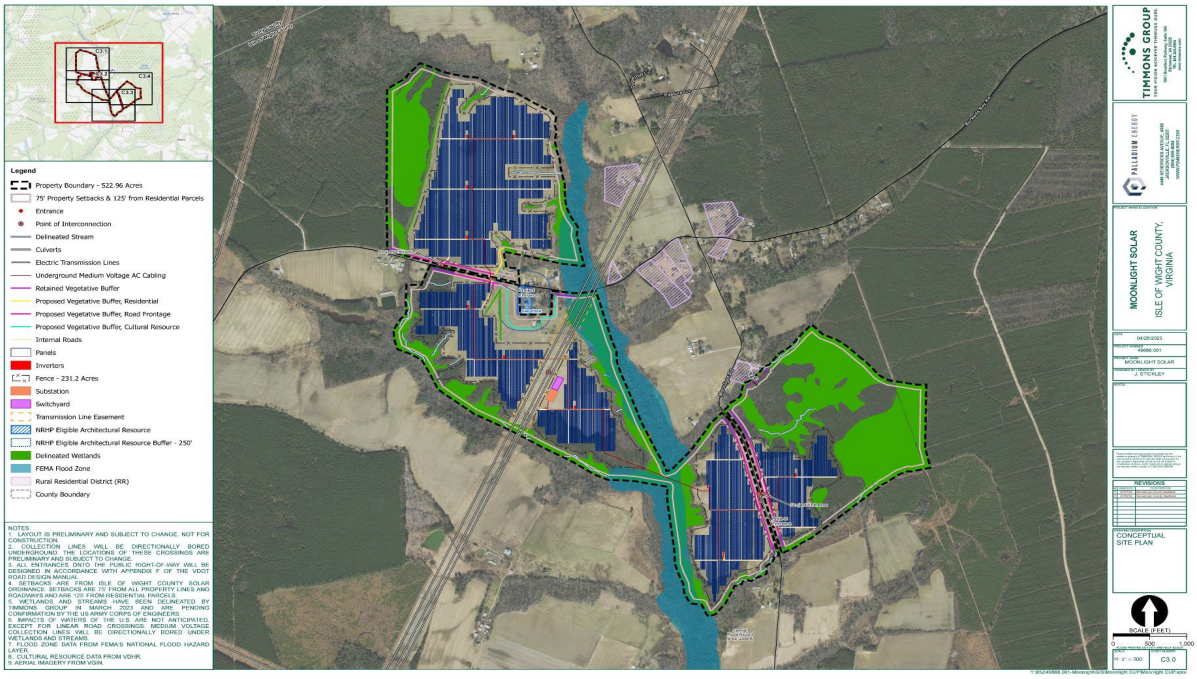
- Development envelope area reduced from 305 acres to 272.8 acres.
- Fenced-in project area reduced from 250.1 acres to 231.2 acres.
- Prime Farmland soil impacts reduced from 272.4 acres to 242 acres.
- Reduced impacts to the following ecological core areas:
  - C3 (High Importance) reduced from 36 acres to 8.9 acres.
  - C4 (Moderate Importance) reduced from 4.4 acres to 0 acres.
  - C5 (General Importance) reduced from 12.7 acres to 12.6 acres.

Applicant Proposed Conditions

1. Increase the height of the vegetative buffer at planting around the Carroll Plantation House to 5-6ft and plant the buffer at beginning of construction.
2. Route heavy vehicle traffic along three primary route – Old Stage Highway, Burwells Bay Road, and Moonlight Road.
3. Install temporary signage along the construction route.
4. Install supplemental signage where warranted, to alert drivers to unexpected geometric conditions (i.e. sharp/blind corners).
5. Post signage at each of the active construction entrances alerting drivers to traffic entering and exiting the site.
6. Place temporary variable messages to alert drivers/residents to changes in traffic patterns and pending delivery schedules.
7. Require the selected contractor(s) to coordinate deliveries so that two-way construction traffic on the aforementioned road is minimized.

Applicant Proposed Conditions Cont.

8. Heavy vehicle traffic will enter as a convoy, utilize on-site roads for circulation/delivery, and leave as a convoy.
9. Pilot vehicles will lead the convoy to ensure trucks follow the plan.
10. Station VDOT-certified flaggers along the construction route and in the vicinity of the site to actively manage construction-related traffic.
11. Prior to construction, conduct a minimum 4-week traffic volume study to quantify best delivery windows. Results will be used to implement delivery windows during the times of day with the lowest volume of traffic.
12. With respect to inter-parcel access, the applicant will consolidate entrance points on opposite sides of the street to align with each other. The entrances on Burwells Bay Road are to be located opposite one another so that any "shared" traffic can easily cross the road. The entrances on Moonlight Road will also be consolidated to a common location.
13. Prior to commencement of construction, the applicant will send mailers to residents and go door to door along the transportation route to provide notice of upcoming construction related activities in the area.




PALLADIUM ENERGY
Moonlight Solar
VS3
MOONLIGHT RD. (SE)
AT PLANTING
Date Taken: 04/19/2023
Time Taken: 12:00 PM
ISLE OF WIGHT COUNTY, VA
Visualization by Timmons Group


PALLADIUM ENERGY
Moonlight Solar
VS3
MOONLIGHT RD. (SE)
AT 3 YEARS
Date Taken: 04/19/2023
Time Taken: 12:00 PM
ISLE OF WIGHT COUNTY, VA
Visualization by Timmons Group


PALLADIUM ENERGY
Moonlight Solar
VS3
MOONLIGHT RD. (SE)
AT 6 YEARS
Date Taken: 04/19/2023
Time Taken: 12:00 PM
ISLE OF WIGHT COUNTY, VA
Visualization by Timmons Group


PALLADIUM ENERGY
Moonlight Solar
VS3
MOONLIGHT RD. (SE)
AT MATURITY (10 YEARS)
Date Taken: 04/19/2023
Time Taken: 12:00 PM
ISLE OF WIGHT COUNTY, VA
Visualization by Timmons Group


PALLADIUM ENERGY
Moonlight Solar
VS2
BURWELLS BAY RD. (SW) CARROLL PLANTATION VIEW
AT PLANTING
Date Taken: 04/19/2023
Time Taken: 12:20 PM
ISLE OF WIGHT COUNTY, VA
Visualization by Timmons Group


PALLADIUM ENERGY
Moonlight Solar
VS2
BURWELLS BAY RD. (SW) CARROLL PLANTATION VIEW
AT 3 YEARS
Date Taken: 04/19/2023
Time Taken: 12:20 PM
ISLE OF WIGHT COUNTY, VA
Visualization by Timmons Group


PALLADIUM ENERGY
Moonlight Solar
VS2
BURWELLS BAY RD. (SW) CARROLL PLANTATION VIEW
AT 5 YEARS
Date Taken: 04/19/2023
Time Taken: 12:20 PM
ISLE OF WIGHT COUNTY, VA
Visualization by Timmons Group


PALLADIUM ENERGY
Moonlight Solar
VS2
BURWELLS BAY RD. (SW) CARROLL PLANTATION VIEW
AT MATURITY (10 YEARS)
Date Taken: 04/19/2023
Time Taken: 12:20 PM
ISLE OF WIGHT COUNTY, VA
Visualization by Timmons Group

The Planning Commission and Board of Supervisors shall consider the following criteria before the granting of a conditional use permit:

1. Will not be detrimental to or endanger the public health, safety, and general welfare;
2. Will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted, nor substantially impair the use of other property within the immediate proximity;
3. Adequate utilities, water, sewer or septic system, access roads, storm drainage and/or other necessary public facilities and improvements will be provided;
4. Ingress and egress so designed as to minimize traffic congestion on the public streets;
5. Not contrary to the goals and objectives of the Isle of Wight County Comprehensive Plan;
6. Shall conform to all other applicable regulations of the zoning district classification in which it is located and to the special requirements established for the specific use; and
7. Will not result in a multiplicity or saturation of similar uses in the same general neighborhood of the proposed use.

Board may impose additional conditions or limitations on CUPS. Such conditions may include, but are not limited to:

1. Number of persons living or working in the immediate area and the proposed hours of operation.
2. Traffic conditions, sidewalks, parking facilities, vehicle access, peak periods of traffic; and proposed roads, but only if construction of such roads will commence within the reasonably foreseeable future;
3. Orderly growth of the neighborhood and community and the fiscal impact on the County;
4. Effect of odors, dust, gas, smoke, fumes, vibration, glare, and noise upon the use of surrounding properties;
5. Facilities for police, fire protection, sewerage, water, trash and garbage collection and disposal, and the ability of the County or persons to supply such services.
6. The degree to which the development is consistent with generally accepted engineering and planning principles and practices;
7. The structures in the vicinity such as schools, houses of worship, theaters, hospitals, and similar places of public use;
8. The purposes set forth in this ordinance, the County's Comprehensive Plan, and related studies for land use, roads, parks, schools, sewers, water, population, recreation, and the like;
9. The environmental impact, the effect on sensitive natural features, and opportunities for recreation and open space; and
10. The preservation of cultural and historic resource landmarks.

Department and Agency Review

Staff distributed the revised application to the following departments for review:

- Sheriff's Department: The applicant has made an honest effort to address most of the issues. However, major concerns still exist regarding roadway conditions with no shoulders as well as limited areas to pull vehicles over or turn vehicles around even with the use of escort vehicles when meeting with large vehicle farm equipment, emergency vehicles, school buses, etc. It would be impractical for these vehicles to maneuver around one another in a safe manner. If this application is approved, we suggest no movement of large vehicles for this project be allowed on the roadway during the time of school bus operations to ensure the safety of the children being bused to and from school.

Note that should this CUP be approved, it will be subject to review and approval from all associated agencies during site plan review.

Comprehensive Plan Review

- Future Recommended land use designation for these properties is Rural Agricultural Conservation (RAC) and Environmental Conservation (EC) under the 2020 adopted Comprehensive Plan.
- Appropriate uses for the RAC land use designation include agriculture, horticulture, forest lands, and scattered low-density residential uses. Other uses such as resource extraction and utility scale solar facilities are also permitted when appropriately sited.
- Appropriate uses for the EC land use designation include wetlands, farms, forest uses, open space, and limited park facilities.
- Solar Energy facilities are considered compatible with the RAC land use when properly sited and with the application of appropriate development criteria. The areas designated as EC should be preserved due to environmental constraints unless site-specific analysis demonstrates there are no environmental concerns in a specific area.

Staff Analysis

Strengths:

1. The proposed use will have minimal impact on community facilities and resources.

Weaknesses:

1. The proposed use would remove agricultural land from production.
2. Temporary impact to residential development in the area from construction traffic and noise is expected during the construction phase.
3. The project will create visual impacts to historical properties which can be substantially mitigated upon landscaping maturity.
4. The project will impact identified ecological core areas, including 8.9 acres of cores with high importance and 12.6 acres of cores with general importance.
5. Approval of the project would result in a multiplicity and saturation of similar uses within a ½ mile distance to another solar energy generation facility.
6. With no to minimal shoulders and deep ditches at several points along the proposed transportation route there may be safety issues that arise as construction vehicles meet along the route.
7. Due to siting concerns, the application is not consistent with recommendations in the Comprehensive Plan.

Staff Recommendation

Based on the identified weaknesses, staff continues to recommend denial of the Conditional Use Permit and the Moonlight AFD withdrawal request. However, should the CUP and withdrawal be approved, staff recommends the original 13 conditions proposed by staff, inclusion of the 13 conditions proposed by the applicant, along with two additional conditions proposed by staff:

1. The applicant will work with Isle of Wight County Public Schools to coordinate with and prohibit any construction or delivery activities along the transportation route during hours of school bus route operation in the morning and afternoon.
2. The 5-6ft tall planting to occur at the beginning of construction to be applied to all adjacent parcels that contain a residence.

Commissioner Carroll suggested this application be brought back to public hearing to give the applicant a chance to bring the updated facts forward as well as asked for a sound study to be provided.

Commissioner Taylor shared her concern for the sheriff's department comments as well with the possible saturation of use that this application would cause.

Chairman Bowser asked the applicant about the sheriff's comments and conditions in regard to the safety of school buses on the road.

Chance Zajicek, Development Manager with Palladium Energy, stated he proposed a four-week traffic study to survey when the traffic was heaviest as well as the school bus routes. He stated they would not have deliveries during those times.

Commissioner Sienkiewicz asked the applicant if he believes the trucks can make the delivery window and what is the plan if they cannot.

Chance Zajicek stated that they have been developing a liquidated damages provision should the conditions of the transportation plan be violated in hopes to handle it on a project-level and hold people accountable.

Commissioner Gibbs asked if the limited delivery window would extend the length of construction.

Mr. Zajicek stated that it could delay construction time.

Commissioner Carroll made the recommendation to send this application to public hearing in May to include a sound study. Commissioners Boykin seconded the motion, which was adopted with Commissioners Boykin, Ford, Rawls Sienkiewicz, Gibbs, Carroll, and Bowser voting in favor of the motion and Commissioners Distefano and Taylor voting against the motion.

The motion passed, and the item will go to the May 28, 2024, Planning Commission meeting.

NEW BUSINESS

There were no new business items.

COUNTY ATTORNEY'S REPORT

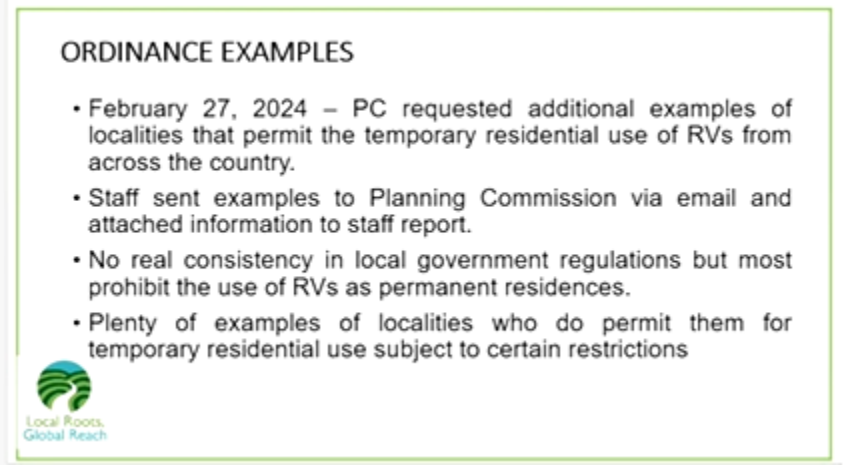
Mandy Rogers confirmed there were no items for the County Attorney's report.

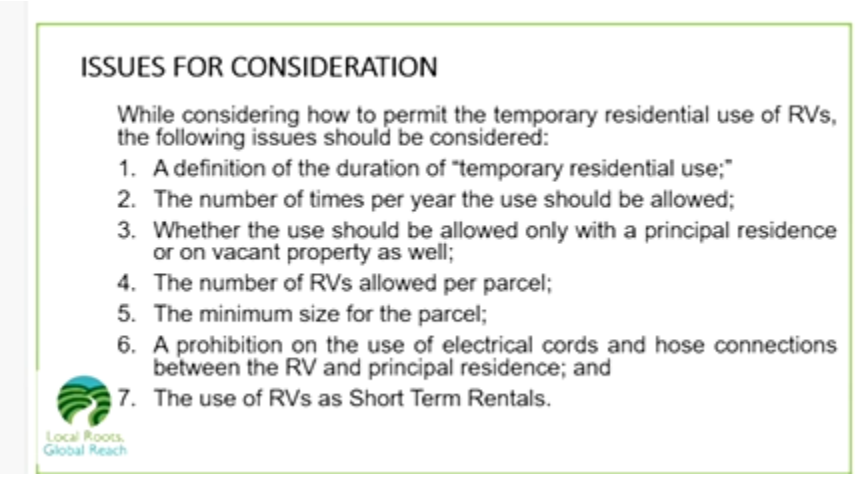
PLANNING DIRECTORS REPORT

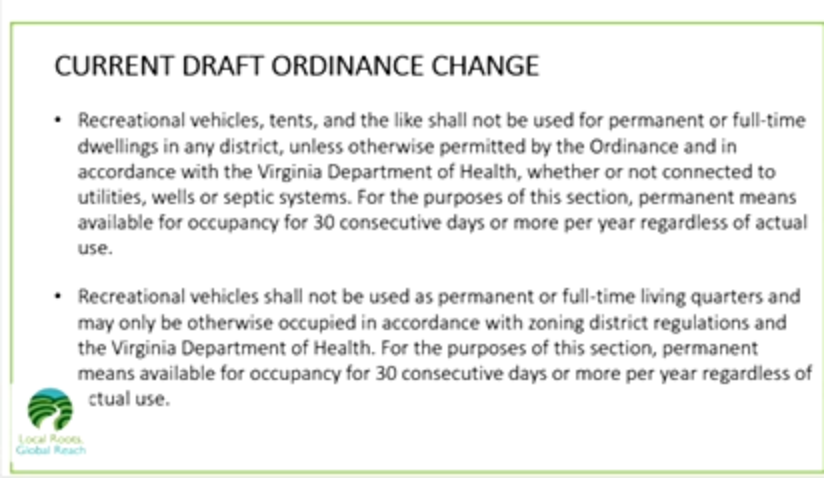
Chairman Bowser asked for the Planning Director's Report item, Recreational Vehicle (RV) Ordinance Discussion.

Amy Ring gave the following presentation.





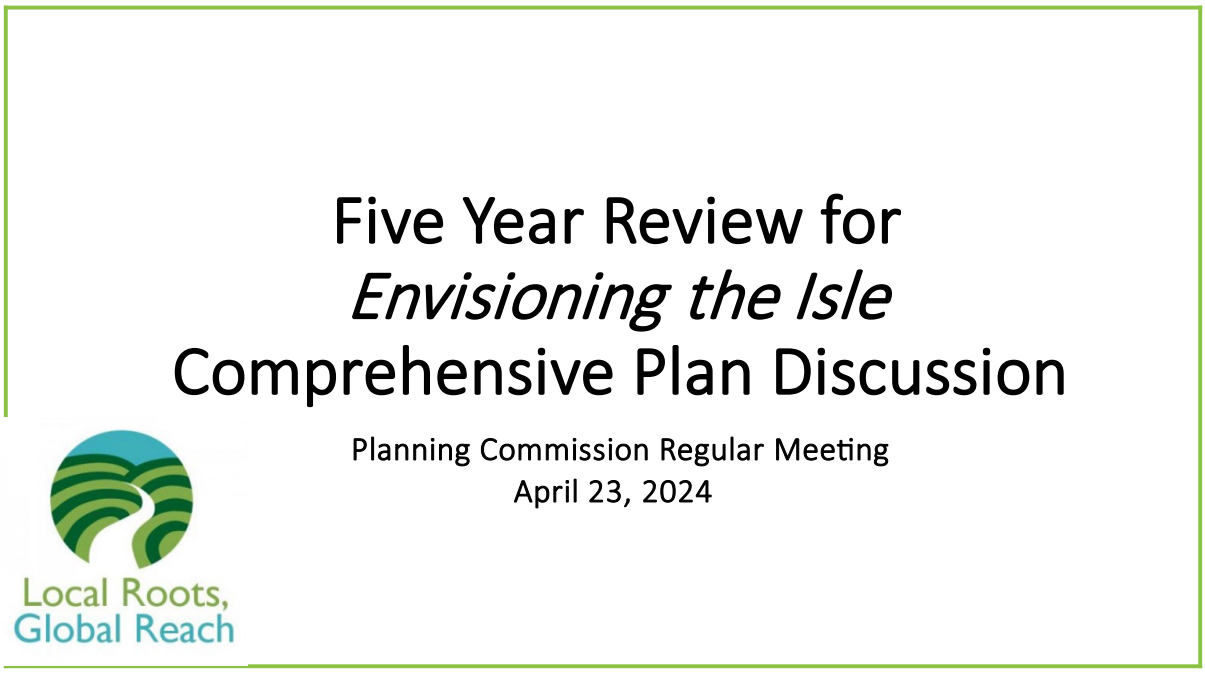




A brief discussion was had, and it was agreed that Ms. Ring would bring the suggested revisions back to the Planning Commission.

Chairman Bowser asked for the next Planning Director's Report item, Comprehensive Plan Five Year Review Discussion.

Amy Ring gave the following presentation.



PROJECT DESCRIPTION

- Section 15.2-2230 of the *Code of Virginia* stipulates that at least once every five years, the comprehensive plan shall be reviewed by the local planning commission to determine whether it is advisable to amend the plan.
- Five year deadline is 2025 for review of the County's comprehensive plan, *Envisioning the Isle*, adopted in 2020.
- Planning Commission held a worksession on April 9, 2024 to continue their discussion on the Plan review process, schedule and the formation of a stakeholder workgroup.

Local Roots, Global Reach

Comprehensive Plan Five Year Process

- At the April 9 worksession, Planning Commission tentatively established the working group will consist of the following:
  - Members of the Isle of Wight County Planning Commission;
  - One representative of the Town of Smithfield Planning Commission;
  - One representative of the Town of Windsor Planning Commission; and
  - One private citizen from each of the election districts.
- Commission members agreed to submit the names and contact information for their private citizen representatives to the Community Development Director by their May 28, 2024, regular meeting.
- Staff posted a notice on the County's Facebook page and website requesting that anyone interested on serving as one of the private citizen representatives to contact their Planning Commission member.
- First meeting of the stakeholder working group has tentatively been set for July 9, 2024.
- Larger stakeholder working group will break into smaller groups to review each of the chapters from the County's Comprehensive Plan



Envision the Isle Comprehensive Plan 2025 Review Tentative Schedule (Subject to Change Based on Meeting Availability and Consultant Deliverable Timeframes)

March 26, 2024	Review of Tentative Review Schedule and Stakeholder Group Work Scope with Planning Commission
April – May 2024	Budget Proposal for Capital Impact Model Update, Operational Impact Model, Growth Rate Impact Scenario Study and Housing Study Consultant Services to County Administrator and Board of Supervisors
July 9, 2024	Initial Meeting of the Comprehensive Plan Review Stakeholder Workgroup – subcommittee chapter review assignments
July 2024	Consultants under contract and begin scenario development and draft community feedback survey
August – September, 2024	Initial growth rate scenario findings and draft community survey presented to stakeholder workgroup for feedback
September 2024	Initial Community Feedback Survey and initial subcommittee workgroup meetings
October 2024	Subcommittee workgroup meetings and Feedback Survey result analysis
November 2024	Feedback Analysis, Summary Report, and subcommittee meetings
December 2024 – January 2025	Subcommittee draft revisions submitted, draft consultant deliverables presented to Stakeholder Workgroup. Development of draft plan begins.
January 2025	Presentation of draft comprehensive plan revisions and initial consultant reports to Planning Commission
February 2025 – March 2025	Draft Comprehensive Plan revisions presented for community feedback
April 2025	Presentation of Comprehensive Plan revisions to Planning Commission for public hearing and consideration
May 2025	Presentation of Comprehensive Plan revisions to Board of Supervisors for public hearing and consideration

Local Roots, Global Reach

Chairman Bowser asked the commissioners to pick one of the categories that they had an interest or expertise in.

Commissioner Taylor stated she was interested in Preserve the Isle.

Commissioner Distefano stated he was interested in Serve the Isle.

Commissioner Ford, Boykin, and Gibbs are interested in Educate the Isle.

Commissioner Boykin is interested in Enhance and Preserve the Isle.

Commissioner Sienkiewicz is interested in Connect the Isle.

CLOSED MEETING

Chairman Bowser confirmed there were no items to discuss in closed meeting.

ADJOURNMENT

There being no further information to discuss, Chairman Bowser adjourned the meeting at 6:58 PM.

Adopted this _____day of _____, 2024

_____
Bobby Bowser, Chairman, Isle of Wight County Planning Commission

Attest: _____
Amanda Landrus, Secretary

PLANNING REPORT

PLANNING REPORT

APPLICATION:

Application (ZA-3-24) of Curtis D. Lytle and Brandy W. Lytle, property owners, for a change in zoning classification from Rural Agricultural Conservation to Conditional Rural Residential for approximately 5.3 acres located at 5114 West Blackwater Road (Rt. 603) with tax parcel number 51-01-012 to create four single family residential lots

ELECTION DISTRICT:

D5

LOCATION:

The proposed lots are currently part of tax map parcel 51-01-012 and will be located off the south side of West Blackwater Road (Rt. 603).

BACKGROUND:

The property lies in the RAC zoning district. A previous family member subdivision was approved in May 2005. Under the sliding scale option in the Rural Residential zoning district, a total of four single family residential lots are allowed to be cut from parcel 51-01-012. If this rezoning is approved, there will be no more subdivisions permitted for parcel 51-01-012, except for family member transfer lots.

DESCRIPTION:

The property's current size is 152.87 acres and consists of forest and agricultural land. There are no wetlands identified in or around the 5.3 acres to be rezoned.

The proposal will allow four 1.27 acre lots to be created along the northeast corner of the property. A proffered condition of the rezoning to C-RR specifically designates these new lots for single family residential use.

The Capital Impacts Model projects an addition of 1.8 new students in the southern service area and no impacts on school capacity. The model shows a deficit of parks and recreation facilities in the southern service area of the County. This proposed rezoning would add to that deficit and there are no projects identified in the Capital Improvement Plan to address this shortfall. Additionally,

the model projects there is enough existing capacity to service these lots for fire and rescue.

COMPREHENSIVE LAND USE PLAN:

The property is designated Rural Agricultural Conservation and Environmental Conservation on the Future Recommended Land Use Map in the Comprehensive Plan.

The RAC land use designation is intended to maintain and conserve rural character and farmlands and to provide for a full range of agricultural, farming activities, and related uses along with scattered, low density residential development.

The EC land use designation is intended to preserve important environmental features located throughout the County such as wetlands, wildlife, and tree preservation. Due to their important environmental role and unsuitability for development, floodplains, and steep slopes are also included.

The proposal is consistent with the future recommended land use.

ORDINANCE REVIEW:

The required lot area in the RR zoning district is a minimum of 40,000 square feet. The minimum lot frontage is 120 feet with 150 feet of lot width at the front setback line. The proposed parcel configurations meet the minimum requirements of the RR zoning district.

The proposed lot is not located in the Chesapeake Bay Preservation Area Overlay District.

Following approval of the rezoning, the subdivision plat will be submitted, approved, and recorded to create the new lot.

AGENCY REVIEW:

The following departments have stated no concerns with the rezoning application as presented:

- Emergency Services
- Virginia Department of Transportation

- Isle of Wight County Public Schools

STAFF CONCLUSIONS:

Strengths:

1. The application is compatible with the existing land uses in the vicinity and within the guidelines of the Future Recommended Land Use Plan Designation.
2. The proposed lots meet lot size requirements for the RR Zoning District.

Weaknesses:

Staff identifies no weaknesses with the application.

STAFF RECOMMENDATION:

Staff recommends approval of the rezoning application as proffered.

ATTACHMENTS:

Description	Type	Upload Date
Application and Proffer	Backup Material	5/6/2024
Rezoning Exhibit	Backup Material	5/6/2024
Site Images	Backup Material	5/6/2024
Location Map	Backup Material	5/16/2024
Zoning Map	Backup Material	5/16/2024
Land Use Map	Backup Material	5/16/2024

Revised 4/7/23

RECEIVED
MAR 05 2024
By: .....

Local Roots, Global Reach
ISLE OF WIGHT
COUNTY, VIRGINIA
DEPARTMENT OF PLANNING AND ZONING

29618
ZA-3-24

APPLICATION FOR REZONING/CONDITIONAL ZONING AMENDMENT

This application should be used to petition for a change to the Official Zoning Map or for an amendment of zoning conditions. The following application requirements are consistent with the procedures set forth in Section 1-1015, *Amendments*, of the Isle of Wight County Zoning Ordinance, as amended.

A. APPLICATION FOR:

[X] Rezoning

[ ] Conditional Rezoning (Are voluntary proffered conditions attached?):_____Yes _____ No

Request to change the subject property(s) from the_____to the_____zoning district.

Proposed Use or Activity: Rural Residential (RR)

[ ] Amendment to Conditional Zoning

Request to change conditional zoning as follows (Attach current and proposed conditions): _____

B. PROJECT DESCRIPTION:

Project Name: Rezoning Exhibit & Subdivision of Tax Parcel 51-01-012

Property Address (if any): 5114 West Blackwater Road, Zuni VA 23898

Election District: District 5

Comprehensive Plan Designation: N/A

The rezoning will apply to 5.289 acres out of 152.872 total acres

Tax Parcel Identification # 51-01-012 Number of Acres to be Rezoned: 5.289

Requesting Zoning District Change from: RAC to RR

Tax Parcel Identification #_____Number of Acres to be Rezoned: _____

Requesting Zoning District Change from:_____to _____

Tax Parcel Identification #_____Number of Acres to be Rezoned: _____

Requesting Zoning District Change from:_____to _____

Proposed Utilities (check all that apply): Public Water_____Private Well _____

Public Sewer_____Private Septic _____

C. **APPLICATION INFORMATION:**

Applicant(s) Name(s): Curtis D. Lytle & Brandy W. Lytle

Address: 5114 West Blackwater Road

City, State, Zip Code: Zuni, VA 23898

Phone No.: 757-636-0685 Email: curt.d.lytle@gmail.com Fax No.: _____

Property Owner(s) Name(s): SAME AS APPLICANT

Address: _____

City, State, Zip Code: _____

Phone No.: _____ Email: _____ Fax No.: _____

[signature] 3/5/24

Applicant Signature **Date**

_____

Owner Signature *if different* **Date**

NOTICE: THE ATTACHED CHECKLIST MUST BE COMPLETED, CERTIFIED, AND SUBMITTED OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE.

Remit Application to: Isle of Wight County Central Permitting, 17140 Monument Circle, Suite 100
P. O. Box 80, Isle of Wight, Virginia 23397

FOR OFFICE USE ONLY:

Complete Application Received On: 3/8/2024 Fees Paid: ✓

Tax Query: [✓] Current [ ] Delinquent Distribution Date: 3/8/2024

Posted/Date to Post: _____

AGENCIES REFERRALS:

_____ Department of Conservation & Recreation
_____ Economic Development
✓ Emergency Services
_____ General Services
✓ Environmental Planner
✓ Health Department
_____ Transportation Manager
_____ Commission of Revenue
_____ Other _____

_____ Inspections
_____ Sheriff's Office
_____ Town of Smithfield
_____ Town of Windsor
✓ VDOT
✓ Schools
_____ Budget & Finance
_____ County Attorney

Verified By: CK Date: 3/8/24

COUNTY OF ISLE OF WIGHT
DISCLOSURE OF REAL ESTATE HOLDINGS

Applicant: Curtis D. Lytle & Brandy W. Lytle

Address: 5114 West Blackwater Road

REAL ESTATE HOLDINGS TO BE AFFECTED

Location or Address	Description
5114 West Blackwater Road	51-01-012A
51-01-012	Residual Tract

OTHER OWNERS OF AFFECTED REAL ESTATE

(Not Required for Corporation whose stock is traded on a national or local stock exchange or having more than 500 shareholders.)

Name of Individuals Corporation/Partnership Business Association	Address

Does any member of the Isle of Wight County Planning Commission or governing body have any interest in such property, either individually, by ownership of stock in a corporation owning such land, partnership, as the beneficiary of a trust, or the settlor of a revocable trust, or whether a member of the immediate household of any member of the Planning Commission or governing body has any such interest? Yes X No

If yes, names of members:

I do solemnly swear that the foregoing statement(s) and attachments(s), if any, are complete, correct, and true.

Applicant: CURTIS LYTLE (Printed or Typed Name) Applicant: [signature] (Signature) Date: 3/5/24

Commonwealth of Virginia
County of Isle of Wight

Subscribed and sworn to before me Staci Nicole Hicks
A Notary Public in and for the County of Isle of Wight, Commonwealth of Virginia, this 5 day of March, 2024.

Staci Nicole Hicks
Notary Public

Staci Nicole Hicks
Notary Public
Reg #7844655
Commonwealth of Virginia

My Commission Expires October 31, 2027

REZONING/CONDITIONAL ZONING AMENDMENT APPLICATION CHECKLIST

****Both checklist and application required upon submission to central permitting or application will not be accepted****

In conjunction with Section 1-1015, *Amendments*, of the Isle of Wight County Zoning Ordinance, as amended, the following information shall be submitted for a Rezoning/Conditional Zoning Amendment Application. Please note that it is the applicant's responsibility to ensure that the application is in compliance with all Federal, State and County regulations.

No application for an exception shall be certified as complete unless the following information is provided. ***The required number of copies may be increased or reduced with permission of the Zoning Administrator, depending on the review needs.*** Applicant(s) must have their signature(s) notarized on the disclosure of real estate holdings.

☒ **Ten (10) copies of the following:**

- ☑ original, executed application
- ☑ a statement of the reasons for seeking a rezoning, and if applicable, a statement of proffered conditions with owner(s) original, notarized signature.
- ☑ narrative description of current condition and use of the property, which shall include the tax parcel identification number
- ☑ full size concept plan of the site to show all existing and proposed physical improvements and such other information as is necessary to clearly indicate to the reviewing body that adequate provisions have been made for compliance with all standards for that particular use, the extent of the property to be so used on a given parcel or parcels, and information defining the requested exceptions. The plan shall be prepared by the appropriate authorized design professional licensed to practice in Virginia. No person shall prepare or certify design elements of site plans which are outside the limits of their professional expertise and license. Such document shall be drawn to scale and shall include the following information:
  - A vicinity map at a scale of no less than one (1) inch equals two thousand (2,000) feet
  - Title of drawing
  - Date of drawing
  - Existing wood line
  - North arrow
  - Scale bar
  - Current zoning of parcel(s), including tax map number(s) and owner(s)
  - Current zoning of adjacent parcel(s), including tax map number(s) and owner(s)
  - Street names including route number and width(s) of the right-of-way(s)
- ☐ any additional information required for the proposed use in accordance with Section 5-5000, *Supplementary Use Regulations,* of the Zoning Ordinance.
- ☐ Community Impact Statement. Required for residential subdivisions of five (5) or more lots, planned development, commercial, industrial, or miscellaneous rezoning/conditional zoning amendment applications. Please refer to Section 1-1015.F for detailed requirements of the Community Impact Statement.
- ☐ Water Quality Impact Assessment. For any rezoning in the Chesapeake Bay

Preservation Area prepared in accordance with Appendix B-1 of the County Code for applications containing any of the following:

- will disturb any portion of the 100-foot buffer area of a Resource Protection Area
- (RPA), or any component identified in Section 3000.B.1 of the Chesapeake Bay Preservation Area Ordinance;
- contains ten (10) acres or more for any use, other than a development of single family detached residential lots;
- contains twenty-five (25) acres or more for the development of single family detached residential lots; or,
- any other development that may warrant such assessment due to the unique
- characteristics of the site or intensity of the proposed use or development, as may be required by the Zoning Administrator.

☐ Planned Development supplemental information shall be submitted in accordance with Section 4-14005, *Submission Requirements,* of the Zoning Ordinance

☒ **One (1) original executed application**

☒ **One (1) digital copy of ALL application documents**

☒ **One (1) reduced 11"x17" copy of concept plan**

☐ **Voluntary Proffer Statement if applicable**

☐ **Waiver and Release of Claims if cash proffer is proposed**

☒ **Application fee submitted with the application. Checks should be made payable to treasurer, Isle of Wight, County**

☐ **Other information may be necessary to demonstrate compliance with all other applicable federal, state and County standards and regulations.**

☒ **All real estate taxes must be paid and current at the time of submittal; otherwise, the submittal will be refused at the counter. Proof of the most recent tax payment to the County must accompany the application.**

I, the undersigned, certify that this application is complete, accurate and contains all required and requested information, documents and other submittals, and that all statements made herein are, to the best of my knowledge, true and correct. I further certify that I have exercised due diligence to obtain the most recent, complete and correct information available. I understand that any section not completed in its entirety may delay processing of this application and the date of the Planning Commission public hearing and that the submittal of a complete application does not guarantee the application will be placed on the next available Planning Commission agenda.

CURTIS LYTLE

Name

Signature

3/5/24

Date

Tim Fallon Land Surveying, PLLC

March 8, 2024

Mr. Caleb J. Kitchen, Planner I
ISLE OF WIGHT COUNTY
Dept of Planning & Zoning
17140 Monument Circle #201
Isle of Wight, VA 23397

RE: Tax Parcel 51-01-012 – West Blackwater Road - Rezoning

Dear Mr. Kitchen:

The purpose for seeking a rezoning is to create four (4) lots using the sliding scale development as explained in Section 4-3004 of the Isle of Wight County Ordinance. The property was purchased on February 20, 2004.

The overall property is cultivated farmland and timber. The cultivated fields are used for agricultural purposes.

Per Section 4-3004, we are requesting a rezoning from RAC to RR.

Sincerely,

TIM FALLON LAND SURVEYING, PLLC

Timothy M. Fallon, L.S.

15139 CARROLLTON BLVD. #C/ P.O. BOX 189, CARROLLTON, VA 23314 / TEL: (757) 644-5775 / FAX: (757) 210-3632

OWNER CONSENT:

I THE UNDERSIGNED OWNER DO HEREBY CERTIFY THAT WE ARE THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED AND THAT THE SUBDIVISION IS MADE WITH OUR FREE CONSENT AND IN ACCORDANCE WITH OUR DESIRES.

_____

CURTIS D. LYTLE DATE

STATE OF VIRGINIA
COUNTY OF ISLE OF WIGHT,TO WIT:

THE COUNTY AND STATE AFORESAID DO HEREBY CERTIFY THAT THE ABOVE PERSON WHOSE NAME IS SIGNED TO THE FOREGOING WRITING HAVE GIVEN UNTO MY HAND THIS _____ DAY OF_____

I _____ ,A NOTARY PUBLIC IN AND FOR

ACKNOWLEDGED THE SAME BEFORE ME IN MY COUNTY AND STATE AFORESAID

MY COMMISSION EXPIRES ON_____

_____

NOTARY PUBLIC

STACI NICOLE HICKS
NOTARY PUBLIC
REG #7844655
COMMONWEALTH OF VIRGINIA

SURVEYORS CERTIFICATE:

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF ALL THE REQUIREMENTS OF THE BOARD OF SUPERVISORS AND THE ORDINANCES OF THE COUNTY OF ISLE OF WIGHT,VIRGINIA HAVE BEEN COMPLIED WITH.

I HEREBY CERTIFY THAT THE PROPERTY SHOWN ON THIS PLAT IS LOCATED IN ZONE "X" AS SHOWN ON THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 51093C 0167E DATED DECEMBER 2, 2015.

_____

TIMOTHY M. FALLON L.S.#1659 DATE

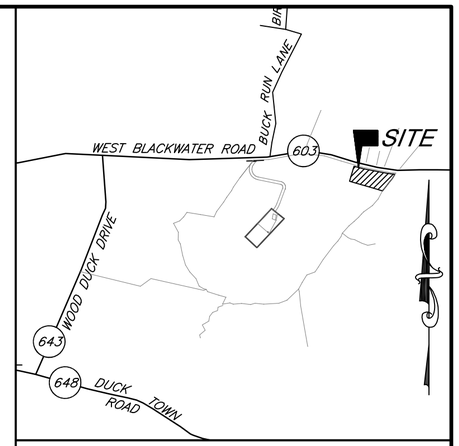
APPROVAL BLOCK:

THIS SUBDIVISION PLAT HAS BEEN FOUND TO BE IN CONFORMANCE WITH THE ISLE OF WIGHT COUNTY SUBDIVISION ORDINANCE AND MUST BE RECORDED WITH THE OFFICE OF THE CLERK OF CIRCUIT COURT OF ISLE OF WIGHT COUNTY WITHIN SIX MONTHS OF THE DATE OF APPROVAL. APPROVAL WILL BE DEEMED VOID AFTER SIX MONTHS AND THE PLAT MUST BE RESUBMITTED FOR APPROVAL.

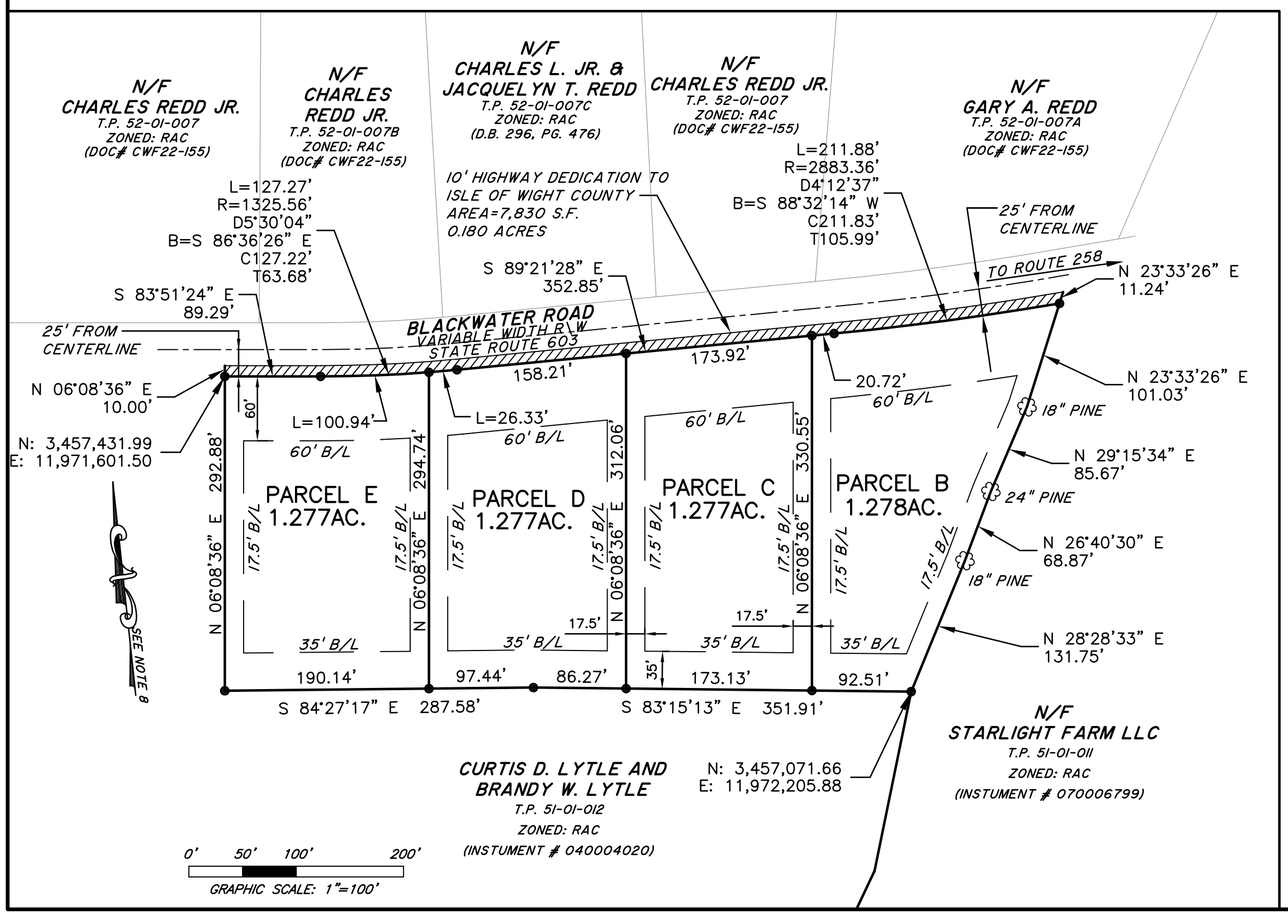
DATE OF APPROVAL: _____ SUBDIVISION AGENT_____

DATE OF APPROVAL: _____ VDOT ENGINEER_____

COMMONWEALTH OF VIRGINIA
TIMOTHY M. FALLON
No. 1659
03-04-2024
LAND SURVEYOR



VICINITY MAP
SCALE 1"=2000'



NOTES

1. SMALL FILLED CIRCLES "•" DENOTE IRON PIN SET.
2. SMALL EMPTY CIRCLES "○" DENOTE IRON PIN FOUND.
3. DASHED LINES DENOTE PORTION OF PROPERTY LINE AS SHOWN IN DOCUMENT # 040004020
4. THE OWNER OF THIS PROPERTY (T.P. 51-01-012) IS CURTIS D. LYTLE & BRANDY W. LYTLE. 5114 BLACKWATER ROAD ZUNI, VIRGINIA, 23898.
5. THIS PROPERTY IS CURRENTLY ZONED RAC RURAL AGRICULTURAL DISTRICT. PROPOSED ZONING IS RR RURAL RESIDENTIAL.
6. THE PROPERTY ENCOMPASSED BY THIS SUBDIVISION LIES IN FLOOD ZONE "X" AS SHOWN ON THE FLOOD INSURANCE RATE MAP, COMMUNITY 510303 PANEL 0240E DATED 12-02-2015 (MAP NUMBER 51093C0240E)
7. PLAT REFERENCES:
   INSTRUMENT #040004020
   INSTRUMENT #90003060
8. COORDINATES SHOWN ON THIS PLAT ARE BASED ON THE ISLE OF WIGHT COUNTY, VIRGINIA 1983 -SOUTH ZONE (1994 HARN ADJUSTMENT), U.S. SURVEY FOOT
9. ANY NEW STRUCTURES MUST BE BUILT TO MEET THE MINIMUM REQUIRED YARD SETBACKS IN ACCORDANCE WITH THE IWCZO AND THE NDSO. ANY VARIATION THERETO MUST BE IN COMPLIANCE WITH THE SAID ORDINANCE.
   NDSO SETBACKS:
   FRONT SETBACK - 60'
   SIDE SETBACK - 17.5' (TOTAL OF 35' WITH A 15' MINIMUM)
   REAR SETBACK - 35'
10. AREA TABLE
    FORMER AREA TAX PARCEL 51-01-012= 6,659,090 SQ.FT. OR 152.872 ACRES
    NEW AREA TAX PARCEL 51-01-012B= 55,667 SQ.FT. OR 1.278 ACRES
    NEW AREA TAX PARCEL 51-01-012C= 55,626 SQ.FT. OR 1.277 ACRES
    NEW AREA TAX PARCEL 51-01-012D= 55,626 SQ.FT. OR 1.277 ACRES
    NEW AREA TAX PARCEL 51-01-012E= 55,626 SQ.FT. OR 1.277 ACRES
    NEW AREA R/W DEDICATION = 7,830 SQ.FT. OR 0.180 ACRES
    AREA TAX PARCEL 51-01-12 = 6,428,715 SQ.FT. OR 147.583 ACRES
11. WHERE SEPTIC TANKS ARE TO BE INSTALLED ON INDIVIDUAL LOTS, THERE SHALL BE AN APPROVAL OF A PRIMARY DRAINFIELD AND A 100% RESERVE DRAINFIELD BY THE HEALTH DEPARTMENT AT THE TIME APPLICATION IS MADE FOR A SEPTIC TANK PERMIT. APPROVAL OF THIS PLAT DOES NOT INDICATE THAT THE INDIVIDUAL LOT IS SUITABLE FOR APPROVAL OF A PRIMARY AND 100% RESERVE DRAINFIELD. (SECTION 4000.B.8 CBPAO)

    ALL ON-SITE SEWAGE DISPOSAL SYSTEMS NOT REQUIRING A VIRGINIA POLLUTION DISCHARGE ELIMINATION SYSTEM (VPDES) PERMIT SHALL BE PUMPED PUT AT LEAST ONCE EVERY FIVE (5) YEARS. (SECTION 4000.B.7 CBPAO)
12. NO ZONING PERMIT OR BUILDING PERMIT SHALL BE ISSUED FOR ANY LOT UNTIL A WELL OR WATER SOURCE HAS BEEN APPROVED BY THE COUNTY HEALTH DEPARTMENT.

NOTE: THE OVERALL PROPERTY IS CULTIVATED FARMLAND AND TIMBER (SILVICULTURE). THE CULTIVATED FIELDS ARE CURRENTLY USED FOR AGRICULTURAL PURPOSES. PARCELS B THRU E CURRENTLY ARE MOSTLY WOODED. THE PROPERTY(S) ARE NOT IN THE CHESAPEAKE BAY WATERSHED. THE EXISTING GROUND WITHIN THE AREA OF PARCELS B THRU E CONSIST OF SLOPES FROM FLAT (0.00%) TO MODERATELY FLAT (WITH THE AVERAGE SLOPE OVER THESE PARCELS 1.95%), WITH ELEVATIONS RANGING FROM APPROXIMATELY 84 TO 80. 90% OF THE SOILS BEING 9-MYATT FINE SANDY LOAM (POORLY DRAINED, VERY HIGH RUNOFF CLASS, HYDROLOGIC SOIL GROUP B/D, HYDRIC SOIL RATING: YES) AND 10% OF THE SOILS BEING 18A-SLAGLE FINE SANDY LOAM (MODERATELY WELL DRAINED, HYDROLIC SOIL GROUP C, HYDRIC SOIL RATING: NO). PARCELS B THRU E DRAIN IN A SOUTH TO SOUTH EASTERN DIRECTION TO THE EASTERN MOST PROPERTY LINE, TO THE HUNTERS SWAMP THEN TO THE DUCKS SWAMP TOWARDS DUCK TOWN ROAD ULTIMATELY TO BLACKWATER RIVER.

REVISION DATE
04-05-2024 REVISED PER COUNTY COMMENTS
04-10-2024 REVISED PER COUNTY COMMENTS
04-11-2024

TIM FALLON LAND SURVEYING, PLLC
15139 CARROLLTON BLVD, SUITE C
P.O. BOX 189
CARROLLTON,VIRGINIA,23314

DRAWN BY: BSG	DATE: 3/01/2024
COMP BY: TMF	DATE: 3/4/2024
CHECKED BY TMF	DATE: 3/4/2024
FINAL BY: TMF	DATE: 3/4/2024
PROJECT # 24017	

REZONING EXHIBIT
AND SUBDIVISION OF
TAX PARCEL #51-01-012
RECORDED INSTRUMENT # 04004020
WINSOR MAGESTERIAL DISTRICT
ISLE OF WIGHT COUNTY, VIRGINIA

SCALE: 1"=100' | DATE:03/01/2024 | SHEET 1 OF 1

In Regards to the Rezoning exhibit of the property at 51-01-012

The subdivision of land shown hereon is to be rezoned from Rural Agricultural Conservation (RAC) to Conditional Rural Residential (C-RR) for use as single-family residential lots.

4/11/24 Curtis Lytle, owner

4/11/24 Notary

SYDNEY M. CREASY
NOTARY
My Comm. Expires 12/31/27
8042879
PUBLIC
COMMONWEALTH OF VIRGINIA

OWNER CONSENT:

I THE UNDERSIGNED OWNER DO HEREBY CERTIFY THAT WE ARE THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED AND THAT THE SUBDIVISION IS MADE WITH OUR FREE CONSENT AND IN ACCORDANCE WITH OUR DESIRES.

_____

CURTIS D. LYTLE DATE

STATE OF VIRGINIA
COUNTY OF ISLE OF WIGHT,TO WIT:

THE COUNTY AND STATE AFORESAID DO HEREBY CERTIFY THAT THE ABOVE PERSON WHOSE NAME IS SIGNED TO THE FOREGOING WRITING HAVE GIVEN UNTO MY HAND THIS _____ DAY OF_____

I _____ ,A NOTARY PUBLIC IN AND FOR

ACKNOWLEDGED THE SAME BEFORE ME IN MY COUNTY AND STATE AFORESAID

MY COMMISSION EXPIRES ON_____

_____

NOTARY PUBLIC

STACI NICOLE HICKS
NOTARY PUBLIC
REG #7844655
COMMONWEALTH OF VIRGINIA

SURVEYORS CERTIFICATE:

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF ALL THE REQUIREMENTS OF THE BOARD OF SUPERVISORS AND THE ORDINANCES OF THE COUNTY OF ISLE OF WIGHT,VIRGINIA HAVE BEEN COMPLIED WITH.

I HEREBY CERTIFY THAT THE PROPERTY SHOWN ON THIS PLAT IS LOCATED IN ZONE "X" AS SHOWN ON THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 51093C 0167E DATED DECEMBER 2, 2015.

_____

TIMOTHY M. FALLON L.S.#1659 DATE

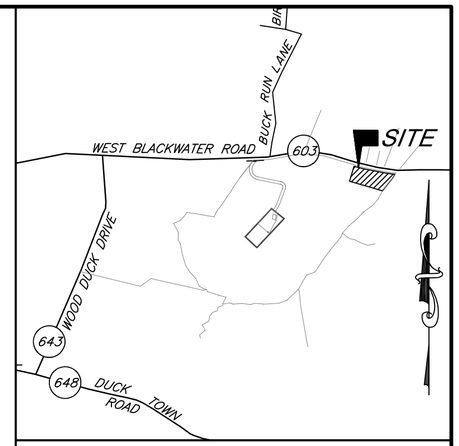
APPROVAL BLOCK:

THIS SUBDIVISION PLAT HAS BEEN FOUND TO BE IN CONFORMANCE WITH THE ISLE OF WIGHT COUNTY SUBDIVISION ORDINANCE AND MUST BE RECORDED WITH THE OFFICE OF THE CLERK OF CIRCUIT COURT OF ISLE OF WIGHT COUNTY WITHIN SIX MONTHS OF THE DATE OF APPROVAL. APPROVAL WILL BE DEEMED VOID AFTER SIX MONTHS AND THE PLAT MUST BE RESUBMITTED FOR APPROVAL.

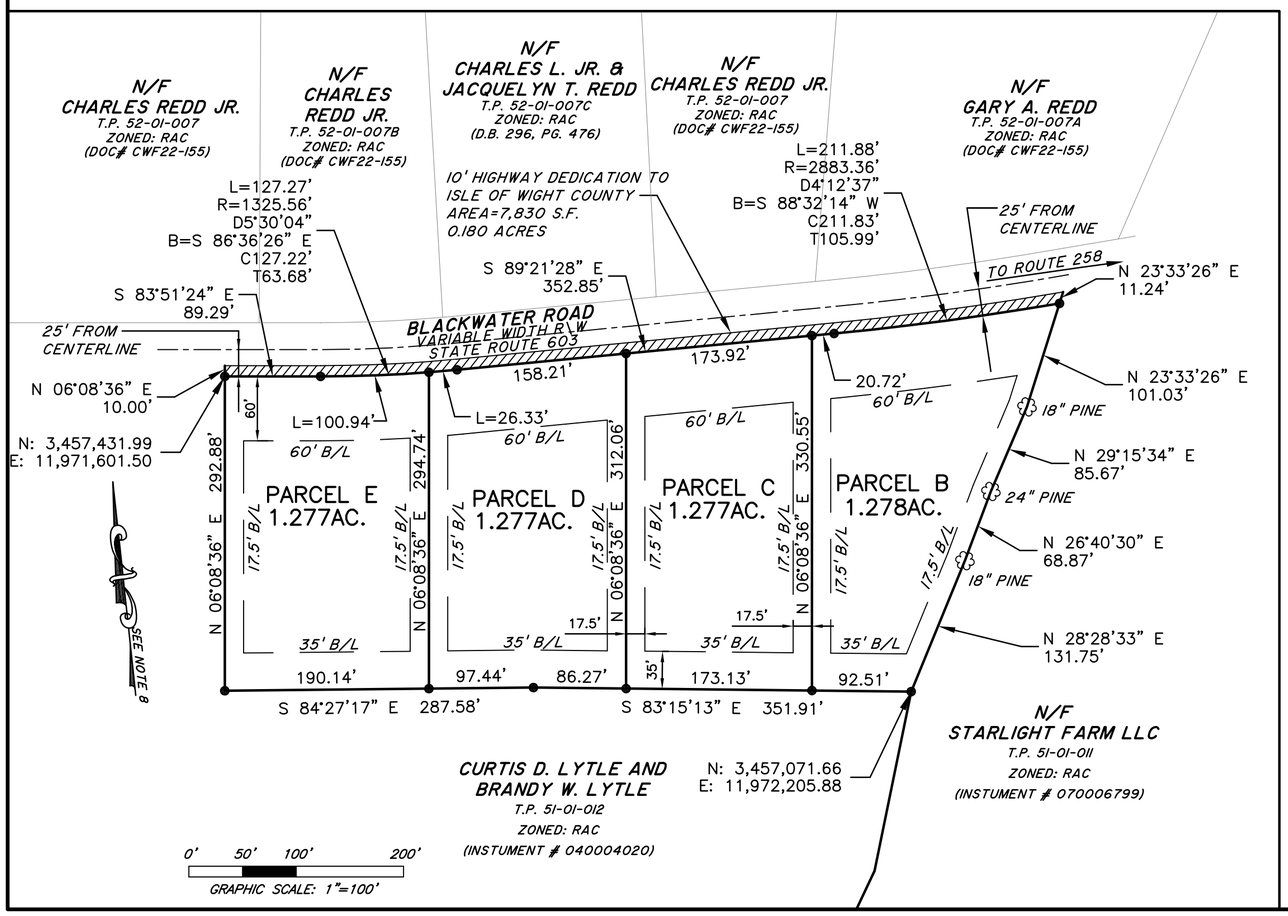
DATE OF APPROVAL: _____ SUBDIVISION AGENT_____

DATE OF APPROVAL: _____ VDOT ENGINEER_____

COMMONWEALTH OF VIRGINIA
TIMOTHY M. FALLON
No. 1659
03-04-2024
LAND SURVEYOR



VICINITY MAP
SCALE 1"=2000'



NOTES

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5. THIS PROPERTY IS CURRENTLY ZONED RAC RURAL AGRICULTURAL DISTRICT. PROPOSED ZONING IS RR RURAL RESIDENTIAL.
6. THE PROPERTY ENCOMPASSED BY THIS SUBDIVISION LIES IN FLOOD ZONE "X" AS SHOWN ON THE FLOOD INSURANCE RATE MAP, COMMUNITY 510303 PANEL 0240E DATED 12-02-2015 (MAP NUMBER 51093C0240E)
7. PLAT REFERENCES:
   INSTRUMENT #040004020
   INSTRUMENT #90003060
8. COORDINATES SHOWN ON THIS PLAT ARE BASED ON THE ISLE OF WIGHT COUNTY, VIRGINIA 1983 -SOUTH ZONE (1994 HARN ADJUSTMENT), U.S. SURVEY FOOT
9. ANY NEW STRUCTURES MUST BE BUILT TO MEET THE MINIMUM REQUIRED YARD SETBACKS IN ACCORDANCE WITH THE IWCZO AND THE NDSO. ANY VARIATION THERETO MUST BE IN COMPLIANCE WITH THE SAID ORDINANCE.
   NDSO SETBACKS:
   FRONT SETBACK - 60'
   SIDE SETBACK - 17.5' (TOTAL OF 35' WITH A 15' MINIMUM)
   REAR SETBACK - 35'
10. AREA TABLE
    FORMER AREA TAX PARCEL 51-01-012= 6,659,090 SQ.FT. OR 152.872 ACRES
    NEW AREA TAX PARCEL 51-01-012B= 55,667 SQ.FT. OR 1.278 ACRES
    NEW AREA TAX PARCEL 51-01-012C= 55,626 SQ.FT. OR 1.277 ACRES
    NEW AREA TAX PARCEL 51-01-012D= 55,626 SQ.FT. OR 1.277 ACRES
    NEW AREA TAX PARCEL 51-01-012E= 55,626 SQ.FT. OR 1.277 ACRES
    NEW AREA R/W DEDICATION = 7,830 SQ.FT. OR 0.180 ACRES
    AREA TAX PARCEL 51-01-12 = 6,428,715 SQ.FT. OR 147.583 ACRES
11. WHERE SEPTIC TANKS ARE TO BE INSTALLED ON INDIVIDUAL LOTS, THERE SHALL BE AN APPROVAL OF A PRIMARY DRAINFIELD AND A 100% RESERVE DRAINFIELD BY THE HEALTH DEPARTMENT AT THE TIME APPLICATION IS MADE FOR A SEPTIC TANK PERMIT. APPROVAL OF THIS PLAT DOES NOT INDICATE THAT THE INDIVIDUAL LOT IS SUITABLE FOR APPROVAL OF A PRIMARY AND 100% RESERVE DRAINFIELD. (SECTION 4000.B.8 CBPAO)

    ALL ON-SITE SEWAGE DISPOSAL SYSTEMS NOT REQUIRING A VIRGINIA POLLUTION DISCHARGE ELIMINATION SYSTEM (VPDES) PERMIT SHALL BE PUMPED PUT AT LEAST ONCE EVERY FIVE (5) YEARS. (SECTION 4000.B.7 CBPAO)
12. NO ZONING PERMIT OR BUILDING PERMIT SHALL BE ISSUED FOR ANY LOT UNTIL A WELL OR WATER SOURCE HAS BEEN APPROVED BY THE COUNTY HEALTH DEPARTMENT.

NOTE: THE OVERALL PROPERTY IS CULTIVATED FARMLAND AND TIMBER (SILVICULTURE). THE CULTIVATED FIELDS ARE CURRENTLY USED FOR AGRICULTURAL PURPOSES. PARCELS B THRU E CURRENTLY ARE MOSTLY WOODED. THE PROPERTY(S) ARE NOT IN THE CHESAPEAKE BAY WATERSHED. THE EXISTING GROUND WITHIN THE AREA OF PARCELS B THRU E CONSIST OF SLOPES FROM FLAT (0.00%) TO MODERATELY FLAT (WITH THE AVERAGE SLOPE OVER THESE PARCELS 1.95%), WITH ELEVATIONS RANGING FROM APPROXIMATELY 84 TO 80. 90% OF THE SOILS BEING 9-MYATT FINE SANDY LOAM (POORLY DRAINED, VERY HIGH RUNOFF CLASS, HYDROLOGIC SOIL GROUP B/D, HYDRIC SOIL RATING: YES) AND 10% OF THE SOILS BEING 18A-SLAGLE FINE SANDY LOAM (MODERATELY WELL DRAINED, HYDROLIC SOIL GROUP C, HYDRIC SOIL RATING: NO). PARCELS B THRU E DRAIN IN A SOUTH TO SOUTH EASTERN DIRECTION TO THE EASTERN MOST PROPERTY LINE, TO THE HUNTERS SWAMP THEN TO THE DUCKS SWAMP TOWARDS DUCK TOWN ROAD ULTIMATELY TO BLACKWATER RIVER.

REVISION DATE
04-05-2024 REVISED PER COUNTY COMMENTS
04-10-2024 REVISED PER COUNTY COMMENTS
04-11-2024

TIM FALLON LAND SURVEYING, PLLC
15139 CARROLLTON BLVD, SUITE C
P.O. BOX 189
CARROLLTON,VIRGINIA,23314

DRAWN BY: BSG	DATE: 3/01/2024
COMP BY: TMF	DATE: 3/4/2024
CHECKED BY TMF	DATE: 3/4/2024
FINAL BY: TMF	DATE: 3/4/2024
PROJECT # 24017	

REZONING EXHIBIT
AND SUBDIVISION OF
TAX PARCEL #51-01-012
RECORDED INSTRUMENT # 04004020
WINSOR MAGESTERIAL DISTRICT
ISLE OF WIGHT COUNTY, VIRGINIA

SCALE: 1"=100' | DATE:03/01/2024 | SHEET 1 OF 1



West Blackwater Road looking East



West Blackwater Road looking West

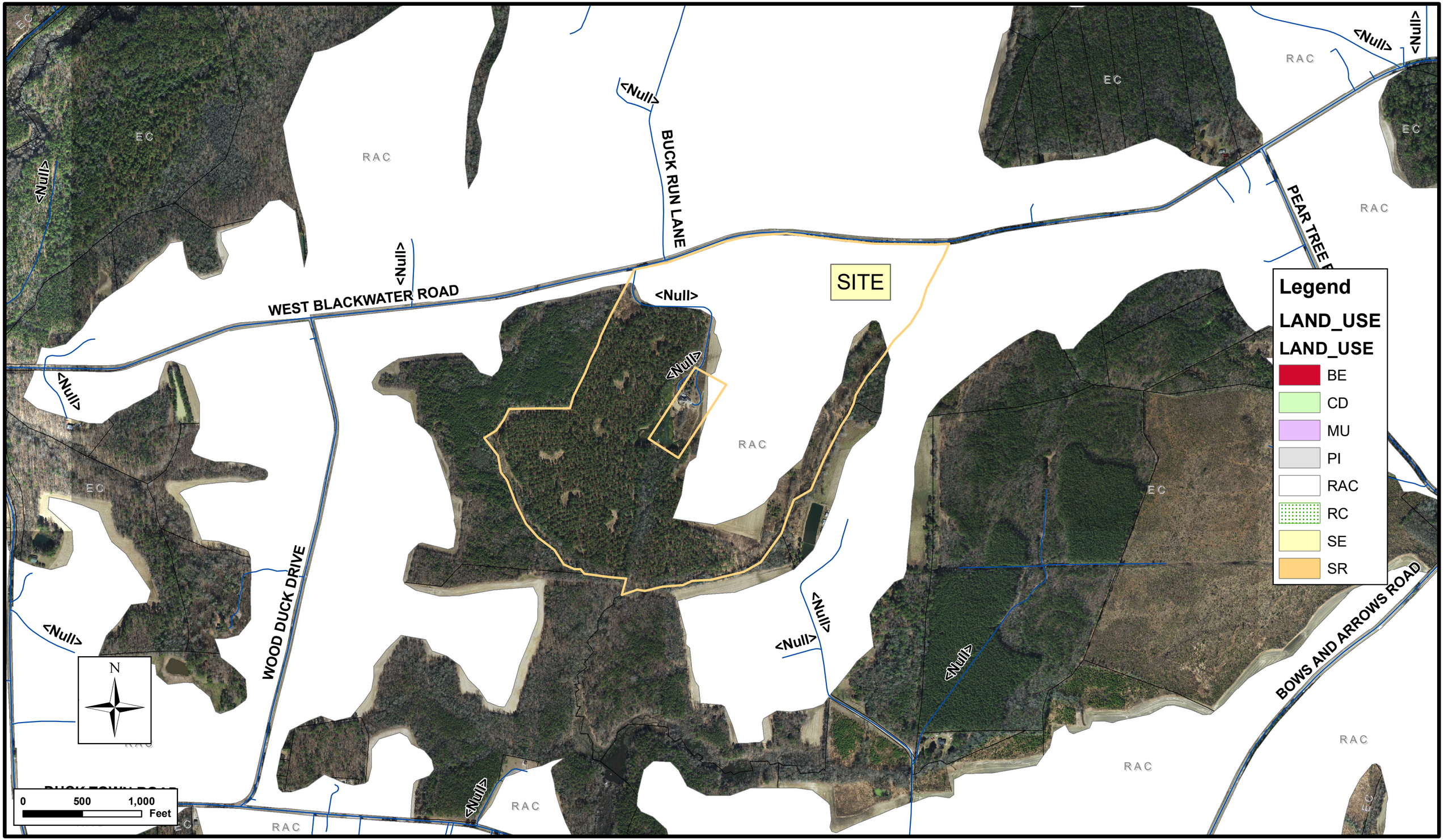
ZA-3-24 Lytle Rezoning Request - Location Map



ZA-3-24 Lytle Rezoning Request - Zoning Map



ZA-3-24 Lytle Rezoning Request - Land Use Map



PLANNING REPORT

APPLICATION:

Application of Moonlight Solar, LLC (CUP-10-23), Applicant, and George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards, LeAnn Ricks Edwards Wait, and Dana Louise Edwards, Property Owners, for a Conditional Use Permit to Establish a Major Utility Service, Specifically a 44 MW Utility-Scale Solar Energy Generation Facility and Substation, on Approximately 523 Acres Located on Moonlight Road (Rte. 627) and Burwells Bay Road (Rte. 621) in the Rural Agricultural Conservation Zoning District and a Request to Withdraw Approximately 523 Acres from the Moonlight Agricultural/Forestal District

ELECTION DISTRICT:

D5

LOCATION:

The proposed project is located on four properties approximately 1/4 mile from the County of Surry jurisdictional boundary at its closest point. The project will have frontage on Moonlight Road and Burwells Bay Road. It is adjacent to agricultural and forestal lands and single-family residences. The project lies approximately 1/2 miles east on average of the existing Cavalier Solar Project. Property location and proximity maps are attached to this staff report.

BACKGROUND:

The properties on which the proposed project is located are currently in agricultural uses. The properties are zoned Rural Agricultural Conservation (RAC). The project sites are secured by lease agreements with the landowners. On October 4, 2023, the Agricultural and Forestal District Advisory Committee held a public meeting to consider an application by the property owners to withdraw the entirety of the subject parcels from the Moonlight Agricultural/Forestal District. The Committee recommended approval of the request.

At their November 28th, 2023 meeting the Planning Commission recommended denial of the CUP application and withdrawal request by a vote of 9-0.

Subsequent to the November Planning Commission meeting, the applicant

requested deferral of the application before the Board of Supervisors until their March 21, 2024, meeting to attempt to mitigate identified weaknesses in the Planning Commission staff report. The applicant resubmitted the following changes to the application:

1. **Development envelope area reduced from 305 acres to 272.8 acres.**
2. **Fenced-in project area reduced from 250.1 acres to 231.2 acres.**
3. **Prime Farmland soil impacts reduced from 272.4 acres to 242 acres.**
4. **Reduced impacts to the following ecological core areas: C3 (High Importance) reduced from 36 acres to 8.9 acres; C4 (Moderate Importance) reduced from 4.4 acres to 0 acres; and C5 (General Importance) reduced from 12.7 acres to 12.6 acres.**

These changes are reflected in the following attachments:

1. **Revised Concept Plan and Maps;**
2. **Updated Visual Impact Analysis; and**
3. **Revised Environmental Impact Analysis.**

Additionally, the applicant is proposing several new conditions to be included:

1. **Increase the height of the vegetative buffer at planting around the Carroll Plantation House to 5-6ft and plant the buffer at beginning of construction.**
2. **Route heavy vehicle traffic along three primary routes - Old Stage Highway, Burwells Bay Road, and Moonlight Road.**
3. **Install temporary signage along the construction route.**
4. **Install supplemental signage where warranted, to alert drivers to unexpected geometric conditions (i.e. sharp/blind corners).**
5. **Post signage at each of the active construction entrances alerting drivers to traffic entering and exiting the site.**
6. **Place temporary variable message to alert drivers/residents to changes in traffic patterns and pending delivery schedules.**
7. **Require the selected contractor(s) to coordinate deliveries so that two-way construction traffic on the aforementioned road is minimized.**
8. **Heavy vehicle traffic will enter as a convoy, utilize on-site roads for circulation/delivery, and leave as a convoy.**
9. **Pilot vehicles will lead the convoy to ensure trucks follow the plan.**
10. **Station VDOT-certified flaggers along the construction route and in the vicinity of the site to actively manage construction-related traffic.**

11. **Prior to construction, conduct a minimum 4-week traffic volume study to quantify best delivery windows. Results will be used to implement delivery windows during the times of day with the lowest volume of traffic.**
12. **With respect to inter-parcel access, the applicant will consolidate entrance points on opposite sides of the street to align with each other. The entrances on Burwells Bay Road are to be located opposite one another so that any "shared" traffic can easily cross the road. The entrances on Moonlight Road will also be consolidated to a common location.**
13. **Prior to commencement of construction, the applicant will send mailers to residents and go door to door along the transportation route to provide notice of upcoming construction related activities in the area.**

Staff forwarded the revised application to the Sheriff's Department for their review and comments.

The Sheriff's Office review comments stated that the applicant has made an honest effort to address most of the issues. However, major concerns still exist regarding roadway conditions with no shoulders as well as limited areas to pull vehicles over or turn vehicles around even with the use of escort vehicles when meeting with large vehicle farm equipment, emergency vehicles, school buses, etc. It would be impractical for these vehicles to maneuver around one another in a safe manner. If this application is approved, they suggest no movement of large vehicles for this project be allowed on the roadway during the time of school bus operations to ensure the safety of the children being bused to and from school.

At their March 21, 2024, meeting the Board of Supervisors heard the application, held their required public hearing, and referred the application back to the Planning Commission for their consideration and recommendation based on the revised application.

After reviewing the revised application, staff continues to recommend denial of the application due to the identified weaknesses continuing to exist. However, should the Board of Supervisors grant the conditional use permit, we recommend inclusion of the original thirteen conditions recommended by staff, all of the additional conditions offered by the applicant, as well as the following additional conditions offered by staff:

1. **The applicant will work with Isle of Wight County Public Schools to**

coordinate with and prohibit any construction or delivery activities along the transportation route during hours of school bus route operation in the morning and afternoon.

2. **The five to six foot tall plantings shall occur at the beginning of construction to be applied to all adjacent parcels that contain a residence.**

DESCRIPTION:

The applicant has proposed a 44 MW solar energy generation facility on a total of 522.96 acres that spans across four different parcels. The project will consist of solar panels along with their racking systems and metal posts, inverters, collection lines, a substation, fencing, underground conduits lines, and access roads that will connect different sections of the project. The substation area will include a transformer, utility interconnection lines, and switching station which will allow the electrical system to interconnect to the 230kV Surry to Chuckatuck Dominion Energy powerline running directly through the interior of the project site. A project narrative provided by the applicant is attached to this staff report.

This application was submitted on May 16, 2023 and reviewed under the zoning ordinance language prior to the Board of Supervisors adopting amendments to the supplementary use regulations for major utility services at their May 18, 2023 meeting.

The applicant has largely designed the application to be in compliance with the recently amended zoning ordinance language as it relates to major utility services.

Public Facility Impacts:

The impacts of the proposed facility on public roads will occur primarily during construction and will be minimal once the use is established. In establishing the use, the enjoyment of neighboring properties may also be temporarily impacted by construction traffic and noise generation. The applicant has provided a proposed construction transportation route which has been reviewed and approved by the Virginia Department of Transportation. The plan is attached to the staff report. The applicant states that deliveries will be coming from the east along Old State Highway (Rte. 10) and westward down Burwells Bay Road (Rte. 621). Hours of construction are proposed to be limited from 7:00 a.m. to 6:00 p.m. In order to ensure safety and neighborhood welfare, staff recommends that no construction should occur on Sundays by any party involved with the project, to include the solar developer, its contractors, and Dominion Energy contractors.

Environmental Assessment:

The project lies within the Blackwater River watershed area and has several wetland areas within. A Jurisdictional Waters Determination Request form has been submitted to the U.S. Army Corp. of Engineers for review and necessary permits will be required prior to site plan approval. The project is designed to avoid impacts to wetlands and streams. There are two instances of underground collection lines crossing wetlands, of which one of these two instances includes the underground collection line crossing a Zone A floodplain.

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) confirms that the proposed activity will not affect any documented state-listed plants or insects that are threatened or endangered.

The proposed project will impact ecological cores classified in importance as high, moderate, and general (C3, C4, C5) as identified in the Virginia Natural Landscape Assessment. Ecological core areas are classified into five categories of ecological integrity: C1 – Outstanding; C2 – Very High; C3 – High; C4 – Moderate; and C5 – General. Scores are enhanced if the core or habitat fragment is part of a larger complex of natural lands. Scores also increase for those cores and habitat fragments that contribute to water quality enhancement. In general, larger, more biologically diverse areas are given higher scores. DCR recommends avoidance of impacts to cores. However, when avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact. The revised project will impact 8.9 acres of "high" importance ecological core, and 12.6 acres of core with "general" importance. A map of the impact acreage to each type of ecological core impact is included in the staff report.

When considering soil classifications inside the fence of the project, there are 188.6 acres of prime farmland, 52.2 acres of prime farmland if drained, 1.2 acres of farmland of statewide importance, and the remaining 30.8 acres are neither prime farmland or farmland of statewide importance. As soil assessment map showing the different soils is included in the staff report.

Additional environmental reports provided by the applicant and state agency responses are attached to the staff report.

Historical Resources Assessment:

A phase 1B archeological survey was conducted for the project area and are included in the attachments to this report. The phase 1B survey resulted in the identification of five archeological sites within the project area. None of these sites are considered eligible for listing in the National Register of Historic Places (NRHP), and no additional work is recommended for the project area. The applicant has stated that Moonlight Solar will work with the landowners to give the Isle of Wight County Museum the opportunity to be a repository for any new finds.

A phase 1 architecture survey and effects assessment was conducted for the project area and are included in the attachments to this report. The phase 1 study resulted in the identification of 21 historic architecture resources. Eleven previously recorded resources were identified within the ½ mile buffer around the project. Of those eleven resources, nine had been surveyed within the past five years. None of the surveyed resources were eligible for listing in the National Register of Historic Places (NRHP).

The analysis identified previously recorded historic structures within the vicinity of the project site. The Carroll Plantation (VDHR #046-0064) has been listed as eligible for the National Register of Historic Places (NRHP) and is located on a parcel adjacent to the project site. This resource has previously been determined potentially eligible as a good example of an early to mid-nineteenth century plantation home.

The phase 1B archeological survey and phase 1 architectural survey are included as attachments to the staff report.

Economic Impact Assessment:

According to the applicant's economic impact analysis, the project encompasses approximately 523 acres, of which the actively-used portion of the project and required buffers would be approximately 492.38 acres. The economic impact assessment states the project will generate two permanent full-time jobs. The County's current assessment value of affected acreage is approximately $505,600. Based on the assessed value, the properties generate about $1,577.50 in real estate tax revenue for agricultural use per year, or $63,100 over forty years. The July 1, 2023, General Reassessment of Real Estate established new criteria for assessment of land associated with conditional use permits. The new methodology for solar farms establishes an assessment of $15,000 per acre for the entire area approved for the conditional use permit, which in this case would be 492.38 acres per the application. This will result in an increased amount of taxes, higher than

the project's financial analysis projects. Under the County's previous assessment criteria which only included fenced-in acreage, the solar facility use would have generated approximately $26,600 annually, or $1,065,000 annually in addition to a one-time amount of $31,000 in rollback taxes. This does not include any sort of siting agreement. The County would also derive machinery and tax revenue from capital investments on site which would generate approximately $3,241,400 over forty years.

In addition to the base tax revenue, Moonlight Solar, LLC, is proposing a siting agreement of an upfront payment of $25,000 per megawatt which would commence at the beginning of commercial operation which would result in approximately $1.1 million in the first year of operation.

The economic impact assessment uses the IMPLAN model to generate economic impact projections based on assumptions of direct annual economic impacts along with indirect impacts, or "ripple effects." The project's total estimated input to the County would include 1) 2 full-time, permanent jobs, 2) $84,600 in wages and benefits, and 3) $297,800 in economic output.

According to the 2017 Census of Agriculture (USDA-NASS), Isle of Wight County has 237 farms totaling 80,672 aces of land. The average farm size is 340 acres. The average annual market value of agricultural products sold per farm is $270,985. Using the same data to derive market values for crops cultivated on 184.2 acres within the fence of this project, the farmland generates an estimated $146,832 in market value.

Currently, agriculture and silviculture are two of the County's top industries. The Moonlight Solar Facility would be the tenth solar energy generation facility in the County and represents a subtraction of approximately 0.61% of the County's cultivated land (USDA-NASS, 2017). While this project represents approximately 15.7% of the collective 3,129 acres of cultivated land encompassed by all ten solar projects, longer-term cumulative land conversions could create adverse effects on the local agricultural industry. A table showing the previously approved and proposed solar energy facilities is attached to the staff report.

Viewshed Analysis:

The applicant provided several viewshed renderings comparing how the existing site looks currently to what it would look immediately after the landscaping buffers are planted, again at 3 years, again at 5 years and again at 10 years, the time of maturity. The analysis includes perspectives from Moonlight Road and

Burwells Bay Road. The analysis is included as an attachment to the staff report.

COMPREHENSIVE LAND USE PLAN:

The future recommended land use designation for these properties is Rural Agricultural Conservation (RAC) and Environmental Conservation (EC) under the adopted Comprehensive Plan. Appropriate uses for the RAC land use designation include agriculture, horticulture, forest lands, and scattered low-density residential uses. Other uses such as resource extraction and utility-scale solar facilities are also permitted when appropriately sited. Appropriate uses for the EC land use designation include wetlands, farms, forest uses, open space, and limited park facilities.

Solar Energy facilities are considered compatible with the RAC land use when properly sited and with the application of appropriate development criteria. The area designated as EC should be preserved due to environmental constraints unless site-specific analysis demonstrates there are no environmental concerns in a specific area.

Staff finds that the project is not appropriate in the RAC future land use designation due to identified weaknesses and siting concerns.

ORDINANCE REVIEW:

The zoning district classification for the subject properties is Rural Agricultural Conservation (RAC). The RAC zoning district is intended to preserve an protect areas of the County that are predominantly in agricultural and forestall use and to maintain the existing land base to support those activities.

The applicant proposes to establish a 44MW solar energy facility, which is classified as a major utility serve use type in the Zoning Ordinance. These facilities are permitted as conditional uses in the RAC, RR, and GC zoning districts and may be considered compatible with appropriate conditions to mitigate any potential negative impacts on the surrounding community.

Section 1-1017 of the Zoning Ordinance provides standards for review of a conditional use application that the Planning Commission and Board of Supervisors shall consider before granting a conditional use permit. They are as follows:

1. That the establishment, maintenance, and operation of the conditional use will not be detrimental to or endanger the public health, safety, and general

welfare;
2. That the conditional use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted, nor substantially impair the use of other property within the immediate proximity;
3. That adequate utilities, water, sewer or septic system, access roads, storm drainage and/or other necessary public facilities and improvements have been or will be provided;
4. That adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion on the public streets;
5. That the proposed conditional use is not contrary to the goals and objectives of the Isle of Wight County Comprehensive Plan;
6. That the conditional use shall, in all other respects, conform to the applicable regulations of the zoning district classification in which it is located and to the special requirements established for the specific use; and
7. That the use(s) at the location proposed will not result in a multiplicity or saturation of similar uses in the same general neighborhood of the proposed use

In addition to the standards and other guidelines described in the Zoning Ordinance, the Board may impose conditions or limitations on any approval, including the posting of performance guarantees. Such conditions may include, but are not necessarily limited to:

1. The number of persons living or working in the immediate area and the proposed hours of operation, as may applicable;
2. Traffic conditions, including facilities for pedestrians, such as sidewalks and parking facilities; the access of vehicles to roads; peak periods of traffic; and proposed roads, but only if construction of such roads will commence within the reasonably foreseeable future;
3. The orderly growth of the neighborhood and community and the fiscal impact on the County;
4. The effect of odors, dust, gas, smoke, fumes, vibration, glare, and noise upon the use of surrounding properties;
5. Facilities for police, fire protection, sewerage, water, trash and garbage collection and disposal, and the ability of the County or persons to supply such services;
6. The degree to which the development is consistent with generally accepted engineering and planning principles and practices;
7. The structures in the vicinity such as schools, houses of worship, theaters, hospitals, and similar places of public use;

8. The purposes set forth in this ordinance, the County's Comprehensive Plan, and related studies for land use, roads, parks, schools, sewers, water, population, recreation, and the like;
9. The environmental impact, the effect on sensitive natural features, and opportunities for recreation and open space; and
10. The preservation of cultural and historic resources of landmarks.

Should the CUP be approved, the applicant will be required to submit a site plan for review and approval in accordance with Zoning Ordinance requirements and conditions of approval.

AGENCY REVIEW:

The application was forwarded to the following departments for their review:

- Economic Development: No concerns
- Emergency Services: All concerns have been addressed in the application.
- Environmental Planner: All concerns have been addressed in the application.
- Commissioner of the Revenue: The July 1, 2023, General Reassessment of Real Estate established new criteria for assessment of land associated with conditional use permits. The new methodology for solar farms establishes an assessment of $15,000 per acre for the entire area approved for the conditional use permit. Moonlight Solar designates a 250-acre fenced-in site as solar use property. The use permit application applies for 492.28 acres. The $15,000 per acre assessment will apply to the 492.38 acres. This will result in an increased amount of taxes, higher than the project's financial analysis projects.
- Sheriff's Department: Increase in patrol during the construction phase and the traffic impacts on proposed transportation routes. These are primarily secondary roads with no to minimal shoulders and are also shared with farm vehicles. During the construction phase they will be bringing in heavy equipment and large vehicles which will require escorts or even road closures. Also, there being multiple sites there is a concern of the operation of heavy equipment on the roads from one parcel to another.
- County Attorney: Only include conditions that go above what is now required under the zoning ordinance.
- VDOT: All concerns have been addressed in the application.
- Isle of Wight County Museum: After review of archeological and architectural surveys, no additional archeological work is recommended within the project area. Should the project proceed, the potential within the

project area for archeological artifacts is highly likely. If the landowner is willing, the Isle of Wight County Museum should be considered a repository for discovered artifacts and future finds on this site as they could further the interpretation or discovery of Isle of Wight County history.

Staff forwarded the revised application to the Sheriffs Department for their comments:

Sheriff Comments: The applicant has made an honest effort to address most of the issues. However, major concerns still exist regarding roadway conditions with no shoulders as well as limited areas to pull vehicles over or turn vehicles around even with the use of escort vehicles when meeting with large vehicle farm equipment, emergency vehicles, school buses, etc. It would be impractical for these vehicles to maneuver around one another in a safe manner. If this application is approved, we suggest no movement of large vehicles for this project be allowed on the roadway during the time of school bus operations to ensure the safety of the children being bused to and from school.

Please note that, should this CUP be approved, it will be subject to review and approval from all associated agencies during site plan review.

STAFF CONCLUSIONS:

Strengths:

1. The proposed use will have minimal impact on community facilities and resources.

Weaknesses:

1. The proposed use would remove agricultural land from production.
2. Temporary impact to residential development in the area from construction traffic and noise is expected during the construction phase.
3. The project will create visual impacts to historical properties which can be substantially mitigated upon landscaping maturity.
4. The project will impact identified ecological core areas, including 8.9 acres of cores with high importance and 12.6 acres of cores with a general importance.
5. Approval of the project would result in a multiplicity and saturation of similar uses within a 1/2 mile distance to another solar energy generation facility.

6. With no to minimal shoulders and deep ditches at several points along the proposed transportation route there may be safety issues that arise as construction vehicles meet along the route.
7. Due to siting concerns, the application is not consistent with recommendations in the Comprehensive Plan.

STAFF RECOMMENDATION:

Based on the identified weaknesses, staff recommends denial of the Conditional Use Permit and the Moonlight ADF withdrawal request. However, should the CUP and withdrawal be approved staff recommends the following conditions: 1) Topsoil shall be stockpiled on the site and shall be stored out of view from adjacent properties and public roads. 2) The applicant shall submit an invasive species management plan as recommended by DCR with the submission of the final site plan. 3) The applicant shall submit a habitat assessment relative to the Barking treefrog as recommended by DCR. 4) The applicant shall submit a seed mix for site groundcover that includes native pollinators blooming in spring/summer as recommended by DCR. 5) The applicant will work directly with the Isle of Wight County Chamber of Commerce, Paul D. Camp Community College, and the Economic Development Department to ensure inclusion of local contractors in the bidding process. 6) A laminated Emergency Response Poster will be mounted near the front gate. The poster will include a general site plan, evacuation routes and muster points, emergency response chain of command, directions to the closest hospital, coordinates to the closest life flight landing area, and other pertinent information associated with the facility during an emergency response. 7) The facility perimeter fencing will be equipped with push bar pedestrian gates to permit emergency exits from the facility. 8) Adherence to the proposed transportation plan shall be required for all facility traffic. Truck traffic shall be limited to only the routes shown in the transportation plan. No other local routes in Isle of Wight County may be used. 9) Excluding the bufferyards, the ground between the panels and in areas not otherwise covered by gravel or infrastructure shall be planted and maintained with a vegetative cover. This vegetative cover will be managed with mowing and/or grazing. 10) Hours of operation for construction and post-construction operation shall be limited to Monday through Friday, 7:00 a.m. to 6:00 p.m. Saturdays from 7:00 a.m. to 5:00 p.m. No construction is to occur on Sundays by any party involved with the project. 11) As part of the site plan review, the applicant shall provide documentation that the selected panels and all power-generating equipment on-site are “Tier 1” modules, as established by the most recent “PV Module Tier 1 List” issued by Bloomberg NEF or a similar third party analysis widely accepted in the solar industry. Additionally, the make and model of the selected panels and all

power-generating equipment initially installed and replaced on the site must qualify, for disposal purposes only, as non-hazardous waste under applicable U.S. Environmental Protection Agency tests (e.g. TCLP). 12) The applicant shall implement a program for the collection of baseline data establishing pre-construction soil conditions for the production of row crops for the agricultural areas within the project area. The program shall establish the relevant characteristics of the topsoil. The baseline data shall be derived from field and laboratory testing of soil conditions, including depth, density, and quality from representative locations. Laboratory testing shall be conducted by an accredited laboratory. Parameters for assessing soil quality may include the following: infiltration rate, bulk density, water holding capacity, pH, percent organic matter, cation exchange capacity, Phosphorous/Phosphate (P), Nitrogen (N), and Potassium/Potash (K). After 30 years of operation and again after 35 years of operation, soil conditions shall be determined for the same sampling locations using the same parameters and the results used to plan soil restoration activities. After equipment is removed as part of decommissioning, soil conditions shall be determined for the same sampling locations using the same parameters. Soil restoration activities shall be performed as necessary during operations or decommissioning to return soil conditions to at least baseline conditions. The County will be provided with data of soil conditions within 30 days after the receipt of results. 13) Any recommendations provided by VDHR during site plan review will be adhered to, in addition to requirements in the zoning ordinance. 14) Increase the height of the vegetative buffer at planting around the Carroll Plantation House to 5-6ft and plant the buffer at beginning of construction. 15) Route heavy vehicle traffic along three primary routes - Old Stage Highway, Burwells Bay Road, and Moonlight Road. 16) Install temporary signage along the construction route. 17) Install supplemental signage where warranted, to alert drivers to unexpected geometric conditions (i.e. sharp/blind corners). 18) Post signage at each of the active construction entrances alerting drivers/residents to traffic entering and exiting the site. 19) Place temporary variable message to alert drivers/residents to changes in traffic patterns and pending delivery schedules. 20) Require the selected contractor(s) to coordinate deliveries so that two-way construction traffic on the aforementioned roads is minimized. 21) Heavy vehicle traffic will enter as a convoy and utilize on-site roads for circulation/delivery, and leave as a convoy. Pilot vehicles will lead the convoy to ensure trucks follow the plan. 22)Station VDOT-certified flaggers along the construction route and in the vicinity of the site to actively manage construction-related traffic. 23) Prior to construction, conduct a minimum 4-week traffic volume study to quantify best delivery windows. The results will be used to implement delivery windows during the times of day with the lowest volume of traffic. 24) With respect to inter-parcel access, the applicant will consolidate entrance points on opposite sides of the

street to align with each other. The entrances on Burwells Bay Road are to be located opposite one another so that any "shared" traffic can easily cross the road. The entrances on Moonlight Road will also be consolidated to a common location. 25) Prior to commencement of construction, the applicant will send mailers to residents and go door to door along the transportation route to provide notice of upcoming construction related activities in the area. 26) The applicant will work with Isle of Wight County Public Schools to coordinate with and prohibit any construction or delivery activities along the transportation route during hours of school bus route operation in the morning and afternoon. 27) The five to six foot tall plantings shall occur at beginning of construction and will be applied to all adjacent parcels that contain a residence.

ATTACHMENTS:

Description	Type	Upload Date
Application	Backup Material	11/1/2023
Agricultural/Forestal District Withdraw Request	Backup Material	11/1/2023
Narrative and Response Comments	Backup Material	11/1/2023
Concept Plan and Maps	Backup Material	11/1/2023
Revised Concept Plan and Maps	Backup Material	3/6/2024
Updated Visual Impact Analysis	Backup Material	3/6/2024
Transportation Plan	Backup Material	11/1/2023
Economic Impact Analysis	Backup Material	11/1/2023
Environmental Resources Impact Analysis and DCR Response	Backup Material	11/1/2023
Revised Environmental Impact Analysis	Backup Material	3/6/2024
Historical and Cultural Resources Impact Analysis and DHR Response	Backup Material	11/1/2023
Transmission Capacity Report	Backup Material	11/1/2023
Appraisal Report	Backup Material	11/1/2023
Decommissioning Plan	Backup Material	11/1/2023
Site Images	Backup Material	11/2/2023
Location Map	Backup Material	11/2/2023
Closeup Map 1	Backup Material	11/2/2023
Closeup Map 2	Backup Material	11/2/2023
Cavalier Solar and Moonlight Solar Proximity Map	Backup Material	11/16/2023
Zoning Map	Backup Material	11/2/2023
Land Use Map	Backup Material	11/2/2023
Solar Farms Acreage Table	Backup Material	11/16/2023
Commissioner of the Revnue Comments	Backup Material	11/16/2023
Isle of Wight County Museum Comments	Backup Material	11/16/2023
Sheriff Department Comments	Backup Material	11/16/2023
Sheriff Department Comments on Resubmittal	Backup Material	4/11/2024

PC Staff Report		Backup Material	11/29/2023
PC Resolution		Resolution	2/27/2024
Ordinance		Ordinance	11/29/2023

Local Roots, Global Reach
ISLE OF WIGHT
COUNTY, VIRGINIA
DEPARTMENT OF PLANNING AND ZONING

APPLICATION FOR CONDITIONAL / SPECIAL USE PERMIT

This application should be used to petition for a permit for certain uses which, because of their unique characteristics or potential impacts on adjacent land uses, are not generally permitted in certain zoning districts as a matter of right, but which may, under the right set of circumstances and conditions be acceptable in certain specific locations. The following application requirements are consistent with the procedures set forth in Section 1-1017, *Conditional Uses,* and Section 1-1018, *Special Use Permits for Uses Not Provided For,* of the Isle of Wight County Zoning Ordinance, as amended.

A. APPLICATION FOR (CHECK ALL THAT APPLY):

[X] Conditional Use Permit (Are applicant proposed conditions attached?): X Yes _____ No

The proposed use or activity is listed as a conditional use in the RAC zoning district as per Section 4-1005 in Article IV of the Isle of Wight County Zoning Ordinance.

[ ] Special Use Permit (Are applicant proposed conditions attached?): _____ Yes _____ No

Proposed Use or Activity: 44MWac Utility Scale Solar Project

B. PROJECT DESCRIPTION:

Project Name: Moonlight Solar

Property Address (if any): _____

Election District: District 5

Comprehensive Plan Designation: Rural Agricultural Conservation (RAC)

The use permit will apply to 492.26 acres out of 522.96 total acres

Tax Parcel Identification # 11-01-017 Number of acres to be effected: 114.26

Tax Parcel Identification # 11-01-018 Number of acres to be effected: 163.95

Tax Parcel Identification # 11-01-023 Number of acres to be effected: 77

Tax Parcel Identification # 11-01-023(A) Number of acres to be effected: 137.75

Proposed Utilities (check all that apply): Public Water _____ Private Well _____

Public Sewer _____ Private Septic _____

C. **APPLICATION INFORMATION:**

Applicant(s) Name(s): Moonlight Solar, LLC

Address: 4446 Hendricks Ave #356

City, State, Zip Code: Jacksonville, Florida 32207

Phone No.: 772-274-2405 Email: czajicek@pd46energy.com Fax No.:

Property Owner(s) Name(s): George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards , LeAnne Ricks Edwards Wait, Dana Louise Edwards

Address: 8266 Moonlight Rd

City, State, Zip Code: Smithfield, VA, 23430

Phone No.: 757-377-7799 Email: jil1020@aol.com Fax No.:

5/3/23

Applicant Signature **Date**

5/3/23

Owner Signature ***if different*** **Date**

George Benjamin Edwards

NOTICE: THE ATTACHED CHECKLIST MUST BE COMPLETED, CERTIFIED, AND SUBMITTED OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE.

Remit Application to: Isle of Wight County Central Permitting, 17140 Monument Circle, Suite 100
P. O. Box 80, Isle of Wight, Virginia 23397

FOR OFFICE USE ONLY:

Complete Application Received On:_____ Fees Paid: _____
Tax Query: [ ] Current [ ] Delinquent Distribution Date: _____
Posted/Date to Post: _____

AGENCIES REFERRALS:

_____ Department of Conservation & Recreation
_____ Economic Development
_____ Emergency Services
_____ General Services
_____ Environmental Planner
_____ Health Department
_____ Transportation Manager
_____ Commission of Revenue
_____ Other _____

_____ Inspections
_____ Sheriff's Office
_____ Town of Smithfield
_____ Town of Windsor
_____ VDOT
_____ Schools
_____ Budget & Finance
_____ County Attorney

Verified By:_____ Date: _____

C. **APPLICATION INFORMATION:**

Applicant(s) Name(s): Moonlight Solar, LLC

Address: 4446 Hendricks Ave #356

City, State, Zip Code: Jacksonville, Florida 32207

Phone No.: 772-274-2405 Email: czajicek@pd46energy.com Fax No.:

Property Owner(s) Name(s): George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards , LeAnne Ricks Edwards Wait, Dana Louise Edwards

Address: 8266 Moonlight Rd

City, State, Zip Code: Smithfield, VA, 23430

Phone No.: 757-377-7799 Email: jil1020@aol.com Fax No.:

5/3/23

Applicant Signature **Date**

5/9/23

Owner Signature *if different* **Date**

Dana Louise Edwards

NOTICE: THE ATTACHED CHECKLIST MUST BE COMPLETED, CERTIFIED, AND SUBMITTED OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE.

Remit Application to: Isle of Wight County Central Permitting, 17140 Monument Circle, Suite 100
P. O. Box 80, Isle of Wight, Virginia 23397

FOR OFFICE USE ONLY:

Complete Application Received On: _____ Fees Paid: _____
Tax Query: [ ] Current [ ] Delinquent Distribution Date: _____
Posted/Date to Post: _____

AGENCIES REFERRALS:

_____ Department of Conservation & Recreation
_____ Economic Development
_____ Emergency Services
_____ General Services
_____ Environmental Planner
_____ Health Department
_____ Transportation Manager
_____ Commission of Revenue
_____ Other _____

_____ Inspections
_____ Sheriff's Office
_____ Town of Smithfield
_____ Town of Windsor
_____ VDOT
_____ Schools
_____ Budget & Finance
_____ County Attorney

Verified By: _____ Date: _____

C. **APPLICATION INFORMATION:**

Applicant(s) Name(s): Moonlight Solar, LLC

Address: 4446 Hendricks Ave #356

City, State, Zip Code: Jacksonville, Florida 32207

Phone No.: 772-274-2405 Email: czajicek@pd46energy.com Fax No.:

Property Owner(s) Name(s): George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards , LeAnne Ricks Edwards Wait, Dana Louise Edwards

Address: 8266 Moonlight Rd

City, State, Zip Code: Smithfield, VA, 23430

Phone No.: 757-377-7799 Email: jil1020@aol.com Fax No.:

5/3/23

Applicant Signature **Date**

5/7/23

Owner Signature *if different* **Date**

George W. Edwards

NOTICE: THE ATTACHED CHECKLIST MUST BE COMPLETED, CERTIFIED, AND SUBMITTED OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE.

Remit Application to: Isle of Wight County Central Permitting, 17140 Monument Circle, Suite 100
P. O. Box 80, Isle of Wight, Virginia 23397

FOR OFFICE USE ONLY:

Complete Application Received On:_____ Fees Paid: _____
Tax Query: [ ] Current [ ] Delinquent Distribution Date: _____
Posted/Date to Post: _____

AGENCIES REFERRALS:

_____ Department of Conservation & Recreation
_____ Economic Development
_____ Emergency Services
_____ General Services
_____ Environmental Planner
_____ Health Department
_____ Transportation Manager
_____ Commission of Revenue
_____ Other _____

_____ Inspections
_____ Sheriff's Office
_____ Town of Smithfield
_____ Town of Windsor
_____ VDOT
_____ Schools
_____ Budget & Finance
_____ County Attorney

Verified By:_____ Date: _____

C. **APPLICATION INFORMATION:**

Applicant(s) Name(s): Moonlight Solar, LLC

Address: 4446 Hendricks Ave #356

City, State, Zip Code: Jacksonville, Florida 32207

Phone No.: 772-274-2405 Email: czajicek@pd46energy.com Fax No.:

Property Owner(s) Name(s): George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards , LeAnne Ricks Edwards Wait, Dana Louise Edwards

Address: 8266 Moonlight Rd

City, State, Zip Code: Smithfield, VA, 23430

Phone No.: 757-377-7799 Email: jil1020@aol.com Fax No.:

5/3/23

Applicant Signature **Date**

LeAnn Ricks Edwards Wait 5/7/23

Owner Signature *if different* **Date**

LeAnn Ricks Edwards Wait

NOTICE: THE ATTACHED CHECKLIST MUST BE COMPLETED, CERTIFIED, AND SUBMITTED OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE.

Remit Application to: Isle of Wight County Central Permitting, 17140 Monument Circle, Suite 100
P. O. Box 80, Isle of Wight, Virginia 23397

FOR OFFICE USE ONLY:

Complete Application Received On: _____ Fees Paid: _____
Tax Query: [ ] Current [ ] Delinquent Distribution Date: _____
Posted/Date to Post: _____

AGENCIES REFERRALS:

_____ Department of Conservation & Recreation
_____ Economic Development
_____ Emergency Services
_____ General Services
_____ Environmental Planner
_____ Health Department
_____ Transportation Manager
_____ Commission of Revenue
_____ Other _____

_____ Inspections
_____ Sheriff's Office
_____ Town of Smithfield
_____ Town of Windsor
_____ VDOT
_____ Schools
_____ Budget & Finance
_____ County Attorney

Verified By: _____ Date: _____

C. **APPLICATION INFORMATION:**

Applicant(s) Name(s): Moonlight Solar, LLC

Address: 4446 Hendricks Ave #356

City, State, Zip Code: Jacksonville, Florida 32207

Phone No.: 772-274-2405 Email: czajicek@pd46energy.com Fax No.:

Property Owner(s) Name(s): George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards , LeAnne Ricks Edwards Wait, Dana Louise Edwards

Address: 8266 Moonlight Rd

City, State, Zip Code: Smithfield, VA, 23430

Phone No.: 757-377-7799 Email: jil1020@aol.com Fax No.:

5/3/23

Applicant Signature **Date**

Jeanette J. Edwards 5/7/2023

Owner Signature *if different* **Date**

Jeanette J. Edwards

NOTICE: THE ATTACHED CHECKLIST MUST BE COMPLETED, CERTIFIED, AND SUBMITTED OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE.

Remit Application to: Isle of Wight County Central Permitting, 17140 Monument Circle, Suite 100
P. O. Box 80, Isle of Wight, Virginia 23397

FOR OFFICE USE ONLY:

Complete Application Received On: _____ Fees Paid: _____
Tax Query: [ ] Current [ ] Delinquent Distribution Date: _____
Posted/Date to Post: _____

AGENCIES REFERRALS:

_____ Department of Conservation & Recreation
_____ Economic Development
_____ Emergency Services
_____ General Services
_____ Environmental Planner
_____ Health Department
_____ Transportation Manager
_____ Commission of Revenue
_____ Other _____

_____ Inspections
_____ Sheriff's Office
_____ Town of Smithfield
_____ Town of Windsor
_____ VDOT
_____ Schools
_____ Budget & Finance
_____ County Attorney

Verified By: _____ Date: _____

COUNTY OF ISLE OF WIGHT
DISCLOSURE OF REAL ESTATE HOLDINGS

Applicant Moonlight Solar, LLC

Address 4446 Hendricks Ave #356
Street

Jacksonville Florida 32207
City State Zip

REAL ESTATE HOLDINGS TO BE AFFECTED

Location or Address	Description
11-01-017	Agriculture- RAC
11-01-018	Agriculture- RAC
11-01-023	Agriculture- RAC
11-01-023(A)	Agriculture- RAC

OTHER OWNERS OF AFFECTED REAL ESTATE
(Not Required for Corporation whose stock is traded on a national or local stock exchange or having more than 500 shareholders.)

Name of Individuals Corporation/Partnership Business Association	Address
George Benjamin Edwards, Jeanette J. Edwards,George W. Edwards, LeAnne Ricks Edwards Wait, Dana Louise Edwards	c/o Moonlight Bay Farm, 8266 Moonlight Rd. Smithfield, VA, 23430

Does any member of the Isle of Wight County Planning Commission or governing body have any interest in such property, either individually, by ownership of stock in a corporation owning such land, partnership, as the beneficiary of a trust, or the settlor of a revocable trust, or whether a member of the immediate household of any member of the Planning Commission or governing body has any such interest? Yes[ ] No[X]
If yes, names of members:

I do solemnly swear that the foregoing statement(s) and attachments(s), if any, are complete, correct, and true.

Applicant: Mark Mirabito (Printed or Typed Name) Applicant: [signature] (Signature) Date: 5/3/23

State of Florida
County of St Johns

Subscribed and sworn to before me Matt Behrens, A Notary Public in and for the County of St Johns, State of Florida, this 3 day of May, 2023.

[signature]
Notary Public

My Commission Expires 04-26-25

MATT BEHRENS
Notary Public-State of Florida
Commission # HH 122310
My Commission Expires
April 26, 2025

Local Roots, Global Reach
ISLE OF WIGHT
COUNTY, VIRGINIA

SUBMITTAL CHECKLIST FOR CONDITIONAL / SPECIAL USE PERMIT APPLICATIONS

****Both checklist and application required upon submission to central permitting or application will notbe accepted****

In conjunction with Section 1-1017, *Conditional Uses*, and Section 1-1018, *Special Uses Permits for Uses Not Provided For*, of the Isle of Wight County Zoning Ordinance, as amended, the following information shall be submitted for a Conditional / Special Use Permit Application. Please note that it is the applicant's responsibility to ensure that the application is in compliance with all Federal, State and County regulations.

No application for an exception shall be certified as complete unless the following information is provided. ***The required number of copies may be increased or reduced with permission of the Zoning Administrator, depending on the review needs.*** Applicant(s) must have their signature(s) notarized on the disclosure of real estate holdings.

- ☒ **Ten (10) copies of the following**
  - ☒ original, executed application
  - ☒ a statement of the reasons for seeking conditional or special use permit
  - ☒ narrative description of the property which shall include the tax parcel identification number
  - ☒ full size concept plan of the site to show all existing and proposed physical improvements and such otherinformation as is necessary to clearly indicate to the reviewing body that adequate provisions have been made for compliance with all standards for that particular use, the extent of the property to beso used on a given parcel or parcels, and information defining the requested exceptions. The plan shall be prepared by the appropriate authorized design professional licensed to practice in Virginia. No person shall prepare or certify design elements of site plans which are outside the limits of their professional expertise and license. Such document shall be drawn to scale and shall include the following information:
    - A vicinity map at a scale of no less than one (1) inch equals two thousand (2,000) feet
    - Title of drawing
    - Date of drawing
    - Existing wood line
    - North arrow

- Scale bar
- Current zoning of parcel(s), including tax map number(s) and owner(s)
- Current zoning of adjacent parcel(s), including tax map number(s) and owner(s)
- Street names including route number and width(s) of the right-of-way(s)

☒ **One (1) original executed application**

☒ **One (1) digital copy of ALL application documents**

☒ **One (1) reduced 11"x17" copy of concept plan**

☒ **Application fee submitted with the application. Checks should be made payable to treasurer, Isle of Wight, County**

☐ N/A **A WQIA (Water Quality Impact Assessment) if located in the Chesapeake Bay Preservation Area.**

☒ Other information may be necessary to demonstrate compliance with all other applicable federal, state and County standards and regulations.

☒ All real estate taxes must be paid and current at the time of submittal; otherwise, the submittal willbe refused at the counter. Proof of the most recent tax payment to the County must accompany the application.

Please note that additional information on the site layout may be requested by the Zoning Administrator during the review process in order to more effectively review the application and prepare the staff reports for the appropriate reviewing body.

I, the undersigned, certify that this application is complete, accurate and contains all required and requested information, documents, and other submittals, and that all statements made herein are, to the best of my knowledge, true and correct. I further certify that I have exercised due diligence to obtain the most recent, complete, and correct information available. I understand that any section not completed in its entirety may delay the processing of this application.

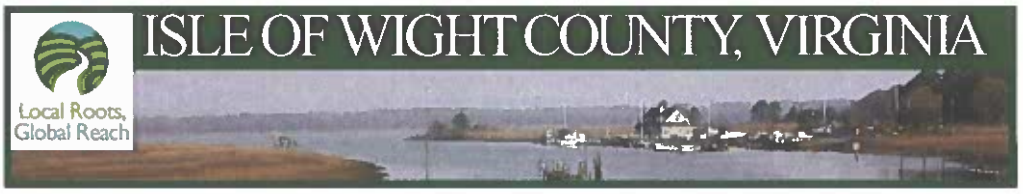
Mark Mirabito

Printed or Typed Name

Signature

5/3/23

Date



Real Estate

View Bill

As of	5/2/2023
Bill Year	2022
Bill	5852
Owner	EDWARDS GEORGE W & JEANETTE J L/E
Parcel ID	11-01-017

Installment	Pay By	Amount	Payments/Credits	Balance	Interest	Due
1	12/5/2022	$534.03	$534.03	$0.00	$0.00	$0.00
2	6/5/2023	$534.02	$534.02	$0.00	$0.00	$0.00
TOTAL		$1,068.05	$1,068.05	$0.00	$0.00	$0.00

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Real Estate

View Bill

As of	5/2/2023
Bill Year	2022
Bill	5848
Owner	EDWARDS G W & JEANNETTE J L/E
Parcel ID	11-01-018

Installment	Pay By	Amount	Payments/Credits	Balance	Interest	Due
1	12/5/2022	$782.23	$782.23	$0.00	$0.00	$0.00
2	6/5/2023	$782.22	$782.22	$0.00	$0.00	$0.00
TOTAL		$1,564.45	$1,564.45	$0.00	$0.00	$0.00

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Real Estate

View Bill

As of	5/2/2023
Bill Year	2022
Bill	5854
Owner	EDWARDS GEORGE W L/E &
Parcel ID	11-01-023

Installment	Pay By	Amount	Payments/Credits	Balance	Interest	Due
1	12/5/2022	$340.65	$340.65	$0.00	$0.00	$0.00
2	6/5/2023	$340.65	$340.65	$0.00	$0.00	$0.00
TOTAL		$681.30	$681.30	$0.00	$0.00	$0.00

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Real Estate

View Bill

As of	5/2/2023
Bill Year	2022
Bill	5855
Owner	EDWARDS GEORGE W L/E &
Parcel ID	11-01-023A

Installment	Pay By	Amount	Payments/Credits	Balance	Interest	Due
1	12/5/2022	$417.78	$417.78	$0.00	$0.00	$0.00
2	6/5/2023	$417.77	$417.77	$0.00	$0.00	$0.00
TOTAL		$835.55	$835.55	$0.00	$0.00	$0.00

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TO: Agricultural and Forestal District Advisory Committee

FROM: George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards, LeAnn Ricks Edwards Wait, and Dana Louise Edwards

RE: Withdrawal of Land from Moonlight Agricultural/Forestal District

DATE: May 4, 2023

Please accept this written request to withdraw the following tax parcels from the Moonlight Agricultural/Forestal District (AFD). This request is made pursuant to Isle of Wight County's requirement for voluntary withdrawal from an AFD prior to or concurrent with submittal of a Conditional Use Permit application. Per information provided by the Isle of Wight County Commissioner of Revenue's office, removal of these parcels of land from the agricultural tax deferment system will take place once the use of the land changes – in this instance, construction of a utility-scale solar energy facility. Until such time, the land will continue to be farmed.

Tax Parcel Number	Record Owner
11-01-017	George Benjamin Edwards, LeAnn Ricks Edwards Wait and Dana Louise Edwards with George W. Edwards and Jeanette J. Edwards reserving a life estate
11-01-018	George Benjamin Edwards with George W. Edwards and Jeanette J. Edwards reserving a life estate
11-01-023	George Benjamin Edwards with George Wesley Edwards reserving a life estate
11-01-023A	George Benjamin Edwards with George W. Edwards reserving a life estate

By: George Benjamin Edwards
George Benjamin Edwards

By: Jeanette J. Edwards
Jeanette J. Edwards

By: George W. Edwards
George W. Edwards

By: LeAnn Ricks Edwards Wait
LeAnn Ricks Edwards Wait

By: Dana Louise Edwards
Dana Louise Edwards

PALLADIUM ENERGY

Moonlight Solar

Agency Review Comments and Responses

The following are responses to the agency review of Moonlight Solar's Conditional Use Permit Application. Additionally, to address agency comments, several Exhibits to Moonlight Solar's CUP application have been updated. The updated Exhibits have been identified and provided with the revised Project Overview and Narrative.

Planning and Zoning Comments:

1) Our tax records show that the combined acreage for these parcels is 522.96. Please revise and resubmit page 1 of the application with the correction.

- Page 1 of the application has been revised to reflect Isle of Wight County Tax records and has been included with the correction.

2) Please provide exact acreage for each different type of crop, pasture, and timberland that is being converted for solar panel coverage within the fence.

- Acreage of the land cover classes provided below:

Land Cover Class	Acreage within Fence
Impervious	0.2
Mixed Forest	60.9
Shrub/Scrub	1.1
Pasture	3.7
Cropland	184.2

- This information has also been added to the Moonlight Solar Project Overview in the "Property Description" section.

3) Does this project impact any state-designated conservation unit or ecological core areas?

- No; Moonlight Solar does not impact any state-designated conservation unit or ecological core areas.

4) Have you received any comments from Dominion Energy in regards to capacity, or do you have an interconnect agreement?

- No, we have not received any comments from Dominion Energy regarding capacity, nor do we have an interconnection agreement. We had Timmons Group evaluate the available capacity on the line we plan to interconnect, which was included with the application as Exhibit G.

5) As it relates to the concept plan, what is the dark green line on parcel 11-01-017 that runs south of the existing culvert and parallel to the Carroll Plantation house? Please clarify and provide symbology in the legend.

- The dark green line on parcel 11-01-017 that runs south of the existing culvert and parallel to the Carroll Plantation house is a delineated wetland. The concept plan has been updated to depict delineated wetlands using the same color.

6) Thank you for list of recommended conditions. Appropriate conditions will be determined by Planning and Zoning and please be advised that we will not include any conditions that are less than what is required by the zoning ordinance at the time of site plan review.

- The CUP application for Moonlight Solar was submitted prior to the adoption of the revisions to the solar zoning ordinance being voted into effect. As such, inclusion of these proposed conditions was a voluntary, good faith effort by Moonlight Solar.

7) Please forward this project to the Virginia Department of Historic Resources for review and comment and provide them in your resubmittal. You can submit to VDHR Archeologist Mike Clem, and his email address is mike.clem@dhr.virginia.gov

- Moonlight Solar has been forwarded to VDHR for review. VDHR's review and comments have now been included.

8) Please forward this project to the Virginia Department of Conservation and Recreation (https://vanhde.org/) and the Virginia Department of Wildlife Resources (https://dwr.virginia.gov/gis/werms/ and https://services.dwr.virginia.gov/fwis/) for their review and comments and provide them in your resubmittal.

- Moonlight Solar has been forwarded to VDCR for review. VDCR's review and comments have now been included.

9) Since this application was submitted for review, the Isle of Wight County Board of Supervisors has adjusted both the real estate tax rate to $0.71 per $100 of assessed value and the machinery and tools tax rate to $1.95 per $100 of assessed value for fiscal year 2023-2024. Accordingly, the projections outlined in the economic impact analysis are no longer accurate. Please resubmit this analysis using the current tax rates.

- The Economic Impact Analysis has been revised to reflect the updated real estate and machinery and tools tax rates. The updated Economic Impact Analysis has been included for review.

Fire/Rescue/EMS Comments:

All concerns have been addressed in the application.

Environmental Planner Comments:

1) Please provide the wetland delineation report and associated maps.

- Wetland delineation report and associated maps have now been included.

2) Please indicate on the maps who delineated the wetlands and when.

- delineated by Timmons Group environmental personnel on December 9-14, 2021 for the areas west of Moonlight Rd. and on March 27-28, 2023 for the areas east of Moonlight Rd. Wetland delineation report and associated maps have now been included.

3) Are the thin green lines (ex. near 046-0064) considered wetlands? If so, how will you avoid them? Wetlands should be avoided if possible.

- Yes, the thin green lines (ex. near 046-0064) are delineated wetlands. These wetlands are avoided in the site plan as they fall outside the fenced area. The maps have been updated to more clearly identify these lines as delineated wetlands. Please see C3.1-C3.3 in the Concept Plan for the updated labels on the maps.

4) Are you proposing any connections through wetlands or floodplains between parcels?

- Yes, there are two instances of underground collection lines crossing wetlands, one of these two instances includes the underground collection line crossing a Zone A floodplain.

5) How will the streams be impacted that are not protected by a wildlife corridor?

- There is one instance of a stream occurring inside the fenced area, which is crossed by an underground collection cable. The remaining streams have been avoided by being left outside the fenced in area, even when not part of a wildlife corridor. The maps have been updated to include and more clearly identify the delineated streams. Please see C3.1-C3.3 in the Concept Plan for the updated labels on the maps.

6) Some of the streams are shown as isolated small areas. Are those actually streams?

- Yes, the streams were delineated by Timmons Group environmental personnel on December 9-14, 2021 for the areas west of Moonlight Rd. and on March 27-28, 2023 for the areas east of Moonlight Rd.

7) USACE confirmation is needed by the time of site plan review.

- A Jurisdictional Waters Determination Request form has been sent to USACE and the confirmation will be provided when the site plan is submitted for review.

8) I see flood zones are indicated in the legend, but they are not observed on the maps. Please add and label zones.

- Maps have been updated to show the flood zone and labeled accordingly.

9) Parcel 11-01-017 is listed as a 2 on the Cultural resource preservation index which means "contributing to, or eligible for listing on the National Register of Historic Places/Virginia Landmarks Register". Has this been evaluated (area shown below in purple)? It appears a full Phase 1 is required based on Apogee recommendations.

- Full phase 1 has now been completed and included, along with Virginia Landmarks Register (VLR) and VDHR review and comment

Commissioner of the Revenue Comments:
I have reviewed the Conditional Use Application for the above-referenced project and did not find any deficiencies in the economic impact analysis. Please let me know if you have any questions as the application moves through the process. (Reminder that these comments are in regards to the economic impact analysis that was submitted. These comments may change upon submission of revised analysis requested above.)

- Please note the Economic Impact Analysis has been revised to reflect the updated real estate and machinery and tools tax rates. The updated Economic Impact Analysis has been included for review.

Economic Development Comments:
No Concerns

Sheriffs Department Comments:
after review of the submitted plan the only needs and concerns of the Sheriff's Office will be the increase in patrol during the construction phase and the traffic situation on the selected routes although they have done a complete study as far as the amount of traffic and past traffic accidents in the area. These are primarily secondary roads with no to minimal shoulders and are also shared with farm vehicles. During the construction phase they will be bringing in heavy equipment and large vehicles which will require escorts or even road closer. Also, there being multiple sites the concern of the operation of heavy equipment on the roads from one site to the other.

- Moonlight Solar will work closely with VDOT and the Sheriff's office to address the increased traffic and transportation of heavy equipment and large vehicles.

VDOT Comments:
1) All entrances onto the public right of way must be designed in accordance with Appendix F of the VDOT Road Design Manual and will be reviewed during the site plan process.

- Entrances onto the public right of way will be designed in accordance with Appendix F of the VDOT Road Design Manual and will be submitted for review with the final site plan.

2) Any utility installations within the public right of way will need to be owned and maintained by a public utility company registered with Virginia 811.

3) The application does not provide useable exhibits clearly showing proposed locations and types of overhead/underground electrical crossings, any new transmission lines, etc., that will cross or otherwise occupy the public right of way.

- The map exhibits in the application have been updated to more clearly show locations and types of electrical crossings of the public right of way. Please see C3.1-C3.3 in the Concept Plan for the updated labels on the maps.

4) A culvert will be required within the existing ditch lines to maintain roadside drainage. The minimum culvert size within State maintained right of way shall be 15" unless otherwise approved by the Department. Pipe sizing calculations should be submitted as part of the site plan. 9" of cover over the culvert pipe is required and the culvert pipe should extend a minimum of one foot beyond the toe of the stabilized slope.

- Culvert and drainage design will be submitted for review as part of the final site plan. The design will include, at a minimum, a 15" culvert size along with pipe sizing calculations.

5) Sight distance for entrances must be evaluated for compliance in accordance with Appendix F of the VDOT Road Design Manual. Sight distance lines shall be shown to scale on the site plans.

- Prior to submittal of the project's site plan for final review, sight distances for entrances will be evaluated in accordance with the VDOT Road Design manual, and the sight distance lines will be shown to scale on the submitted site plans.

6) VDOT will assist Isle of Wight County in reviewing proposed Traffic Management Plans, roadway condition evaluations, and repair plans in accordance with the proposed CUP conditions, particularly number 19.

- Proposed condition 19 states: "During and at the end of project construction, any damage done to public roads by solar farm construction equipment shall be repaired in accordance with VDOT standards and specifications. Post construction damage shall be identified based on inspections by VDOT with the developer or their agent, prior to construction and upon completion, identifying the items for repair. Additionally, at the request of VDOT, in order to ensure the safety of the traveling public, some damages may need to be addressed immediately."
- Moonlight Solar is committed to correcting any damage caused to roadways by its construction activities and as such, recommends keeping proposed condition 19 in.

Isle of Wight County Museum Comments:

After reviewing the conditional use permit application and Phase IA cultural resources assessment for the proposed Moonlight Solar Facility as prepared by Apogee Environmental & Archaeological Inc., the Isle of Wight County Museum/Isle of Wight County Department of Historic Resources agrees with the conclusions of the report.

Further investigation and analysis should include a Phase IB archaeological survey as well as a Phase I historic architectural survey of the proposed facility's location. The latter should include a ½-mile buffer for the consideration of the project's visual radius.

While much of the proposed site that will contain the solar facility has been farmed and logged, there are sites of medium and high probability for archaeological discovery. Additionally, this study determined that there were 20 previously unidentified architectural resources within the proposed project boundary. These sites, as well as the Jordan cemetery, should be further evaluated.

The potential on the project site for archaeological artifacts is likely. If the landowner is willing, the Isle of Wight County Museum should be considered a repository for discovered artifacts and

future finds on this site as they could further the interpretation or discovery of Isle of Wight County history.

- Phase 1B has been completed by Apogee Environmental & Archaeological Inc., and has been included.
- Should any artifacts be discovered, Moonlight Solar will work with the Landowner to give the Isle of Wight County Museum the opportunity to be a repository for any new finds.

Isle of Wight County Public Utilities and Stormwater Division Comments:
No comments at this time. Comments will be provided during the site plan review after the conditional use permit is obtained.

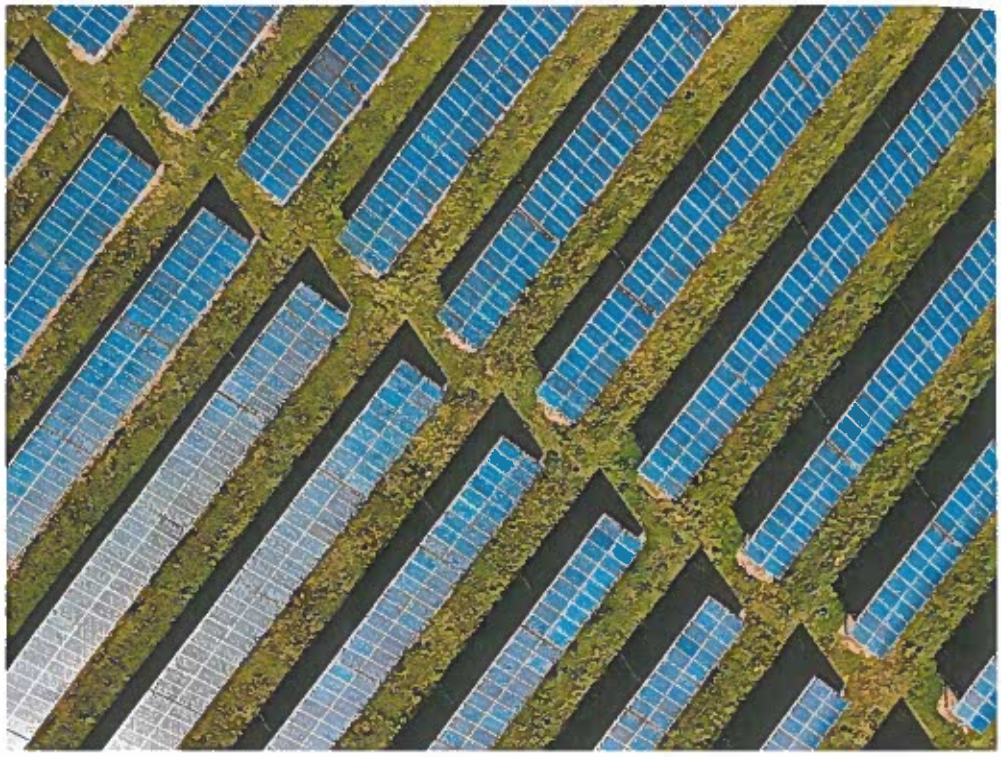
- Moonlight Solar will work diligently to proactively address any comments Isle of Wight County Public Utilities and Stormwater Division has during the site plan review.

Isle of Wight County Transportation Manager Comments:
Transportation Manager, Jamie Oliver, said she would defer to VDOT's comments for this project.

- Please find responses to VDOT's comments above.

PALLADIUM ENERGY

RES
Renewable Energy Services



MOONLIGHT SOLAR APPLICATION FOR CONDITIONAL USE PERMIT

Project Overview & Narrative (Revised: August 2023)

A summary of the key components of the Moonlight Solar project and its application for Conditional Use Permit approval.

Basic Project Details

The Moonlight Solar facility (the "Project") is a utility-scale solar PV facility that will be located on approximately 522.96 acres intersected in the north by Burwells Bay Rd. and intersected in the southeast by Moonlight Rd. In District Five (5) of Isle of Wight County, Virginia (the "Project Site"). Of these 522.96 acres, approximately 250 acres will be inside the fence line. The facility currently has a nameplate capacity of 44MWac, enough energy to power about 11,000 homes.

The facility will meet the County's amended zoning ordinance (the "Ordinance for Solar Energy Facilities in Isle of Wight County"), including setbacks of at least seventy-five (75) feet from property lines, one hundred twenty-five (125) feet from residential parcels, and two hundred fifty (250) feet from any structure with documented historical significance, cemeteries, cultural resources, and schools. New substations, inverters, and transformers will be kept at least five hundred (500) feet from non-participant property lines, any structure with documented historical significance, cemeteries, cultural resources, and schools. The project will also be screened with a vegetative buffer at least 50-feet wide consisting of three staggered rows of trees and shrubs installed a maximum of eight feet on center.

About the Applicant

Project Owner / Applicant

Moonlight Solar, LLC is a special purpose entity which owns the Project and serves as the applicant for this Conditional Use Permit. Moonlight Solar, LLC is owned and controlled by Palladium Energy, LLC and its affiliates ("Palladium").

Project Developer

Palladium is a Florida-based renewable energy development and investment company. Palladium is committed to providing clean and sustainable energy across the country for a brighter future through the origination, development, and financing of renewable energy projects. The Palladium team have an extensive track record of successfully developing, financing, constructing, and operating energy projects across markets (both in the U.S. and internationally) and technologies (solar, wind, natural gas, biomass).

Palladium has partnered with Renewable Energy Services, LLC (RES) to jointly develop Moonlight Solar. RES is a family-owned-and-operated utility-scale solar developer based in Durham, North Carolina. Founded in 2013, RES has fully developed over twenty-five projects, constituting over 240 megawatts and covering over two thousand acres. Since its inception, RES' development pipeline has grown greatly, with a significant portfolio of solar generation under development across Virginia, North Carolina, and South Carolina. As developers, RES focuses on quality over quantity, only pursuing renewable energy projects that meet our high standards in design,

minimized community impact, and grid connection feasibility. Additionally, RES strives to deliver projects that are community-friendly, so neighbor engagement is our priority.

Palladium and RES are responsible for developing the Project. Construction, operation, and maintenance of the Project will be the responsibility of the long-term owner of Moonlight Solar, bound by the Project's permits, approvals, and agreements.

The Project will lease the Project Site from local landowners. A table of the landowners can be found on page one of the Project's site plan.

Statement of Reasons for Seeking Conditional Use Permit

Palladium is developing the Project in District Five of Isle of Wight County. The Project Site is currently designated as Rural Agricultural Conservation ("RAC"). A Conditional Use Permit ("CUP") is required to construct a utility-scale solar energy facility on properties designated RAC. The Project intends to support the Commonwealth of Virginia's Renewable Energy Portfolio Standard established by the Virginia Clean Economy Act which mandates the two utilities in the Commonwealth (Dominion Energy and American Electric Power) produce their electricity from one hundred percent (100%) renewable sources by 2045 and 2050, respectively.

Project Siting - Why here?

This location for Moonlight Solar was selected for a variety of reasons:

- Landowner Interest and Benefit: The Project offers increased financial security to the landowners involved with the Project. The partnership between these landowners, their families, and the developers makes this project possible. If the Project is successful, all parties benefit.
- Minimized Visual Impact: The Project is proposed far from any neighborhoods or urban centers. The Project site is predominately surrounded by very low-density residential areas, with most adjoining land being undeveloped and used for agriculture and forestry. The Project will include a vegetative buffer at least 50-feet wide consisting of three staggered rows of trees and shrubs installed a maximum of eight feet on center further minimizing any visual impact.
- Proximity to Grid Infrastructure: The proposed Project Site offers direct access to several high-voltage powerlines.
- Proximity to Load: The proposed Project is in reasonable proximity to clusters of energy consumers, such as the communities of Smithfield, Suffolk, Norfolk and Newport News. This nearby load offers a local destination for the energy generated, making it easier for the utility to integrate the facility into their existing grid-management plans.

Property Description

The four (4) parcels fully or partially under lease option by the Project total approximately 522.96 acres (Parcel IDs 11-01-018, 11-01-017, 11-01-023, 11-01-023A).

Of that total parcel acreage, approximately 250 acres will be developed. The properties involved are primarily being used for row crop farming. These +/- 250 acres consist of 5 different land cover classes. Impervious represents 0.2 acres, Mixed Forest represents 60.9 acres, Shrub/Scrub represents 1.1 acres, Pasture represents 3.7 acres, and Cropland represents 184.2 acres. The Project Site is secured by lease agreements with the landowners. Concurrent with the submittal of this CUP application for Moonlight Solar, the landowners submitted a written request to the Agricultural and Forestal District Advisory Committee, pursuant to Isle of Wight County's requirements, for the voluntary withdrawal of the Project Site from the Moonlight Agricultural/Forestal District.

Nearby Properties

The land adjoining the proposed Project Site is largely undeveloped. There are approximately nine (9) adjoining single-family homes on individual parcels, four (4) owned and inhabited by a Project landowner. There are no nearby or adjoining neighborhoods, planned developments, or commercial centers. Surrounding undeveloped land is primarily managed timber, intermixed with small to medium sized agricultural fields.

Project Equipment

Moonlight Solar is a 44-megawatt (AC) facility. The facility will use bifacial solar modules, mounted to a single-axis tracking system, which enables the panels to track the movement of the sun as it crosses the sky, increasing total electricity production relative to stationary panels. The single-axis tracking system is comprised of racking tables to which the solar modules are mounted.

The electricity produced by the modules is converted from direct current (DC) to alternating current (AC) by electrical inverters, creating usable electricity for nearby residential and commercial customers.

To distribute the electricity generated, a project substation is needed. The substation includes a transformer capable of increasing the voltage of the electricity as it moves from the inverters to the transmission line. Adjacent to this substation are the utility interconnection facilities and switching station, which will allow the system to interconnect to the 230kV Surry to Chuckatuck Dominion Energy powerline running directly through the Project Site. These stations will be located alongside the powerline, in the interior of the Project site, away from property boundaries and viewsheds. Once the energy is generated, it will be distributed at the discretion of the grid operator.

Conceptual Plan

Moonlight Solar is sited on approximately 250 acres. The Project will be designed to substantially conform to the proposed revisions to the zoning ordinance, on a voluntary basis. All equipment and accessory structures are located a minimum of seventy-five (75) feet from all property lines, one hundred twenty-five (125) feet from residential parcels, two hundred fifty (250) feet from any structure of documented historical significance, and cultural resources. No schools or cemeteries are in the vicinity of the

project. New substations, connector stations, inverters, and transformers will be located a minimum of five hundred (500) feet from the property line of any non-participating properties, any structure of documented historical significance, and cultural resources.

The proposed locations of solar equipment, adjacent properties, screening, landscaping, internal roadways, easements, the proposed point of interconnection to the electrical grid, wildlife corridors, and environmentally sensitive features can be found on the Project's site plan in Exhibit A.

Visual Impact Analysis

A visual impact analysis was completed by Timmons Group to demonstrate through project siting and proposed mitigation that the Project minimizes impacts on the visual character of its surroundings. The reference photos and renderings for the visual impact analysis are included as Exhibit B.

Observation photos were taken in 4 different locations. The first set of photos were taken on Burwells Bay Rd. at approximately latitude : 37°1'59.64"N longitude: 76°44'8.15"W looking northeast. The second set of photos were taken on Burwells Bay Rd. at approximately latitude: 37°1'55.61"N longitude: 76°43'51.06"W looking southwest. The third set of photos were taken on Moonlight Rd. at approximately latitude: 37°1'28.32"N longitude: 76°43'13.15"W looking south-southeast. The fourth set of photos were taken on Moonlight Rd. at approximately latitude: 37°1'19.99"N longitude: 76°43'10.65"W looking northwest.

Landscaping Screening

Along roadways and where the Project abuts neighboring parcels a vegetative buffer at least 50-feet wide consisting of three staggered rows of trees and shrubs installed a maximum of eight feet on center will be included to further minimize any visual impact. Existing vegetation which meets or exceeds this standard will be retained. The reference photos in Exhibit B show the landscape screening at planting and at maturity from each of the four observation point locations. The landscape screening buffer will effectively screen the project from view when the trees and shrubs used reach maturity.

Transportation Plan

A transportation plan was commissioned from Timmons Group to identify and address potential transportation issues that could arise during the construction and operation of the Project. The transportation plan will also show vehicular access to the site, proposed construction traffic routes, parking areas, and laydown yards. The transportation plan evaluated existing conditions in the vicinity of the Project to identify four (4) site access points and to identify locations where temporary traffic control measures may be needed. Two (2) of the site access points will be located on Route 621 and two (2) will be located on Route 627.All temporary staging, parking and assembly areas will be located within the boundaries of the Project area.

Site access point #1 will be located on Route 621 approximately 0.72 miles west of the Route 621 and Route 627 intersection. Sight distance along Route 621 east and west of the proposed access point exceeds 500 feet.

Site access point #2 will be located on Route 621 approximately 0.59 miles west of the Route 621 and Route 627 intersection. Sight distance along Route 621 east and west of the proposed access point exceeds 500 feet.

Site access point #3 will be located on Route 627 approximately 0.81 miles south of the Route 621 and Route 627 intersection. Sight distance along Route 627 north and south of the proposed access point exceeds 500 feet. Site access point #3 will allow access to the site on the west side of Route 627.

Site access point #4 will be located on Route 627 approximately 0.81 miles south of the Route 621 and Route 627 intersection. Sight distance along Route 627 north and south of the proposed access point exceeds 500 feet. Site access point #4 will allow access to the site on the east side of Route 627.

Prior to and during construction of the Project, Moonlight Solar will coordinate with representatives from Isle of Wight County, including the Sheriff's Office, and VDOT to determine appropriate transportation management procedures. Anticipated construction traffic volumes will not exceed available roadway capacities. Construction related traffic will access the Project site via state-maintained roadways. Temporary traffic control measures are not anticipated but will be implemented as necessary to ensure public safety.

Moonlight Solar will take steps to maintain and repair roads as needed both during and upon completion of construction. Once constructed, internal access roads will be utilized as much as possible to minimize impacts to neighbors and the local road network.

The full transportation plan can be found in Exhibit C.

Construction

Construction of Moonlight Solar is anticipated to begin in Q1 2027, subject to utility timelines, and will take between 9-12 months to complete. Hours of operation for construction shall be limited to 7:00 a.m. to 6:00 p.m. No construction is to occur before 7:00 a.m. or after 6:00 p.m. When appropriate, a bidding process will be set up in coordination with the Isle of Wight County Economic Development Authority to ensure local firms have an opportunity to win business. As noted above, Moonlight Solar is responsible for repairing any road damage caused during construction.

Proper stormwater management measures will be in place in connection with any ground disturbance, and permanent measures will be installed to ensure there are no adverse impacts on adjoining waterways after construction is complete.

Economic Impact to Isle of Wight County

Taxes

An Economic Impact Analysis was completed by Mangum Economics. The results of the analysis show Moonlight Solar will provide a significant increase to the County's tax base compared to the land's current use.

Property Taxes

Use	Year 1	Cumulative Total by Year 40
Current Use	$ 1,580	$ 63,100
Moonlight Solar	**$ 26,600**	**$ 4,338,000**

** Forecasts are estimates and do not consider tax rate changes that may be imposed by the County at a later date.*

Additionally, the facility will pay Isle of Wight County any rollback taxes that may occur due to the change in land use which are estimated to be $31,600.

Siting Agreement

Pursuant to Virginia Code section 15.2-2316.7, Moonlight Solar submitted a Notice of Intent to Locate a Solar Project in Isle of Wight County. According to Section 15.2-2316.7, the siting agreement may include terms and conditions, including: *"(i) mitigation of any impacts of such solar facility; (ii) financial compensation to the host locality to address capital needs set out in the (a) capital improvement plan adopted by the host locality, (b) current fiscal budget of the host locality, or (c) fiscal fund balance policy adopted by the host locality; or (iii) assistance by the applicant in the deployment of broadband, as defined in §56-585.1:9, in such locality."* The Project is proposing to make an upfront payment of $25,000 per megawatt to Isle of Wight County upon commercial operation of the Project. Based on the proposed size of the Project, this would equate to an additional $1.1 million benefit paid directly to Isle of Wight County.

Construction-Related Economic Impact

In addition to providing an increase to the County's tax base, Moonlight Solar is poised to provide additional economic benefits to Isle of Wight County. The facility will take approximately one year to construct, and during that time, an estimated 125 construction workers will work on the facility. In addition to the construction labor, the extended construction schedule will foster significant spending in Isle of Wight County. Moonlight Solar will work with Isle of Wight County's Economic Development Authority to ensure that local companies and labor pools have an opportunity to participate in the Project, including, but not limited to:

- -Fuel
- -Grading and site preparation
- -Solid waste
- -Equipment maintenance and parts
- -Fencing
- -Lodging

-Food and beverage -Landscape materials

The full Economic Impact Analysis can be found in Exhibit D.

Environmental Impact Analysis

An Environmental Impact Analysis was completed by Timmons Group. The analysis concludes the Project does not intersect any federal, state, or local conservation easement or recreational lands, and that there are no such resources within a one (1) mile radius of the Project limits. The analysis also demonstrates the Project is not likely to impact state or federal endangered, threatened, listed, or candidate species.

The full Environmental Impact Analysis, along with the Wetland Delineation Report can be found in Exhibit E.

Conservation Land

The Environmental Impact Analysis found that Moonlight Solar does not intersect any federal, state, or local conservation easement or recreational lands, and that there are no such resources within a one (1) mile radius of the Project limits. A Wetland Reserve Program (WRP) site is found approximately 1.6 miles to the west of the Project. An Isle of Wight Purchase of Agricultural Conservation Easement (PACE) site is found approximately 2.5 miles to the southeast of the project site.

Wetlands and Streams

Wetlands and Streams within the Project boundary have been delineated by Timmons Group. The project will be designed to avoid impacts to streams and wetlands. A Jurisdictional Waters Determination Request form has been sent to USACE. If impact to wetlands or streams are unavoidable, the Project will obtain the proper USACE permit for impacts to USACE jurisdictional wetlands.

Wildlife

Federal and State agency databases were reviewed to determine whether any species listed by the State or by the Endangered Species Act (ESA) have the potential to occur onsite. This comprehensive search determined that there are three species with State or Federal protection with the potential to occur at the Project Site: the Northern Long-Eared Bat (Myotis septentrionalis), the Eastern Big-Eared Bat (Corynorhinus rafinesquii macrotis), and the Monarch Butterfly (Danaus plexippus).

The Northern Long-Eared Bat (NLEB) is a federally Endangered species. Based on a review completed by US Fish and Wildlife Service (USFWS) through the Information for Planning and Consultation (IPaC) system, the Northern Long-Eared Bat has the potential to occur onsite. Per the USFWS, there are no known hibernacula or roost trees for the Northern Long-Eared Bat within the vicinity of the Project, and USFWS determined Moonlight Solar is not reasonably certain to cause incidental take of the Northern Long-Eared Bat. Coordination with USFWS is complete. No further consultation or coordination between USFWS and the Project is required for the Northern Long-Eared Bat.

The Eastern Big-Eared Bat is listed as a State Endangered species. The VDCR assessment states the project contains predicted suitable habitat for the Eastern Big-Eared Bat. There are no known hibernacula or roost trees for the Eastern Big-Eared Bat within the vicinity of the Project.

The Monarch Butterfly is a Candidate Species and is not listed or proposed for listing. Based on a review completed by US Fish and Wildlife Service (USFWS) through the Information for Planning and Consultation (IPaC) system, the Monarch Butterfly has the potential to occur onsite. No further consultation is necessary to avoid impacts to the Monarch Butterfly.

In general, solar PV facilities, such as Moonlight Solar, do not pose a threat to fish or wildlife. While the facility's fencing may slightly alter the movement patterns of larger mammals, the proposed facility's site plan minimizes fenced areas and incorporates wildlife corridors along streams and wetlands throughout the site to minimize impacts on animal movement patterns. Additionally, a wildlife-friendly and pollinator-friendly buffer has been included along the planted portions of the Project's boundary in the site plan. This can benefit the Monarch Butterfly (Danaus plexippus), although it has no restrictions at this time. By implementing these measures and further coordinating with the USFWS and the VDWR, Moonlight Solar will work to minimize its impact on all species.

Soils

The Environmental impact Analysis found instances of prime farmland within the leased property for the Project. Prime Farmland totals 291.6 acres, farmland of statewide importance totals 2.5 acres, prime farmland if drained totals 120.6 acres, and the remaining 102.2 acres are neither prime farmland or farmland of statewide importance. When considering soil classifications inside the fence of the Project, prime farmland totals 180.5 acres, prime farmland if drained totals 49.4 acres, farmland of statewide importance totals 1.1 acres, and the remaining 19.1 acres are neither prime farmland or farmland of statewide importance.

Soil testing for any contaminants directly attributable to the Project will occur pre-construction, and post- construction. Soil testing will continue every 5 years during the operation of the Project. The initial baseline results and subsequent reports will be provided to the County's Zoning Administrator.

Historical and Cultural Resources

A Historical and Cultural Resources Analysis was completed by Apogee. The analysis found that in the total leased area there are approximately 176.92 acres of high probability areas, 135.23 acres of medium probability areas, 60.77 acres of areas with low probability, and 143.98 acres of areas designated as visual inspection only. High probability areas will require full shovel tests at fifty (50) foot intervals. Medium probability areas will require sampling covering approximately twenty-five (25) percent of the area. Low probability areas require cursory shovel test coverage of approximately ten (10) percent. Areas designated as visual inspection only require the area to be walked over and visually inspected. The analysis also identified previously recorded historic structures within the vicinity of the Project Site. The Carroll Plantation (DHR ID

046-0064) has been listed as eligible for the National Register of Historic Places (NRHP) and is located on a parcel adjoining the Project Site. The proposed concept plan establishes an increased setback of two hundred fifty (250) feet from this structure with documented historical significance, which includes a 50-foot-wide vegetative buffer consisting of three staggered rows of large and small canopy trees and medium shrubs installed a maximum of eight feet on center to create an effective visual screen. Additionally, new substations, connector stations, inverters and transformers will be at least five hundred (500) feet from this structure with documented historical significance.

A Phase 1B Archaeological Survey was conducted by Apogee. The report documents an archaeological survey of the Moonlight Solar site. During the course of the survey, five archaeological sites were identified (44IW0390, 44IW0391, 44IW0392, 44IW0393, and 44IW0394). Site 44IW0390 is a mid-19th to early-20th century domestic trash scatter. Site 44IW0391 is a low-density artifact scatter dating to the mid- to late-19th century. Site 44IW0392 and 44IW0393 are a low-density artifact scatters dating to the mid-19th to mid-20th century potentially associated with the agricultural structure across Moonlight Road. Site 44IW0394 is a late-19th to early 20th century domestic artifact scatter. Apogee recommends that all five sites (44IW0390, 44IW0391, 44IW0392, 44IW0393, and 44IW0394) are not eligible for listing the National Register of Historic Places (NRHP). No additional work is recommended for the project area. VDHR agrees with Apogee's recommendations.

A Phase 1 Historic Architecture Survey and Effects Assessment was completed by Apogee. Apogee identified a total of twenty-one (21) historic architectural resources. Eleven (11) previously recorded resources were identified within the 0.5-mile buffer. Of the eleven (11) resources, nine (9) had been surveyed within the past 5 years. The remaining two (2) previously recorded resources and nineteen (19) newly identified resources were surveyed. Apogee recommends none of the surveyed resources as eligible for listing in the National Register of Historic Places (NRHP). Virginia Landmarks Register (VLR) and VDHR concur with Apogee's recommendation.

The full Historical and Cultural Resources Impact Analysis, The Phase 1B Archaeological Survey Report, the Phase 1 Historic Architecture Survey and Effects Assessment Report, and the VDHR letter of concurrence are included as Exhibit F.

Detailed Capacity Information

A report detailing the available capacity of the interconnecting transmission system and potential impacts on future generation projects was completed by Timmons Group. The report analyzed the transmission system, existing and planned power generation projects, and near-term planned power generation project retirements. The report concludes that the existing transmission infrastructure has more than enough available capacity to accommodate the energy generated by Moonlight Solar.

The full report is included as Exhibit G.

Surrounding Property Value Impact Analysis

An analysis of the impact of Moonlight Solar on surrounding property values was completed by Kirkland Appraisals. The analysis shows no impact to surrounding properties where a solar farm is properly screened and buffered. The analysis states that noise, odor, and traffic are criteria which would typically correlate with a downward adjustment on property values, but due to the nature of solar farms the Project does not contribute to these criteria. The analysis concludes that the Project will have no impact on the value of adjoining or abutting properties because of the rural nature of where it is sited and that the proposed use is in harmony with the area in which it is located.

The full Property Impact Analysis is included as Exhibit H.

Health and Safety

Health

The toxicity of panels has been thoroughly investigated in scientific literature. While there are two heavy metal components present in panels, lead and silver, they are only present in very small quantities. The silver does not create a toxicity hazard, and the lead is part of tin-lead solder that is standard in the electronic industry. There is no risk of leaching from sealed, undamaged panels. The International Energy Agency researched worst-case leeching scenarios from damaged panels and their models showed the health risks created were significantly below public health standards set by the EPA meaning that solar poses no health threat to groundwater or surface water resources. The facility will not generate any other toxic or chemical byproducts.

The creation of electromagnetic fields, another common concern, has been shown to have no discernable impact on human health at the frequency and strength generated by the Project. Any electromagnetic field generated by the Project is not expected to leave the Project Site.

Solar energy facilities do not create heat island effects like those sometimes observed in urban areas, and do not affect the temperature of the surrounding area. Similarly, it creates no light pollution and any noise generated is generally undiscernible outside the fence line. If environmental noise is a concern, use of the property by a quiet solar farm often precludes other uses that create substantial environmental noise (e.g., farming equipment, lawnmowers and leaf blowers from a single-family subdivision, guns from hunters, etc.).

Moonlight Solar will produce emission-free electricity that would otherwise likely be produced through the combustion of fossil fuels. Solar farms also protect ground and surface waters from uses that could otherwise be developed as a matter of right (e.g., collection of manure from dairy farming; chemicals used in nurseries and greenhouses; or heavy application of chemicals used in crop production).

Safety

The only researched-backed physical safety concerns from a solar project are electric shock, arc flash, and fire. These concerns are not unique to solar, but rather come with any electrical use, including in any workplace or home and are mitigated with security fencing. The conditions that produce these hazards are rare, and the danger is localized to areas immediately surrounding the specific piece of malfunctioning equipment.

The facility is required to meet the high U.S. safety standards and will be constructed to meet or exceed all standards of the National Electric Code (NEC). All installed equipment is listed with and will contain the stamp of Underwriters Laboratories, a safety consulting and certification company that specializes in the public adoption and drafting of safety standards for electrical devices and components. Solar energy systems have little flammable material, and no special equipment is required to respond to a fire incident. The facility will be remotely monitored 24/7 to ensure that hazards are caught early on before public danger can occur.

Additionally, public access to the Moonlight Solar site will be restricted by security fencing. The fencing is harmonious with the rural, agricultural, and historical character of the county while meeting federal and state regulations for solar electric generating facility fencing, in compliance with both the Isle of Wight County ordinance and the NEC guidelines. This fence will protect wildlife, the public, and the facility by restricting access to qualified technicians trained to work safely around electrical equipment.

Each entrance will have notification signage stating the rated nameplate capacity, the name of the Project owner, the name of the Project operator (if different from the Project owner), the street address of the site, and a 24-hour emergency contact phone number for the operator. Electrical warning signs will also be posted along the perimeter. Fencing will be placed around the solar arrays, inverters, and substation only. Fencing will not be placed around the whole site to provide wildlife corridors.

Finally, glare from the solar panels is sometimes cited as a concern when a new solar project is being planned in a community. Moonlight Solar will be a single-axis tracking facility, which orients the panels to face the sun throughout the day. The effect of the tracking technology is that glare would only be a potential issue at dawn or dusk and only then when looking (through the vegetative buffers) across the panels towards the rising or setting sun, a very unlikely scenario given the required setbacks and vegetative buffers. The Project is not in the vicinity of any airports that utilize a control tower and thus does not pose a threat for aviation, and the security fence and vegetative buffer aid in shielding motorists from similar effects.

Emergency Services

Prior to the construction of Moonlight Solar, an Emergency Response Plan will be submitted for approval to the County. The Emergency Response Plan will detail fire suppression methods during both the construction and operation of the Project. The plan will include a training program which will be provided to emergency responders covering onsite incidence response. The Project will install a Knox Box or other remote access technology at the facility, ensuring emergency responders have 24/7 access to the facility to remedy any issues which could arise. No special equipment is necessary to respond to an issue at a solar farm.

Stormwater Management

A Stormwater Pollution Prevention Plan (SWPPP) including erosion and sediment control measures will be approved and the measures installed for the duration of land disturbing activities and until the site has been stabilized. For the duration of

construction these control measures will be inspected by the construction management team after any rain event of a quarter inch or more and a compliance report will be generated. The permitting agency (VA DEQ) also inspects the control measures on a routine basis or as needed. Any non-compliance is documented, and the authority having jurisdiction can issue a "Notice of Violation". It is likely that drones will be used to inspect the control measures and confirm that there are no impacts after significant storm events. The inspection and maintenance of all sedimentation and erosion control measures are critical components of the facility's construction, as they uphold the project's adherence to the SWPPP. Upon the conclusion of construction, the permanent SWPPP is implemented, including best management practices (BMPs) established by the Virginia Department of Environmental Quality. The permanent stormwater control measures are robust and designed to handle significant rain events.

Stormwater

Stormwater control and erosion mitigation is a common community concern with large solar facilities, primarily due to the total acreage that will be disturbed during construction and recent issues with a small number of projects in other parts of the Commonwealth. It is important to note, however, over 90% of the site will be covered with native grasses and vegetation, such as the grassy areas under panels, meaning that unlike traditional developments, the vast majority of the facility's footprint will be able to naturally absorb water, minimizing runoff.

Recent stormwater issues at other solar farms seem to stem from large rain events after construction is complete but before vegetative groundcover has been established. This issue is being studied by the VA DEQ and additional guidance on stormwater mitigation is expected to be issued prior to the facility's final site design. Neither Palladium nor RES has any involvement in or firsthand knowledge of the solar farms in Virginia at which stormwater issues have been noted. Sites developed by Palladium and RES, both jointly and separately, have not experienced any stormwater issues.

Prior to any ground-disturbing activities, the Project must receive approval of its proposed SWPPP from the VA DEQ, as well as comply with the Virginia Erosion and Sediment Control Program (VESCP), as mandated by Virginia Statute § 62.1-44.15:52. The SWPPP as well as the VESCP will outline the engineered control measures, based on exact land data, such as topography surveys, stream and wetland delineations, geological data, and geo-technical data, to create specific water flow calculations quantifying different levels of rainfall over varying time periods. These calculations inform the design and scale of stormwater mitigation and sediment and erosion control measures that are necessary to ensure that the construction and operation of the facility will not adversely impact the water system or adjoining landowners. Such control measures may include, but are not limited to, sediment basins, silt fencing, enhanced drainage swales, and bioretention areas. Some control measures, such as silt fencing, are specific to construction and others, such as retention ponds, are permanent. The ultimate design and location of each control measure is based on the final site design prepared by professional engineers.

To put it simply, Moonlight Solar must work closely with the VA DEQ to ensure the appropriate control measures are in place prior to any land disturbing activities, for all stormwater both during construction and during operation of the facility.

Decommissioning

A Decommissioning Plan for Moonlight Solar has been prepared by Timmons Group. Moonlight Solar bears exclusive responsibility for decommissioning and removing the system at the end of the facility's useful life, anticipated to be forty (40) years.

Decommissioning will be done in accordance with the approved decommissioning plan. Decommissioning includes the removal of modules, support columns, buildings, cabling, electrical components, and any associated facilities (e.g., foundations, conduit) plus the necessary grading, restoration, decompaction, and stabilization of soil through reseeding. No hazardous material is expected to be on-site.

The estimated timeframe for completion of the removal and decommissioning activities is six (6) to twelve (12) months (weather dependent) unless otherwise extended by Isle of Wight County.

All equipment and facility materials will be removed from the site such that it is returned to a condition suitable for continued agricultural and timber use, as was present prior to the construction of the facility, unless otherwise directed. Moonlight Solar will perform the decommissioning of the Project in accordance with all governing authorities, applicable local, state and federal requirements, and industry standards. Any required permits will be obtained, and environmental considerations will be adhered to prior to de-energizing and decommissioning the facility. Moonlight Solar does not anticipate any environmental impacts as a result of the decommissioning process.

The facility's components will be recycled, reused, salvaged, or transported to the appropriate facilities for disposal upon removal. Based on current salvage practices and industry standards, it is anticipated that most of the Project's materials will be able to be recycled or reused upon decommissioning.

Surety

To guarantee the removal of equipment and restoration of the land, Moonlight Solar will provide financial assurance in the form of a decommissioning bond, or other form of reasonably acceptable surety (e.g., irrevocable letter of credit, cash deposit, etc.) to cover the cost of the facility's decommissioning with a federally insured financial institution. The value of the security will be 100% of the estimated cost to decommission the facility, remove the equipment, and restore the land, as determined by an estimate by an independent third-party engineer licensed in the Commonwealth, with experience in preparing decommissioning estimates. The financial assurance will include an annual inflation factor. This surety will meet or exceed the County ordinance and the standards outlined in Virginia Statute § 15.2-2241.2. The surety amount will be updated not less than every five years to ensure its value is kept current.

The full Decommissioning Plan is included as Exhibit I.

Compliance with Comprehensive Plan

The Isle of Wight County Comprehensive Plan adopted January 16, 2020 (the "Plan") is a general, long-range, dynamic policy and implementation guide for decisions concerning the overall growth and development of the County. Moonlight Solar is in substantial accord with the Plan. Across the items discussed in the Plan, the Moonlight Solar project complies with the locational recommendations for solar projects, including: (1) located on RAC designated properties, (2) outside of the viewshed of any scenic, cultural, or recreational resource, (3) adjacent to existing electric transmission lines, and (4) outside of Development Service Districts. Moonlight Solar, as a renewable energy generation facility, also aligns with the following Plan policy: "*Encourage progressive, alternative, and environmentally compatible energy production and conservation practices that support the local economy and supports the foundation of a rural and scenic atmosphere that contributes to the desirable quality of life in Isle of Wight County.*"

According to the maps provided in the Plan, Moonlight Solar is in an area designated as RAC. The RAC land use consists of large contiguous areas of agricultural and forest land and is almost exclusively outside of the Development Service Districts. The Plan states that "*...uses reliant on large areas of land such as solar farms and agritourism activities may also be appropriate when sited correctly.*" Please refer to Exhibit A which contains maps showing the Project location and land use designation.

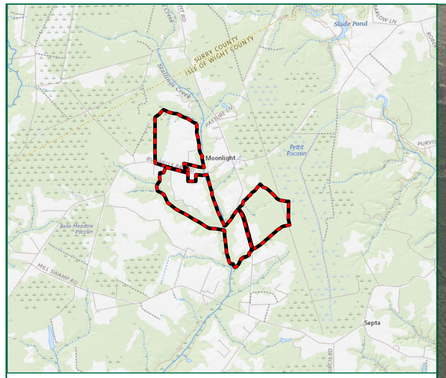
The secluded nature of Moonlight Solar would balance new economic growth while maintaining the rural character of the County.

Though Moonlight Solar will occupy land currently used for agriculture, that occupation is temporary and will not inhibit the land's potential to again be used for agriculture or silviculture. In accordance with the Plan, extensive environmental impact studies have been completed, as noted and discussed in previous sections of this narrative, to ensure no impact to the environment or surrounding properties.

The stated policy encouraging progressive, alternative and environmentally compatible energy production and conservation practices that support the local economy and Moonlight Solar represents an opportunity for Isle of Wight County to diversify its economy and tax base via an emerging, pollution-free industry. The emergence of this industry would not come at the expense of the other strategies in the Plan, which primarily encourage traditional development in town centers and industrial parks and would provide significant tax benefit to the County to expand infrastructure and other key services highlighted in the Plan.

Land use goals stated in the Plan include promoting a balance of land uses to meet economic and demographic needs and to promote a clean-living environment. This Project would help meet both of those goals by promoting diversity of land uses, improving air quality, and producing pollution-free energy likely to be consumed locally.

The Project's location also aligns with the Natural Resource goals by preserving flood plains, swamps, and other areas of environmental importance.



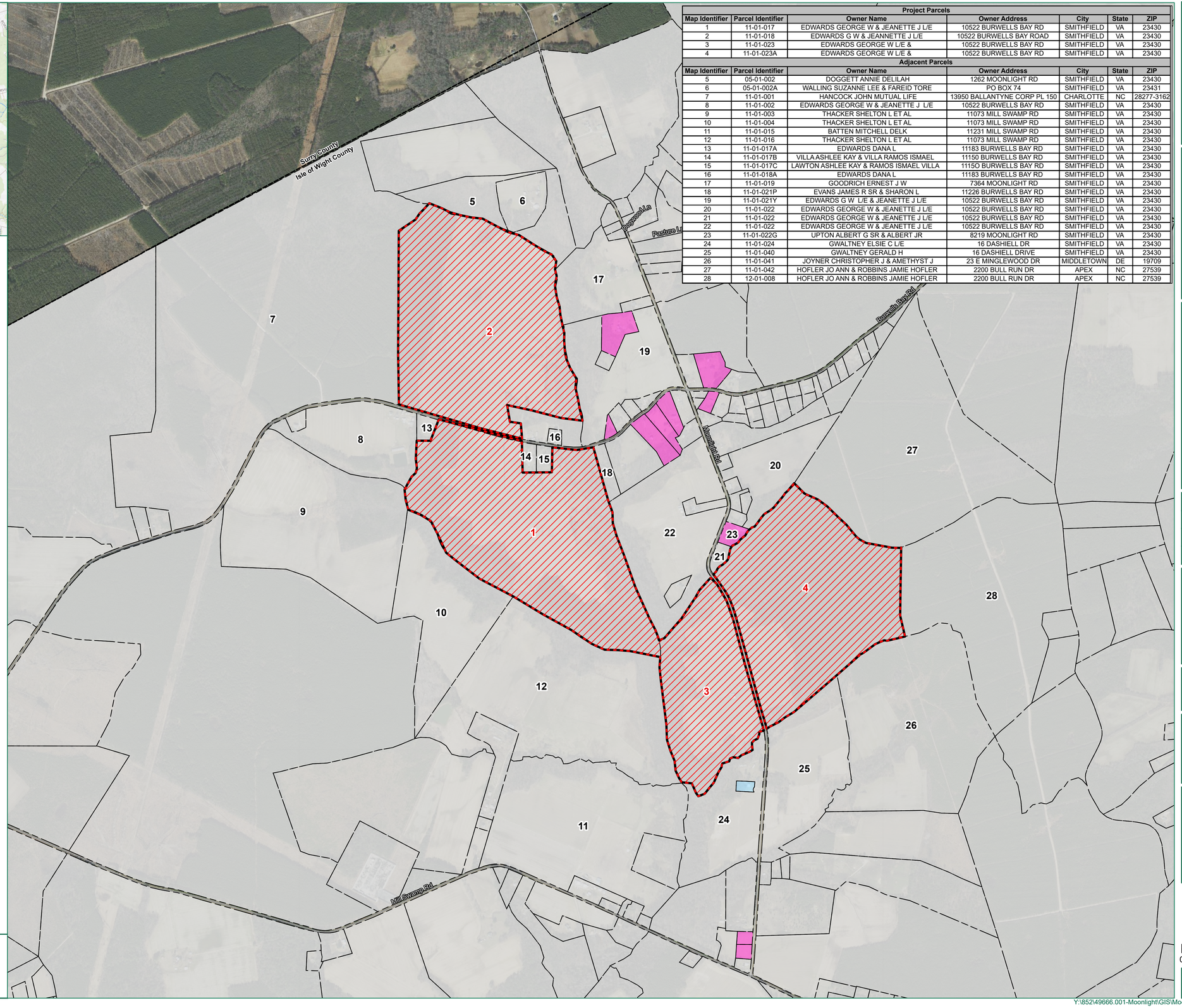
Legend

- Property Boundary - 522.96 Acres
- County Boundary
- Isle of Wight County Tax Parcels

Zoning

- Rural Agricultural Conservation District (RAC)
- Rural Residential District (RR)
- General Commercial District (GC)

NOTES:
1. PARCEL AND ZONING DATA FROM ISLE OF WIGHT COUNTY GIS.
2. COUNTY BOUNDARY FROM VDEM.
3. AERIAL IMAGERY FROM VGIN.



Project Parcels

Map Identifier	Parcel Identifier	Owner Name	Owner Address	City	State	ZIP
1	11-01-017	EDWARDS GEORGE W & JEANETTE J L/E	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
2	11-01-018	EDWARDS G W & JEANNETTE J L/E	10522 BURWELLS BAY ROAD	SMITHFIELD	VA	23430
3	11-01-023	EDWARDS GEORGE W L/E &	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
4	11-01-023A	EDWARDS GEORGE W L/E &	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430

Adjacent Parcels

Map Identifier	Parcel Identifier	Owner Name	Owner Address	City	State	ZIP
5	05-01-002	DOGGETT ANNIE DELILAH	1262 MOONLIGHT RD	SMITHFIELD	VA	23430
6	05-01-002A	WALLING SUZANNE LEE & FAREID TORE	PO BOX 74	SMITHFIELD	VA	23431
7	11-01-001	HANCOCK JOHN MUTUAL LIFE	13950 BALLANTYNE CORP PL 150	CHARLOTTE	NC	28277-3162
8	11-01-002	EDWARDS GEORGE W & JEANETTE J L/E	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
9	11-01-003	THACKER SHELTON L ET AL	11073 MILL SWAMP RD	SMITHFIELD	VA	23430
10	11-01-004	THACKER SHELTON L ET AL	11073 MILL SWAMP RD	SMITHFIELD	VA	23430
11	11-01-015	BATTEN MITCHELL DELK	11231 MILL SWAMP RD	SMITHFIELD	VA	23430
12	11-01-016	THACKER SHELTON L ET AL	11073 MILL SWAMP RD	SMITHFIELD	VA	23430
13	11-01-017A	EDWARDS DANA L	11183 BURWELLS BAY RD	SMITHFIELD	VA	23430
14	11-01-017B	VILLA ASHLEE KAY & VILLA RAMOS ISMAEL	11150 BURWELLS BAY RD	SMITHFIELD	VA	23430
15	11-01-017C	LAWTON ASHLEE KAY & RAMOS ISMAEL VILLA	11150 BURWELLS BAY RD	SMITHFIELD	VA	23430
16	11-01-018A	EDWARDS DANA L	11183 BURWELLS BAY RD	SMITHFIELD	VA	23430
17	11-01-019	GOODRICH ERNEST J W	7364 MOONLIGHT RD	SMITHFIELD	VA	23430
18	11-01-021P	EVANS JAMES R SR & SHARON L	11226 BURWELLS BAY RD	SMITHFIELD	VA	23430
19	11-01-021Y	EDWARDS G W L/E & JEANETTE J L/E	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
20	11-01-022	EDWARDS GEORGE W & JEANETTE J L/E	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
21	11-01-022	EDWARDS GEORGE W & JEANETTE J L/E	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
22	11-01-022	EDWARDS GEORGE W & JEANETTE J L/E	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
23	11-01-022G	UPTON ALBERT G SR & ALBERT JR	8219 MOONLIGHT RD	SMITHFIELD	VA	23430
24	11-01-024	GWALTNEY ELSIE C L/E	16 DASHIELL DR	SMITHFIELD	VA	23430
25	11-01-040	GWALTNEY GERALD H	16 DASHIELL DRIVE	SMITHFIELD	VA	23430
26	11-01-041	JOYNER CHRISTOPHER J & AMETHYST J	23 E MINGLEWOOD DR	MIDDLETOWN	DE	19709
27	11-01-042	HOFLER JO ANN & ROBBINS JAMIE HOFLER	2200 BULL RUN DR	APEX	NC	27539
28	12-01-008	HOFLER JO ANN & ROBBINS JAMIE HOFLER	2200 BULL RUN DR	APEX	NC	27539

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JACKSONVILLE, FL 32207
(904) 659-4684
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PROJECT NAME & LOCATION

MOONLIGHT SOLAR

ISLE OF WIGHT COUNTY, VIRGINIA

DATE 04/26/2023

PROJECT NUMBER 49666.001

PROJECT NAME MOONLIGHT SOLAR

DESIGNED BY / DRAWN BY J. STICKLEY

NOTES

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REVISIONS

#	MM/DD/YY	DESCRIPTION
1	07/07/23	Revised per County feedback

DRAWING DESCRIPTION

PARCEL AND ZONING MAP

SCALE (FEET)

0 700 1,400

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE H: 1" = 700'

SHEET NUMBER C2.0

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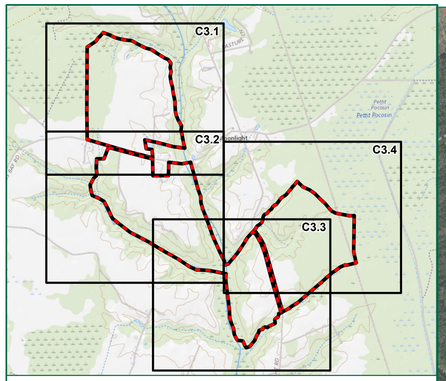
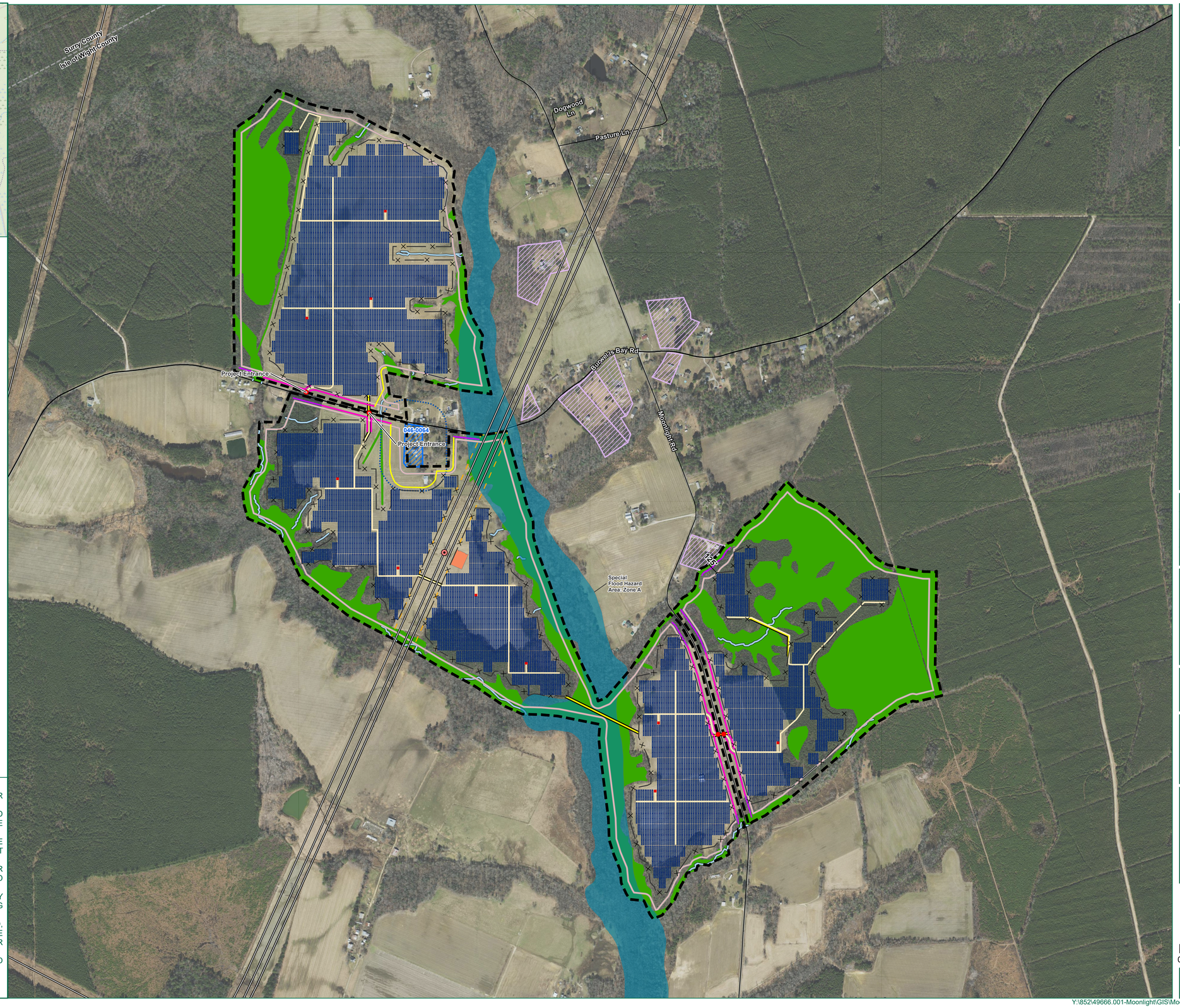


Legend

- Property Boundary - 522.96 Acres
- 75' Property Setbacks & 125' from Residential Parcels
- Entrance
- Point of Interconnection
- Inverters
- Delineated Stream
- Culverts
- Electric Transmission Lines
- Retained Vegetative Buffer
- Proposed Vegetative Buffer, Residential
- Proposed Vegetative Buffer, Road Frontage
- Internal Roads
- Panels
- Fence - 250.1 Acres
- Substation
- Transmission Line Easement
- NRHP Eligible Architectural Resource
- NRHP Eligible Architectural Resource Buffer - 250'
- Delineated Wetlands
- FEMA Flood Zone
- Rural Residential District (RR)
- County Boundary
- Proposed Underground Collection Line

NOTES:
1. LAYOUT IS PRELIMINARY AND SUBJECT TO CHANGE. NOT FOR CONSTRUCTION.
2. COLLECTION LINES WILL BE DIRECTIONALLY BORED UNDERGROUND. THE LOCATIONS OF THESE CROSSINGS ARE PRELIMINARY AND SUBJECT TO CHANGE.
3. ALL ENTRANCES ONTO THE PUBLIC RIGHT-OF-WAY WILL BE DESIGNED IN ACCORDANCE WITH APPENDIX F OF THE VDOT ROAD DESIGN MANUAL.
4. SETBACKS ARE FROM ISLE OF WIGHT COUNTY SOLAR ORDINANCE. SETBACKS ARE 75' FROM ALL PROPERTY LINES AND ROADWAYS AND ARE 125' FROM RESIDENTIAL PARCELS.
5. WETLANDS AND STREAMS HAVE BEEN DELINEATED BY TIMMONS GROUP IN MARCH 2023 AND ARE PENDING CONFIRMATION BY THE US ARMY CORPS OF ENGINEERS.
6. IMPACTS OF WATERS OF THE U.S. ARE NOT ANTICIPATED, EXCEPT FOR LINEAR ROAD CROSSINGS. MEDIUM VOLTAGE COLLECTION LINES WILL BE DIRECTIONALLY BORED UNDER WETLANDS AND STREAMS.
7. FLOOD ZONE DATA FROM FEMA'S NATIONAL FLOOD HAZARD LAYER.
8.. CULTURAL RESOURCE DATA FROM VDHR.
9. AERIAL IMAGERY FROM VGIN.



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PROJECT NAME & LOCATION

MOONLIGHT SOLAR

ISLE OF WIGHT COUNTY, VIRGINIA

DATE: 04/26/2023
PROJECT NUMBER: 49666.001
PROJECT NAME: MOONLIGHT SOLAR
DESIGNED BY / DRAWN BY: J. STICKLEY

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REVISIONS

#	MM/DD/YY	DESCRIPTION
1	07/07/23	*Revised per County feedback*

DRAWING DESCRIPTION
CONCEPTUAL SITE PLAN

SCALE (FEET)
0 500 1,000
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H: 1" = 500'	C3.0

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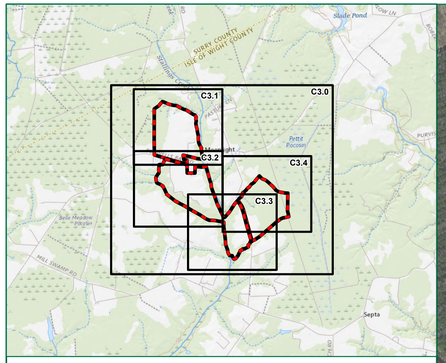

Legend

- Property Boundary - 522.96 Acres
- Retained Vegetative Buffer
- Proposed Vegetative Buffer, Residential
- Proposed Vegetative Buffer, Road Frontage
- Electric Transmission Lines
- Internal Roads
- Panels
- Fence - 250.1 Acres
- Substation
- Eligible Architecture Resources
- Eligible Cultural Resource Buffer - 250'

NOTES:
1. CULTURAL RESOURCE DATA FROM VDHR.
2. AERIAL IMAGERY FROM VGIN.

Dogwood Ln
Pasture Ln
Bluvelt Bay Rd
Moonlight Rd
046-0064

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DRAWING DESCRIPTION
PROPOSED LANDSCAPING MAP

SCALE (FEET)
0 500 1,000
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE: H: 1" = 500'
SHEET NUMBER: C4.0

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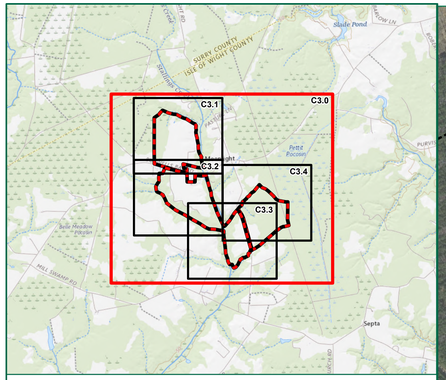

Legend

- Property Boundary - 522.96 Acres
- Development Envelope - 305.0 Acres
- Culverts
- Delineated Stream
- Wildlife Corridor
- Delineated Wetlands
- Transmission Line Easement
- FEMA Flood Zone
- NRHP Eligible Architecture Resource
- NRHP Eligible Cultural Resource Buffer - 250'
- County Boundary

NOTES:
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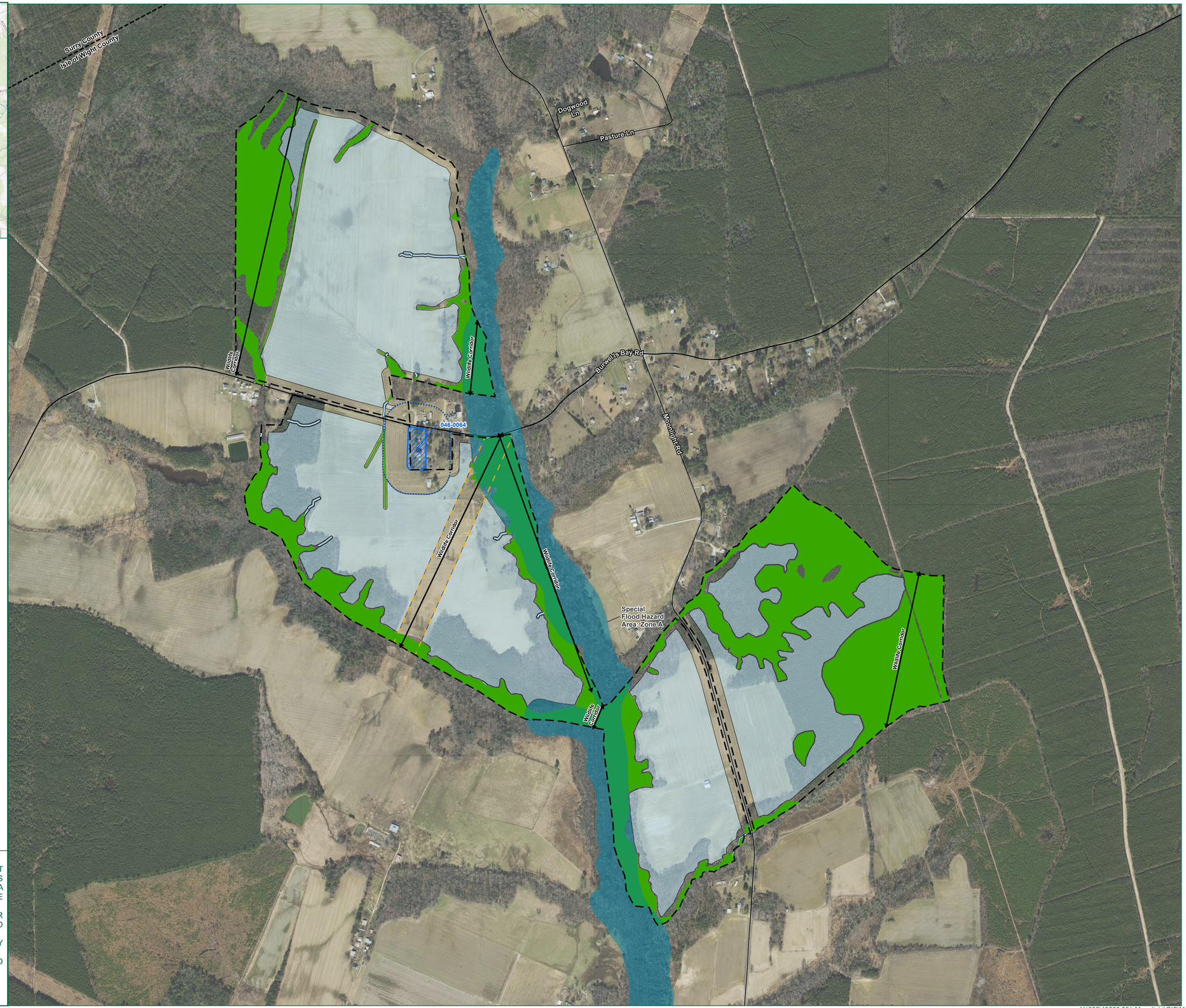

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PROJECT NAME & LOCATION
MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY, VIRGINIA

DATE: 04/26/2023
PROJECT NUMBER: 49666.001
PROJECT NAME: MOONLIGHT SOLAR
DESIGNED BY / DRAWN BY: J. STICKLEY

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DRAWING DESCRIPTION
NOT TO EXCEED SITE PLAN

SCALE (FEET)
0 500 1,000
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H: 1" = 500'	C5.0

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MOONLIGHT SOLAR

44 MWac SOLAR ELECTRIC POWER GENERATION FACILITY
CONDITIONAL USE PERMIT
ISLE OF WIGHT COUNTY, VIRGINIA

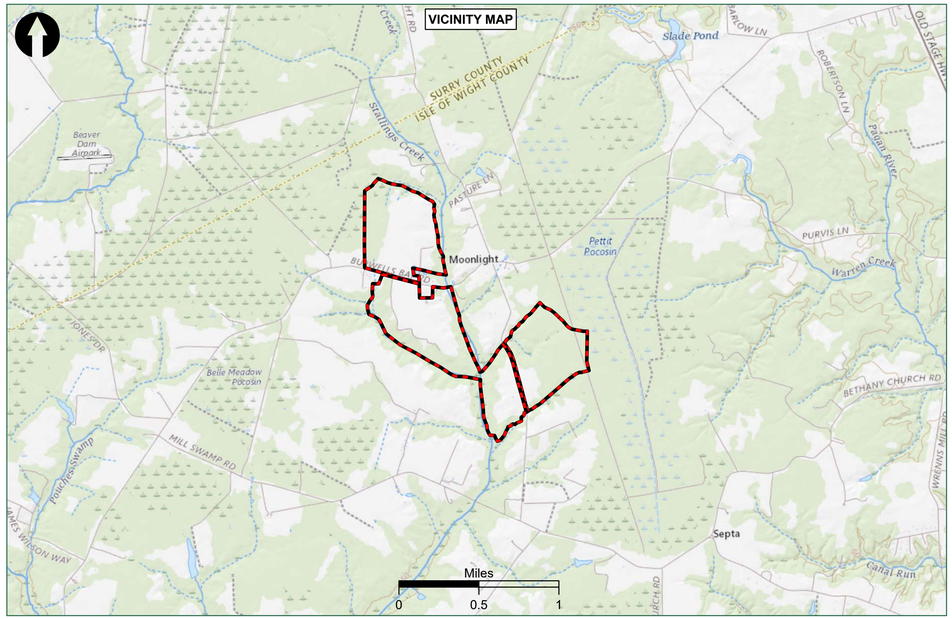

TABLE OF CONTENTS	
SHEET	DESCRIPTION
C1.0	COVER SHEET
C2.0	PARCEL AND ZONING MAP
C3.0	CONCEPTUAL SITE PLAN
C4.0	PROPOSED LANDSCAPING MAP
C5.0	NOT TO EXCEED SITE PLAN

PALLADIUM

DEVELOPER

4446 HENDRICKS AVENUE, #356
JACKSONVILLE, FL 32207
(904) 669-4684
WWW.PD46ENERGY.COM

TIMMONS GROUP

ENGINEER

1001 BOULDERS PARKWAY, SUITE 300
RICHMOND, VA 23225
TEL 804.200.6538

PRELIMINARY SITE PLANS PREPARED BY TIMMONS GROUP

REVISED FEBRUARY 15, 2024

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Richmond, VA 23225
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1	07/07/23	Revised per County feedback
2	10/15/24	Revised per County feedback

DRAWING DESCRIPTION: COVER SHEET

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SCALE	SHEET NUMBER
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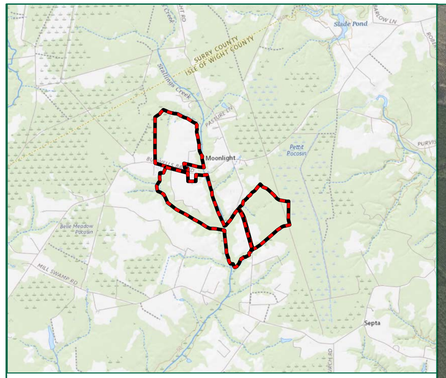

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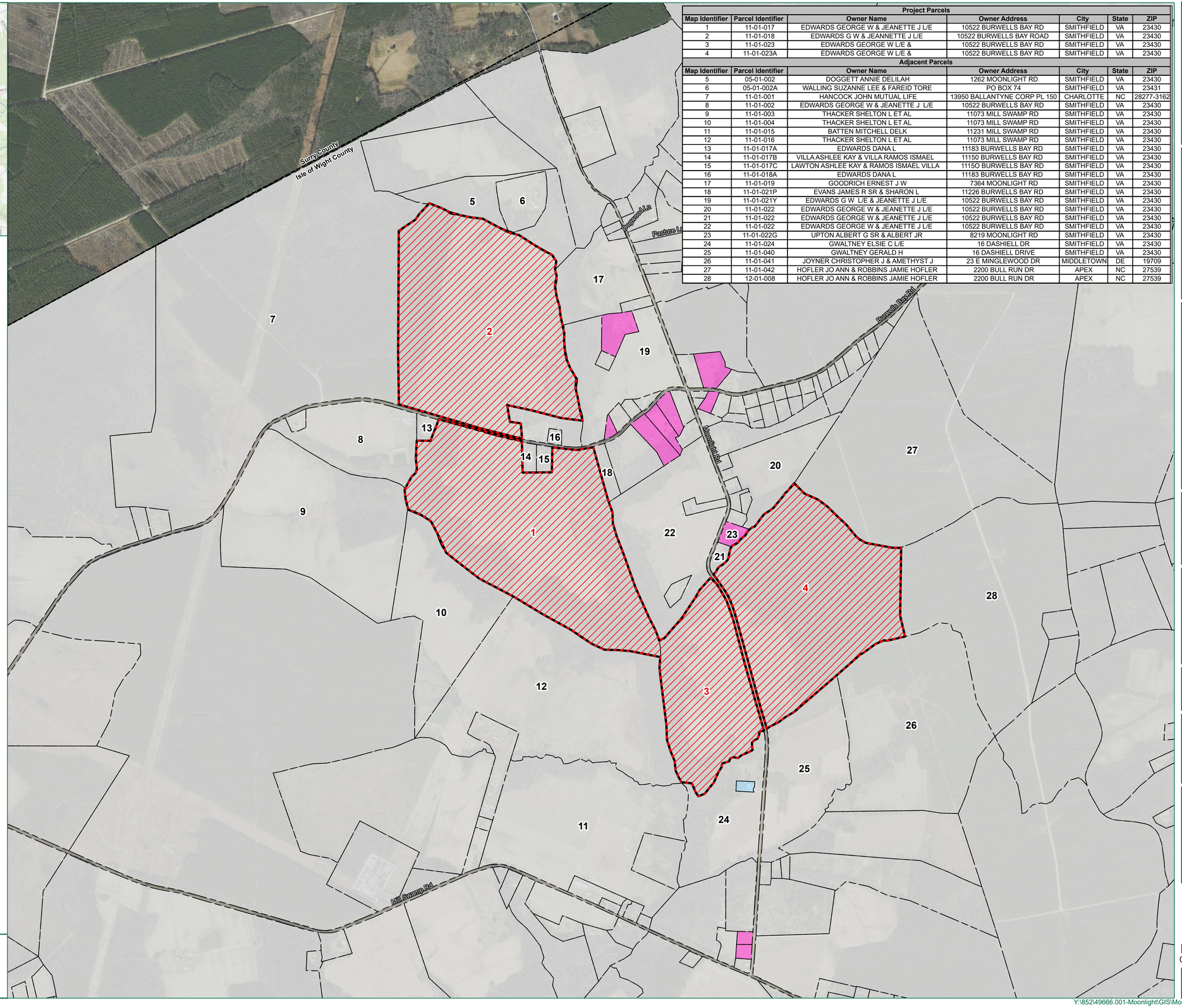

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2	11-01-018	EDWARDS G W & JEANNETTE J L/E	10522 BURWELLS BAY ROAD	SMITHFIELD	VA	23430
3	11-01-023	EDWARDS GEORGE W L/E &	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
4	11-01-023A	EDWARDS GEORGE W L/E &	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430

Adjacent Parcels

Map Identifier	Parcel Identifier	Owner Name	Owner Address	City	State	ZIP
5	05-01-002	DOGGETT ANNIE DELILAH	1262 MOONLIGHT RD	SMITHFIELD	VA	23430
6	05-01-002A	WALLING SUZANNE LEE & FAREID TORE	PO BOX 74	SMITHFIELD	VA	23431
7	11-01-001	HANCOCK JOHN MUTUAL LIFE	13950 BALLANTYNE CORP PL 150	CHARLOTTE	NC	28277-3162
8	11-01-002	EDWARDS GEORGE W & JEANETTE J L/E	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
9	11-01-003	THACKER SHELTON L ET AL	11073 MILL SWAMP RD	SMITHFIELD	VA	23430
10	11-01-004	THACKER SHELTON L ET AL	11073 MILL SWAMP RD	SMITHFIELD	VA	23430
11	11-01-015	BATTEN MITCHELL DELK	11231 MILL SWAMP RD	SMITHFIELD	VA	23430
12	11-01-016	THACKER SHELTON L ET AL	11073 MILL SWAMP RD	SMITHFIELD	VA	23430
13	11-01-017A	EDWARDS DANA L	11183 BURWELLS BAY RD	SMITHFIELD	VA	23430
14	11-01-017B	VILLA ASHLEE KAY & VILLA RAMOS ISMAEL	11150 BURWELLS BAY RD	SMITHFIELD	VA	23430
15	11-01-017C	LAWTON ASHLEE KAY & RAMOS ISMAEL VILLA	11150 BURWELLS BAY RD	SMITHFIELD	VA	23430
16	11-01-018A	EDWARDS DANA L	11183 BURWELLS BAY RD	SMITHFIELD	VA	23430
17	11-01-019	GOODRICH ERNEST J W	7364 MOONLIGHT RD	SMITHFIELD	VA	23430
18	11-01-021P	EVANS JAMES R SR & SHARON L	11226 BURWELLS BAY RD	SMITHFIELD	VA	23430
19	11-01-021Y	EDWARDS G W L/E & JEANETTE J L/E	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
20	11-01-022	EDWARDS GEORGE W & JEANETTE J L/E	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
21	11-01-022	EDWARDS GEORGE W & JEANETTE J L/E	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
22	11-01-022	EDWARDS GEORGE W & JEANETTE J L/E	10522 BURWELLS BAY RD	SMITHFIELD	VA	23430
23	11-01-022G	UPTON ALBERT G SR & ALBERT JR	8219 MOONLIGHT RD	SMITHFIELD	VA	23430
24	11-01-024	GWALTNEY ELSIE C L/E	16 DASHIELL DR	SMITHFIELD	VA	23430
25	11-01-040	GWALTNEY GERALD H	16 DASHIELL DRIVE	SMITHFIELD	VA	23430
26	11-01-041	JOYNER CHRISTOPHER J & AMETHYST J	23 E MINGLEWOOD DR	MIDDLETOWN	DE	19709
27	11-01-042	HOFLER JO ANN & ROBBINS JAMIE HOFLER	2200 BULL RUN DR	APEX	NC	27539
28	12-01-008	HOFLER JO ANN & ROBBINS JAMIE HOFLER	2200 BULL RUN DR	APEX	NC	27539

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PROJECT NAME & LOCATION

MOONLIGHT SOLAR

ISLE OF WIGHT COUNTY, VIRGINIA

DATE 04/26/2023

PROJECT NUMBER 49666.001

PROJECT NAME MOONLIGHT SOLAR

DESIGNED BY / DRAWN BY J. STICKLEY

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DRAWING DESCRIPTION

PARCEL AND ZONING MAP

SCALE (FEET)

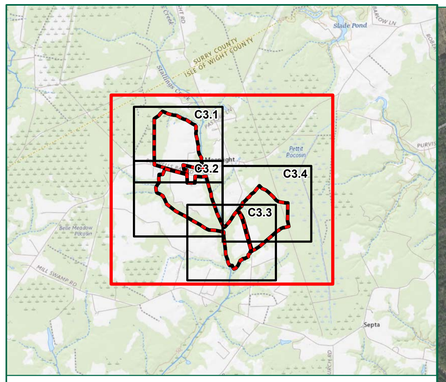
0 700 1,400

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE H: 1" = 700'

SHEET NUMBER C2.0

Y:\852\49666.001-Moonlight\GIS\Moonlight CUP\Moonlight CUP.aprx



Legend

- Property Boundary - 522.96 Acres
- 75' Property Setbacks & 125' from Residential Parcels
- Entrance
- Point of Interconnection
- Delineated Stream
- Culverts
- Electric Transmission Lines
- Underground Medium Voltage AC Cabling
- Retained Vegetative Buffer
- Proposed Vegetative Buffer, Residential
- Proposed Vegetative Buffer, Road Frontage
- Proposed Vegetative Buffer, Cultural Resource
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- Panels
- Inverters
- Fence - 231.2 Acres
- Substation
- Switchyard
- Transmission Line Easement
- NRHP Eligible Architectural Resource
- NRHP Eligible Architectural Resource Buffer - 250'
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- Rural Residential District (RR)
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8.. CULTURAL RESOURCE DATA FROM VDHR.
9. AERIAL IMAGERY FROM VGIN.

Surry County
Isle of Wight County
Dogwood Ln
Pasture Ln
Burwells Bay Rd
Project Entrance
Project Entrance
046-0064
Moonlight Rd
Project Entrance
Project Entrance
Special Flood Hazard Area - Zone A

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CONCEPTUAL SITE PLAN

SCALE (FEET)
0 500 1,000
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H: 1" = 500'	C3.0

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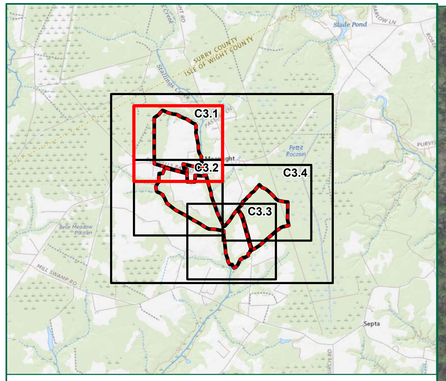

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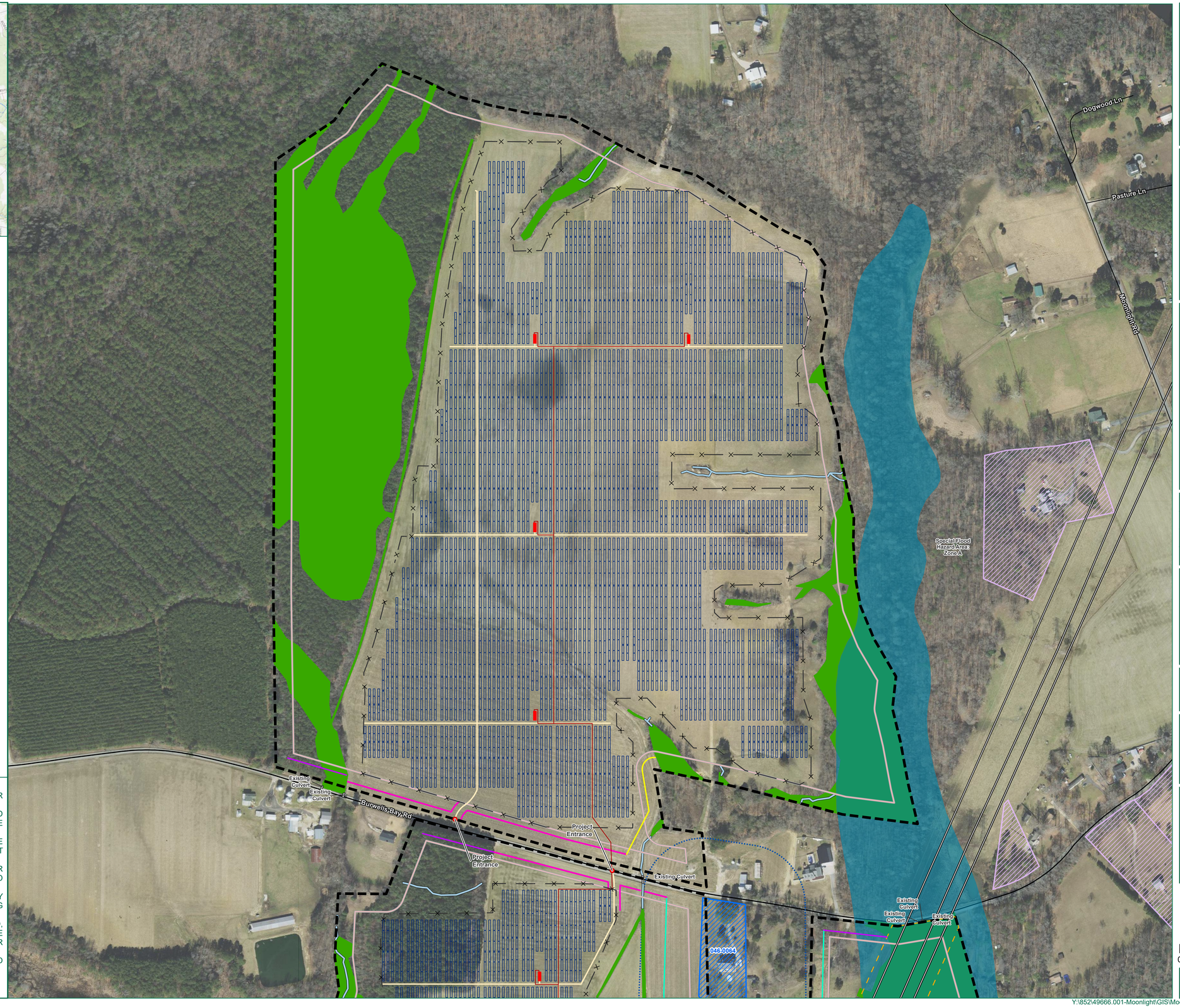

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SCALE (FEET)
0 200 400
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE H: 1" = 200'
SHEET NUMBER C3.1

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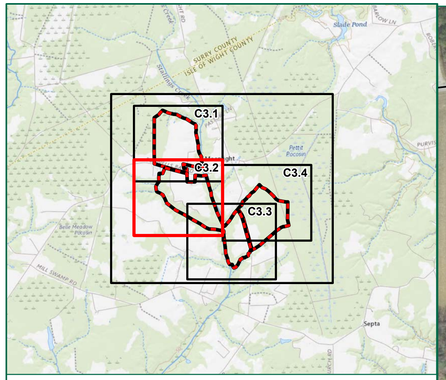

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SCALE (FEET)
0 200 400
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SCALE	SHEET NUMBER
H: 1" = 200'	C3.2

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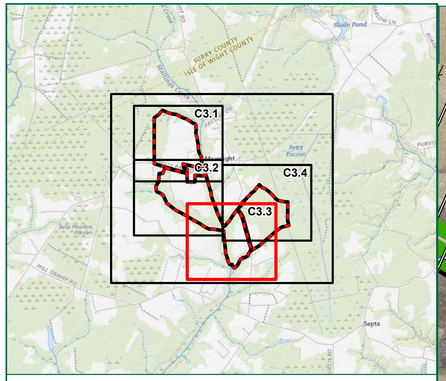

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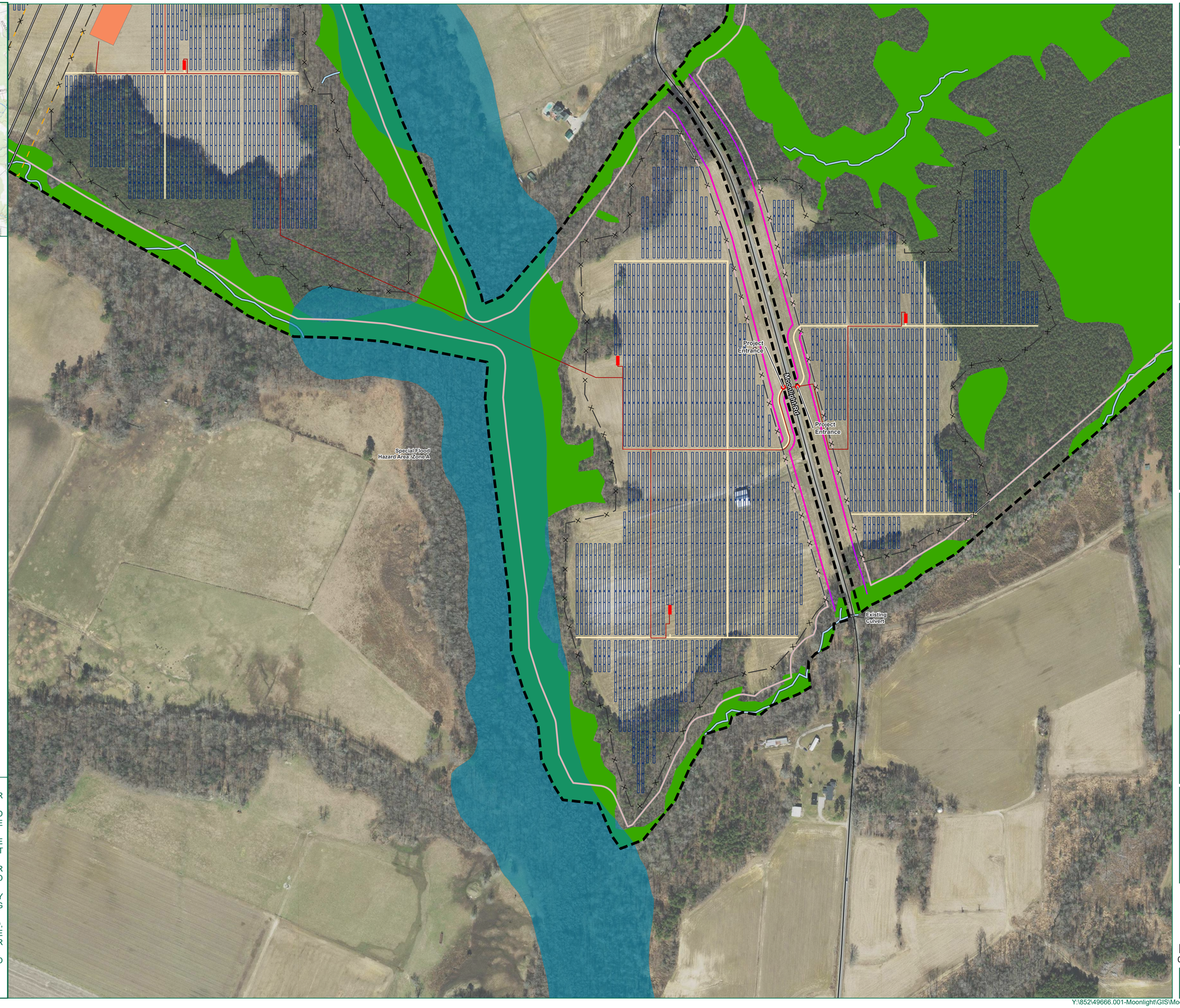

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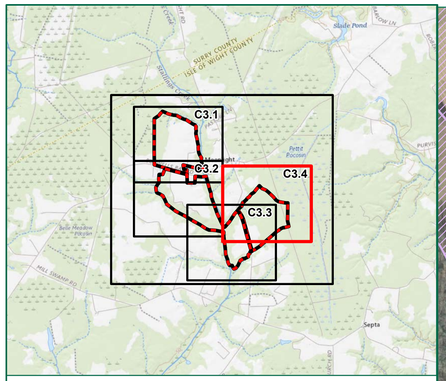

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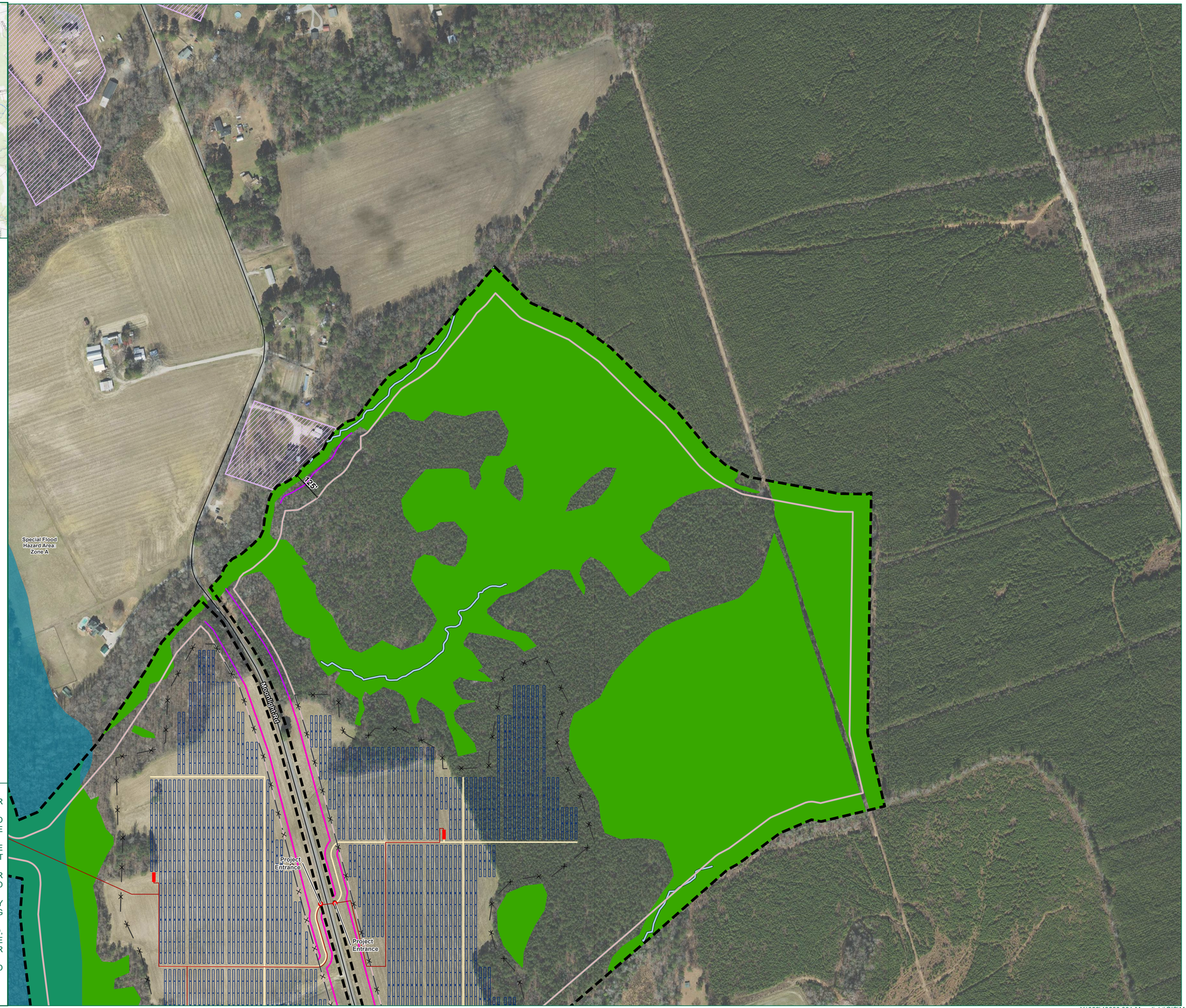

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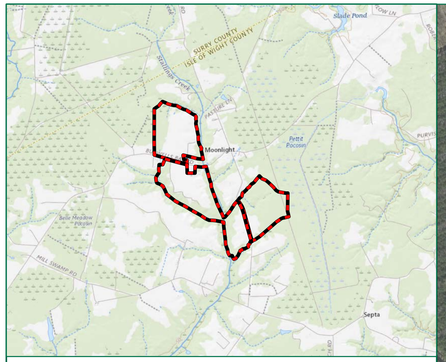

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CONCEPT PLANT LIST: FRONTAGE ZONE			
BOTANICAL NAME	COMMON NAME	MINIMUM HEIGHT AT PLANTING	TYPICAL HEIGHT AT MATURITY
EVERGREEN TREES AND SHRUBS			
ILEX X 'CONAF' OAKLEAF	RED HOLLY/OAKLEAF HOLLY	4 FT.	12-15 FT.
ILEX X MARY NELL	MARY NELL HOLLY	4 FT.	12-15 FT.
JUNIPERUS VIRGINIANA 'BRODIE'	EASTERN RED CEDAR	4 FT.	10-15 FT.
MYRICA CERIFERA	SOUTHERN WAX MYRTLE	4 FT.	10-15 FT.
THUJA OCCIDENTALIS 'TECHNY'	EASTERN ARBORVITAE	4 FT.	10-15 FT.

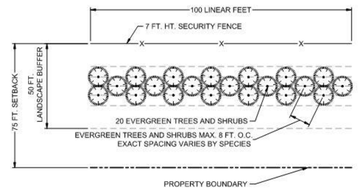
CONCEPT PLANT LIST: RESIDENTIAL BUFFER ZONE			
BOTANICAL NAME	COMMON NAME	MINIMUM HEIGHT AT PLANTING	LARGE
MEDIUM EVERGREEN SHRUBS			
ILEX X 'CONAF' OAKLEAF	RED HOLLY/OAKLEAF HOLLY	4 FT.	12-15 FT.
ILEX X MARY NELL	MARY NELL HOLLY	4 FT.	12-15 FT.
JUNIPERUS VIRGINIANA 'BRODIE'	EASTERN RED CEDAR	4FT.	10-15 FT.
MYRICA CERIFERA	SOUTHERN WAX MYRTLE	4 FT.	10-15 FT.
THUJA OCCIDENTALIS 'TECHNY'	EASTERN ARBORVITAE	4 FT.	10-15 FT.
LARGE AND SMALL CANOPY TREES			
AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY	4 FT.	15-20 FT.
CHIONANTHUS VIRGINICA	FRINGETREE	4 FT.	12-20 FT.
MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	4 FT.	15-20 FT.

CONCEPT PLANT LIST: CULTURAL RESOURCE ZONE			
BOTANICAL NAME	COMMON NAME	MINIMUM HEIGHT AT PLANTING	LARGE
MEDIUM EVERGREEN SHRUBS			
ILEX X 'CONAF' OAKLEAF	RED HOLLY/OAKLEAF HOLLY	5-6 FT.	12-15 FT.
ILEX X MARY NELL	MARY NELL HOLLY	5-6 FT.	12-15 FT.
JUNIPERUS VIRGINIANA 'BRODIE'	EASTERN RED CEDAR	5-6 FT.	10-15 FT.
MYRICA CERIFERA	SOUTHERN WAX MYRTLE	5-6 FT.	10-15 FT.
THUJA OCCIDENTALIS 'TECHNY'	EASTERN ARBORVITAE	5-6 FT.	10-15 FT.
LARGE AND SMALL CANOPY TREES			
AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY	5-6 FT.	15-20 FT.
CHIONANTHUS VIRGINICA	FRINGETREE	5-6 FT.	12-20 FT.
MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	5-6 FT.	15-20 FT.

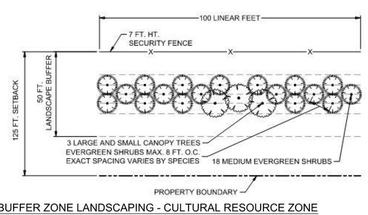
NOTES:
1. CULTURAL RESOURCE DATA FROM VDHR.
2. AERIAL IMAGERY FROM VGIN.

MOONLIGHT SOLAR FACILITY LANDSCAPING

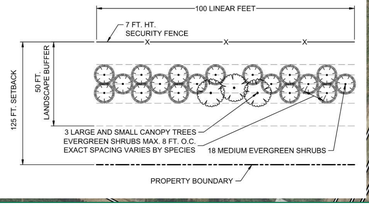
FRONTAGE ZONE LANDSCAPING
APPLY TO PUBLIC ROADWAYS WITH ROW GREATER OR LESSER THAN 50 FEET



BUFFER ZONE LANDSCAPING - ABUTTING RESIDENTIAL PARCELS



BUFFER ZONE LANDSCAPING - CULTURAL RESOURCE ZONE



VEGETATIVE BUFFER NOTES

- PROVIDE A 50-FOOT WIDE LANDSCAPE BUFFER CONSISTING OF A STAGGERED TRIPLE ROW OF EVERGREEN AND DECIDUOUS TREES AND SHRUBS PER ISLE OF WIGHT COUNTY ZONING ORDINANCE, ARTICLE V, SUPPLEMENTARY USE REGULATIONS.
- PRESERVE EXISTING WETLANDS AND WOODLANDS TO SERVE AS A MINIMUM 50' VEGETATIVE BUFFER. EXISTING VEGETATION THAT MEETS THE MINIMUM LANDSCAPING SPECIFICATIONS MAY BE USED TO MEET REQUIRED LANDSCAPING. IF EXISTING TREES AND VEGETATION ARE DISTURBED, PROVIDE NEW BUFFER PLANTINGS. WHERE INTERMITTENT EXISTING TREES OR SHRUBS EXIST WITHIN A PROPOSED BUFFER LOCATION, PROPOSED SCREENING MUST BE FIELD-LOCATED AND PLANTED AS NEEDED TO SUPPLEMENT THE EXISTING VEGETATIVE SCREENING.
- ENSURE THAT ALL PLANT MATERIAL MEETS REQUIREMENTS IN THE ISLE OF WIGHT COUNTY ORDINANCE.
- TREES AND SHRUBS PLANTED IN THE BUFFER MUST BE AT LEAST FOUR (4) FEET TALL AT TIME OF PLANTING. ALL TREES TO BE PLANTED SHALL MEET THE SPECIFICATIONS OF THE AMERICAN ASSOCIATION OF NURSERYMEN.
- PLANT A MINIMUM OF 3 SPECIES EVERY 100 LINEAR FEET. VARY THE SPECIES USED EVERY 100 LINEAR FEET.
- PLANT TREES AND SHRUBS A MAXIMUM OF 8 FEET ON CENTER.
- FENCING MUST BE INSTALLED ON THE SOLAR PANEL SIDE OF THE BUFFER (SEE PLANTING TEMPLATES).

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PROJECT NAME & LOCATION
MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY, VIRGINIA

DATE 04/26/2023
PROJECT NUMBER 49666.001
PROJECT NAME MOONLIGHT SOLAR
DESIGNED BY / DRAWN BY J. STICKLEY

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REVISIONS

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1	07/07/23	*Revised per County feedback*
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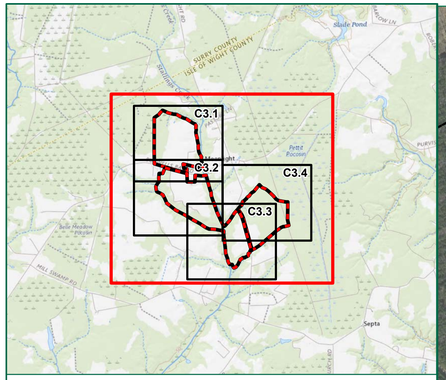
DRAWING DESCRIPTION
PROPOSED LANDSCAPING MAP

SCALE (FEET)
0 500 1,000
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE H: 1" = 500'
SHEET NUMBER C4.0

Y:\852\49666.001-Moonlight\GIS\Moonlight CUP\Moonlight CUP.aprx



Legend

- Property Boundary - 522.96 Acres
- Development Envelope - 272.8 Acres
- Culverts
- Delineated Stream
- Wildlife Corridor
- Delineated Wetlands
- Transmission Line Easement
- FEMA Flood Zone
- NRHP Eligible Architecture Resource
- NRHP Eligible Cultural Resource Buffer - 250'
- County Boundary

NOTES:
1. LAYOUT IS SUBJECT TO CHANGE WITHIN DEVELOPMENT ENVELOPE. THE DEVELOPMENT FOOTPRINT INCLUDES ALL AREAS OUTSIDE OF REQUIRED PROPERTY SETBACKS, FEMA FLOODPLAIN, AND DELINEATED WETLANDS AND STREAMS, ASIDE FROM PERPENDICULAR ROAD CROSSINGS WHERE NECESSARY.
2. SETBACKS ARE FROM ISLE OF WIGHT COUNTY SOLAR ORDINANCE. SETBACKS ARE 75' FROM ALL PROPERTY LINES AND ROADWAYS AND ARE 125' FROM RESIDENTIAL PARCELS.
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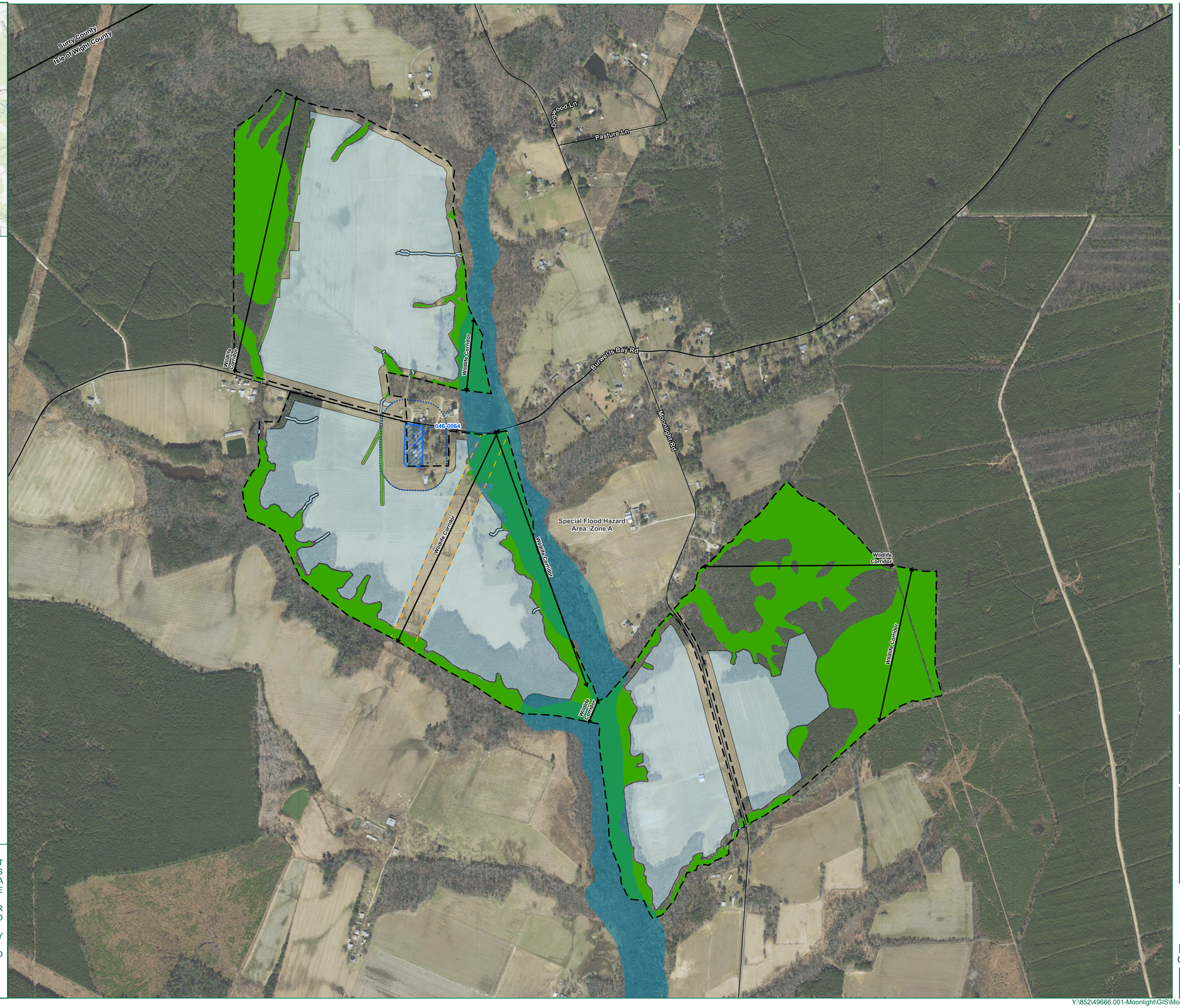
4. FLOOD ZONE DATA FROM FEMA'S NATIONAL FLOOD HAZARD LAYER.
5. CULTURAL RESOURCE DATA FROM VDHR.
6. AERIAL IMAGERY FROM VGIN.



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PROJECT NAME & LOCATION
MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY, VIRGINIA

DATE: 04/26/2023
PROJECT NUMBER: 49666.001
PROJECT NAME: MOONLIGHT SOLAR
DESIGNED BY / DRAWN BY: J. STICKLEY

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DRAWING DESCRIPTION
NOT TO EXCEED SITE PLAN

SCALE (FEET)
0 500 1,000
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE: H: 1" = 500'
SHEET NUMBER: C5.0

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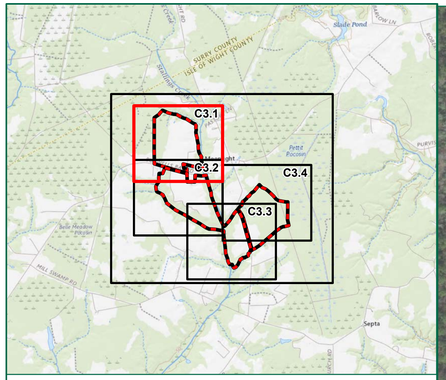

Legend

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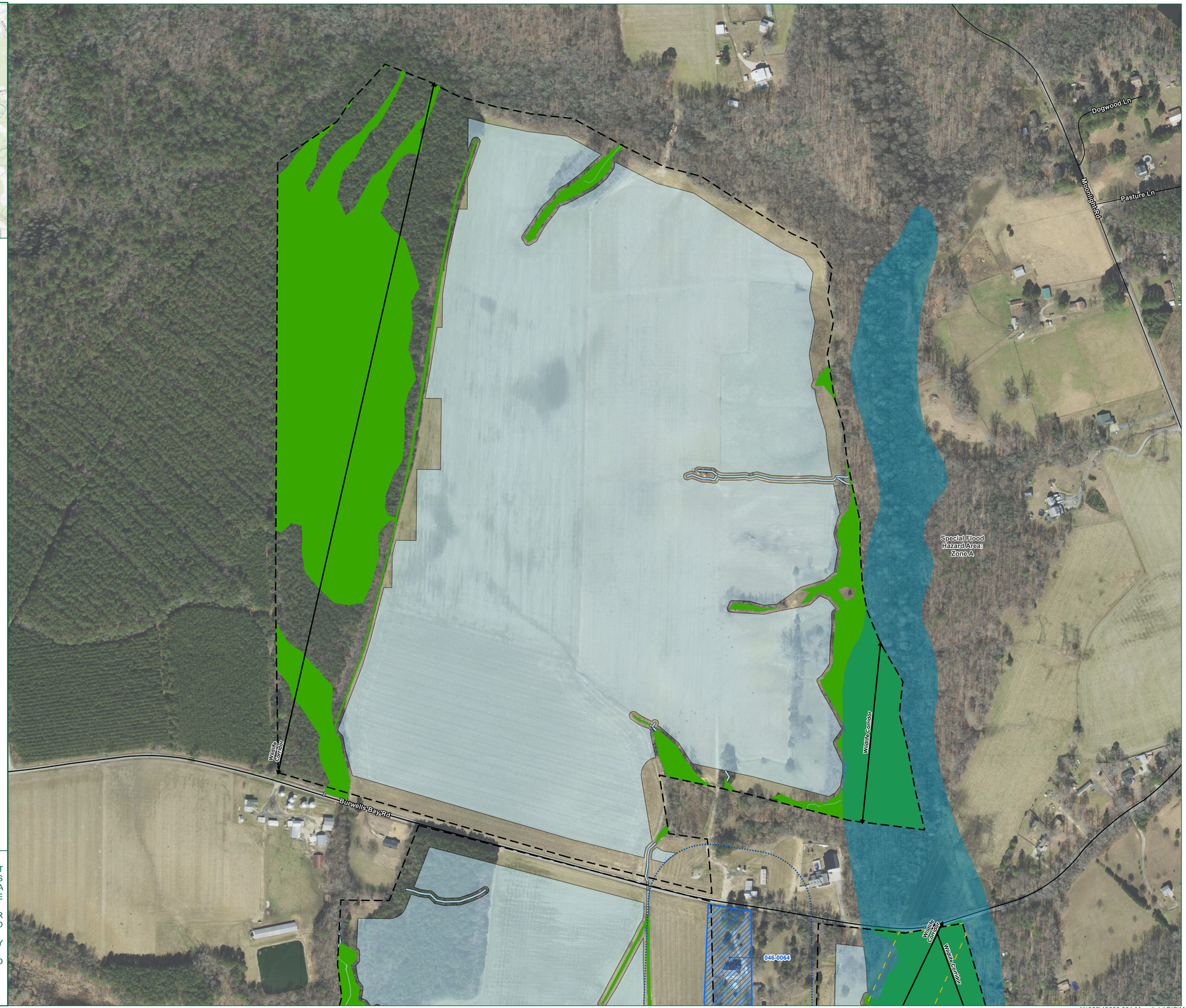

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PROJECT NAME & LOCATION

MOONLIGHT SOLAR

ISLE OF WIGHT COUNTY, VIRGINIA

DATE: 04/26/2023

PROJECT NUMBER: 49666.001

PROJECT NAME: MOONLIGHT SOLAR

DESIGNED BY / DRAWN BY: J. STICKLEY

NOTES

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DRAWING DESCRIPTION: NOT TO EXCEED SITE PLAN

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

SCALE: H: 1" = 200'

SHEET NUMBER: C5.1

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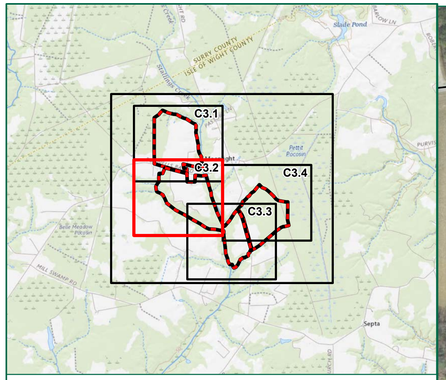

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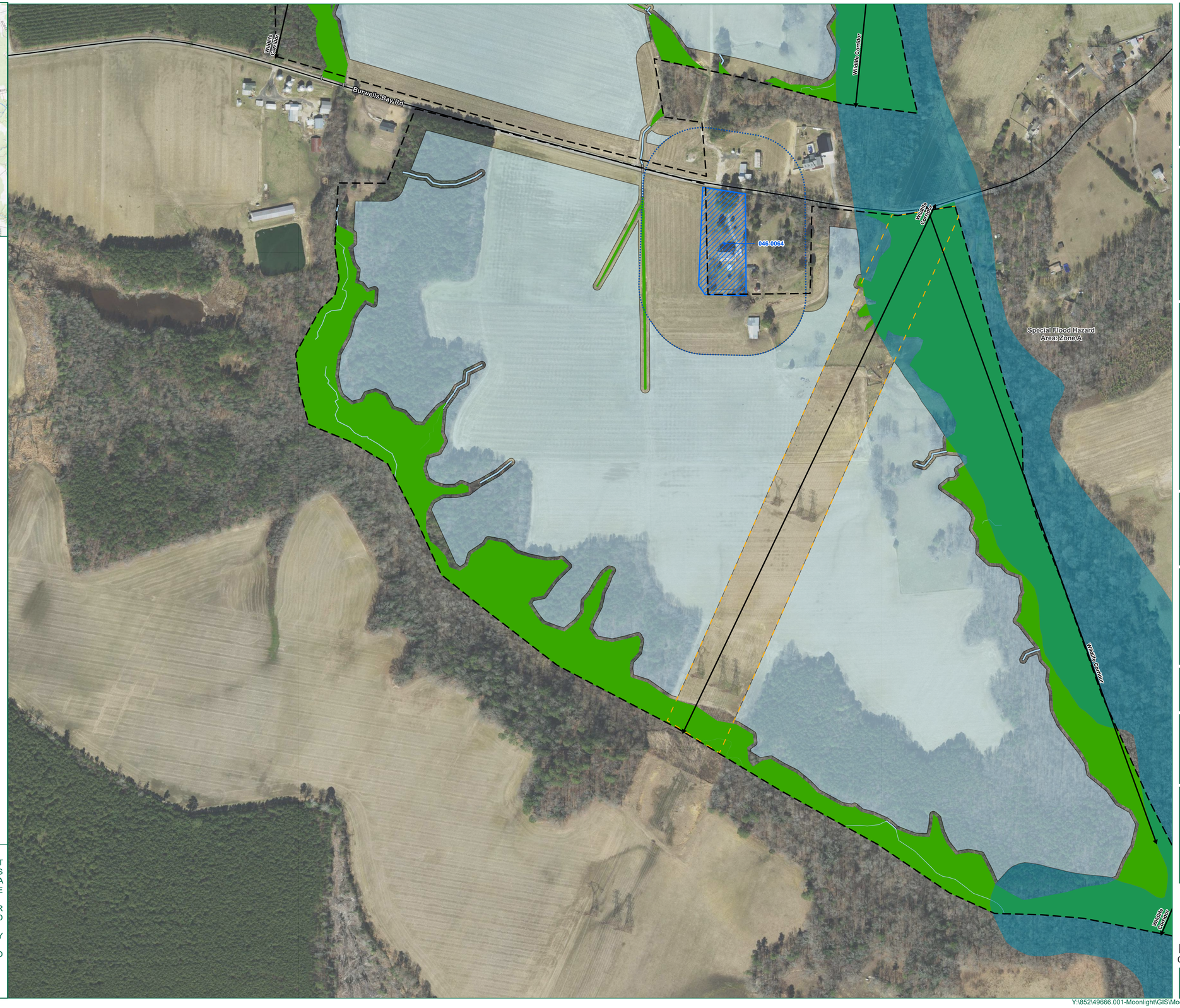

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PROJECT NAME & LOCATION
MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY, VIRGINIA

DATE: 04/26/2023
PROJECT NUMBER: 49666.001
PROJECT NAME: MOONLIGHT SOLAR
DESIGNED BY / DRAWN BY: J. STICKLEY

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

SCALE	SHEET NUMBER
H: 1" = 200'	C5.2

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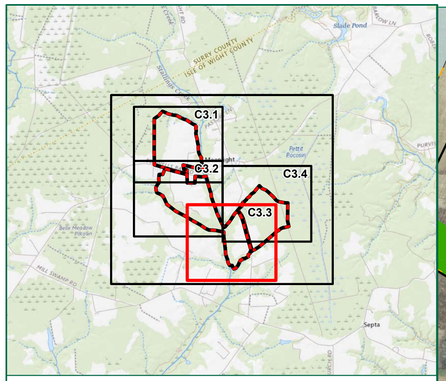

Legend

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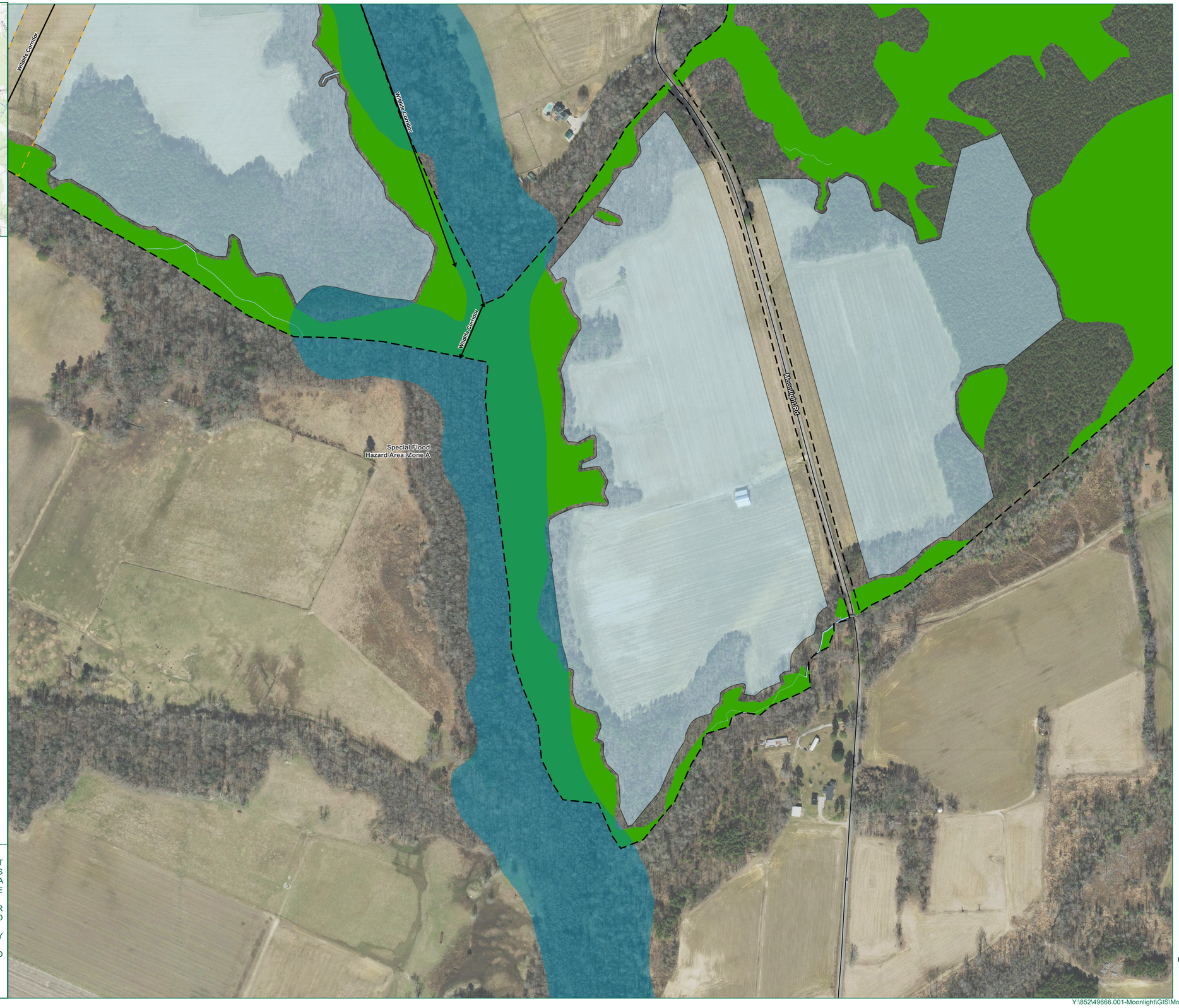

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PROJECT NAME & LOCATION

MOONLIGHT SOLAR

ISLE OF WIGHT COUNTY, VIRGINIA

DATE: 04/26/2023

PROJECT NUMBER: 49666.001

PROJECT NAME: MOONLIGHT SOLAR

DESIGNED BY / DRAWN BY: J. STICKLEY

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DRAWING DESCRIPTION

NOT TO EXCEED SITE PLAN

SCALE (FEET)

0 200 400

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H: 1" = 200'	C5.3

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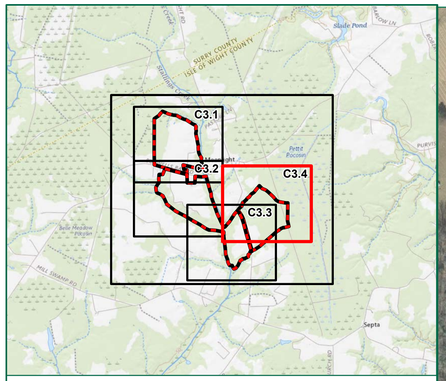

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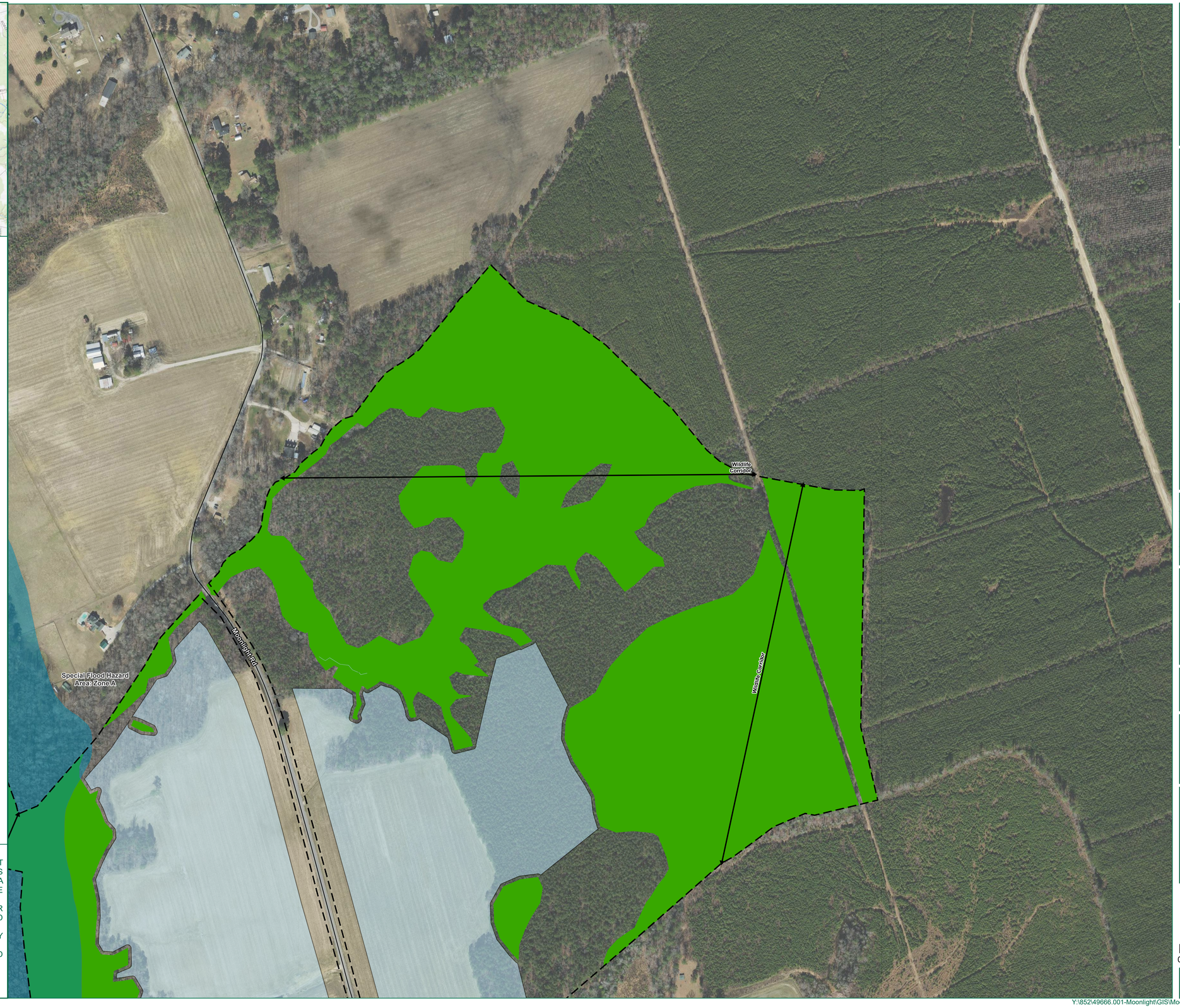

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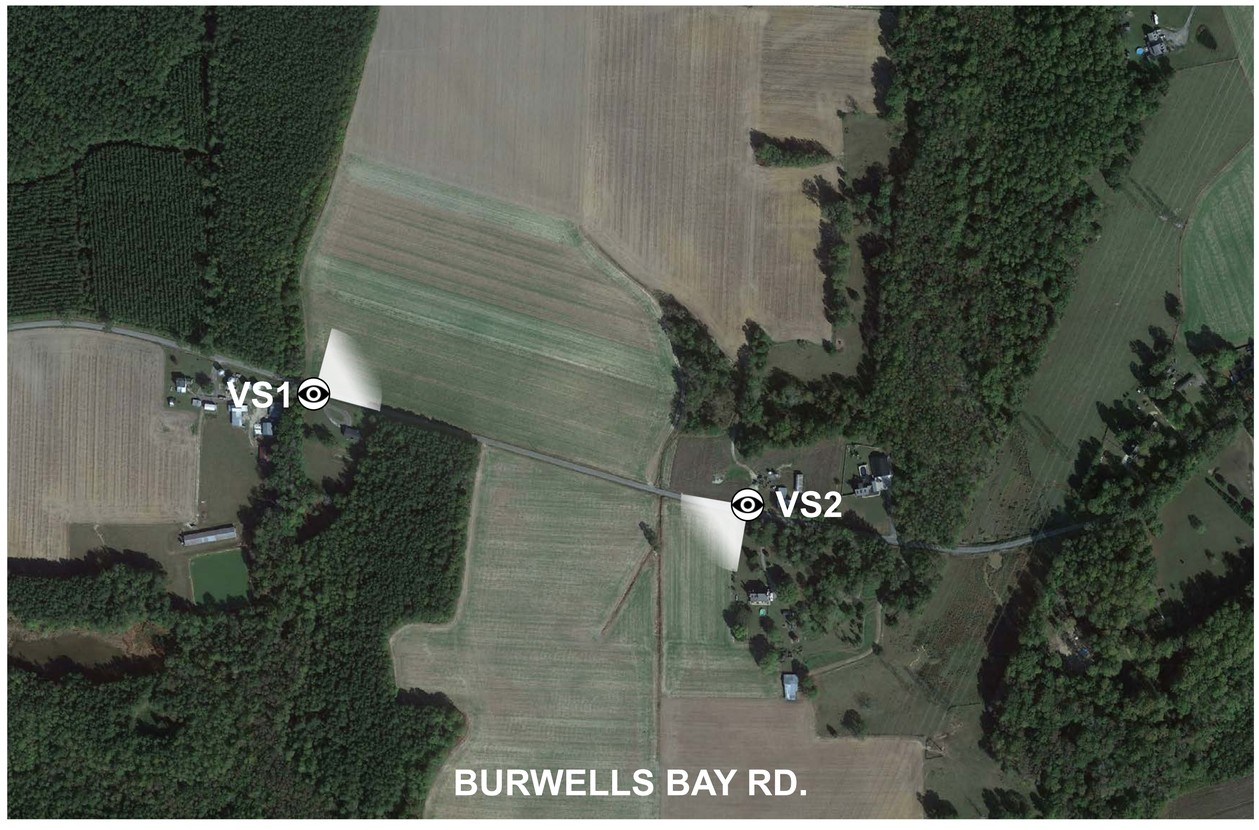
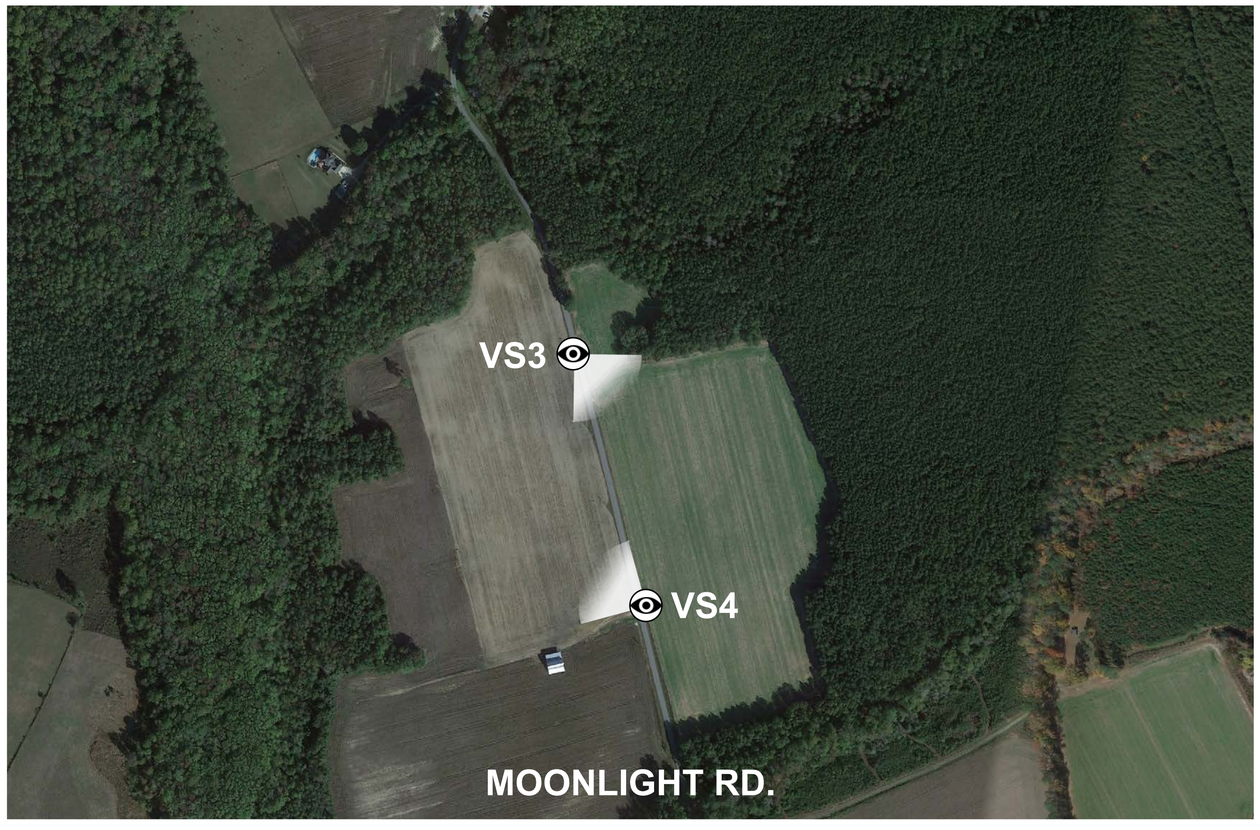
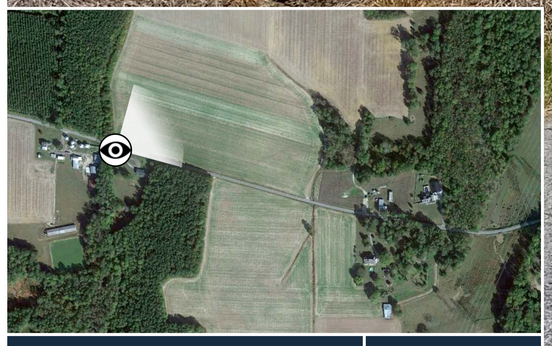
VISUAL IMPACT ANALYSIS
MOONLIGHT SOLAR





PALLADIUM ENERGY



Moonlight Solar

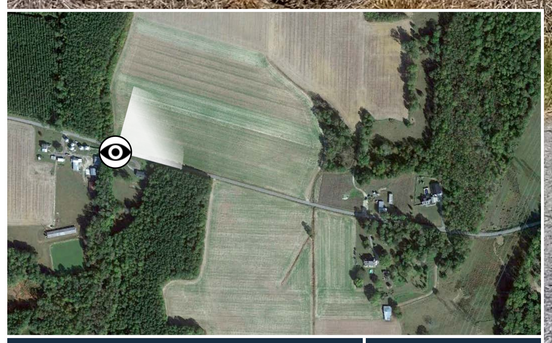
VS1

BURWELLS BAY RD. (NE)	AT PLANTING
Date Taken: 04/19/2023	Time Taken: 12:29 PM

ISLE OF WIGHT COUNTY, VA

Visualization by Timmons Group

PALLADIUM ENERGY



Moonlight Solar

VS1

BURWELLS BAY RD. (NE)	AT 3 YEARS
Date Taken: 04/19/2023	Time Taken: 12:29 PM
ISLE OF WIGHT COUNTY, VA	

Visualization by Timmons Group

PALLADIUM ENERGY



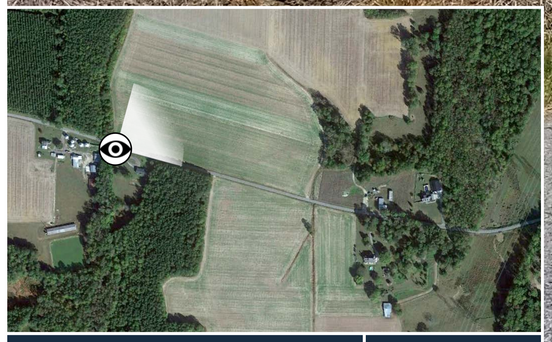
Moonlight Solar

VS1

BURWELLS BAY RD. (NE)	AT 5 YEARS
Date Taken: 04/19/2023	Time Taken: 12:29 PM
ISLE OF WIGHT COUNTY, VA	

Visualization by Timmons Group

PALLADIUM ENERGY



Moonlight Solar

VS1

BURWELLS BAY RD. (NE)	AT MATURITY (10 YEARS)
Date Taken: 04/19/2023	Time Taken: 12:29 PM

ISLE OF WIGHT COUNTY, VA

Visualization by Timmons Group

PALLADIUM ENERGY



Moonlight Solar

VS2

BURWELLS BAY RD. (SW) CARROLL PLANTATION VIEW	AT PLANTING
Date Taken: 04/19/2023	Time Taken: 12:20 PM
ISLE OF WIGHT COUNTY, VA	

Visualization by Timmons Group

PALLADIUM ENERGY



Moonlight Solar

VS2

BURWELLS BAY RD. (SW) CARROLL PLANTATION VIEW	AT 3 YEARS
Date Taken: 04/19/2023	Time Taken: 12:20 PM
ISLE OF WIGHT COUNTY, VA	

Visualization by Timmons Group

PALLADIUM ENERGY



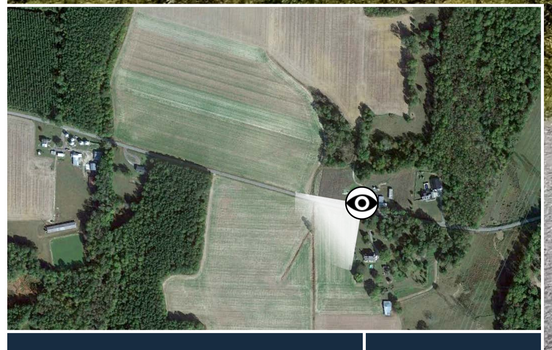
Moonlight Solar

VS2

BURWELLS BAY RD. (SW) CARROLL PLANTATION VIEW	AT 5 YEARS
Date Taken: 04/19/2023	Time Taken: 12:20 PM
ISLE OF WIGHT COUNTY, VA	

Visualization by Timmons Group

PALLADIUM ENERGY



Moonlight Solar

VS2

BURWELLS BAY RD. (SW) CARROLL PLANTATION VIEW	AT MATURITY (10 YEARS)
Date Taken: 04/19/2023	Time Taken: 12:20 PM

ISLE OF WIGHT COUNTY, VA

Visualization by Timmons Group

PALLADIUM ENERGY



Moonlight Solar

VS3

MOONLIGHT RD. (SE)	AT PLANTING
Date Taken: 04/19/2023	Time Taken: 12:00 PM

ISLE OF WIGHT COUNTY, VA

Visualization by Timmons Group

PALLADIUM ENERGY



Moonlight Solar

VS3

MOONLIGHT RD. (SE)	AT 3 YEARS
Date Taken: 04/19/2023	Time Taken: 12:00 PM

ISLE OF WIGHT COUNTY, VA

Visualization by Timmons Group

PALLADIUM ENERGY



Moonlight Solar

VS3

MOONLIGHT RD. (SE)	AT 5 YEARS
Date Taken: 04/19/2023	Time Taken: 12:00 PM

ISLE OF WIGHT COUNTY, VA

Visualization by Timmons Group

PALLADIUM ENERGY



Moonlight Solar

VS3

MOONLIGHT RD. (SE)	AT MATURITY (10 YEARS)
Date Taken: 04/19/2023	Time Taken: 12:00 PM

ISLE OF WIGHT COUNTY, VA

Visualization by Timmons Group

PALLADIUM ENERGY



Moonlight Solar

VS4

MOONLIGHT RD. (NW)	AT PLANTING
Date Taken: 04/19/2023	Time Taken: 12:05 PM

ISLE OF WIGHT COUNTY, VA

Visualization by Timmons Group

PALLADIUM ENERGY



Moonlight Solar	VS4
MOONLIGHT RD. (NW)	AT 3 YEARS
Date Taken: 04/19/2023	Time Taken: 12:05 PM
ISLE OF WIGHT COUNTY, VA	

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PALLADIUM ENERGY



Moonlight Solar

VS4

MOONLIGHT RD. (NW)	AT 5 YEARS
Date Taken: 04/19/2023	Time Taken: 12:05 PM
ISLE OF WIGHT COUNTY, VA	

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PALLADIUM ENERGY



Moonlight Solar

VS4

MOONLIGHT RD. (NW)	AT MATURITY (10 YEARS)
Date Taken: 04/19/2023	Time Taken: 12:05 PM
ISLE OF WIGHT COUNTY, VA	

Visualization by Timmons Group

Traffic & Route Evaluation Study

Moonlight Solar Project

Isle of Wight County, Virginia

July 2023

Prepared For:

Palladium Energy, LLC

TIMMONS GROUP
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Contact: Scott Dunn, AICP, PTP

1001 Boulders Parkway, Suite 300 • Richmond, VA 23225
(804) 200-6500 phone • (804) 560-1438 fax
www.timmons.com

Traffic & Route Evaluation Study

Moonlight Solar Project

Isle of Wight County, Virginia

Prepared For:

Palladium Energy, LLC
4446 Hendricks Avenue, #356
Jacksonville, FL 32207

Prepared By:

Timmons Group
1001 Boulders Parkway
Suite 300
Richmond, Virginia 23225
(804) 200-6500

April 2023

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1 PROJECT OVERVIEW

Timmons Group, at the request of Palladium Energy, LLC completed a transportation assessment for the proposed Moonlight Solar Project, located in Isle of Wight County, VA. This work has been prepared in conjunction with the site's evaluation to identify any potential transportation issues and recommend solutions. The tasks associated with this assessment included:

- Review of data and documents provided by the Client relative to the project;
- Coordination with the Client on access, schedule, and other parameters that are reflected in the traffic assessment;
- Obtaining available geometric (roadway widths, intersection control, etc.) and speed limit data that is readily available via a review of available aerial imagery through Google Earth, Bing, or County GIS systems and a field visit conducted on Wednesday, April 12, 2023;
- Obtaining available VDOT traffic data for those roads adjacent to the site;
- Obtaining available VDOT crash data for those roads adjacent to the site; and
- Preparing a narrative summarizing (1) existing conditions, (2) traffic along the adjacent roadway network, (3) anticipated impacts, if any, associated with the site-related traffic, and (3) potential mitigation measures.

2 EXISTING CONDITIONS

Timmons Group compiled existing roadway conditions and crash data for facilities adjacent to the proposed Moonlight Solar project located approximately 5.5 miles northwest of Smithfield in Isle of Wight County, VA.

The site is comprised of four (4) parcels of land generally located along both sides of Routes 621 and 627. For the purposes of this work, the assumed delivery routes include direct access to the proposed site entrances from state-maintained roads - Route 10, Route 621, and Route 627

The project location is shown on Figure 1 (all figures are located at the end of the report) and a site plan can be found in Figure 2. It should be noted that there are two (2) proposed electrical connections associated with this site that will cross existing rights of way on Routes 621 and 627; these crossings align with proposed entrance locations and are shown on Figure 3.

EXISTING ROADWAYS

A visual assessment of the adjacent roadways was performed on April 12, 2023.

Route 10 (Old Stage Highway) is a two-lane, undivided minor arterial road with a posted speed limit of 55 mph. According to 2021 VDOT AADT data, Route 10 services 7,000 vehicles per day in the vicinity of the site between the Surry County Line and Business Route 10 in Smithfield. The pavement on Route 10 is approximately 25' wide with center and edge line markings.

Route 621 (Burwells Bay Road) is a two-lane, undivided minor collector with a posted speed limit of 45 mph. According to 2021 VDOT AADT data, Route 621 services 130 vehicles per day between Mill Swamp Drive and Moonlight Road and 310 vehicles per day between Moonlight Road and Route 10. The pavement on Route 621 is approximately 20' wide and neither center nor edge line pavement markings are present.

Route 627 (Moonlight Road) is a two-lane, undivided local road with no available posted speed limit signs and therefore assumed to be 55 mph. According to 2021 VDOT AADT data, Route 627 services 340 vehicles per day between the Surry County line and Route 626. The pavement on Route 627 is approximately 18' to 20' wide, and neither center nor edge line pavement markings are present.

Based on field observations, it was noted that the existing roadways had minor pavement deficiencies including typical alligator cracking, longitudinal cracking, and a few areas of rutting. Additionally, as noted above, pavement widths varied, with certain areas being narrower than others.

Overall, the existing roadways are acceptable for use by local traffic. However, due to narrow pavement widths along Routes 621 and 627, it is recommended that signage be posted alerting drivers to the presence of construction and heavy vehicles.

EXISTING STRUCTURES

There are three (3) identified culverts along the proposed haul route and one (1) bridge adjacent to the site that is not located along the proposed haul route.

The three (3) culverts are located on Route 621 and Route 627, adjacent to the site; each location was verified during our field visit and measured.

- The pavement over culvert #1 is approximately 17' wide.
- The pavement over culvert #2 is approximately 15' wide.
- The pavement over culvert #3 is approximately 16' wide.

The location of the crossings is shown in Figure 3 and photos of each crossing can be found in Figures 4 through 6.

One (1) bridge, which is located on Route 626, south of the site and not along the proposed haul route, crosses over Stallings Creek. Per the VDOT-maintained Bridge and Culvert Database, the bridge is rated in poor condition with a 15-ton weight restriction. The pavement over the bridge is approximately 17' wide.

The location of the bridge structure is shown in Figure 3 and photos of the bridge can be found in Figure 8.

Based on the field visit, two (2) of the existing culverts, #1 and #3, are constructed with corrugated plastic pipe and have limited cover. It is recommended that these structures be further evaluated for structural integrity and may need to be replaced prior to or during construction of the solar facility.

EXISTING INTERSECTIONS

Two (2) key intersections were identified within the study area and are included in this evaluation:

1. Route 10 and Route 621 (Unsignalized);
2. Route 621 and Route 627 (Unsignalized);

Route 10 (Old Stage Highway) and Route 621 (Burwells Bay Road)

At the unsignalized four-legged intersection of Route 10 and Route 621, Route 621 is the stop-controlled approach. Each approach consists of one (1) lane that serves all left/through/right movements. The pavement on Route 10 is approximately 25' wide and the pavement on Route 621 is approximately 20' wide. Photos of the intersection can be found on Figure 9.

Route 621 (Burwells Bay Road) and Route 627 (Moonlight Road)

At the unsignalized four-legged intersection of Route 621 and Route 627, all approached are stop-controlled. Each approach consists of one (1) lane in each direction that serves all left/through/right movements. The pavement on Route 621 is approximately 18' to 20' wide and the pavement on Route 627 is approximately 20' wide. Photos of the intersection can be found on Figures 10 and 11.

Crash Data

Based on VDOT crash data from the past five years there have been a total of 12 crashes in the vicinity of the Moonlight Solar project:

- five (5) were fixed object (off road) crashes;
- two (2) angle crashes;
- two (2) rear end crashed;
- one (1) deer;
- one (1) sideswipe crash; and
- one (1) other type crash.

With respect to crash severity:

- two (2) resulted in severe injury;
- three (3) resulted in visible injury;
- one (1) resulted in nonvisible injury; and
- six (6) resulted in property damage only.

An aerial showing the location/type of the 12 crashes can be found on Figure 11 and the location/severity of the crashes can be found on Figure 13.

Seven (7) occurred during daylight hours and five (5) occurred at night or dawn. During three (3) of the crashes the pavement was wet.

As expected, there is a cluster of crashes at the Route 10/Route 621 intersection; while the crash locations along Routes 621 and 627 appear to correspond with existing driveways.

3 SITE ACCESS

SITE ENTRANCES

Access to the site will be provided via four (4) entrances – two (2) on Route 621 and two (2) on Route 627. The locations of these entrances are shown on Figure 1.

The proposed site entrance locations are approximate and will require that new entrances/driveways be installed to accommodate site-generated construction traffic. It is anticipated that these entrances will remain in place following construction of the solar facility and be used for future operations/maintenance activities.

Note that temporary staging and assembly areas will be used during the construction period for the storage of construction vehicles and equipment, as well as staging of components of the solar facility. All temporary staging, parking, and assembly areas will be located within the project area boundaries and provide on-site accommodations so that construction-related traffic is not parked with state-maintained right-of-way.

Site Entrance #1 on Route 621

Site Entrance #1 on Route 621 is approximately 0.72 miles west of the Route 621 and Route 627 intersection; this entrance is currently not constructed. Sight distance along Route 621 to the east and west of the proposed entrance measured in excess of 500'. The portion of Route 621 in front of this proposed entrance is approximately 17' wide.

Photos of the proposed Site Entrance #1 location can be found in Figure 14.

Site Entrance #2 on Route 621

Site Entrance #2 on Route 621 is approximately 0.59 miles west of the Route 621 and Route 627 intersection; this entrance is currently not constructed. Sight distance along Route 621 to the east and west of the proposed entrance measured in excess of 500'. The portion of Route 621 in front of this proposed entrance is approximately 18' wide.

Photos of the potential location of Site Entrance #2 can be found in Figure 15.

Site Entrance #3 on Route 627

Site Entrance #3 on Route 627 is approximately 0.81 miles south of the Route 621 and Route 627 intersection; this entrance is currently not constructed. Sight distance along Route 627 to the north and south of the proposed entrance measured in excess of 500'. The portion of Route 627 in front of this proposed entrance is approximately 17.5' wide.

Photos of the potential location of Site Entrance #2 can be found in Figure 16.

Site Entrance #4 on Route 627

Site Entrance #4 on Route 627 is approximately 0.81 miles south of the Route 621 and Route 627 intersection; this entrance is currently not constructed. Sight distance along Route 627 to the north and south of the proposed entrance measured in excess of 500'. The portion of Route 627 in front of this proposed entrance is approximately 18' wide.

Photos of the potential location of Site Entrance #2 can be found in Figure 17.

TRAFFIC MITIGATION

Throughout construction of the site, Moonlight Solar will coordinate with the representatives from Isle of Wight County and VDOT to determine appropriate transportation management procedures which may include, but are not limited to, traffic control, lane closures, road access restrictions, truck restrictions, and temporary/short-term road closures.

Based on the existing roadway conditions, the locations for proposed access points, and the available average daily traffic numbers for the agreed upon access roads, the anticipated construction traffic volumes will not exceed available roadway capacities; the roadways should not be significantly impacted by standard construction traffic. During operation and maintenance, the facility will not generate a significant volume of traffic with the anticipation of only a few pickup trucks per month.

Construction-related traffic will access the Moonlight Solar site via state-maintained roadways. Given the existing posted speeds and anticipated slower entering/exiting traffic, temporary traffic control (TTC) measures may be necessary. Pertinent signage should be installed prior to the site preparation work and removed when mechanical/electrical work/inspections begin. It is not anticipated that daily vehicular traffic following construction will disrupt local traffic flows.

Outside of the previously noted mitigation efforts, should a traffic issue arise during construction, Moonlight Solar will work the County and VDOT appropriately address the specific concern.

4 CONCLUSIONS

Based on our review of available data relating to the site, existing conditions, and estimated traffic, the following is offered:

- The proposed Moonlight Solar Site is located northwest of the Town of Smithfield in Isle of Wight County, Virginia (see Figures 1 and 2).
- Access to the sites will be provided via Route 10, and Routes 621 and 627.
- Each of the three (3) previously mentioned roadway facilities has the available capacity to accommodate site-generated traffic, both during construction and operations/maintenance activities based on existing ADTs.
- While there is capacity available along both Routes 621 and 627, there are culverts located on both routes in the vicinity of the proposed site driveways that are constructed of black corrugated pipe with minimal cover. It is recommended that these culverts be evaluated prior to use by construction/heavy vehicle traffic.
- Assuming site-traffic is focused on Route 621 and Route 627, the potential exists for temporary traffic control measures to be implemented for the duration of the site preparation/construction phase to safely and effectively manage site-related traffic.

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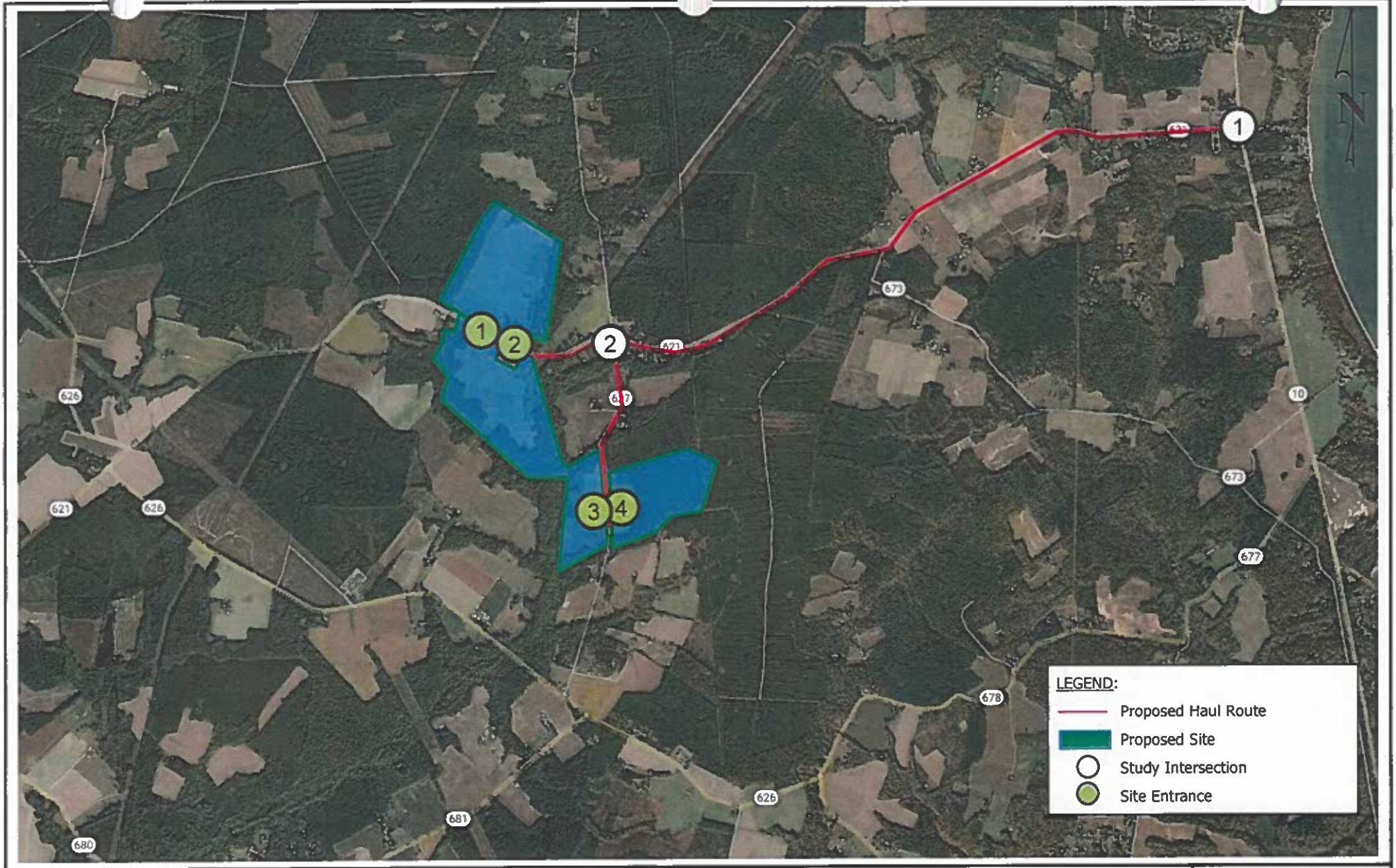

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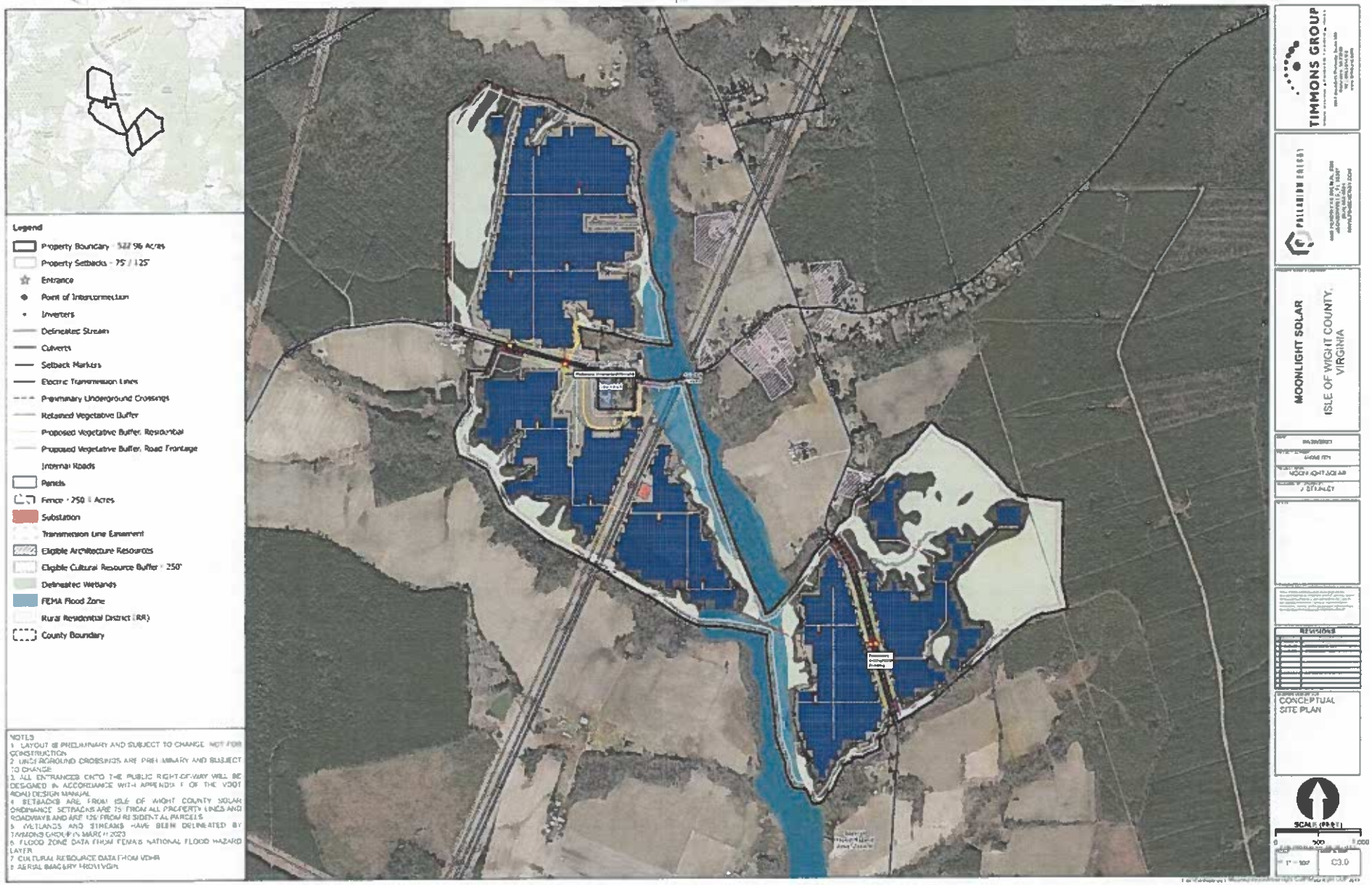
Surrounding Roadway Network and Site Location
Moonlight Solar
Isle of Wight County, Virginia

Figure
1



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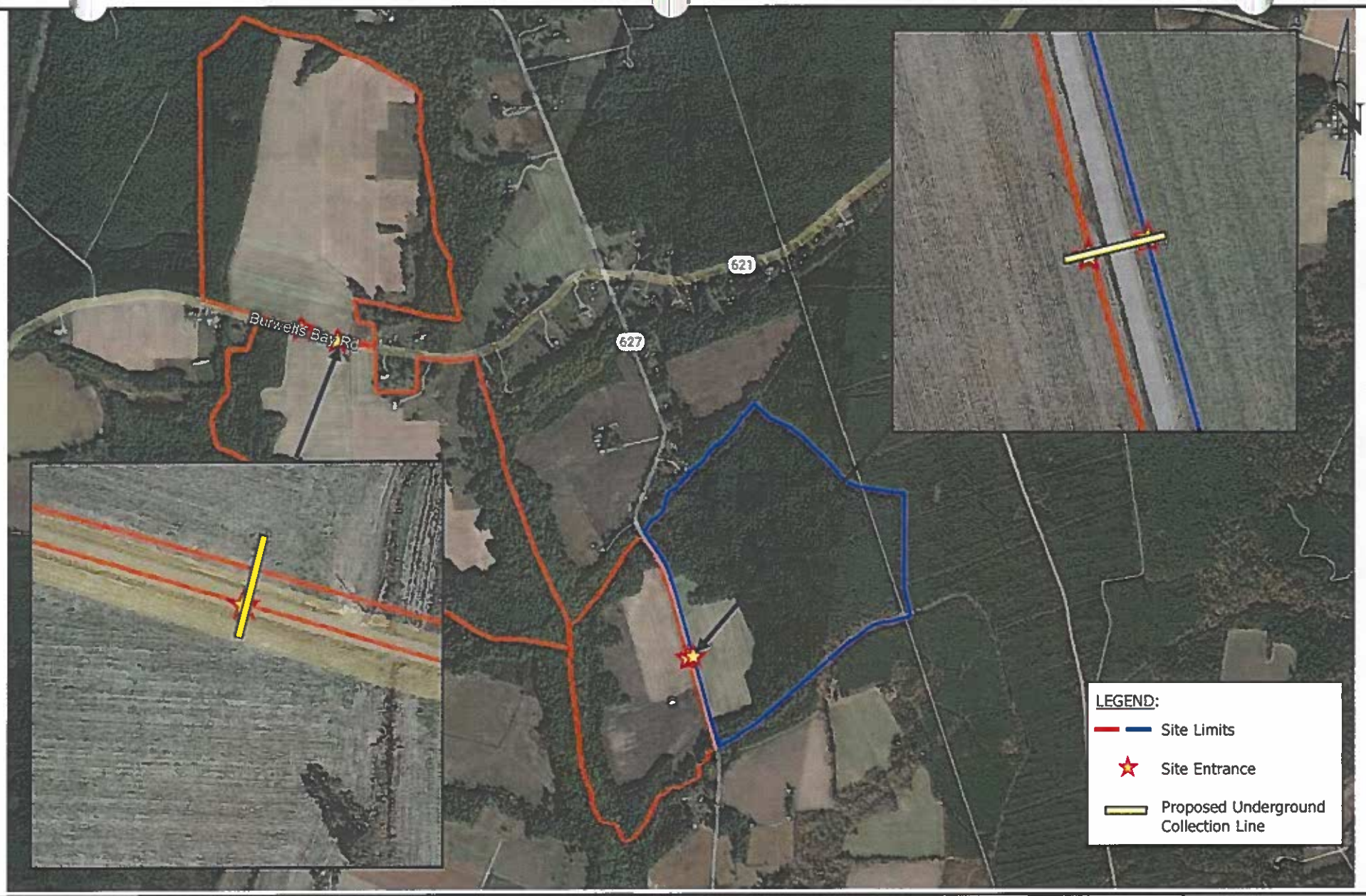
Concept Plan
Moonlight Solar
Isle of Wight County, Virginia

Figure
2



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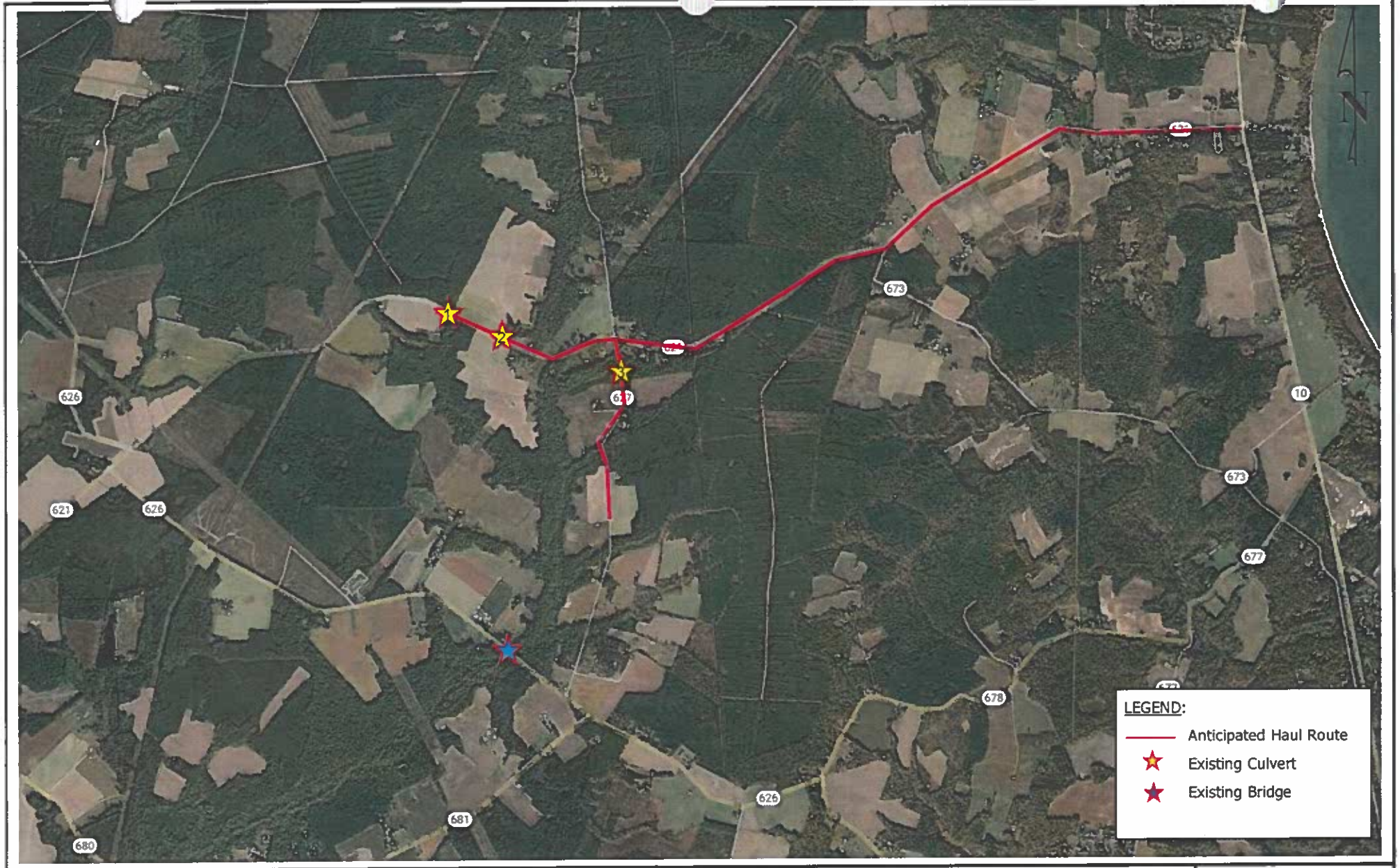
Location of Proposed Right of Way Crossings
Moonlight Solar
Isle of Wight County, Virginia

Figure
3



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Location of Existing Structures
Moonlight Solar
Isle of Wight County, Virginia

Figure
4

Culvert West of Site Entrance #1 on Route 621







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Existing Structure on Haul Route – Culvert on Route 621
Moonlight Solar
Isle of Wight County, Virginia

Figure
5

Culvert East of Site
Entrance #2 on Route 621







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Existing Structure on Haul Route – Culvert on Route 621
Moonlight Solar
Isle of Wight County, Virginia

Figure
6

Culvert North of Site Entrances
3 and 4 on Route 627





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Existing Structure on Haul Route – Culvert on Route 627
Moonlight Solar
Isle of Wight County, Virginia

Figure
7



Bridge over Stallings
Creek on Route 626





West along Bridge on
Route 626

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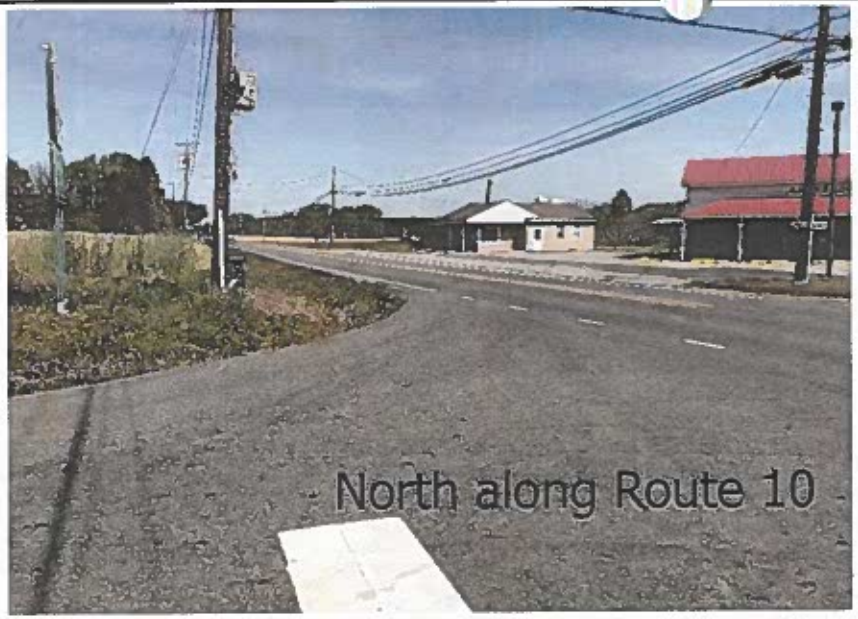
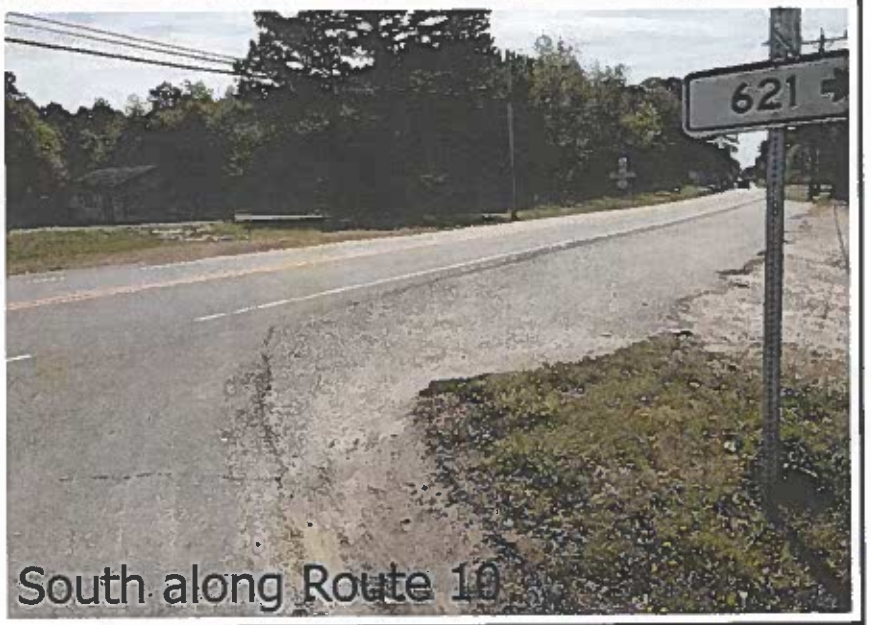
Existing Structure Adjacent to Haul Route
Moonlight Solar
Isle of Wight County, Virginia

Figure
8









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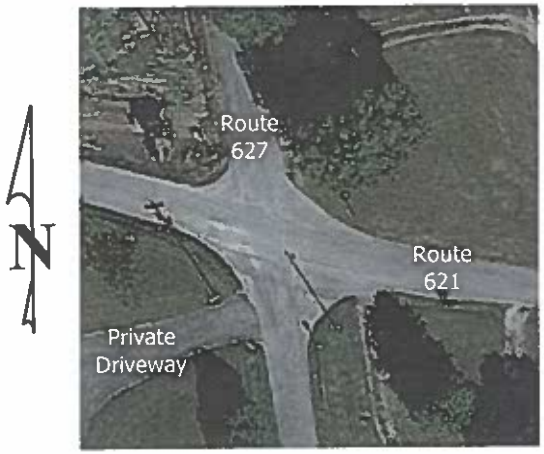
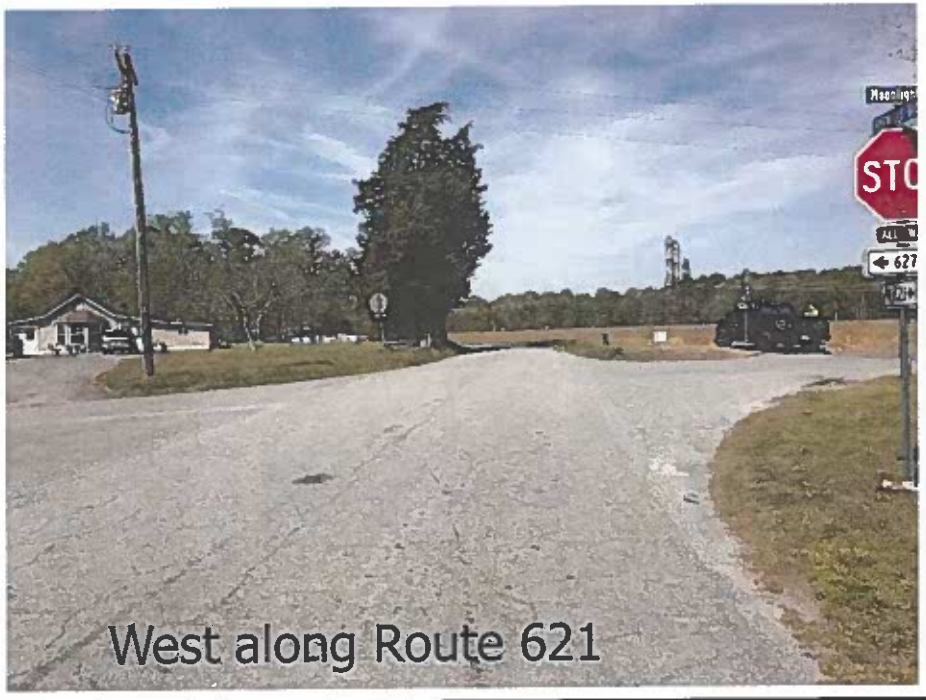
Intersection #1
Route 10 (Old Stage Highway) and Route 621 (Burwells Bay Road)
Moonlight Solar
Isle of Wight County, Virginia

Figure
9









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Intersection #2
Route 621 (Burwells Bay Rd) and Route 627 (Moonlight Road)
Moonlight Solar
Isle of Wight County, Virginia

Figure
10







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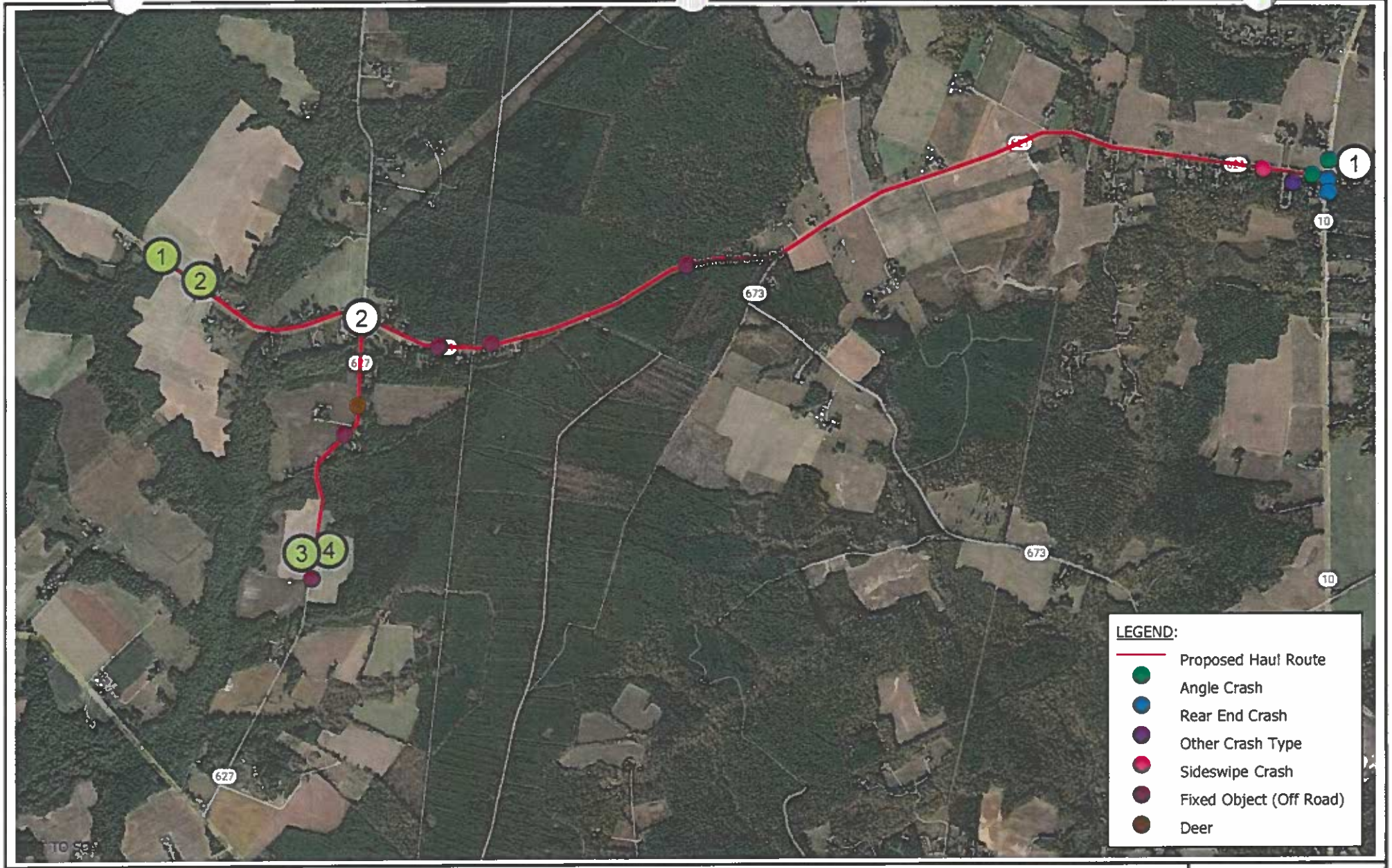
Intersection #2
Route 621 (Burwells Bay Rd) and Route 627 (Moonlight Road)
Moonlight Solar
Isle of Wight County, Virginia

Figure
11



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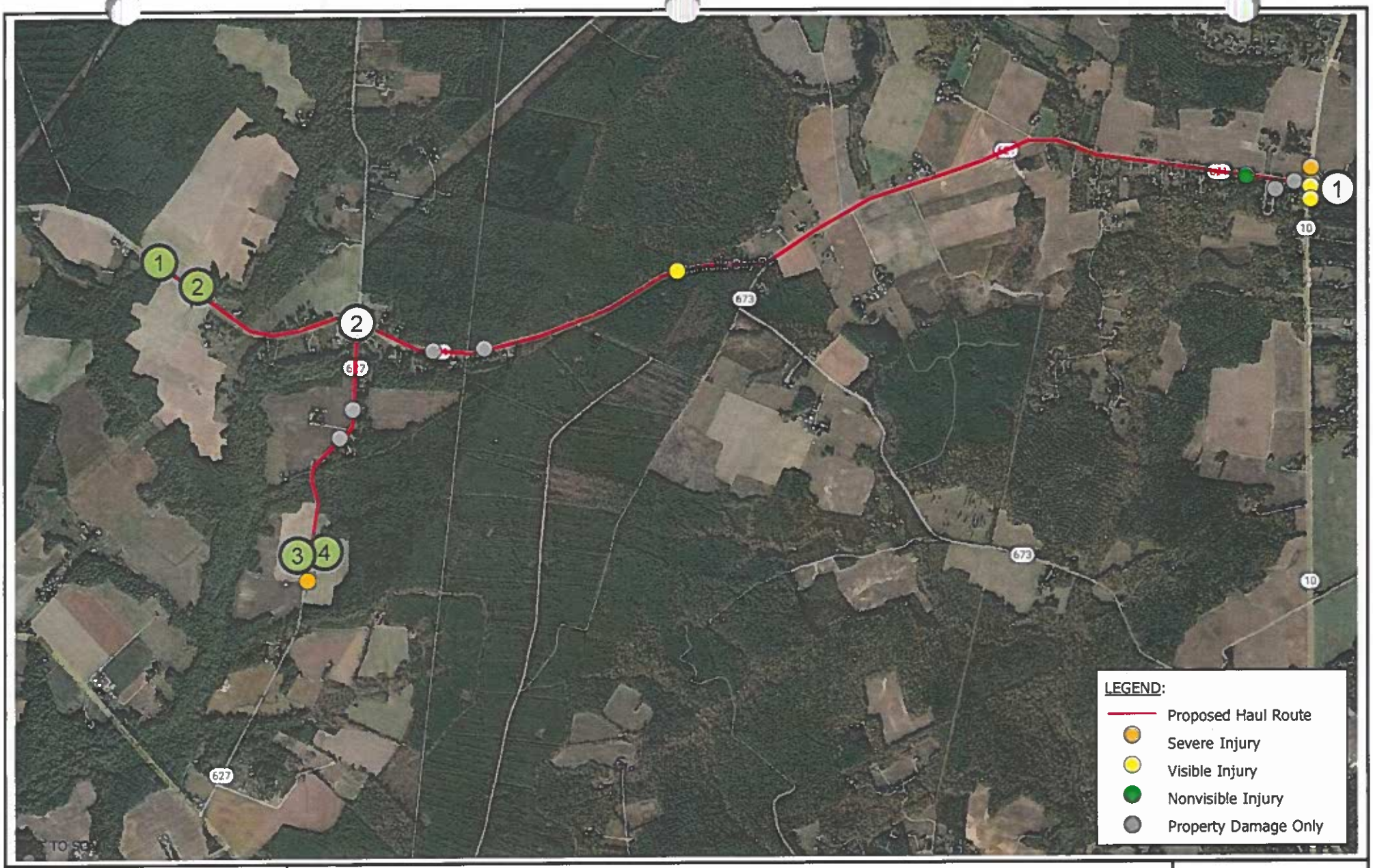
Crash Map – Crash Type
Moonlight Solar
Isle of Wight County, Virginia

Figure
12



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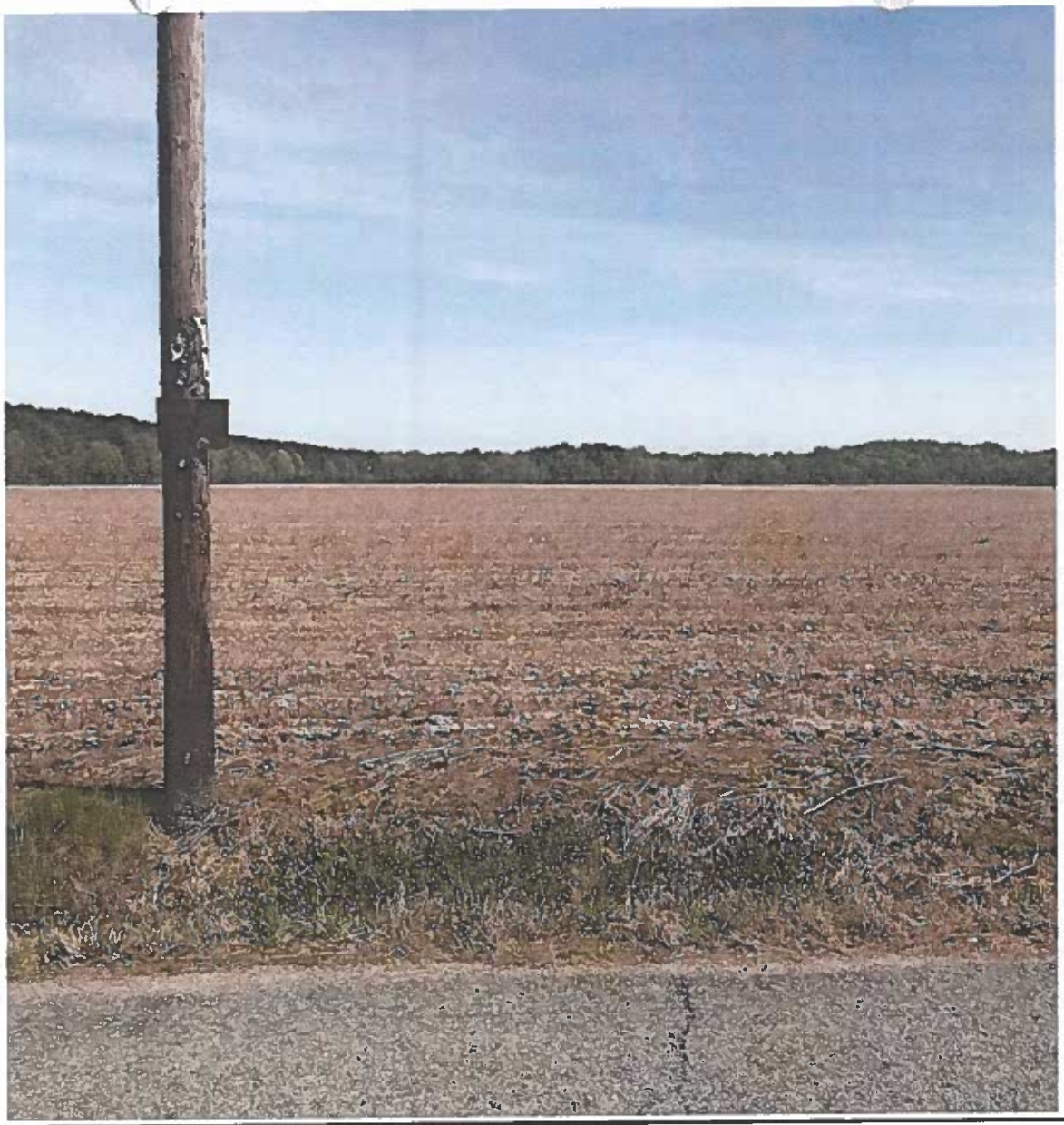
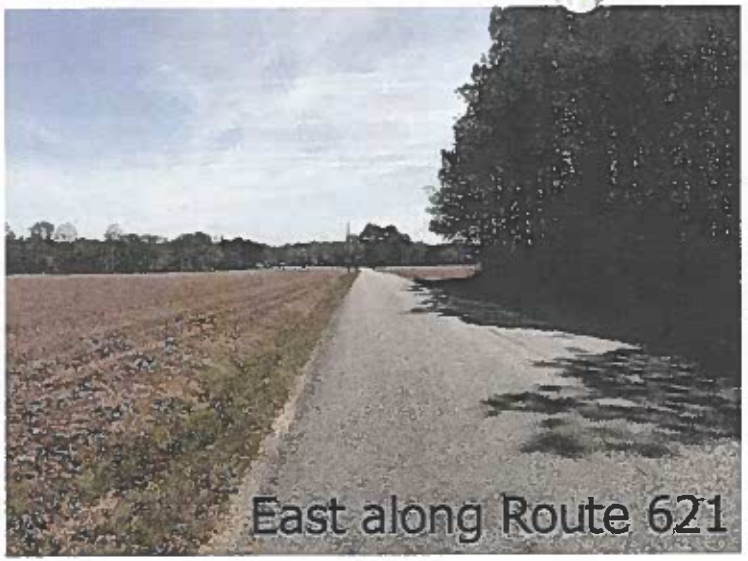
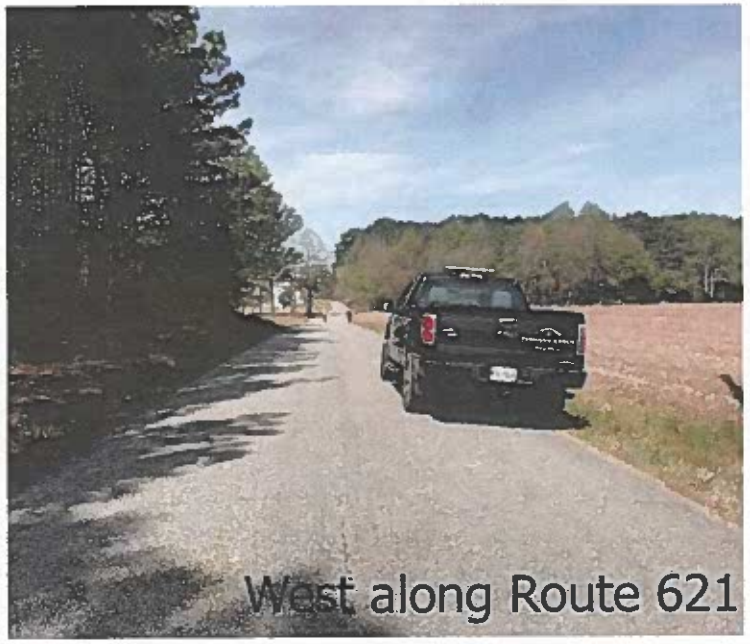
Crash Map – Crash Severity
Moonlight Solar
Isle of Wight County, Virginia

Figure
13







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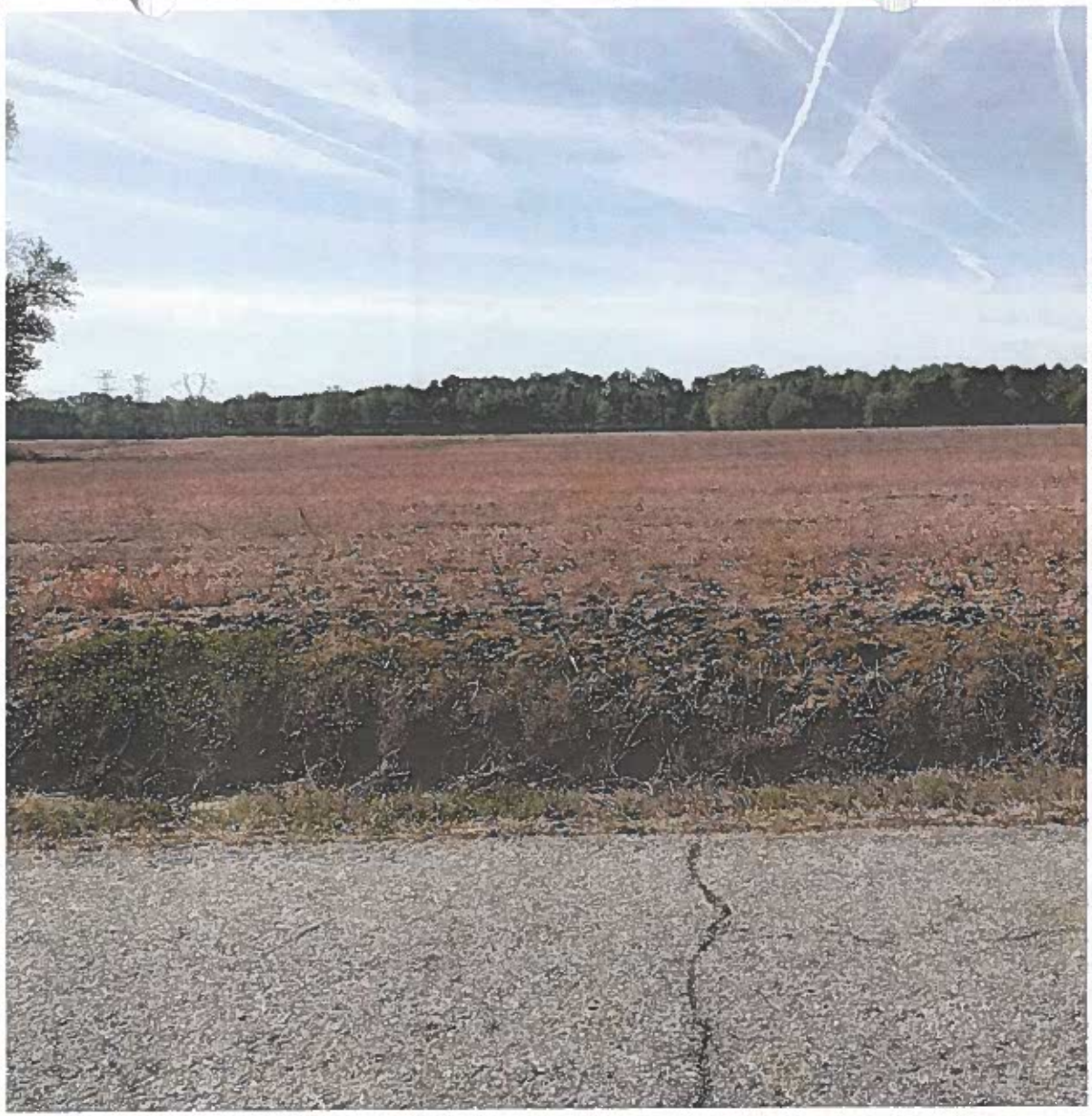
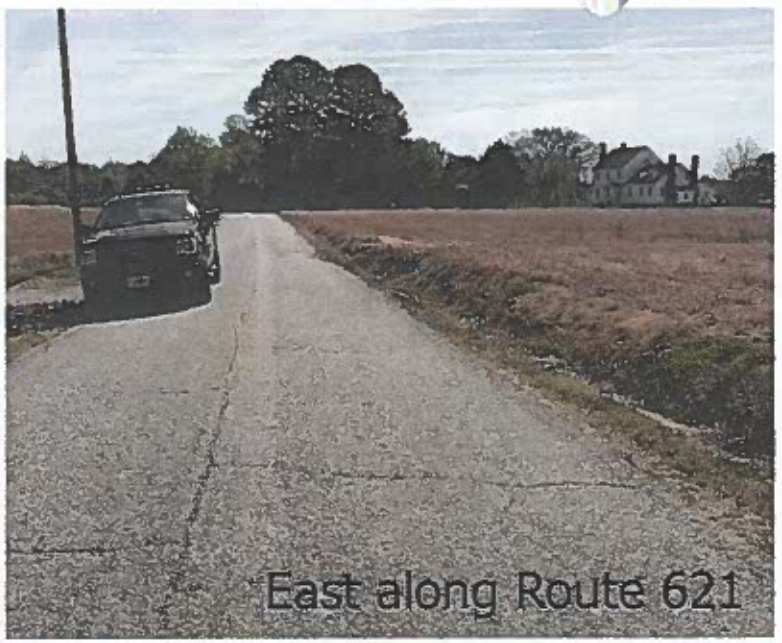
Site Entrance #1 - Route 621 (Burwells Bay Road)
Moonlight Solar
Isle of Wight County, Virginia

Figure
14







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Site Entrance #2 - Route 621 (Burwells Bay Road)
Moonlight Solar
Isle of Wight County, Virginia

Figure
15







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Site Entrance #3 Route 627 (Moonlight Road)
Moonlight Solar
Isle of Wight County, Virginia

Figure
16







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Site Entrance #4 Route 627 (Moonlight Road)
Moonlight Solar
Isle of Wight County, Virginia

Figure
17

MOONLIGHT SOLAR

ECONOMIC AND FISCAL CONTRIBUTION TO ISLE OF WIGHT COUNTY, VIRGINIA



Prepared for

PALLADIUM ENERGY

JUNE 2023

MANGUM economics

4198 COX ROAD, SUITE 104
GLEN ALLEN, VIRGINIA 23060
804-322-7777

MANGUMECONOMICS.COM

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About Mangum Economics, LLC

Mangum Economics is a Glen Allen, Virginia based firm that was founded in 2003. Since then, we have become known as a leader in industry analysis, economic impact assessment, policy and program evaluation, and economic and workforce strategy development. The Mangum Team specializes in producing objective and actionable quantitative economic research that our clients use for strategic decision making in a variety of industries and environments. We know that our clients are unique, and that one size does not fit all. As a result, we have a well-earned reputation for tailoring our analyses to meet the specific needs of specific clients, with a specific audience.

Most of our research falls into four general categories:

- **Information Technology:** Working with some of the largest names in the industry, to date the Mangum Team has produced analyses of the economic and fiscal impact of the data center industry in Virginia, home to the largest concentration of data centers in the world, and in five other states.
- **Energy:** The Mangum Team has produced analyses of the economic and fiscal impact of over 19 GW of proposed solar, wind, battery storage, and hydro projects spanning nineteen states. Among those projects was Dominion Energy's 2.6 GW Coastal Virginia Offshore Wind project off of Virginia Beach. In addition, the Mangum Team has also performed economic and fiscal impact analyses for the natural gas, nuclear, oil, and pipeline industries.
- **Economic Development and Special Projects:** The Mangum Team has performed hundreds of analyses of proposed economic development projects. Most recently, we were called upon by Henrico County to provide an analysis of the proposed $2.3 billion Green City "net-zero eco district." The Mangum Team has also authored multiple economic development plans, including identifying industries that were likely recruitment targets because of the high-speed MAREA and BRUSA sub-sea cable landings in Virginia Beach.
- **Education and Workforce:** The Mangum Team has worked with multiple post-secondary and secondary education institutions to quantify their economic contribution to their host communities as well as their impact on regional and statewide workforce needs.

The Project Team

Rebecca Kyle
Senior Research Analyst

Martina Arel, M.B.A.
Director – Economic Development & Energy Research

A. Fletcher Mangum, Ph.D.
Founder and CEO

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Executive Summary

This report assesses the economic and fiscal contribution that the proposed Moonlight Solar project would make to Isle of Wight County, Virginia. The primary findings from that assessment are as follows:

1) **Moonlight Solar is a proposed 44-megawatt (MW) alternating current (AC) solar photovoltaic power generating facility. The project would be located along Moonlight Road and Burwells Bay Road in Isle of Wight County, Virginia. The total acreage to be leased for the project encompasses approximately 523 acres of agricultural land. The actively used, fenced-in portion of the solar site would be approximately 250 acres.**

2) **The proposed Moonlight Solar project would make a significant economic contribution to Isle of Wight County:**

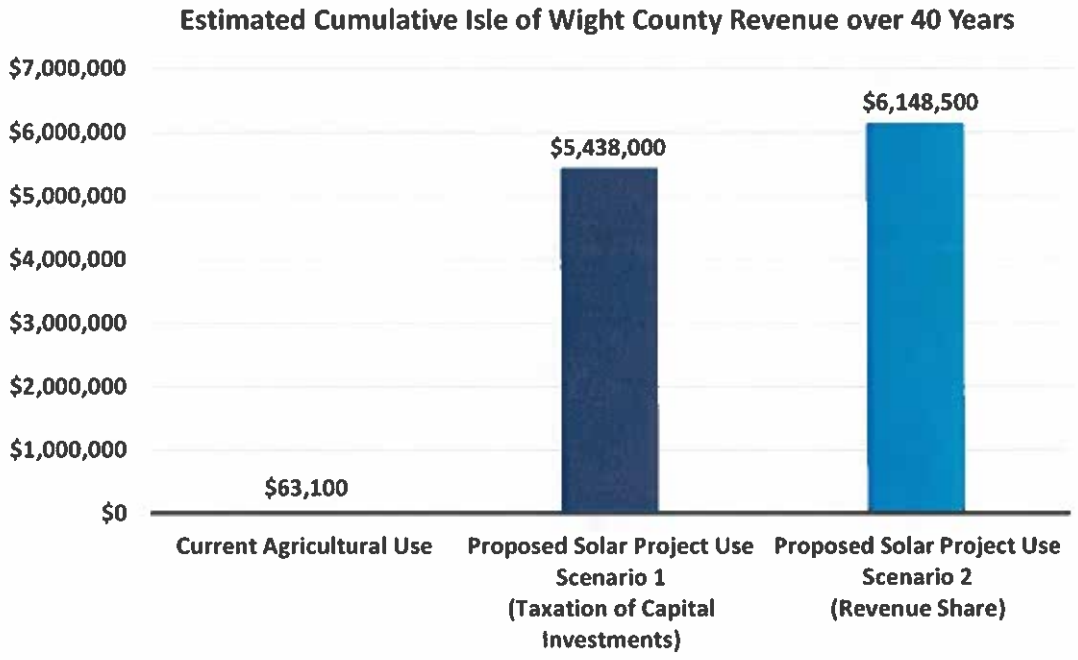
   - The proposed Moonlight Solar project would provide an estimated one-time pulse of economic activity to Isle of Wight County during its construction phase supporting approximately:
     - 25 direct, indirect, and induced jobs.
     - $1.2 million in associated wages and benefits.
     - $8.0 million in economic output.
   - The proposed Moonlight Solar project would provide an estimated annual economic impact to Isle of Wight County during its ongoing operational phase supporting approximately:
     - 2 direct, indirect, and induced jobs.
     - $84,600 in associated wages and benefits.
     - $297,800 in economic output.

3) **The proposed Moonlight Solar project would also make a significant fiscal contribution to Isle of Wight County. The proposed project would generate approximately:**

   - $140,900 in state and local tax revenue from the one-time pulse of economic activity associated with the project's construction.
   - $5.4 million in cumulative county revenue over the facility's anticipated 40-year operational life assuming revenues are generated from the reassessment of the real property, a siting agreement between Isle of Wight County and Moonlight Solar, and the taxation of the associated capital investments (Scenario 1); or
   - $6.1 million in cumulative county revenue over the facility's anticipated 40-year operational life assuming revenues are generated from the reassessment of the real property, a siting agreement between Isle of Wight County and Moonlight Solar, and payments associated with a locally adopted revenue share ordinance. The payments would be based on the project's generation capacity and would include a 10 percent escalator every five years (Scenario 2).

4) **The proposed Moonlight Solar project would have a significantly greater fiscal impact on Isle of Wight County than the property generates in its current agricultural use:**

- The proposed Moonlight Solar project would generate approximately $5.4 million in cumulative county revenue over the facility's anticipated 40-year operational life under Scenario 1 and approximately $6.1 million in cumulative county revenue over the facility's anticipated 40-year operational life under Scenario 2, as compared to approximately $63,100 in cumulative county revenue in the property's current agricultural use – a difference of approximately $5.4 million and $6.1 million respectively.



5) **The proposed Moonlight Solar project would provide a boost to Isle of Wight County's construction sector:**

- At 507 jobs, construction is Isle of Wight County's sixth largest major industry sector.[1]
- The construction sector also posted the third largest job gain of any industry sector in the county between the third quarter of 2021 and the third quarter of 2022 (a gain of 41 jobs).[2]
- The proposed Moonlight Solar project would directly support approximately 16 jobs and $1.2 million in wages and benefits in Isle of Wight County's construction sector.

[1] Data Source: U.S. Bureau of Labor Statistics.
[2] Data Source: U.S. Bureau of Labor Statistics.

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The estimates provided in this report are based on the best information available and all reasonable care has been taken in assessing the quality of that information. However, because these estimates attempt to foresee the consequences of circumstances that have not yet occurred, it is not possible to be certain that they will be representative of actual events. These estimates are intended to provide a good indication of likely future outcomes and should not be construed to represent a precise measure of those outcomes.

Introduction

This report assesses the economic and fiscal contribution that the proposed Moonlight Solar project would make to Isle of Wight County, Virginia. This report was commissioned by Palladium Energy and produced by Mangum Economics.

The Project

Moonlight Solar is a proposed 44-megawatt (MW) alternating current (AC) solar photovoltaic power generating facility. The project would be located along Moonlight Road and Burwells Bay Road in Isle of Wight County, Virginia. The total acreage to be leased for the project encompasses approximately 523 acres of agricultural land. The actively used, fenced-in portion of the solar site would be approximately 250 acres.

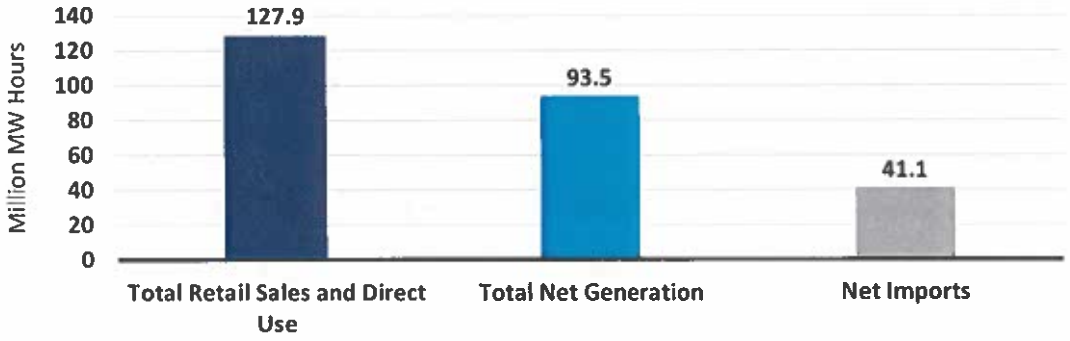
Electricity Production in Virginia

This section provides a backdrop for the proposed Moonlight Solar project by profiling Virginia's electricity production sector and the role that solar energy could play in that sector.

Overall Market

As shown in Figure 1, in 2021 electricity sales and direct use in Virginia totaled 127.9 million megawatt hours, ranking the state 10th among the fifty states in terms of electricity consumption. However, only 73 percent of that demand was met by in-state utilities, independent producers, and other sources. As a result, Virginia had to import the remaining electricity it consumed from producers in other states. As with all imports, this means that the jobs, wages, and economic output created by that production went to localities in those states, not to localities in Virginia.

Figure 1: Demand and Supply of Electricity in Virginia in 2021 (in millions of megawatt-hours)[3]



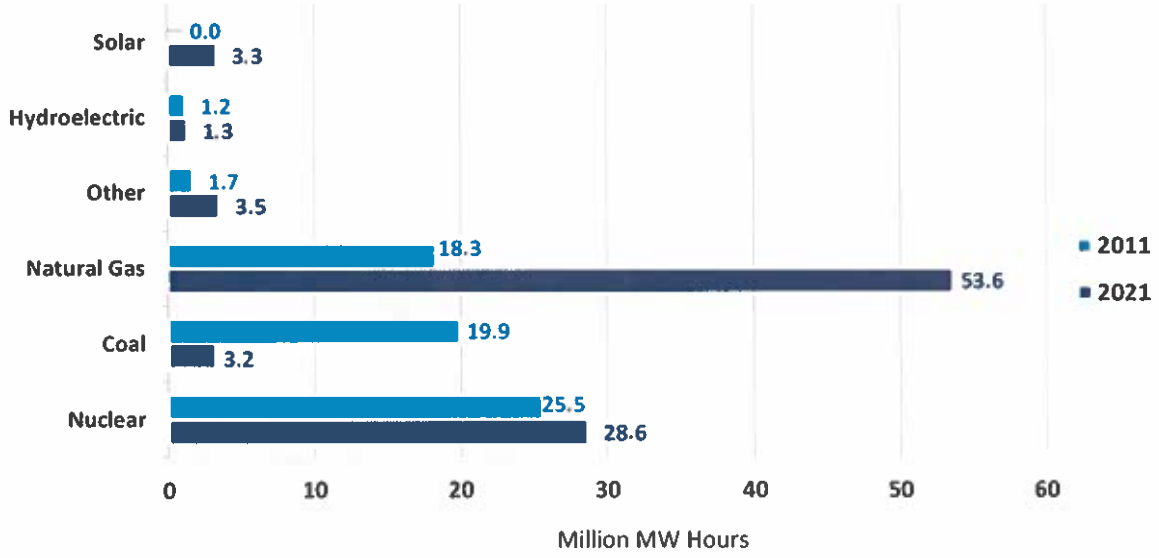
[3] Data Source: U.S. Energy Information Administration. In this chart, "Net Imports" also takes into account losses during transmission. As a result, it does not directly equal the residual of "Total Net Generation" minus "Total Retail Sales and Direct Use."

Sources of Production

Between 2011 and 2021, the total amount of electricity produced in Virginia increased from 66.7 to 93.5 million megawatt hours, while retail and direct consumption of electricity increased from 112.1 to 127.9 million megawatt hours. Consequently, imports of electricity decreased by 11.8 million megawatt hours (or 22 percent) during this time.[4] Figure 2 provides a comparison of the energy sources that were used to produce electricity in Virginia in each of those years. As these data show, the most significant change between 2011 and 2021 was a decrease in the use of coal and an increase in the use of natural gas. Where coal was the state's second largest source of electricity in 2011, accounting for 19.9 million megawatt hours (or 29.9 percent) of production, by 2021 production had fallen by 16.7 million megawatt hours, making coal a distant fifth place source of electricity with only 3.4 percent of production.

In contrast, the share of electricity produced using cleaner-burning low-emissions energy sources increased over the period. Where natural gas accounted for only 18.3 million megawatt hours (or 27.5 percent) of Virginia's electricity production in 2011, by 2021 that proportion had almost tripled to 53.6 million megawatt hours (or 57.3 percent of production), making natural gas the state's largest source of electricity. In addition, solar, which entered the Virginia electricity production market in 2016, increased its share to 3.3 million megawatt hours in 2021.

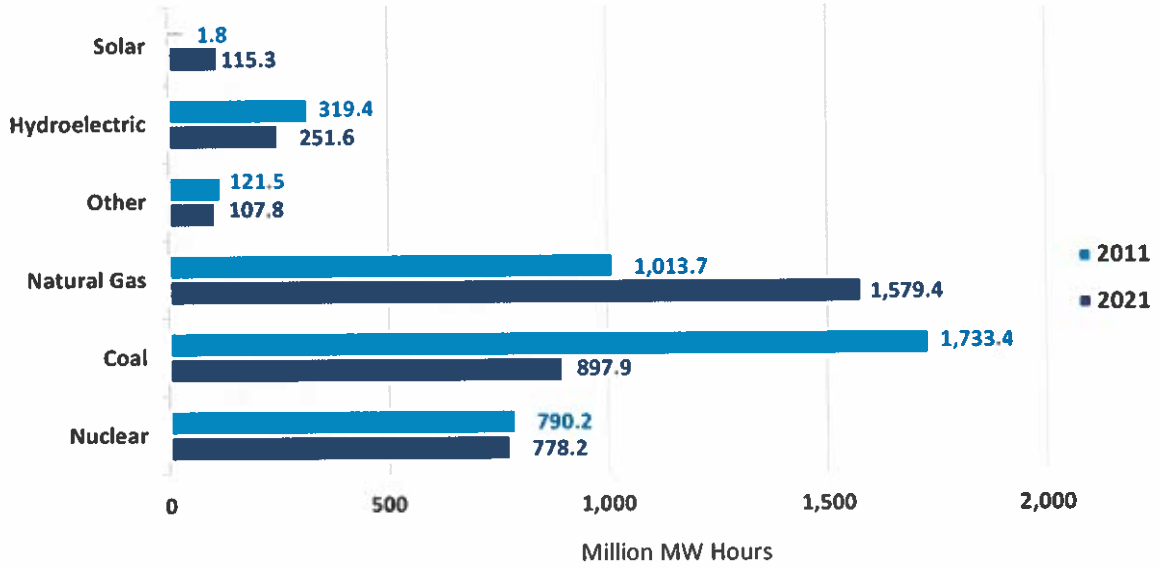
Figure 2: Electricity Generation in Virginia by Energy Source in 2011 and 2021 (in millions of megawatt-hours)[5]



[4] Imports also takes into account losses during transmission. As a result, totals do not equal sum of components.
[5] Data Source: U.S. Energy Information Administration. The "Other" category includes battery, wood, petroleum, other biomass, "other", and pumped storage.

Figure 3 provides similar data for the U.S. as a whole. A quick comparison of Figures 2 and 3 shows that although the degree of reliance on specific energy sources for electricity production is quite different between the U.S. and Virginia, the trend toward lower-emissions energy sources is the same. Nationally, between 2011 and 2021 the amount of electricity produced using coal declined by 835.5 million megawatt hours from 42 to 22 percent of production, while in contrast the amount of electricity produced using natural gas increased by 565.7 million megawatt hours from 25 to 38 percent of production. Nationwide, as in Virginia, the reliance on renewable energy sources such as solar increased during this time but at a slower pace than in Virginia. Between 2011 and 2021, the amount of electricity produced using solar increased by 113.5 million megawatt hours to 2.8 percent of total electricity production in the nation compared to 3.5 percent of total electricity production in Virginia.

Figure 3: Electricity Generation in the United States by Energy Source in 2011 and 2021 (in millions of megawatt-hours)[6]

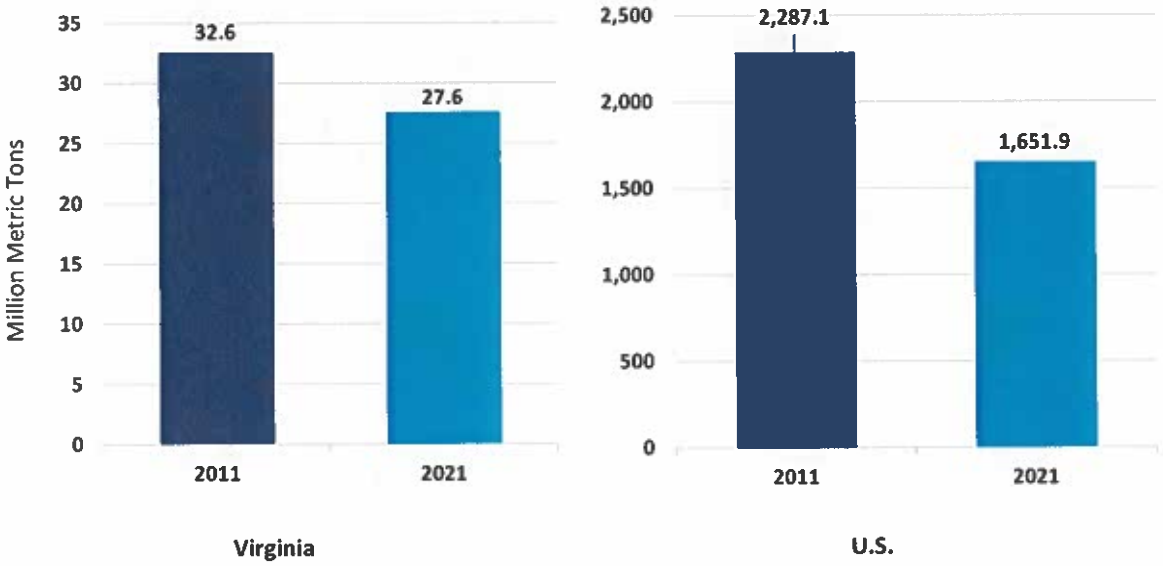


Impact on the Environment

In discussing the impact of these trends on the environment, it is important to realize that electricity production is one of the U.S.'s largest sources of greenhouse gas emissions. Figure 4 depicts carbon dioxide emissions from electricity production in 2011 and 2021 for both Virginia and the U.S. As these data indicate, between 2011 and 2021, as the share of electricity produced in Virginia by coal fell from 29.9 to 3.4 percent, carbon dioxide emissions from electricity production fell from 32.6 to 27.6 million metric tons. Where at the national level, as the share of electricity produced by coal fell from 42 to 22 percent, carbon dioxide emissions from electricity production fell from 2,287.1 to 1,651.9 million metric tons.

[6] Data Source: U.S. Energy Information Administration. "Other" includes battery, geothermal, hydroelectric, other, other biomass, other gas, petroleum, pumped storage, wind, and wood.

Figure 4: Carbon Dioxide Emissions from Electricity Production (millions of metric tons)[7]



[7] Data Source: U.S. Energy Information Administration.

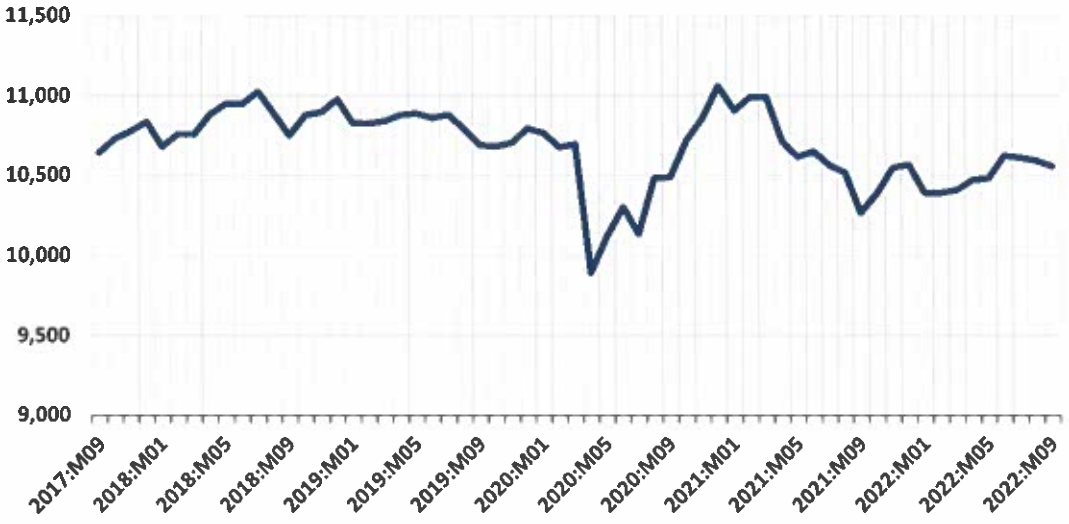
Local Economic Profile

This section provides context for the economic and fiscal impact assessments to follow by profiling the local economy of Isle of Wight County.

Total Employment

Figure 5 depicts the trend in total employment in Isle of Wight County during the five-year period from September 2017 through September 2023. With the exception of seasonal variations, employment in the county was fairly stable through 2019. Then, in April 2020 total employment declined significantly due to the lockdowns imposed as a result of the COVID-19 pandemic. Employment has since rebounded and recovered to pre-pandemic levels. As of September 2022, total employment in the county stood at 10,557 jobs, which represents an overall decrease in employment of 0.8 percent (or 87 jobs) over the five-year period. To put this number in perspective, over this same period, total statewide employment in Virginia increased by 3.4 percent.[8]

Figure 5: Total Employment in Isle of Wight County – September 2017 to September 2022[9]



To control for seasonality and provide a point of reference, Figure 6 compares the year-over-year change in total employment in Isle of Wight County to that of the state of Virginia over the same five-year period. Any point above the zero line in this graph indicates an increase in employment, while any point below the zero line indicates a decline in employment. As these data show, Isle of Wight County fluctuated around the statewide average for most of the period. As of September 2022, the year-over-year change in total employment in Isle of Wight County was 2.8 percent as compared to 3.4 percent statewide in Virginia.

[8] Data Source: U.S. Bureau of Labor Statistics.
[9] Data Source: U.S. Bureau of Labor Statistics.

Figure 6: Year-Over-Year Change in Total Employment – September 2017 to September 2022[10]



Employment and Wages by Industry Supersector

To provide a better understanding of the underlying factors motivating the total employment trends depicted in Figures 5 and 6, Figures 7 through 9 provide data on private employment and wages in Isle of Wight County by industry supersector.[11]

Figure 7 provides an indication of the distribution of private sector employment across industry supersectors in Isle of Wight County in the third quarter of 2022. As these data indicate, the county's largest industry sectors that quarter were Manufacturing (2,805 jobs), followed by Trade, Transportation and Utilities (1,663 jobs), and Leisure and Hospitality (1,259 jobs).

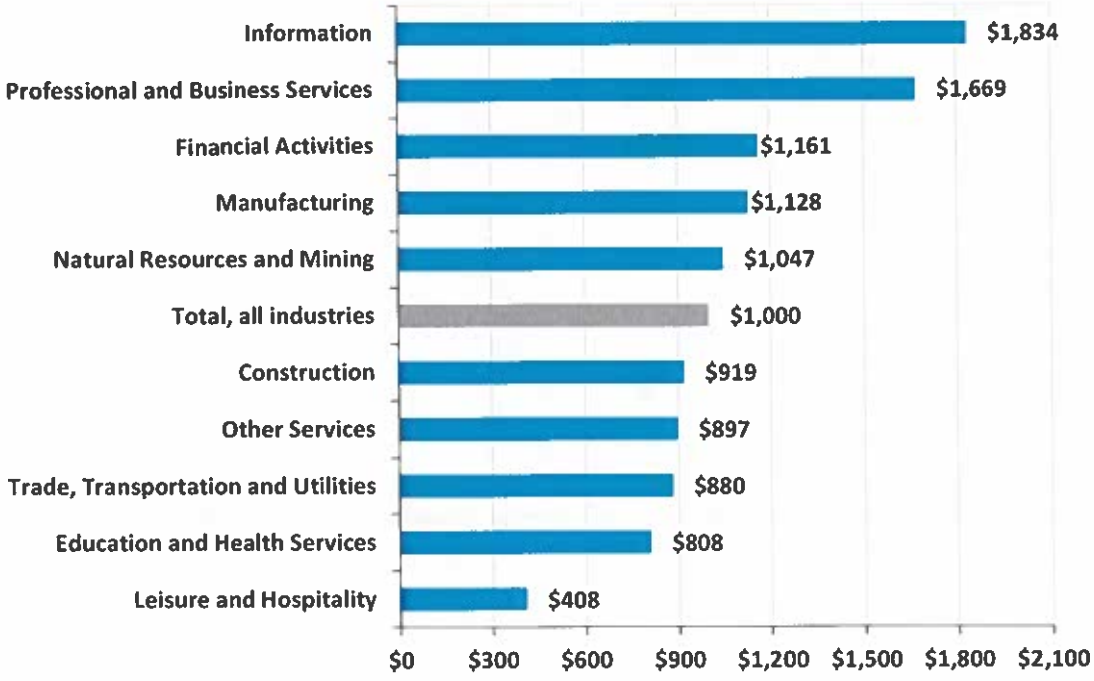
Figure 8 provides a similar ranking for average private sector weekly wages by industry supersector in Isle of Wight County in the third quarter of 2022. As these data show, the highest paying industry sectors that quarter were Information ($1,834 per week), Professional and Business Services ($1,669 per week), and Financial Activities ($1,161 per week). To provide a point of reference, the average private sector weekly wage across all industry sectors in Isle of Wight County that quarter was $1,000 per week.

[10] Data Source: U.S. Bureau of Labor Statistics.
[11] A "supersector" is the highest level of aggregation in the coding system that the Bureau of Labor Statistics uses to classify industries.

Figure 7: Private Employment by Industry Supersector in Isle of Wight County – 3rd Qu. 2022[12]



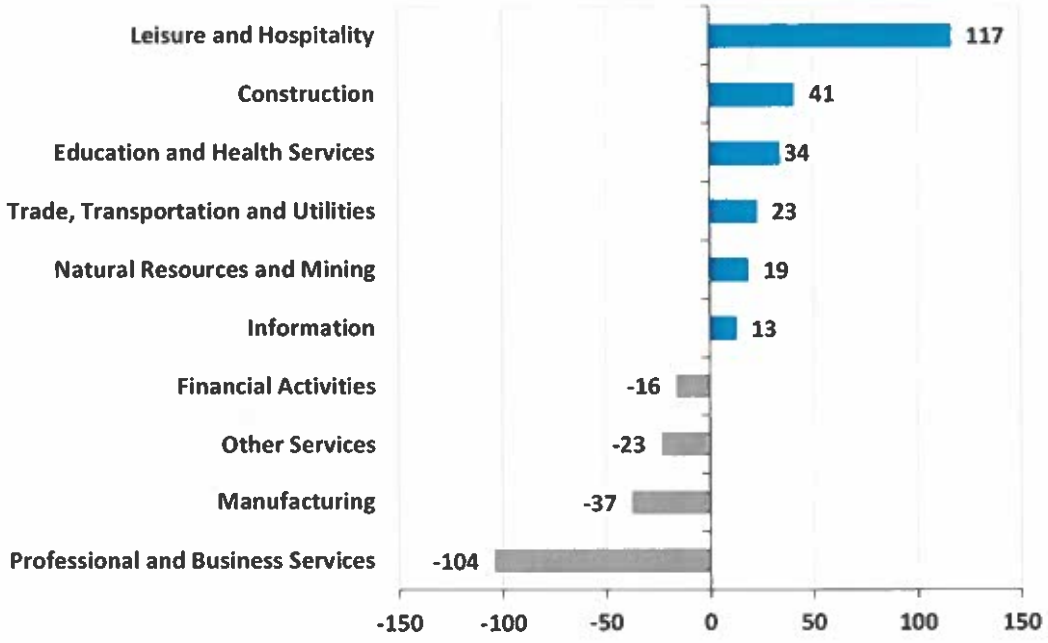
Figure 8: Average Private Weekly Wages by Industry Supersector in Isle of Wight County – 3rd Qu. 2022[13]



[12] Data Source: U.S. Bureau of Labor Statistics.
[13] Data Source: U.S. Bureau of Labor Statistics.

Figure 9 details the year-over-year change in private sector employment from the third quarter of 2021 to the third quarter of 2022 in Isle of Wight County by industry supersector. Over this period, the largest employment gains occurred in the Leisure and Hospitality (up 117 jobs), Construction (up 41 jobs), and Education and Health Services (up 34 jobs) sectors. The largest employment losses occurred in the Professional and Business Services (down 104 jobs), Manufacturing (down 37 jobs), Other Services (down 23 jobs) sectors.

Figure 9: Change in Private Employment by Industry Supersector in Isle of Wight County from 3rd Qu. 2017 to 3rd Qu. 2022[14]

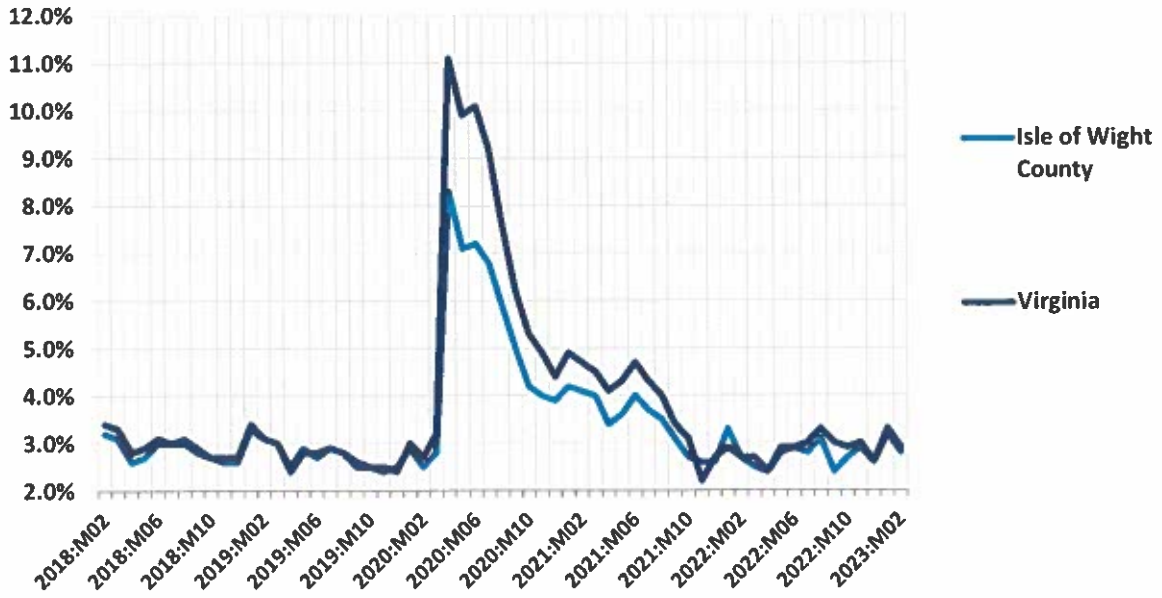


Unemployment

Figure 10 illustrates the trend in Isle of Wight County's unemployment rate over the five-year period from February 2018 through February 2023 and benchmarks those data against the statewide trend for Virginia. As these data show, unemployment rates in Isle of Wight County generally tracked closely with the statewide trend throughout the period. In April 2020 unemployment in the county and state significantly rose as a result of the labor dislocations caused by the COVID-19 pandemic. Isle of Wight County's unemployment rate peaked lower than the statewide rate and has mostly remained below the statewide average during the recovery from the pandemic. As of February 2023, unemployment stood at 2.8 percent in Isle of Wight County compared to 2.9 percent in Virginia as a whole.

[14] Data Source: U.S. Bureau of Labor Statistics.

Figure 10: Unemployment Rate – February 2018 to February 2023[15]



[15] Data Source: U.S. Bureau of Labor Statistics.

Economic and Fiscal Impact

This section quantifies the economic and fiscal contribution that the proposed Moonlight Solar project would make to Isle of Wight County. The analysis separately evaluates the one-time pulse of economic activity that would occur during the construction phase of the project, as well as the annual economic activity that the project would generate during its ongoing operational phase.

Method

To empirically evaluate the likely local economic impact attributable to the proposed Moonlight Solar project, the analysis employs a regional economic impact model called IMPLAN.[16] The IMPLAN model is one of the most commonly used economic impact simulation models in the U.S., and in Virginia is used by UVA's Weldon Cooper Center, the Virginia Department of Planning and Budget, the Virginia Employment Commission, and other state agencies and research institutes. Like all economic impact models, the IMPLAN model uses economic multipliers to quantify economic impact.

Economic multipliers measure the ripple effects that an expenditure generates as it makes its way through the economy. For example, as when the Moonlight Solar project purchases goods and services – or when contractors hired by the facility use their salaries and wages to make household purchases – thereby generating income for someone else, which is in turn spent, thereby becoming income for yet someone else, and so on, and so on. Through this process, one dollar in expenditures generates multiple dollars of income. The mathematical relationship between the initial expenditure and the total income generated is the economic multiplier.

One of the primary advantages of the IMPLAN model is that it uses regional and national production and trade flow data to construct region-specific and industry-specific economic multipliers, which are then further adjusted to reflect anticipated actual spending patterns within the specific geographic study area that is being evaluated. As a result, the economic impact estimates produced by IMPLAN are not generic. They reflect as precisely as possible the economic realities of the specific industry, and the specific study area, being evaluated.

In the analysis that follows, these impact estimates are divided into three categories. First round direct impact measures the direct economic contribution of the entity being evaluated (e.g., own employment, wages paid, goods and services purchased by the Moonlight Solar project). Second round indirect and induced impact measures the economic ripple effects of this direct impact in terms of business to business, and household (employee) to business, transactions. Total impact is simply the sum of the preceding two. These categories of impact are then further defined in terms of employment (the jobs that are created), labor income (the wages and benefits associated with those jobs), and economic output (the total amount of economic activity that is created in the economy).

[16] IMPLAN is produced by IMPLAN Group, LLC.

Construction Phase

This portion of the section assesses the economic and fiscal impact that the one-time pulse of activity associated with construction of the proposed Moonlight Solar project would have on Isle of Wight County.

Assumptions

The analysis is based on the following assumptions:

- Total capital investment in the Moonlight Solar project is estimated to be approximately $66.8 million.[17]
- Of that total:
    - Architecture, engineering, site preparation, and other construction and development costs are estimated to be approximately $34.0 million.[18]
    - Capital equipment costs are estimated to be approximately $32.8 million.[19] It is anticipated that no capital equipment would be purchased from vendors in Isle of Wight County.[20]
- All construction expenditures are assumed to take place during a 9-month period.

Economic Impact

Applying these assumptions in the IMPLAN model results in the following estimates of one-time economic and fiscal impact. As shown in Table 1, construction of the proposed Moonlight Solar project would directly provide a one-time pulse supporting approximately: 1) 16 jobs, 2) $0.8 million in wages and benefits, and 3) $6.6 million in economic output to Isle of Wight County.[21]

Taking into account the economic ripple effects that direct investment would generate, the total estimated one-time impact on Isle of Wight County would support approximately: 1) 25 jobs, 2) $1.2 million in wages and benefits, 3) $8.0 million in economic output, and 4) $140,900 in state and local tax revenue.

[17] Data Source: Palladium Energy. Investment estimate is subject to change based on final design and vendor contracts.
[18] Data Source: Palladium Energy.
[19] Data Source: Palladium Energy.
[20] Data Source: IMPLAN Group LLC.
[21] It is important to note that construction sector jobs are not necessarily new jobs, but the investments made can also support an existing job during the construction of the project.

Table 1: Estimated One-Time Economic and Fiscal Impact on Isle of Wight County from Construction of the Moonlight Solar Project

Economic Impact	Employment	Wages and Benefits	Output
1st Round Direct Economic Activity	16	$817,300	$6,613,200
2nd Round Indirect and Induced Economic Activity	9	$399,300	$1,366,300
Total Economic Activity	**25**	**$1,216,600**	**$7,979,500**
Fiscal Impact			
State and Local Tax Revenue			**$140,900**

**Totals may not sum due to rounding.*

Ongoing Operations Phase

This portion of the section assesses the annual economic and fiscal impact that the proposed Moonlight Solar project would have on Isle of Wight County during its anticipated 40-year operational phase.

Economic Impact Assumptions

The analysis is based on the following assumptions:

- The Moonlight Solar project would spend approximately $0.2 million each year for maintenance and repair, vegetative control, and other operational expenditures.[22]
- The Moonlight Solar project would make confidential lease payments to landowners.[23]

Economic Impact

Applying these assumptions in the IMPLAN model results in the following estimates of annual economic impact. As shown in Table 2, annual operation of the proposed Moonlight Solar project would on average directly support approximately: 1) 1 job, 2) $50,600 in wages and benefits, and 3) $156,500 in economic output to Isle of Wight County.

Taking into account the economic ripple effects that direct impact would generate, the total estimated annually supported impact on Isle of Wight County would be approximately: 1) 2 jobs, 2) $84,600 in wages and benefits, and 3) $297,800 in economic output.

[22] Data Source: Palladium Energy. Expenditure estimate is subject to change based on final design and vendor contracts.
[23] Data Source: Palladium Energy.

Table 2: Estimated Annual Economic Impact on Isle of Wight County from the Ongoing Operation of the Moonlight Solar Project

Economic Impact	Employment	Wages and Benefits	Output
1st Round Direct Economic Activity	1	$50,600	$156,500
2nd Round Indirect and Induced Economic Activity	1	$34,000	$141,300
Total Economic Activity	**2**	**$84,600**	**$297,800**

**Totals may not sum due to rounding.*

Fiscal Impact Assumptions

The analysis is based on the following assumptions:

- The Moonlight Solar project would involve an investment of approximately $66.8 million in capital equipment and improvements to the existing property.[24]
- The proposed Moonlight Solar project would be situated on approximately 250 fenced-in acres within an approximate 523-acre tract of leased land.[25]
- The actively used, fenced-in acreage would be removed from the land use program and reassessed at $15,000 per acre.[26]
- Tax rates and locality ratios remain constant throughout the analysis.
- The initial interconnection request for Moonlight Solar was filed in January 2021.[27]
- The Moonlight Solar project's total generation capacity would be 44 MW AC.
- The Moonlight Solar project would become operational in the fourth quarter of 2027.[28]

Fiscal Impact

This portion of the section quantifies the direct fiscal contribution that the proposed Moonlight Solar project would make to Isle of Wight County. The analysis considers two scenarios. Both scenarios include the additional revenue that the Moonlight Solar project would generate for Isle of Wight County over a 40-year period from the increased property assessments associated with reassessing the site as solar use property and a siting agreement negotiated between Isle of Wight County and Moonlight Solar. Scenario 1 then describes the additional revenue Moonlight Solar would generate for Isle of Wight County from taxes levied on the capital investment, while Scenario 2 assumes tax revenue generated from the capital investment will be replaced with revenue associated with a locally adopted revenue share ordinance and based on the project's total generation capacity.

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[24] Data Source: Palladium Energy. Investment estimate is subject to change based on final design and vendor contracts.
[25] Data Source: Palladium Energy.
[26] Data Source: Isle of Wight County Commissioner of Revenue's Office. Current assessment value of existing solar farm in the county.
[27] Data Source: Palladium Energy.
[28] Data Source: Palladium Energy.

Reassessment of Property

Table 3 details the increased tax revenue associated with removing the affected acreage from the land use program and reassessing the 250-acre fenced-in site as solar use property. The county real estate tax revenue from the project after reassessment is estimated to be approximately $26,600 per year, for a cumulative total of approximately $1.1 million over the project's anticipated 40-year operational life expectancy.[29] Adding one-time rollback taxes of approximately $31,600 increases that cumulative total to approximately $1.1 million. In contrast, the property currently generates approximately $1,580 per year in real estate tax revenue for the county, for a cumulative total of approximately $63,100 over 40 years.[30]

Table 3: Estimated County Revenue Generated by the Proposed Moonlight Solar Project over 40 Years from Real Estate Taxes

Estimated Increased Appraised Value of Property under Solar Use[31]	$3,750,000
Isle of Wight County Real Estate Tax Rate[32]	0.0071
Annual County Real Estate Tax – Solar Use	$26,600
Revenue over 40 years	**$1,065,000**
One-time Rollback Taxes[33]	**$31,600**
Total Cumulative Revenue over 40 years	**$1,096,600**

**Totals may not sum due to rounding.*

Siting Agreement

According to §15.2-2316.7 of the Code of Virginia, a host locality may negotiate a siting agreement with the applicant of a solar facility. Based on information provided by Moonlight Solar, LLC, Moonlight Solar is proposing to make an upfront payment of $25,000 per megawatt to Isle of Wight County at the beginning of commercial operation of the project. As shown in Table 4, this would total approximately $1.1 million in the first year of Moonlight Solar's operation.

[29] Assumes property will be reassessed at $15,000 per acre once it is under solar use.
[30] Derived from Isle of Wight County's Property Card database. Excludes value of existing structures as they will not be affected.
[31] Calculated as 250 acres times $15,000 per acre.
[32] Data Source: Isle of Wight County's Commissioner of Revenue's office.
[33] Rollback taxes are computed as the difference between the current land use value assessment tax and the tax on the fair market value for the affected acreage for five complete tax years plus the current year. Does not account for changes in assessment values over time. Includes simple interest.

Table 4: Proposed Value of Siting Agreement Between Moonlight Solar and Isle of Wight County

Moonlight Solar Total Generation Capacity in MW	44
Proposed Payment Per MW[34]	$25,000
Total Revenue from Upfront Payment	**$1,100,000**

Scenario 1: Taxation of Capital Investment

Table 5 separately details the additional annual revenue that the proposed Moonlight Solar project would generate for Isle of Wight County over a 40-year period from taxes levied on capital investment. This estimate is calculated as: 1) the taxable portion of capital investments based on the stepdown local tax exemption pursuant to Virginia Code §58.1-3660[35], times 2) the State Corporation Commission's utility assessment ratio for taxation of public utilities in Isle of Wight County, times 4) the State Corporation Commission's current depreciation guidelines for solar facilities, times 5) Isle of Wight County's real property tax rate of $0.71 per $100 of assessed value pursuant to Virginia Code §58.1-2606.

As the data in Table 5 indicate, based on these calculations the estimated additional county revenue from taxation of capital investments associated with the proposed Moonlight Solar project would be approximately $75,200 in the project's first year of operation, with that figure projected to increase to approximately $144,600 in year 11 of the project as the value of the exemption is reduced, and thereafter declining to approximately $16,700 in the project's 34th year of operation and thereafter as the value of the proposed capital investments is further depreciated, for a cumulative total of approximately $3.2 million

Table 5: Estimated County Revenue by Proposed Solar Investment Over 40 Years

Year	Total Capital Investment Subject to Exemption[36]	Depreciated Value of Taxable Capital Investment[37]	Additional Annual County Tax Revenue Solar Investment[38]
1	$66,818,707	$10,586,489	$75,164
2	$66,818,707	$10,586,489	$75,164

[34] Data Source: Palladium Energy.
[35] Virginia Code §58.1-3660 stipulates that solar facilities over 5MW and under 150MW are subject to a stepdown exemption from local property taxes if the interconnection request has been filed on or after January 1, 2019. The amount of the exemption is 80 percent in the first five years, 70 percent in years six through ten, and 60 percent thereafter.
[36] Data Source: Palladium Energy.
[37] Accounts for the State Corporation Commission's depreciation guidelines for solar facilities and the utility assessment ratio for taxation of public utilities in Isle of Wight County. Also accounts for the stepdown exemption from local property taxes pursuant to Virginia Code §58.1-3660 for projects over 5 MW and under 150 MW with an interconnection request on or after January 1, 2019. The amount of the exemption is 80 percent in the first five years, 70 percent in years six through ten, and 60 percent thereafter.
[38] Calculated pursuant to Virginia Code §58.1-2606 which stipulates that capital equipment owned by utilities is taxed as real property and the local tax rate on that capital equipment would be capped at Isle of Wight County's real property tax rate of $0.71 per $100 of assessed value.

Year	Total Capital Investment Subject to Exemption[36]	Depreciated Value of Taxable Capital Investment[37]	Additional Annual County Tax Revenue Solar Investment[38]
3	$66,818,707	$10,586,489	$75,164
4	$66,818,707	$10,586,489	$75,164
5	$66,818,707	$10,586,489	$75,164
6	$66,818,707	$15,879,733	$112,746
7	$66,818,707	$15,879,733	$112,746
8	$66,818,707	$15,879,733	$112,746
9	$66,818,707	$15,825,036	$112,358
10	$66,818,707	$15,556,845	$110,454
11	$66,818,707	$20,363,699	$144,582
12	$66,818,707	$19,963,765	$141,743
13	$66,818,707	$19,540,306	$138,736
14	$66,818,707	$19,088,615	$135,529
15	$66,818,707	$18,611,047	$132,138
16	$66,818,707	$18,105,248	$128,547
17	$66,818,707	$17,568,866	$124,739
18	$66,818,707	$17,001,901	$120,713
19	$66,818,707	$16,397,295	$116,421
20	$66,818,707	$15,759,753	$111,894
21	$66,818,707	$15,082,218	$107,084
22	$66,818,707	$14,364,689	$101,989
23	$66,818,707	$13,604,814	$96,594
24	$66,818,707	$12,797,889	$90,865
25	$66,818,707	$11,943,912	$84,802
26	$66,818,707	$11,035,826	$78,354
27	$66,818,707	$10,075,985	$71,539
28	$66,818,707	$9,057,329	$64,307
29	$66,818,707	$7,979,860	$56,657
30	$66,818,707	$6,834,167	$48,523
31	$66,818,707	$5,622,602	$39,920
32	$66,818,707	$4,338,108	$30,801
33	$66,818,707	$2,975,980	$21,129
34	$66,818,707	$2,352,553	$16,703
35	$66,818,707	$2,352,553	$16,703
36	$66,818,707	$2,352,553	$16,703
37	$66,818,707	$2,352,553	$16,703
38	$66,818,707	$2,352,553	$16,703
39	$66,818,707	$2,352,553	$16,703
40	$66,818,707	$2,352,553	$16,703
CUMULATIVE TOTAL			**$3,241,400**

**Totals may not sum due to rounding.*

Scenario 1: Total Fiscal Impact

Table 6 combines the results from the calculations depicted in Tables 3 through 5 to provide an estimate of the cumulative fiscal contribution that the proposed Moonlight Solar project would make to Isle of Wight County over its 40-year anticipated operational life under Scenario 1. As these data indicate, that cumulative total is approximately $5.4 million.

Table 6: Estimated Cumulative County Tax Revenue from the Proposed Moonlight Solar Project over 40 Years under Scenario 1

County Real Estate Tax	$1,096,600
County Revenue from Siting Agreement	$1,100,000
County Revenue from Taxation of Capital Investments	$3,241,400
TOTAL Cumulative Revenue over 40 Years	**$5,438,000**

**Totals may not sum due to rounding.*

Scenario 2: Revenue Share Ordinance

The following section describes the additional annual revenue that the proposed Moonlight Solar project would generate for Isle of Wight County assuming the county adopts an energy revenue share ordinance under Virginia Code §58.1-2636. The Virginia Code currently stipulates that a locality may assess an annual revenue share of up to $1,400 per megawatt (MW) alternating current (AC) generation capacity of a solar facility. However, legislation that was passed in the 2021 General Assembly (SB 1201/HB 2006) and went into effect on July 1, 2021, allows a 10 percent escalator to be applied to the $1,400 per MW revenue share every five years, beginning in 2026. Section 58.1-3660 further stipulates that capital investment associated with the solar project will be exempt from taxation if the county adopts an energy revenue share ordinance.

Table 7 details the revenue generated from a revenue share ordinance including the 10 percent escalator. Based on a total generation capacity of 44 MW AC and an assumed commissioning date of the fourth quarter of 2027, a revenue share ordinance would generate approximately $4.0 million over the anticipated 40-year operational life of the project.

Table 7: Estimated County Revenue Generated from a Revenue Share Ordinance over 40 Years

Year	MW	Revenue Share per MW with Escalator	Annual County Revenue
1	44	$1,540	$67,760
2	44	$1,540	$67,760
3	44	$1,540	$67,760
4	44	$1,540	$67,760
5	44	$1,694	$74,536

Year	MW	Revenue Share per MW with Escalator	Annual County Revenue
6	44	$1,694	$74,536
7	44	$1,694	$74,536
8	44	$1,694	$74,536
9	44	$1,694	$74,536
10	44	$1,863	$81,990
11	44	$1,863	$81,990
12	44	$1,863	$81,990
13	44	$1,863	$81,990
14	44	$1,863	$81,990
15	44	$2,050	$90,189
16	44	$2,050	$90,189
17	44	$2,050	$90,189
18	44	$2,050	$90,189
19	44	$2,050	$90,189
20	44	$2,255	$99,207
21	44	$2,255	$99,207
22	44	$2,255	$99,207
23	44	$2,255	$99,207
24	44	$2,255	$99,207
25	44	$2,480	$109,128
26	44	$2,480	$109,128
27	44	$2,480	$109,128
28	44	$2,480	$109,128
29	44	$2,480	$109,128
30	44	$2,728	$120,041
31	44	$2,728	$120,041
32	44	$2,728	$120,041
33	44	$2,728	$120,041
34	44	$2,728	$120,041
35	44	$3,001	$132,045
36	44	$3,001	$132,045
37	44	$3,001	$132,045
38	44	$3,001	$132,045
39	44	$3,001	$132,045
40	44	$3,301	$145,250
Cumulative Total			**$3,952,000**

Scenario 2: Total Fiscal Impact

Table 8 combines the results from the calculations depicted in Tables 3, 4 and 7 to provide an estimate of the cumulative fiscal contribution that the proposed Moonlight Solar project would make to Isle of Wight County over its 40-year anticipated operational life under Scenario 2. As these data indicate, that cumulative total is approximately $6.1 million.

Table 8: Estimated Cumulative County Revenue from the Proposed Moonlight Solar Project over 40 Years under Scenario 2

County Real Estate Tax	$1,096,600
County Revenue from Siting Agreement	$1,100,000
County Revenue from Revenue Share Ordinance	$3,952,000
TOTAL Cumulative Revenue over 40 Years	**$6,148,500**

**Totals may not sum due to rounding.*

Current Agricultural Use

This section provides a benchmark for the previous estimates of the economic contribution that the proposed Moonlight Solar project would make to Isle of Wight County by estimating the economic and fiscal contribution that the site makes to the county in its current agricultural use.

Economic Impact Assumptions

The analysis is based on the following assumptions:

- The proposed Moonlight Solar project would be situated on an approximate 250-acre tract of agricultural land used to produce cotton, corn, and soybeans.[39]

Economic Impact

Applying these assumptions in the IMPLAN model results in the following estimates of annual economic impact. As shown in Table 9, in its current use the proposed Moonlight Solar project site directly supports approximately: 1) 1 job, 2) $42,600 in wages and benefits, and 3) $148,600 in economic output to Isle of Wight County.

Taking into account the economic ripple effects that direct impact generates, on average, the total annually supported impact on Isle of Wight County is approximately: 1) 2 jobs, 2) $75,000 in wages and benefits, and 3) $232,900 in economic output.

Table 9: Total Estimated Annual Economic Impact of the Moonlight Solar Project Site on Isle of Wight County – Current Agricultural Use[40]

Economic Impact	Employment	Wages and Benefits	Output
1st Round Direct Economic Activity	1	$42,600	$148,600
2nd Round Indirect and Induced Economic Activity	1	$32,400	$84,300
Total Economic Activity	**2**	**$75,000**	**$232,900**

**Totals may not sum due to rounding.*

Fiscal Impact Assumptions

The analysis is based on the following assumptions:

- The current use assessment value of the affected acreage is approximately $222,100.[41]

[39] Data Source: Palladium Energy.
[40] Calculations based data from the U.S. Department of Agriculture and IMPLAN Group, LLC for Virginia and Isle of Wight County.
[41] Data Source: Derived from Isle of Wight County's Property Card database. Excludes value of existing structures as they will not be affected.

Fiscal Impact

Table 10 details the estimated tax revenue that the proposed Moonlight Solar site generates for Isle of Wight County in its current agricultural use. As the data in Table 10 indicate, the current county real estate tax revenue from the project site is estimated to be approximately $1,580 per year, for a cumulative total of approximately $63,100 over 40 years.

Table 10: Estimated County Revenue Generated by the Proposed Moonlight Solar Project Site over 40 Years from Real Estate Taxes – Current Agricultural Use

Estimated Assessed Value of Property – Agricultural Use[42]	$222,100
Isle of Wight County Current Real Estate Tax Rate	0.0071
Estimated Annual County Real Estate Tax – Agricultural Use	$1,580
Total Cumulative Revenue over 40 years	**$63,100**

**Totals may not sum due to rounding.*

The estimates provided in this report are based on the best information available and all reasonable care has been taken in assessing the quality of that information. However, because these estimates attempt to foresee the consequences of circumstances that have not yet occurred, it is not possible to be certain that they will be representative of actual events. These estimates are intended to provide a good indication of likely future outcomes and should not be construed to represent a precise measure of those outcomes.

[42] Data Source: Derived from Isle of Wight County's Property Card database. Excludes value of existing structures as they will not be affected.

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

1001 Boulders Parkway
Suite 300
Richmond, VA 23225

P 804.200.6500
F 804.560.1016
www.timmons.com

MEMORANDUM

TO: Isle of Wight County Planning and Zoning Department

FROM: Timmons Group on behalf of Moonlight Solar

DATE: July 14, 2023

RE: Moonlight Solar Environmental Resource Impact Analysis

Timmons Group, on behalf of Moonlight Solar, has prepared a limited environmental review of resources that may be present within a one-mile radius of the proposed project location. This report includes a database review protected lands, wetlands and streams, prime farmland, and threatened and/or endangered species potentially present on site. Further review and analysis will be conducted with the appropriate resource agencies during permitting efforts at the state level.

Federal, State, and Local Conservation and Recreation Lands

Moonlight Solar does not intersect any federal, state, or local conservation easement or recreational lands, and there are no such resources within one mile of the project limits. The nearest managed lands are over one mile away: a Wetlands Reserve Program (WRP) site is found approximately 1.6 miles to the west of the site and Isle of Wight Purchase of Agricultural Conservation Easement (PACE) site that is approximately 2.5 miles southeast of the site.

Wetlands and Streams

Wetlands and streams onsite have been delineated by Timmons Group in March 2023 and are awaiting confirmation from the USACE. If wetland or stream impacts are unavoidable, the Applicant will obtain the proper USACE permit for impacts to jurisdictional wetlands and streams.

Wetlands and streams form a natural wildlife corridor, and as they will generally not be impacted by the project, will remain as interior corridors for wildlife utilization. Wetlands and streams are outside the fenced area so free passage of wildlife will be allowed for the duration of the project. The Virginia Department of Wildlife Resources advises that interior passages through solar projects helps reduce potential impacts to wildlife, to which this project will adhere.

Prime Farmland

Based on the Natural Resources Conservation Service (NRCS) soils layer shown on the Prime Farmland Map, there are areas of prime farmland within the development envelope of the site. Prime farmland[1] totals

[1] Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for those uses.

212.3 acres, farmland of statewide importance[2] totals 1.2 acres, prime farmland if drained totals 60.1 acres, and the rest of the development envelope, 31.4 acres, is neither prime farmland nor farmland of statewide importance. The Virginia Cooperative Extension recently developed a prime farmland dataset known as the Virginia Land and Energy Navigator (VaLEN). The results of our analysis of prime farmland using NRCS data is consistent with the VaLEN dataset.

Threatened and Endangered Species

Timmons Group has conducted a threatened and endangered (T&E) species review of the Moonlight Solar project. The following databases were reviewed for the potential presence of T&E species:

- Virginia Department of Conservation and Recreation (VDCR) – Natural Heritage Review Service
- Virginia Department of Wildlife Resources (VDWR) – Virginia Fish and Wildlife Information Service (VaFWIS)
- US Fish and Wildlife Service (USFWS) – Information for Planning and Consultation (IPaC)

Based on the queried databases, there is the potential for three T&E species to occur near the Project.

- Northern Long-eared Bat *Myotis septentrionalis* Federal Endangered USFWS
- Tri-Colored Bat *Perimyotis subflavus* State Endangered, Federal Proposed USFWS
- Eastern Big-eared Bat *Corynorhinus rafinesquii macrotis* State Endangered VDCR
- Barking Treefrog *Hyla gratiosa* Delisted VDCR
- Monarch Butterfly *Danaus plexippus* Candidate Species USFWS

According to USFWS IPaC results, the northern long-eared bat and the tri-colored bat have the potential to occur onsite. According to VDCR, the Project contains predicted suitable habitat for the eastern big-eared bat. There are no known hibernacula or roost trees for these species within the vicinity of the site. VDCR also notes there is predictive suitable habitat for the barking treefrog onsite; the barking treefrog has been delisted. According to VDCR, there are no protected plant or insect species within the project area. During permitting efforts at the state level, the Applicant will coordinate with resource agencies to ensure the protection and avoidance of T&E species.

According to VDCR, the Moonlight Sinkhole Ponds Conservation Site is approximately 1,500LF east of the project area. It is a complex of sinkhole ponds in a matric of loblolly pines and has a biodiversity rank of B2, which represents a site of very high significance. There are no conservation sites within the project area. The project will have minimal impacts to Ecological Cores C3 (High), C4 (Moderate), and C5 (General).

Attachments

- Protected Lands Map
- Prime Farmland Map
- Virginia Land & Energy Navigator (VaLEN) Map
- Wildlife Environmental Review Map
- Ecological Cores Map
- T&E Species Database Reviews

[2] Farmland of statewide importance generally includes areas that almost meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods.


Legend
Project Study Limits - 522.96 Acres
One Mile Buffer
County Boundary
Conservation Easements
Protected Areas of the US
Federal
Local Government
American Indian Areas - Not Present
State - Not Present
Regional Agency Special District - Not Present
Non-Governmental Organization - Not Present
Private - Not Present
Joint - Not Present
Territorial - Not Present
Unknown - Not Present
NOTES
PROTECTED AREAS OF THE US FROM ESRI
CONSERVATION EASEMENT DATA FROM VDCR
AERIAL IMAGERY FROM VGIN
TIMMONS GROUP
PALLADIUM ENERGY
MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY, VIRGINIA
PROTECTED LANDS MAP
SCALE (FEET)
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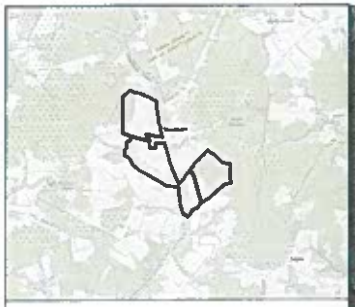
2,000
4,000



Legend

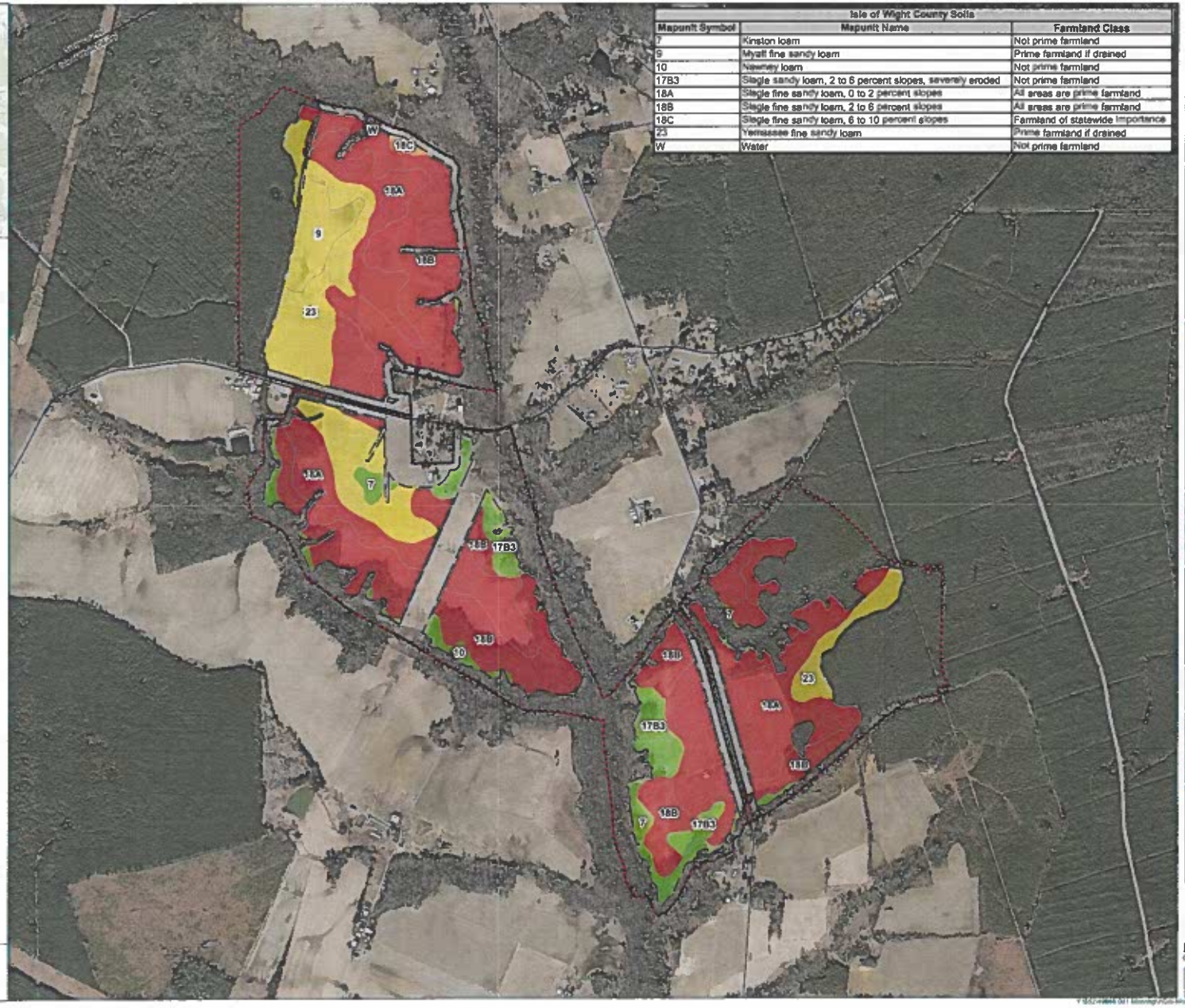
- Project Study Limits - 522.96 Acres
- Development Envelope - 305.8 Acres
- County Boundary

Farmland Class

- All Areas are Prime Farmland - 212.3 Acres
- Farmland of Statewide Importance - 1.2 Acres
- Prime Farmland if Drained - 60.1 Acres
- Not Prime Farmland - 31.4 Acres

NOTES:

SOILS DATA FROM SSURGO
COUNTY BOUNDARY DATA FROM VDEM
AERIAL IMAGERY FROM VGIN



Isle of Wight County Soils		
Mapunit Symbol	Mapunit Name	Farmland Class
7	Kinston loam	Not prime farmland
9	Myatt fine sandy loam	Prime farmland if drained
10	Newhurry loam	Not prime farmland
17B3	Slagle sandy loam, 2 to 6 percent slopes, severely eroded	Not prime farmland
18A	Slagle fine sandy loam, 0 to 2 percent slopes	All areas are prime farmland
18B	Slagle fine sandy loam, 2 to 6 percent slopes	All areas are prime farmland
18C	Slagle fine sandy loam, 6 to 10 percent slopes	Farmland of statewide importance
23	Yemassee fine sandy loam	Prime farmland if drained
W	Water	Not prime farmland

TIMMONS GROUP

PALLADIUM ENERGY

MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY
VIRGINIA

03/17/2023

MOONLIGHT SOLAR

M. HILL

PRIME FARMLAND MAP

SCALE (FEET)

0 500 1,000


Legend
Project Study Limits - 522.96 Acres
Virginia Land & Energy Navigator (VaLEN) Dataset
County Boundary
NOTES
PRIME FARMLAND FROM VaLEN
AERIAL IMAGERY FROM VGIN
TIMMONS GROUP
PALLADIUM ENERGY
MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY
VIRGINIA
MOONLIGHT SOLAR
VIRGINIA LAND & ENERGY NAVIGATOR (VaLEN) MAP
SCALE (FEET)
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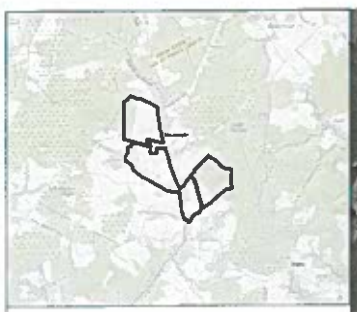
1,000



Legend

- Project Study Limits - 522.96 Acres
- Two Mile Buffer
- County Boundary
- NLEB Roost Trees - Not Present
- Trout Streams - Not Present
- Threatened/Endangered Waters - Not Present
- Anadromous Fish Use
- Bald Eagle Concentration Areas and Roosts
- Colonial Water Birds
- Federal or State Listed Observation Area - Not Present
- Bat Hibernacula (0.5 Mile Buffer) - Not Present
- Bat Hibernacula (5.5 Mile Buffer) - Not Present

Federal Status, State Status

- Non-Threatened, Non-Endangered

Species Observed within Two Miles		
Common Name	Federal Status	State Status
Bullhead, yellow	NT / NE	NT / NE
Chub, creek	NT / NE	NT / NE
Chubsucker, creek	NT / NE	NT / NE
Dace, blacknose	NT / NE	NT / NE
Dace, roayside	NT / NE	NT / NE
Darter, tessellated	NT / NE	NT / NE
Eagle, bald	NT / NE	NT / NE
Eel, American	NT / NE	NT / NE
Flier	NT / NE	NT / NE
Frog, southern cricket	NT / NE	NT / NE
Heron, great blue	NT / NE	NT / NE
Lamprey, least brook	NT / NE	NT / NE
Mosquitofish, eastern	NT / NE	NT / NE
Mudminnow, eastern	NT / NE	NT / NE
Pepper, spring	NT / NE	NT / NE
Perch, pirate	NT / NE	NT / NE
Pickerel, redfin	NT / NE	NT / NE
Pumpkinseed	NT / NE	NT / NE
Salamander, eastern red-backed	NT / NE	NT / NE
Shiner, golden	NT / NE	NT / NE
Sunfish, bluespotted	NT / NE	NT / NE
Sunfish, redear	NT / NE	NT / NE
Treefrog, barking	NT / NE	NT / NE
Treefrog, pine woods	NT / NE	NT / NE
Treefrog, squirrel	NT / NE	NT / NE
Warmouth	NT / NE	NT / NE

NT = Non-Threatened, NE = Non-Endangered

NOTES

WERMS DATA FROM DWR
BAT HIBERNACULA INCLUDE IDENTIFICATIONS OF NORTHER LONG-EARED BAT, TRI-COLORED BAT, LITTLE BROWN BAT, VIRGINIA BIG-EARED BAT, GRAY BAT AND INDIANA BAT
AERIAL IMAGERY FROM VGIN

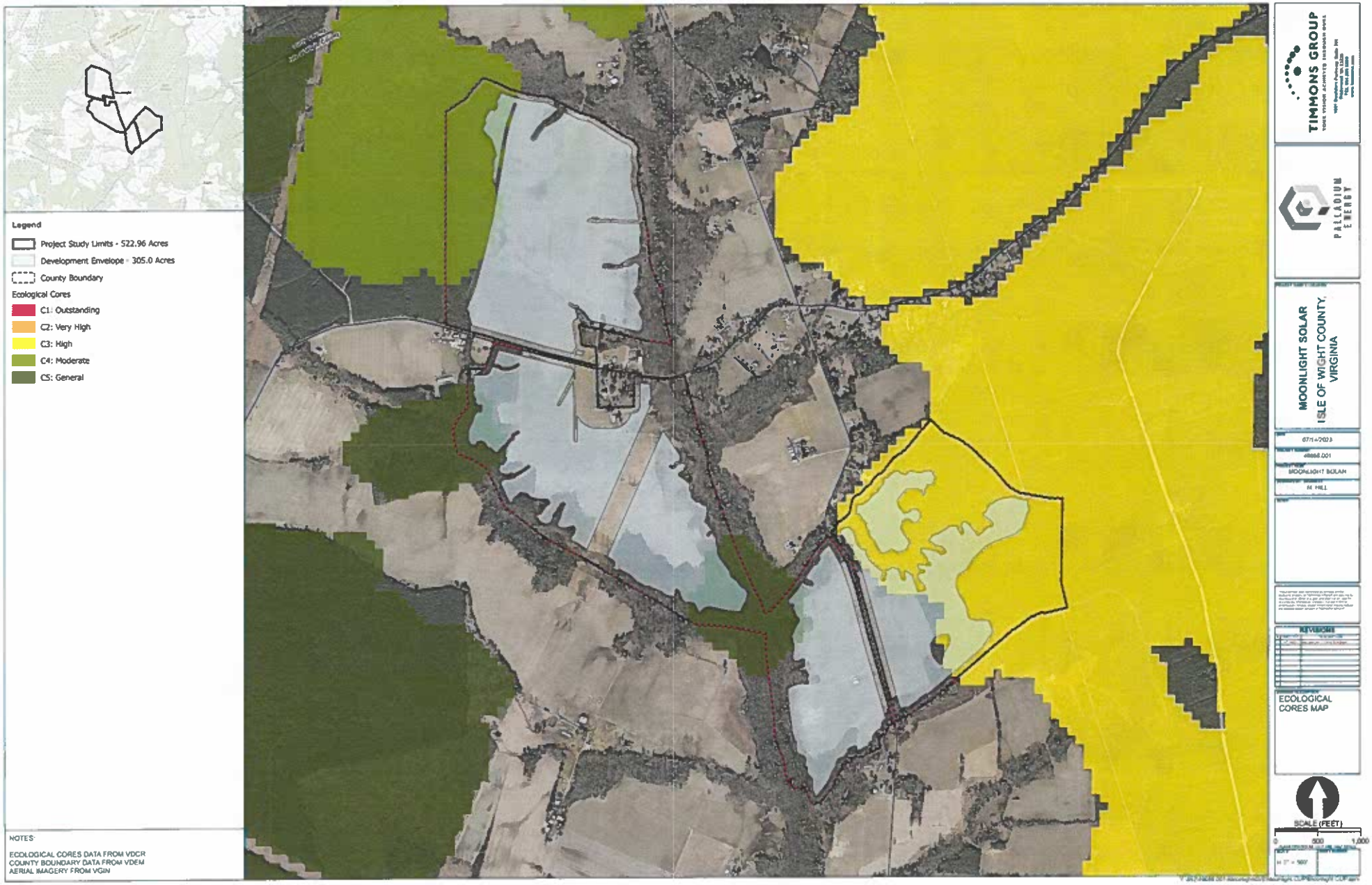
TIMMONS GROUP

PALLADIUM ENERGY

MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY, VIRGINIA

WILDLIFE ENVIRONMENTAL REVIEW MAP

SCALE (FEET)
0 1,500 3,000
1" = 1,500'


Legend
Project Study Limits - 522.96 Acres
Development Envelope - 305.0 Acres
County Boundary
Ecological Cores
C1: Outstanding
C2: Very High
C3: High
C4: Moderate
C5: General
NOTES:
ECOLOGICAL CORES DATA FROM VDCR
COUNTY BOUNDARY DATA FROM VDEM
AERIAL IMAGERY FROM VGIN
TIMMONS GROUP
PALLADIUM ENERGY
MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY, VIRGINIA
07/14/2023
48868.001
MOONLIGHT SOLAR
M HILL
REVISIONS
ECOLOGICAL CORES MAP
SCALE (FEET)
0
500
1,000

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To:
Project code: 2023-0061092
Project Name: Moonlight Solar
IPaC Record Locator: 578-124233281

March 28, 2023

Federal Nexus: no
Federal Action Agency (if applicable):

Subject: Technical assistance for 'Moonlight Solar'

Dear Timmons Group:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on March 28, 2023, for 'Moonlight Solar' (here forward, Project). This project has been assigned Project Code 2023-0061092 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements are not complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter.

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis, your project is not reasonably certain to cause incidental take of the northern long-eared bat. Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Candidate

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species and/or critical habitat listed above. Note that if a new species is listed that may be affected by the identified action before it is complete, additional review is recommended to ensure compliance with the Endangered Species Act.

Next Steps

Coordination with the Service is complete. This letter serves as technical assistance. All conservation measures should be implemented as proposed. Thank you for considering federally listed species during your project planning.

We are uncertain where the northern long-eared bat occurs on the landscape outside of known locations. Because of the steep declines in the species and vast amount of available and suitable forest habitat, the presence of suitable forest habitat alone is a far less reliable predictor of their presence. Based on the best available information, most suitable habitat is now expected to be unoccupied. During the interim period, while we are working on potential methods to address this uncertainty, we conclude take is not reasonably certain to occur in areas of suitable habitat where presence has not been documented.

If no changes occur with the Project or there are no updates on listed species, no further consultation/coordination for this project is required for the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place before project implements any changes which are final or commits additional resources.

If you have any questions regarding this letter or need further assistance, please contact the Virginia Ecological Services Field Office and reference Project Code 2023-0061092 associated with this Project.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Kestrel *Falco sparverius paulus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9587	Breeds Apr 1 to Aug 31
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Aug 31

NAME	BREEDING SEASON
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Brown-headed Nuthatch *Sitta pusilla* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Jul 15
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see

below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

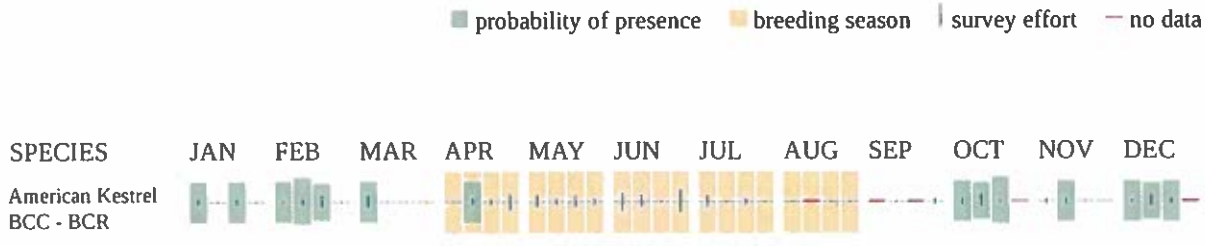
1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

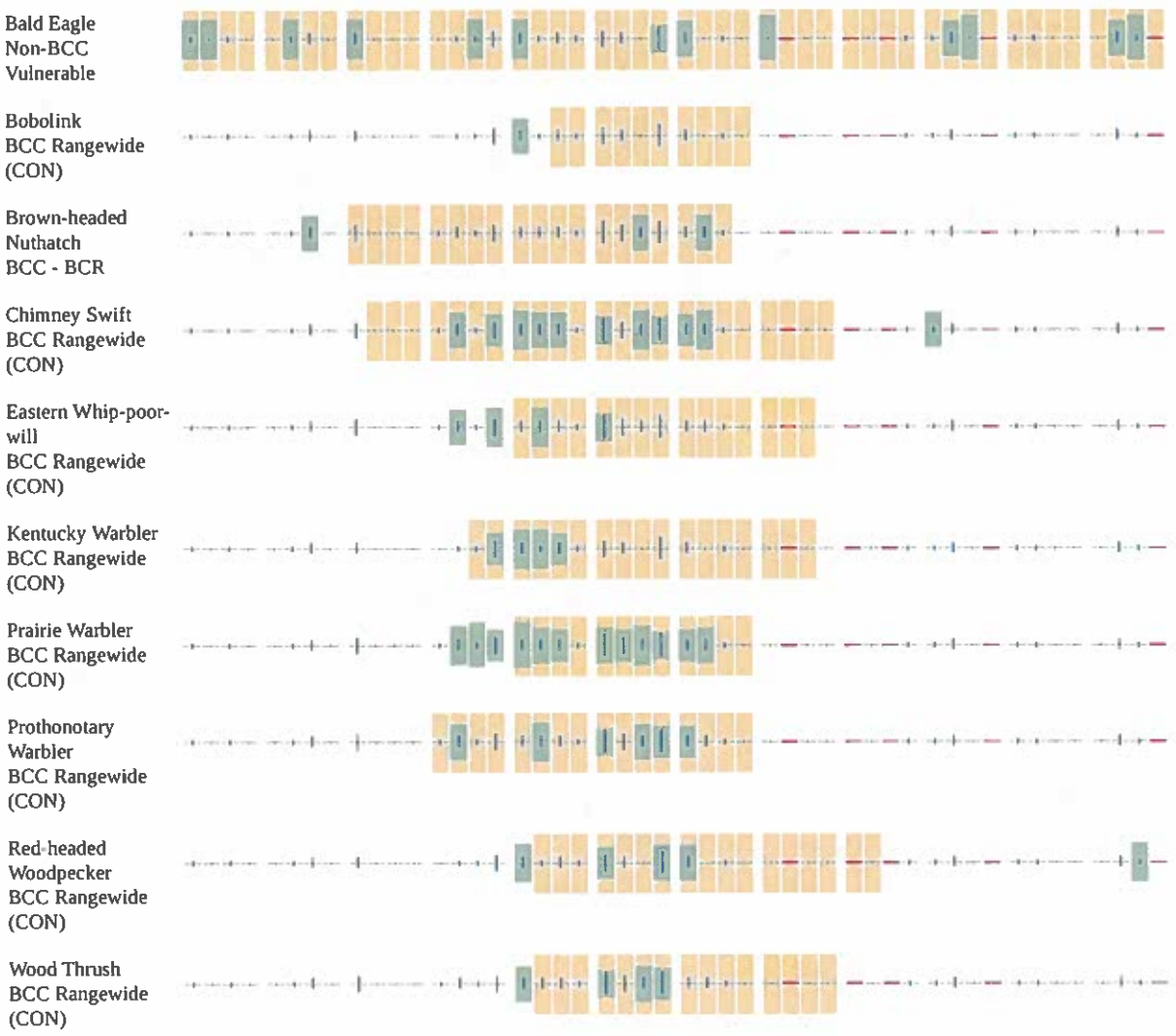
Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ( )
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in

the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of

certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

IPAC USER CONTACT INFORMATION

Agency: Timmons Group
Name: Timmons Group
Address: 1001 Boulders Pkwy
City: Richmond
State: VA
Zip: 23225
Email 804@timmons.com
Phone: 8042006500

VaFWIS - Department of Game and Inland Fisheries

37.02954 -76.72453
is the Search Point
Submit Cancel

Search Point
- Change to "clicked" map point
- Fixed at 37.02954 -76.72453

Show Position Rings
- Yes
- No

1 mile and 1/4 mile at the Search Point

Show Search Area
- Yes
- No

2 Search distance miles buffer

Search Point is at map center

Base Map Choices
BW Aerial Photography

Map Overlay Choices
Current List: Anadromous, TEWaters, BAEANests, BECAR, Trout, TierII, Habitat, Search

Map Overlay Legend

T & E Waters
- Federal
- State

Predicted Habitat WAP Tier I & II
- Aquatic
- Terrestrial

Trout Waters
- Class I - IV
- Class V - VI

Anadromous Fish Reach
- Confirmed
- Potential

Impediment

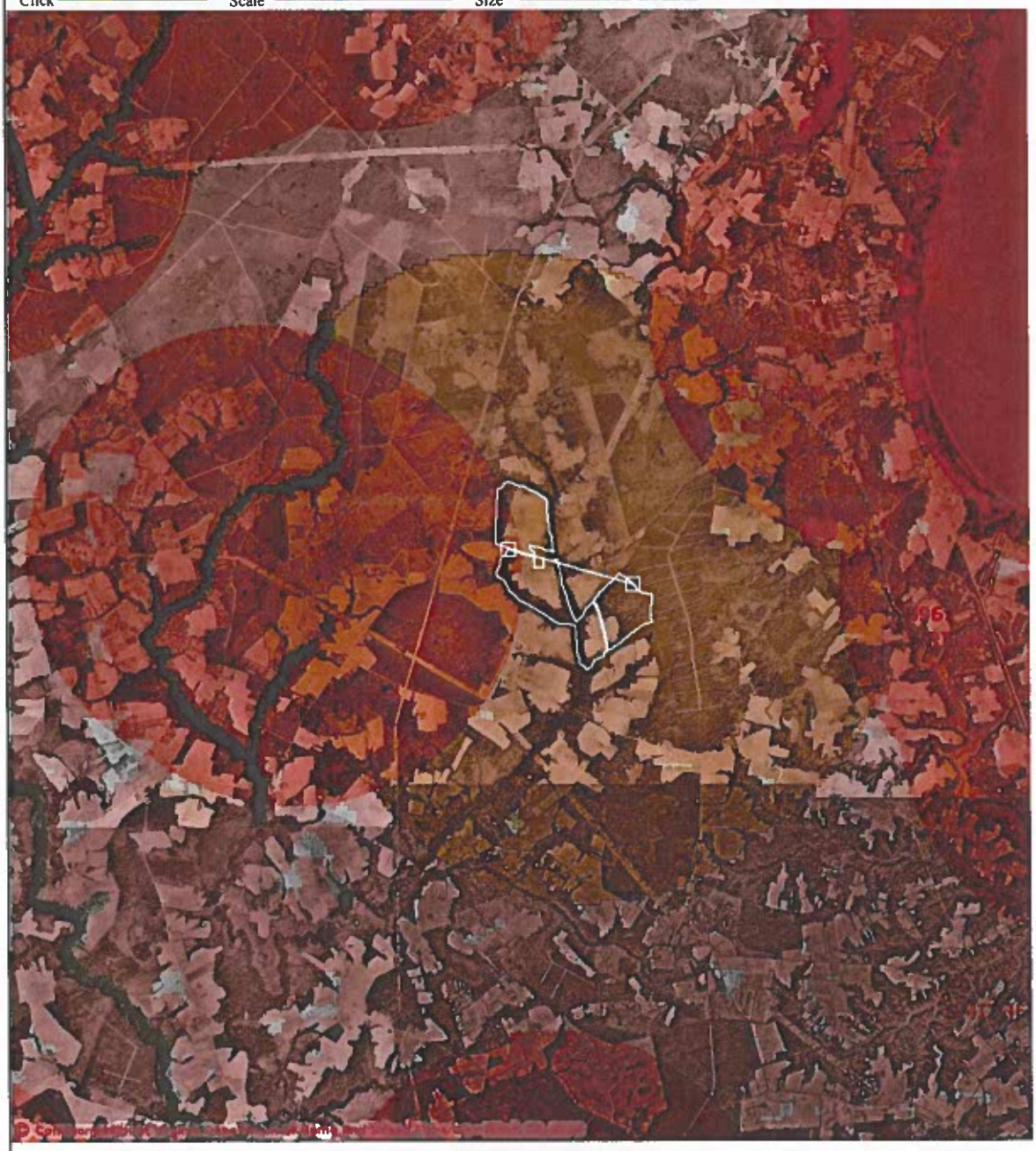
2 mile radius Search Area

Bald Eagle Concentration Areas and Roosts

Bald Eagle nests 660 and 330 foot management zones

Data Observation Site

back | Map Click: Pan | Refresh Browser Page | Map Scale: In Zoom Out | Screen Size: Small Size Big | Help



Point of Search 37.02954 -76.72453
Map Location 37.02954 -76.72453

Select Coordinate System:
- Degrees,Minutes,Seconds Latitude - Longitude
- Decimal Degrees Latitude - Longitude
- Meters UTM NAD83 East North Zone
- Meters UTM NAD27 East North Zone

Base Map source: Black & White USGS Aerial Photography (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 338613 and top 4107540. Pixel size is 16 meters . Coordinates displayed are decimal Degrees North and West. Map is currently displayed as 1000 columns by 1000 rows for a total of 1000000 pixles. The map display represents 16000 meters east to west by 16000 meters north to south for a total of 256.0 square kilometers. The map display represents 52502 feet east to west by 52502 feet north to south for a total of 98.8 square miles.

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
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http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2023-03-20 13:19:21 (qa/qc March 21, 2016 12:20 - tn=1467810 dist=3218 I
)
$poi=37.0287900 -76.7151300

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VaFWIS Initial Project Assessment Report Compiled on 3/20/2023, 1:20:31 PM

Help

Known or likely to occur within a **2 mile buffer around line beginning 37.0287900 -76.7151299** in **093 Isle of Wight County, 181 Surry County, VA**

View Map of Site Location

533 Known or Likely Species ordered by Status Concern for Conservation (displaying first 33) (33 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
040228	FESE	Ia	Woodpecker, red-cockaded	Picoides borealis		BOVA
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
030071	FTST	Ia	Turtle, loggerhead sea	Caretta caretta		BOVA
040144	FTST	Ia	Knot, red	Calidris canutus rufa		BOVA
040110	FTSE	Ia	Rail, eastern black	Laterallus jamaicensis jamaicensis		BOVA
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon		BOVA,Habitat
030064	SE	Ia	Turtle, eastern chicken	Deirochelys reticularia reticularia		BOVA
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050034	SE	Ia	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis		BOVA
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
020052	SE	IIa	Salamander, eastern tiger	Ambystoma tigrinum		BOVA
030013	SE	IIa	Rattlesnake, canebrake	Crotalus horridus		Habitat
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei		BOVA,Habitat
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100079	FC	IIIa	Butterfly, monarch	Danaus plexippus		BOVA
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin		BOVA,Habitat
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA
010077		Ia	Shiner, bridle	Notropis bifrenatus		BOVA
070131		Ic	Isopod, Phreatic	Caecidotea phreatica		BOVA
020063		IIa	Toad, oak	Anaxyrus quercicus		BOVA,Habitat
020002		IIa	Treefrog, barking	Hyla gratiosa	Yes	BOVA,SppObs
040052		IIa	Duck, American black	Anas rubripes		BOVA

040033		IIa	Egret, snowy	Egretta thula		BOVA
040029		IIa	Heron, little blue	Egretta caerulea caerulea		BOVA
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040181		IIa	Tern, common	Sterna hirundo		BOVA
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA
040140		IIa	Woodcock, American	Scolopax minor		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii		BOVA

To view **All 533 species** View 533

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

View Map of All Query Results from All Observation Tables

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Colonial Water Bird Survey (1 records)

View Map of All Query Results Colonial Water Bird Survey

Colony_Name	N Obs	Latest Date	N Species			View Map
			Different Species	Highest TE*	Highest Tier**	
Warren Creek	1	Jun 1 1993	1			Yes

Displayed 1 Colonial Water Bird Survey

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests (1 records)

View Map of All Query Results
Bald Eagle Nests

Nest	N Obs	Latest Date	DGIF Nest Status	View Map
IW8601	35	Apr 23 2008	Unknown	Yes

Displayed 1 Bald Eagle Nests

Habitat Predicted for Aquatic WAP Tier I & II Species (2 Reaches)

View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

Stream Name	Tier Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Passenger Swamp (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes
Pouches Swamp (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species (4 Species)

View Map of Combined Terrestrial Habitat Predicted for 4 WAP Tier I & II Species Listed Below

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
030013	SE	IIa	Rattlesnake, canebrake	Crotalus horridus	Yes
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Yes
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Yes
020063		IIa	Toad, oak	Anaxyrus quercicus	Yes

Public Holdings:

N/A

Compiled on 3/20/2023, 1:20:31 PM 11467810.0 report=IPA searchType=L dist=3218 poi=37.0287900 -76.7151299 siteDD=37.0287945 -76.7151318;37.0284905 -76.7147378;37.0280135 -76.7142598;37.0278875 -76.7140838;37.0277415 -76.7137618;37.0277045 -76.7135368;37.0275305 -76.7124758;37.0275185 -76.7120718;37.0275355 -76.7120128;37.0247985 -76.7121288;37.0239575 -76.7119058;37.0239135 -76.7121498;37.0237965 -76.7128138;37.0238195 -76.7129498;37.0236735 -76.7134028;37.0234855 -76.7137288;37.0233345 -76.7139968;37.0232675 -76.7141588;37.0224605 -76.7153478;37.0210125 -76.7175288;37.0208825 -76.7178128;37.0207875 -76.7180178;37.0207255 -76.7181158;37.0206085 -76.7183208;37.0205475 -76.7184798;37.0204395 -76.7187638;37.0203555 -76.7189128;37.0204615 -76.7189468;37.0207435 -76.7190368;37.0210005 -76.7191328;37.0229705 -76.7197478;37.0249835 -76.7203898;37.0252915 -76.7205088;37.0255615 -76.7206358;37.0257225 -76.7207288;37.0258755 -76.7208348;37.0259835 -76.7209228;37.0262575 -76.7211478;37.0265945 -76.7214348;37.0267155 -76.7212888;37.0268235 -76.7212258;37.0269155 -76.7211158;37.0269735 -76.7209788;37.0270835 -76.7208118;37.0271645 -76.7207118;37.0272355 -76.7206678;37.0273775 -76.7206418;37.0274785 -76.7206058;37.0275875 -76.7205758;37.0276655 -76.7205318;37.0276915 -76.7205048;37.0277395 -76.7204548;37.0277825 -76.7203228;37.0278545 -76.7201718;37.0279655 -76.7200658;37.0280725 -76.7199088;37.0281305 -76.7198048;37.0282345 -76.7197318;37.0283345 -76.7196408;37.0283765 -76.7195788;37.0284525 -76.7194648;37.0284845 -76.7193278;37.0286055 -76.7192038;37.0287545 -76.7190638;37.0288505 -76.7189728;37.0289755 -76.7188338;37.0290555

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Travis A. Voyles
Secretary of Natural and Historic Resources

Matthew S. Wells
Director

Andrew W. Smith
Chief Deputy Director

Frank N. Stovall
Deputy Director for Operations

Darryl Glover
Deputy Director for Dam Safety, Floodplain Management and Soil and Water Conservation

Laura Ellis
Deputy Director for Administration and Finance

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

July 11, 2023

Jillian Stickley
Timmons Group
1001 Boulders Parkway
North Chesterfield, VA 23225

Re: 49666.001, Moonlight Solar

Dear Ms. Stickley:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to a DCR biologist and predicted suitable habitat modeling, there is a potential for Barking treefrog (*Hyla gratiosa*, G5/S2S3/NL/NL) to occur in the project area if suitable habitat exists on site. The Barking treefrog ranges through the coastal plain from North Carolina to Florida and west to Mississippi and eastern Louisiana (NatureServe, 2009). There are disjunct populations in Delaware, Maryland, Kentucky and Tennessee, and southeastern Virginia (NatureServe, 2009). Across its range, it inhabits areas near shallow ponds in pine savannas and in low wet woods and swamps (Martof et al., 1980). In Virginia, this species breeds in fish-free vernal ponds (Pague & Young, 1991). When inactive during cold or dry seasons, they burrow under tree roots, vegetation, or in the soil; otherwise, this species is mostly arboreal and thus dependent on trees near the water (Pague & Young, 1991). Adult frogs feed on insects and other invertebrates; tadpoles consume primarily algae (VDGIF, 1993).

Major threats to the Barking treefrog include continued logging of native pine, destruction of breeding ponds, and over collecting (Pague & Young, 1991).

Due to the potential for this site to support populations of Barking treefrog, DCR recommends a habitat assessment for the resource in the study area. With the habitat assessment results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources. If possible, please include photos and plant and animal species composition information for the isolated pond in the wooded section of the northwest portion of the project site.

DCR-Division of Natural Heritage biologists are qualified to conduct inventories for rare, threatened, and endangered species. Please contact Anne Chazal, Natural Heritage Chief Biologist, at anne.chazal@dcr.virginia.gov or 804-786-9014 to discuss availability and rates for field work.

In addition, according to predicted suitable habitat modeling, there is potential for Eastern big-eared bat (*Corynorhinus rafinesquii macrotis*, G3G4T3/S2/NL/LE) to occur in the project area if suitable habitat exists on site. The Eastern big-eared bat is named for its enormous ears twice the length of its head, is extremely rare in Virginia and is currently known only from the southeastern portion of the state. Although widespread throughout the southeast, they are never found in large numbers. These bats roost singly or in small groups in hollow trees or abandoned buildings. They forage only after dark primarily in mature forests of both upland and lowland areas along permanent bodies of water (NatureServe, 2009). The details of this bat's feeding behavior and much of its natural history remain a mystery. Lack of information regarding the ecology of the Eastern big-eared bat, and their sensitivity to disturbance, make them particularly vulnerable to destruction of roost sites and feeding areas where their presence goes undetected (Handley and Schwab 1991, Harvey 1992).

Threats to this species include forest destruction, particularly hollow tree removal, decreasing availability of abandoned buildings, and possibly, insecticides. Please note that this species is currently classified as endangered by the Virginia Department of Wildlife Resources (VDWR).

DCR recommends avoiding tree removal in bottomland habitats along Stallings Creek and tributaries and assessing any large potential roost trees and/or abandoned structures on the property for bat presence/absence. DCR also recommends coordination with DWR if removal of potential roost habitat for the Eastern big-eared bat becomes necessary to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

DCR recommends the development of an invasive species management plan for the project and the planting of Virginia native pollinator plant species that bloom throughout the spring and summer, to maximize benefits to native pollinators. DCR recommends planting these species in at least the buffer areas of the planned facility, and optimally including other areas within the project site. For screening zones outside the perimeter fencing, DCR recommends native species appropriate for the region be used. Guidance on plant species can be found here: http://www.dcr.virginia.gov/natural-heritage/solar-site-native-plants-finder. In addition, Virginia native species alternatives to the non-native species listed in the Virginia Erosion and Sediment Control Handbook (Third Edition 1992), can be found in the 2017 addendum titled "Native versus Invasive Plant Species", here: https://www.deq.virginia.gov/home/showpublisheddocument?id=2466. Page 3 of the addendum provides a list of native alternatives for non-natives commonly used for site stabilization including native cover crop species (i.e. Virginia wildrye).

In addition, the proposed project will impact Ecological Cores **(C3, C4, C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Ecological Cores are areas of at least 100 acres of continuous interior, natural cover that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Interior core areas begin 100 meters inside core edges and continue to the deepest parts of cores. Cores also provide the natural, economic, and quality of life benefits of open space, recreation, thermal moderation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including sequestration of carbon, absorption of gaseous pollutants, and production of oxygen). Cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of natural heritage resources they contain.

Impacts to cores occur when their natural cover is partially or completely converted permanently to developed land uses. Habitat conversion to development causes reductions in ecosystem processes, native biodiversity, and

habitat quality due to habitat loss; less viable plant and animal populations; increased predation; and increased introduction and establishment of invasive species.

DCR recommends avoidance of impacts to cores. When avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months (January 11, 2024) has passed before it is utilized.

A fee of $395.00 has been assessed for the service of providing this information. Please find attached an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, DCR Finance, 600 East Main Street, 24th Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The Virginia Department of Wildlife Resources (VDWR) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Amy Martin at (804-367-2211) or amy.martin@dwr.virginia.gov.

Should you have any questions or concerns, please contact me at 804-225-2429. Thank you for the opportunity to comment on this project.

Sincerely,

Tyler Meader

Tyler Meader
Natural Heritage Locality Liaison

Cc: Amy Martin, VDWR
Susan Tripp, DEQ
Randy Keaton, Isle of Wight County Administrator

Literature Cited

Handley, C.O., and D. Schwab. 1991. Eastern big-eared bat. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia. p. 571-573.

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Martof, B.S., W.M. Palmer, J.R. Bailey, and J.R. Harrison, III. 1980. Amphibians and reptiles of the Carolinas and Virginia. The University of North Carolina Press, Chapel Hill, North Carolina. p. 120.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: March 31, 2010).

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VDGIF. 1993. Draft *Hyla gratiosa* Recovery Plan. Nongame and Endangered Species Program, Virginia Department of Game and Inland Fisheries, Richmond, VA.

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1001 Boulders Parkway
Suite 300

P 804.200.6500
F 804.560.1016
www.timmons.com

July 27, 2023

Pete Kube
U.S. Army Corps of Engineers - Norfolk District
Norfolk District - Main Office
803 Front Street
Norfolk, VA 23510

Re: Wetlands and Waters Delineation Package
Moonlight Solar (Approx. 521.5 acres)
Isle of Wight County, Virginia

Applicant: Palladium Energy, LLC
c/o Garrett Weeks
4446 Hendricks Ave., #356
Jacksonville, FL 32207

Dear Mr. Kube,

Please find the enclosed Wetlands and Waters Delineation Package. On behalf of Palladium Energy, LLC, Timmons Group is submitting this package to you in order to obtain a preliminary jurisdictional determination for the delineation completed at the Moonlight Solar site (Site). Timmons Group environmental personnel conducted a field wetland delineation on December 9 and 14, 2021 on the study area west of Moonlight Road and on March 27 and 28, 2023 in the study area to the east of Moonlight Road to identify jurisdictional wetlands and/or waters within the project limits of the Site.

Moonlight Solar is located and intersected by Moonlight Road in Isle of Wight County, Virginia (see Figure 1: Vicinity Map). The Site is located within the headwaters of the Blackwater River watershed (HUC 03010202) in the Atlantic Coastal Plain physiographic province (see Figure 2: Hydrologic Unit Code Map). The project limits encompass approximately 521.5 acres, consisting of agricultural fields and mixed pine-deciduous forest. Surface water onsite drains to Stallings Creek, which intersects the Site from north to south, via unnamed tributaries and swamps. The Site is bound by agricultural and/or silvicultural lands on all sides (see Figure 3: Environmental Inventory Map).

Per the USACE Antecedent Precipitation Tool (Version 1.0), the site visits were conducted within the wet season, during a period of 'mild drought in December 2021 and 'moderate drought' in March 2023 (PDSI). The USACE Antecedent Precipitation Tool (Version1.0) indicates the Site was within "Drier than Normal" conditions with a precipitation normalcy index of 7 in December 2021 and 9 in March 2023 (see Appendix A: USACE Antecedent Precipitation Tool Data).

The Site was delineated based upon the methodology outlined in the 1987 U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual, the Regional Supplement to the USACE Wetland Delineation Manual: Atlantic Gulf and Coastal Plain Region (Version 2.0), and subsequently issued USACE regulatory guidance regarding the identification of jurisdictional stream channels through the recognition of field indicators of an ordinary high water mark within drainage features. The wetland boundary was flagged with consecutively numbered pink and black ribbon at approximately 50-foot intervals. Field data stations were established within close proximity to the flagged wetland boundary in order to document upland and wetland conditions along the jurisdictional boundary. Field data stations were labeled and marked with blue flagging in the field. Field data sheets are included in Appendix B. Features identified in the field were located using sub-meter GPS equipment. Photographs were taken at field data stations to depict site conditions along the delineation boundary. Site photographs collected during the field delineation are available upon request.

Using these methodologies, delineation mapping was produced showing the location and size of jurisdictional areas identified onsite and is included as Figure 4: Wetlands and Waters Delineation Map. During our delineation, approximately 137.2 acres of palustrine forested (PFO) wetlands, 0.05 acres of palustrine scrub-shrub (PSS) and 5.11 acres of palustrine emergent (PEM) wetlands were observed onsite.

In addition, approximately 4,320 linear feet of perennial stream (R2), 2,461 linear feet of intermittent stream (R4), 1,792 linear feet of ephemeral stream (R6), and 284 linear feet of jurisdictional ditch were identified onsite.

The most common primary hydrology indicators observed within jurisdictional areas included Oxidized Rhizospheres on Living Roots (C3), High Water Table (A2), Saturation (A3), Drift Deposits (B3), and Water-Stained Leaves (B9). The most frequently observed secondary indicators included Drainage Patterns (D10), Geomorphic Position (D2), and FAC-Neutral Test (D5).

Dominant vegetation within the tree stratum consisted of loblolly pine (*Pinus taeda*), black gum (*Nyssa sylvatica*), red maple (*Acer rubrum*), and American sycamore (*Platanus occidentalis*). Vegetation within the sapling stratum was dominated by red maple, loblolly pine, sweetgum (*Liquidambar styraciflua*), and American holly (*Ilex opaca*). Dominant shrubs include American holly, red maple, sweetgum, and southern highbush blueberry (*Vaccinium formosum*). Dominant vegetation within the herbaceous stratum consisted of Japanese honeysuckle (*Lonicera japonica*), American holly, slender wood-oats (*Chasmanthium laxum*), Japanese stiltgrass (*Microstegium vimineum*), and southern highbush blueberry. Dominant woody vines include Japanese honeysuckle and muscadine grape (*Vitis rotundifolia*).

The soils observed within jurisdictional areas onsite exhibited low chroma matrix colors and concentrations characteristic of reducing anaerobic conditions associated with the formation of hydric soils. The majority of soils within wetlands onsite met the Depleted Matrix (F3) hydric soils indicator.

We respectfully request written confirmation detailing the verified location of onsite wetlands and waters within the Moonlight Solar site as presented in the provided mapping. Please contact Ben Crumrine at (804) 200-6370 or ben.crumrine@timmons.com if you would like to schedule a site visit or require any further documentation regarding the confirmation. Thank you in advance for the review of this package.

Sincerely,
Timmons Group

Madison Norris
Environmental Technician

Ben Crumrine
Environmental Scientist II

MAPS

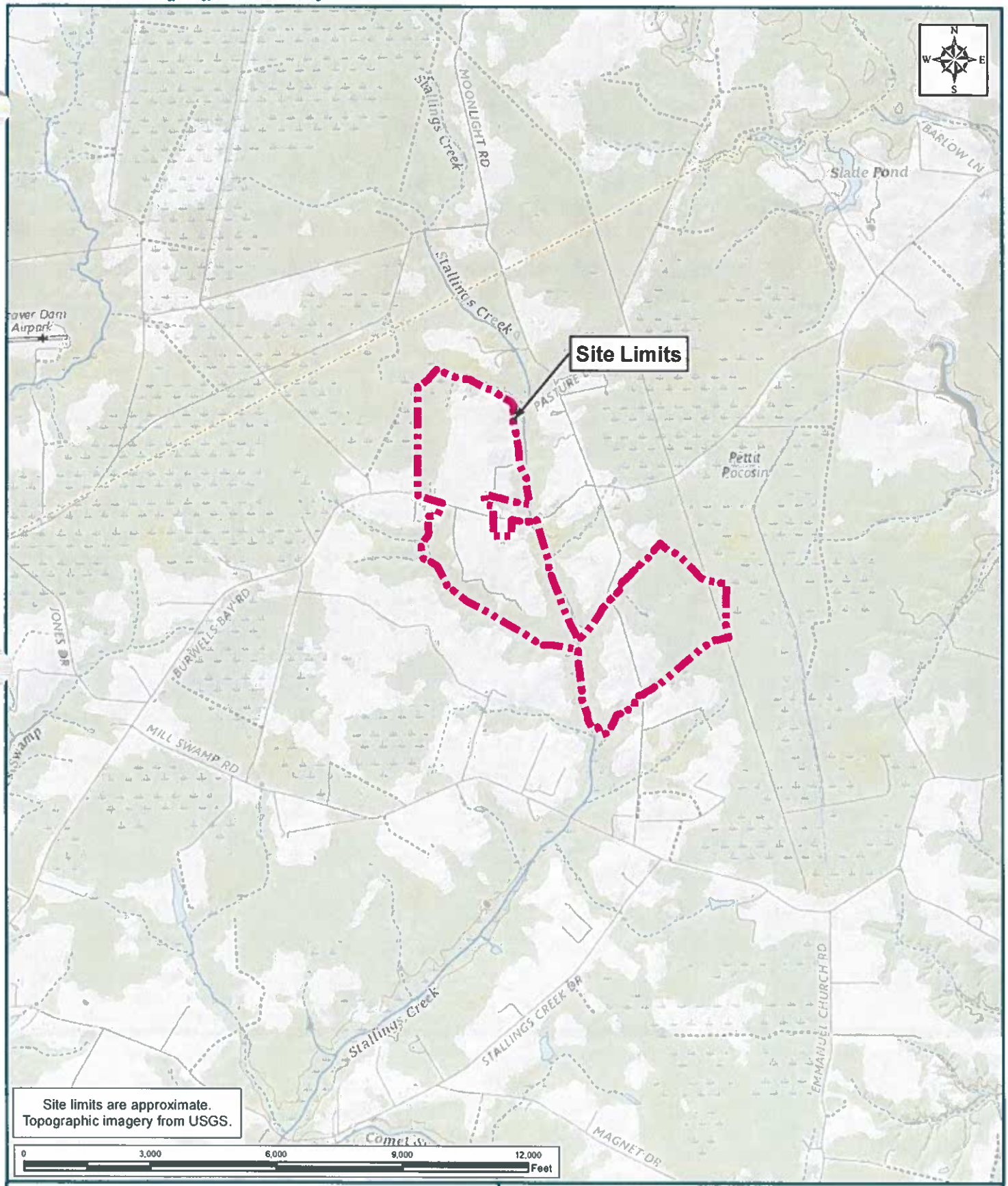
Figure 1	Vicinity Map
Figure 2	Hydrologic Unit Code Map
Figure 3	Environmental Inventory Map
Figure 4	Wetlands and Waters Delineation Map

APPENDICES

Appendix A	USACE Antecedent Precipitation Tool Data
Appendix B	Field Data Sheets
Appendix C	USACE JD Request Form

MAPS

Path: Y:\804\49666-Palladium_Energy\49666.001-Moonlight\GIS\49666.001-JD-VIC.mxd



PALLADIUM ENERGY - MOONLIGHT
ISLE OF WIGHT COUNTY, VIRGINIA
FIGURE 1: VICINITY MAP

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TIMMONS GROUP JOB NUMBER:*49666.001*
PROJECT STUDY LIMITS: *521.5 ACRES*
LATITUDE:*37.029659*
LONGITUDE:*-76.732308*

U.S.G.S. QUADRANGLE(S):*MEHERRIN*
DATE(S):*2019*
WATERSHED(S):*BLACKWATER (ALBEMARLE-CHOWAN RIVER BASIN)*
HYDROLOGIC UNIT CODE(S):*03010202*

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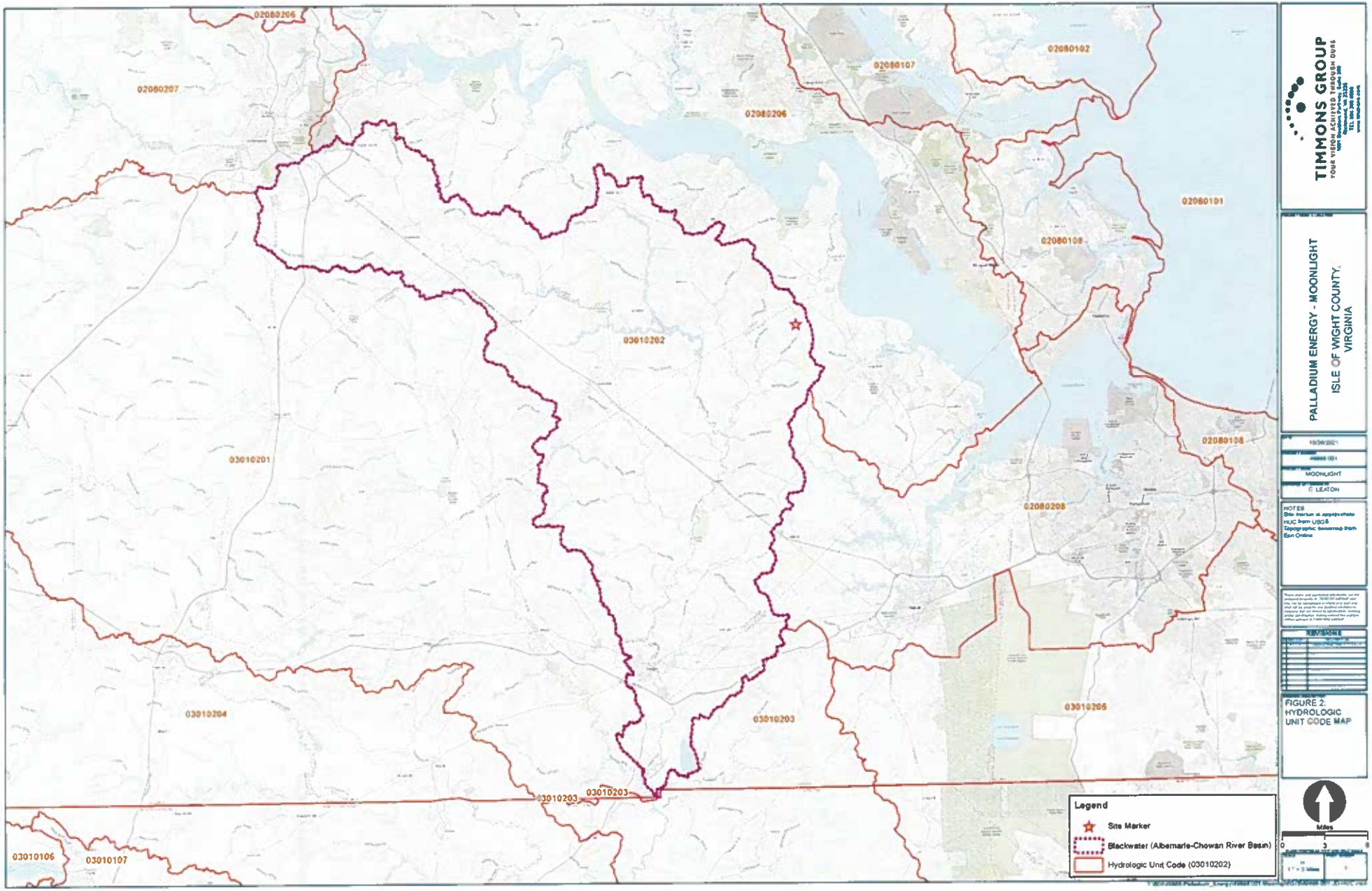

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PALLADIUM ENERGY - MOONLIGHT

ISLE OF WIGHT COUNTY, VIRGINIA

MOONLIGHT

C. LEATON

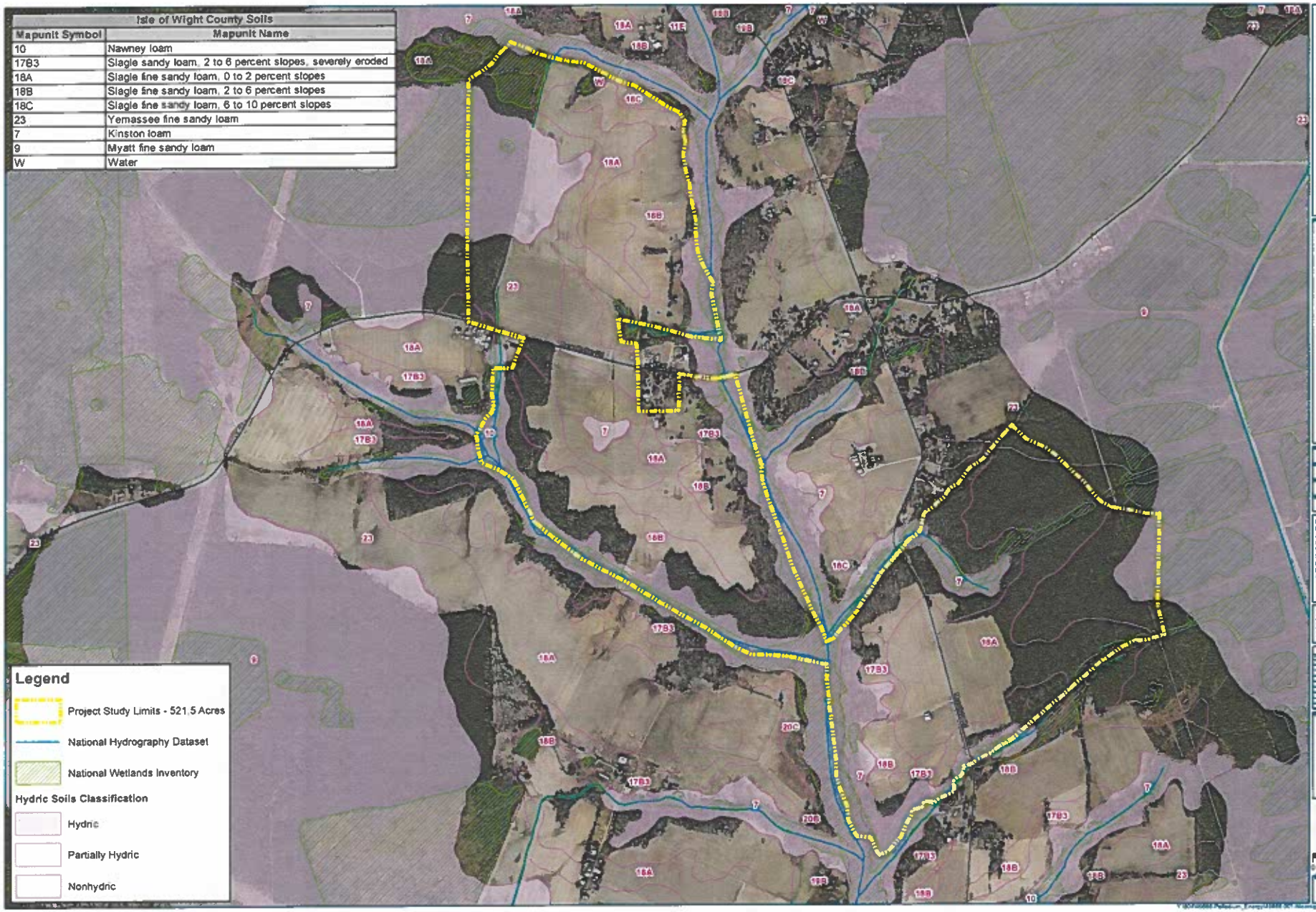
NOTES

Site location as appropriate

HUC from USGS

Topographic basemap from Esri Online

FIGURE 2:
HYDROLOGIC
UNIT CODE MAP



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PALLADIUM ENERGY - MOONLIGHT
ISLE OF WIGHT COUNTY - VIRGINIA

MOONLIGHT

E. LEATON

NOTES
Project Limits are approximate
NWI from US F ish and Wildlife Service
Soils data from SSURGO
National Hydrography Dataset from USGS
Aerial imagery from VGIN

FIGURE 3
ENVIRONMENTAL INVENTORY MAP

SCALE (FEET)
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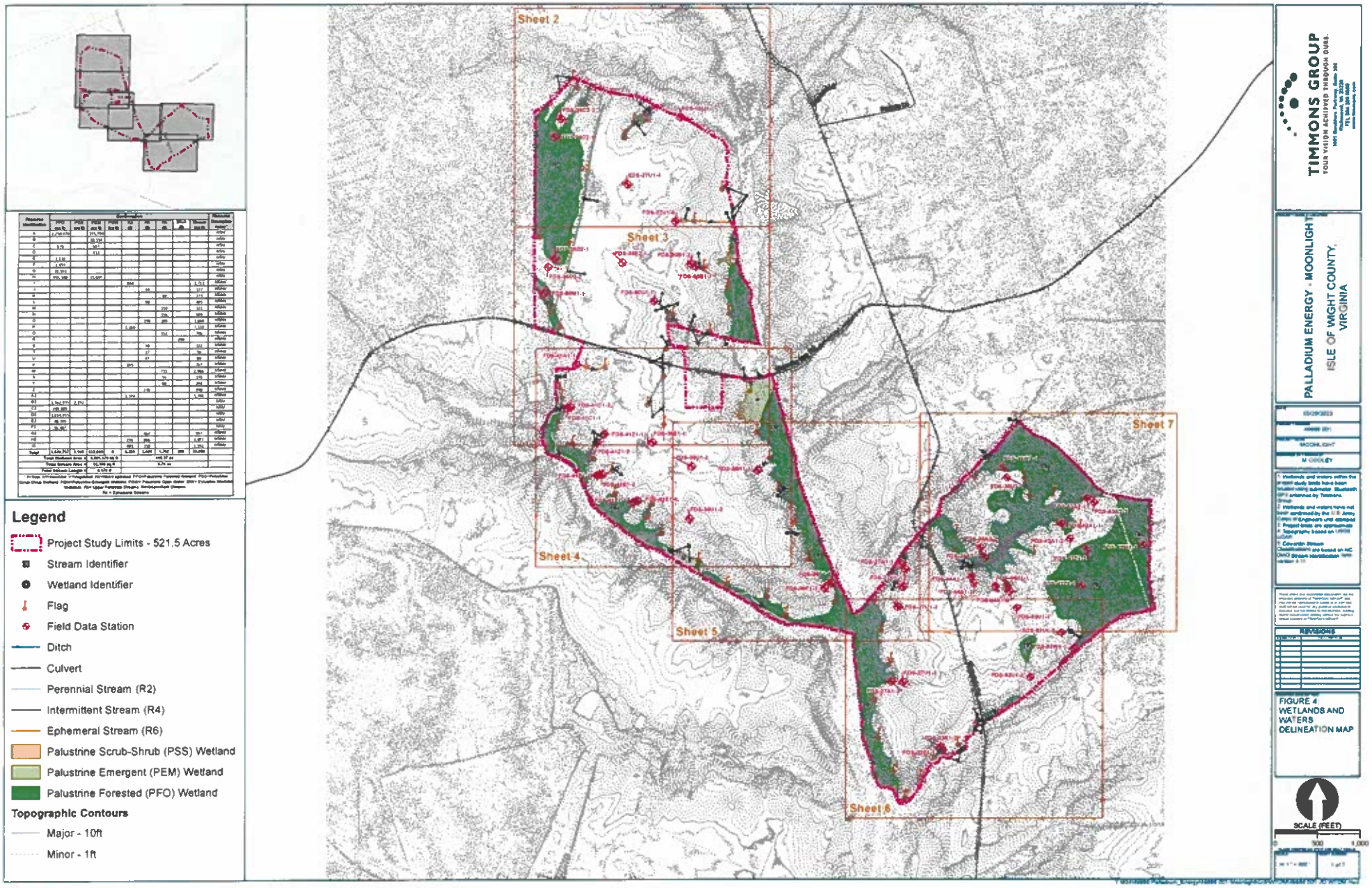
Sheet 2
Sheet 3
Sheet 4
Sheet 5
Sheet 6
Sheet 7
Legend
Project Study Limits - 521.5 Acres
Stream Identifier
Wetland Identifier
Flag
Field Data Station
Ditch
Culvert
Perennial Stream (R2)
Intermittent Stream (R4)
Ephemeral Stream (R6)
Palustrine Scrub-Shrub (PSS) Wetland
Palustrine Emergent (PEM) Wetland
Palustrine Forested (PFO) Wetland
Topographic Contours
Major - 10ft
Minor - 1ft
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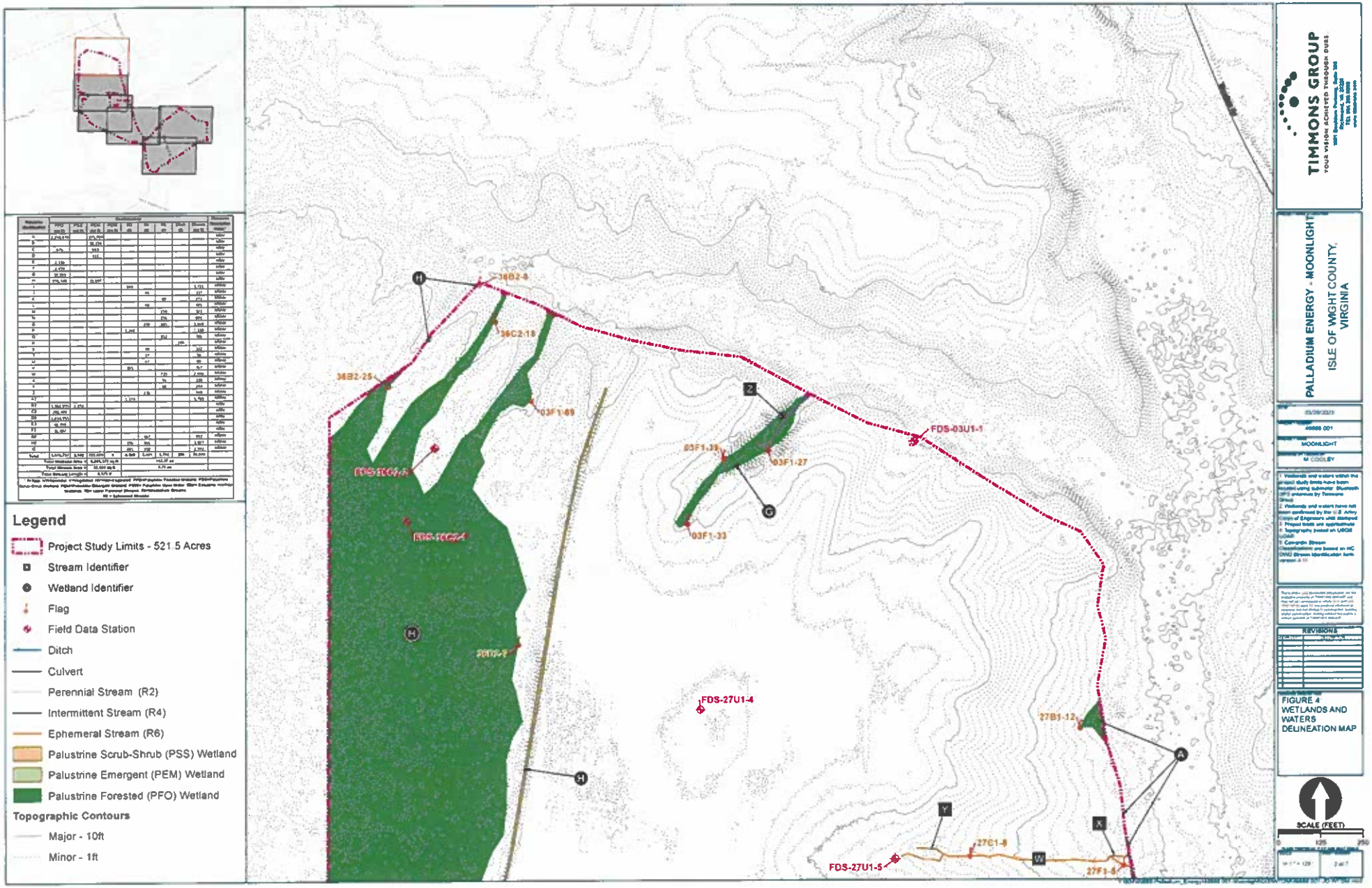
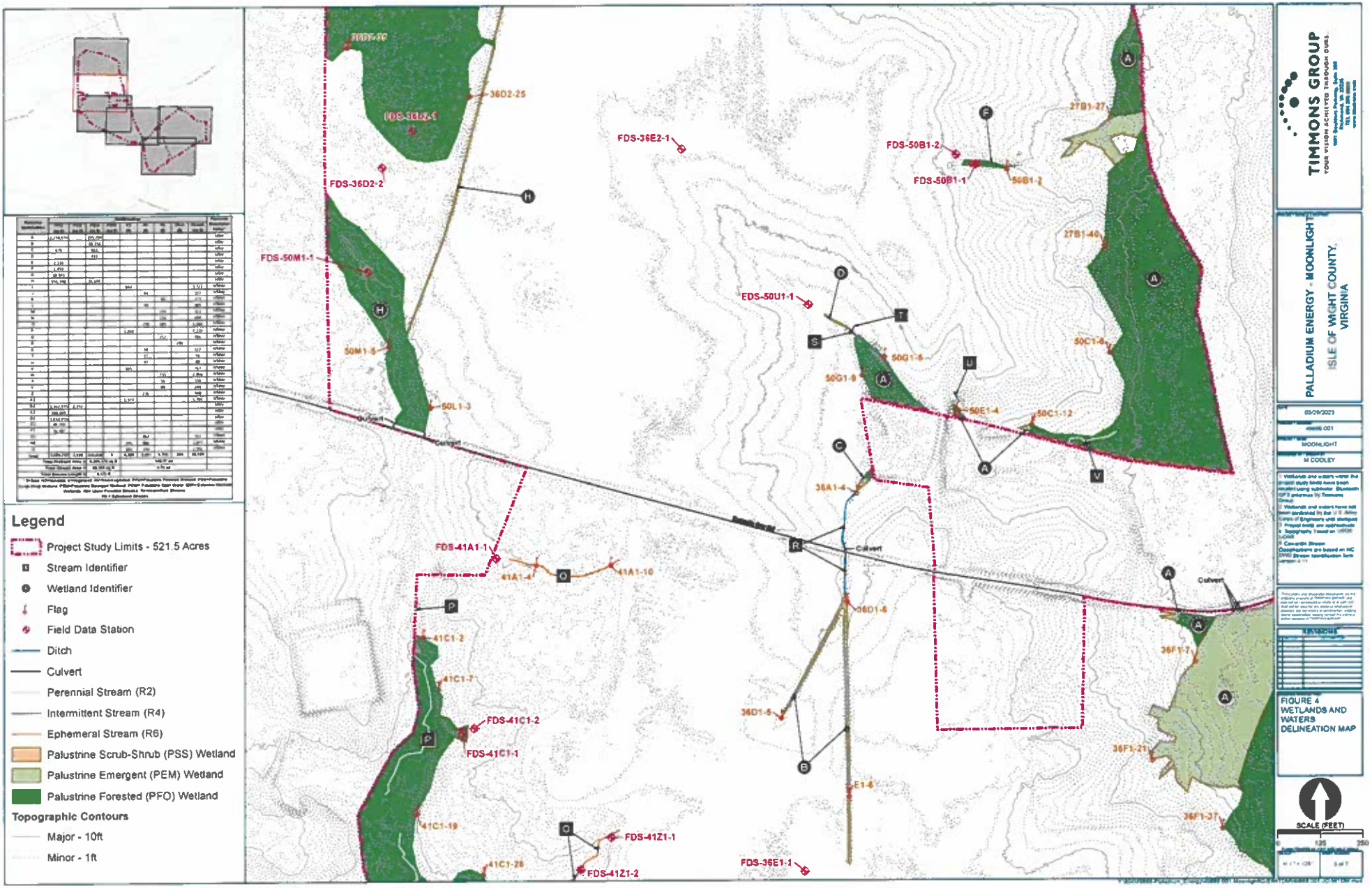
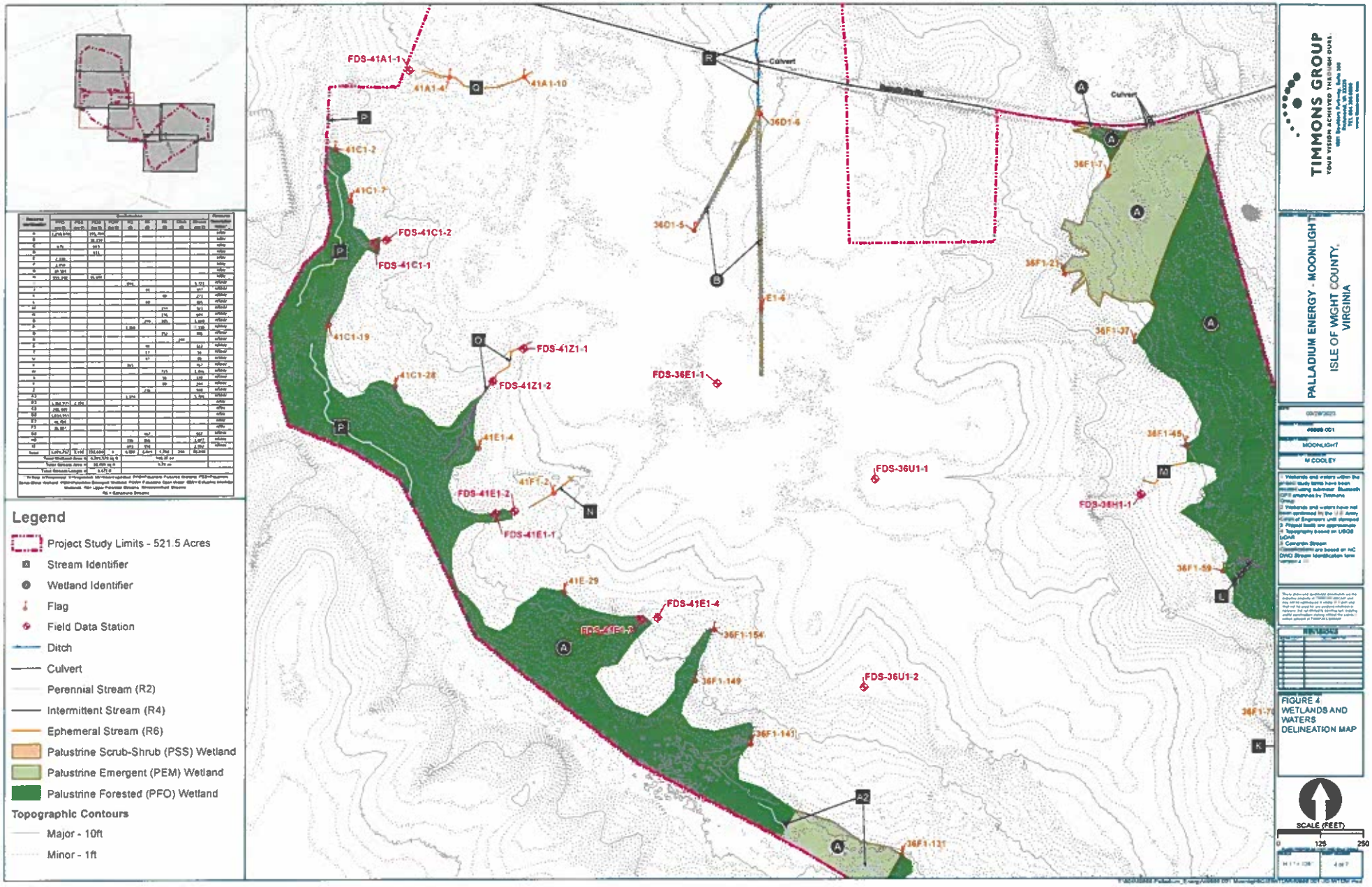
YOUR VISION ACHIEVED THROUGH OURS.
PALLADIUM ENERGY - MOONLIGHT
ISLE OF WIGHT COUNTY, VIRGINIA
FIGURE 4
WETLANDS AND WATERS DELINEATION MAP
SCALE (FEET)
0
500
1,000


Legend
Project Study Limits - 521.5 Acres
Stream Identifier
Wetland Identifier
Flag
Field Data Station
Ditch
Culvert
Perennial Stream (R2)
Intermittent Stream (R4)
Ephemeral Stream (R6)
Palustrine Scrub-Shrub (PSS) Wetland
Palustrine Emergent (PEM) Wetland
Palustrine Forested (PFO) Wetland
Topographic Contours
Major - 10ft
Minor - 1ft
36B2-8
36C2-18
36B2-25
03F1-69
FDS-03U1-1
03F1-39
03F1-27
03F1-33
FDS-27U1-4
27B1-12
FDS-27U1-5
27C1-8
27F1-8
TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS
PALLADIUM ENERGY - MOONLIGHT
ISLE OF WIGHT COUNTY, VIRGINIA
MOONLIGHT
REVISIONS
FIGURE 4
WETLANDS AND WATERS DELINEATION MAP
SCALE (FEET)


Legend
Project Study Limits - 521.5 Acres
Stream Identifier
Wetland Identifier
Flag
Field Data Station
Ditch
Culvert
Perennial Stream (R2)
Intermittent Stream (R4)
Ephemeral Stream (R6)
Palustrine Scrub-Shrub (PSS) Wetland
Palustrine Emergent (PEM) Wetland
Palustrine Forested (PFO) Wetland
Topographic Contours
Major - 10ft
Minor - 1ft
FDS-36E2-1
FDS-36D2-2
36D2-25
FDS-50M1-1
50M1-5
50L1-3
FDS-50U1-1
FDS-50B1-2
FDS-50B1-1
50B1-2
27B1-27
27B1-46
50G1-5
50G1-9
50E1-4
50C1-5
50C1-12
36A1-4
FDS-41A1-1
41A1-4
41A1-10
41C1-2
41C1-7
FDS-41C1-2
FDS-41C1-1
41C1-19
41C1-28
FDS-41Z1-1
FDS-41Z1-2
FDS-36E1-1
36D1-6
36D1-5
E1-6
36F1-7
36F1-21
36F1-37
Culvert
TIMMONS GROUP
PALLADIUM ENERGY - MOONLIGHT
ISLE OF WIGHT COUNTY, VIRGINIA
03/29/2023
MOONLIGHT
M COOLEY
FIGURE 4
WETLANDS AND WATERS DELINEATION MAP
SCALE (FEET)
0
125
250


FDS-41A1-1
41A1-4
41A1-10
41C1-2
41C1-7
FDS-41C1-2
FDS-41C1-1
41C1-19
41C1-28
FDS-41Z1-1
FDS-41Z1-2
41E1-4
41F1-2
FDS-41E1-2
FDS-41E1-1
41E-29
FDS-41E1-4
36F1-154
36F1-149
36F1-141
36F1-131
36D1-6
36D1-5
E1-4
FDS-36E1-1
Culvert
Culvert
36F1-7
36F1-21
36F1-37
36F1-45
FDS-36U1-1
FDS-36H1-1
36F1-59
FDS-36U1-2
36F1-77
Legend
Project Study Limits - 521.5 Acres
Stream Identifier
Wetland Identifier
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Minor - 1ft
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ISLE OF WIGHT COUNTY, VIRGINIA
MOONLIGHT
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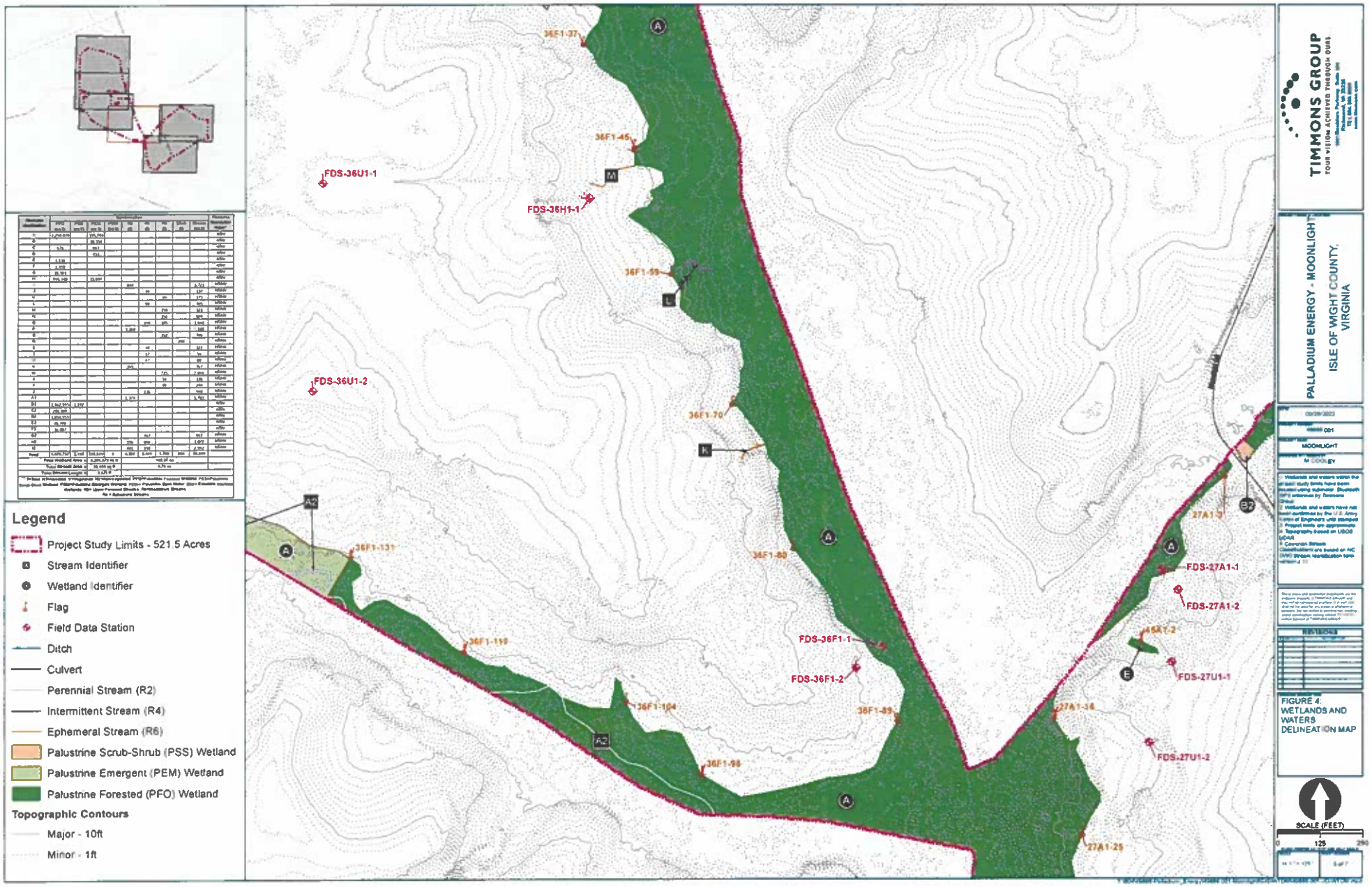
FIGURE 4
WETLANDS AND WATERS DELINEATION MAP
SCALE (FEET)
0
125
250


36F1-37
36F1-45
FDS-36U1-1
FDS-36H1-1
36F1-59
FDS-36U1-2
36F1-70
36F1-131
36F1-80
FDS-27A1-1
FDS-27A1-2
FDS-36F1-1
FDS-36F1-2
36F1-119
36F1-104
36F1-89
FDS-27U1-1
FDS-27U1-2
36F1-98
27A1-25
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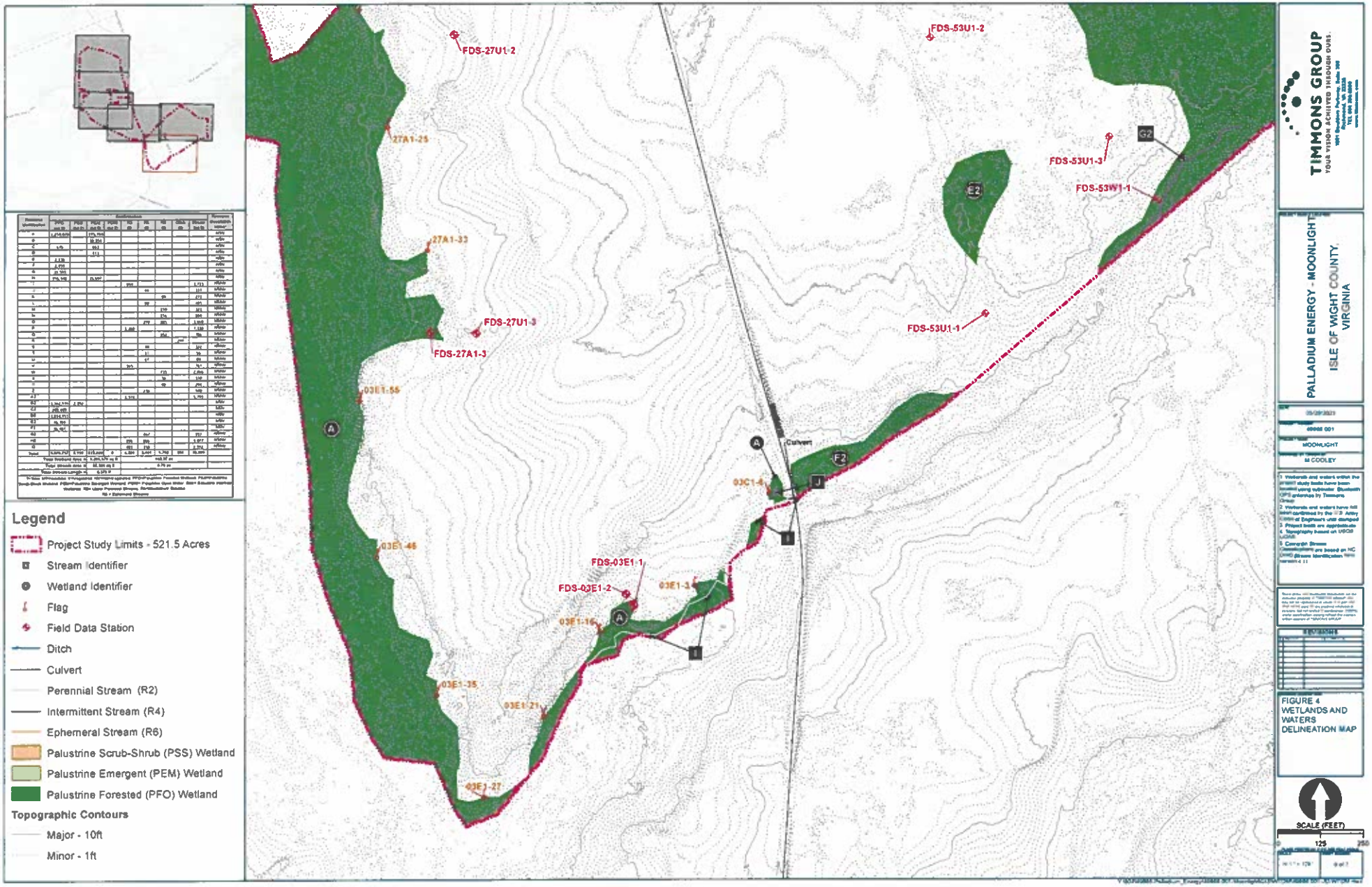
ISLE OF WIGHT COUNTY, VIRGINIA
FIGURE 4:
WETLANDS AND WATERS DELINEATION MAP
SCALE (FEET)
0
125
250


FDS-27U1-2
FDS-53U1-2
27A1-25
FDS-53U1-3
FDS-53W1-1
27A1-33
FDS-27U1-3
FDS-27A1-3
FDS-53U1-1
03E1-55
Culvert
03C1-4
03E1-46
FDS-03E1-1
FDS-03E1-2
03E1-3
03E1-16
03E1-35
03E1-21
03E1-27
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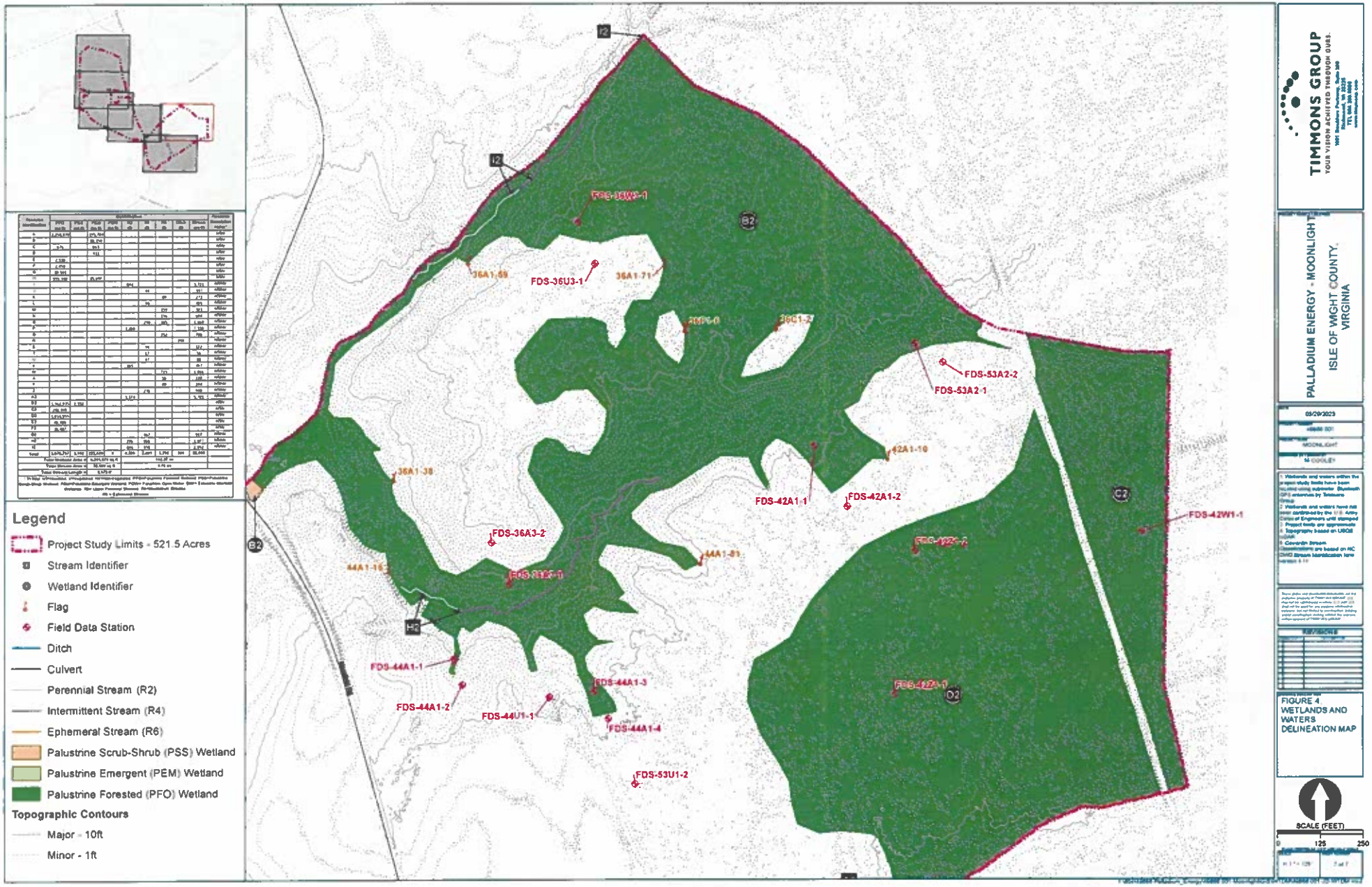
SCALE (FEET)
0
125
250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Topographic Contours
Major - 10ft
Minor - 1ft
FDS-36W3-1
36A1-59
FDS-36U3-1
36A1-71
FDS-53A2-2
FDS-53A2-1
42A1-10
36A1-38
FDS-42A1-1
FDS-42A1-2
FDS-42W1-1
FDS-36A3-2
44A1-81
44A1-16
FDS-44A1-1
FDS-44A1-3
FDS-44A1-2
FDS-44U1-1
FDS-44A1-4
FDS-53U1-2
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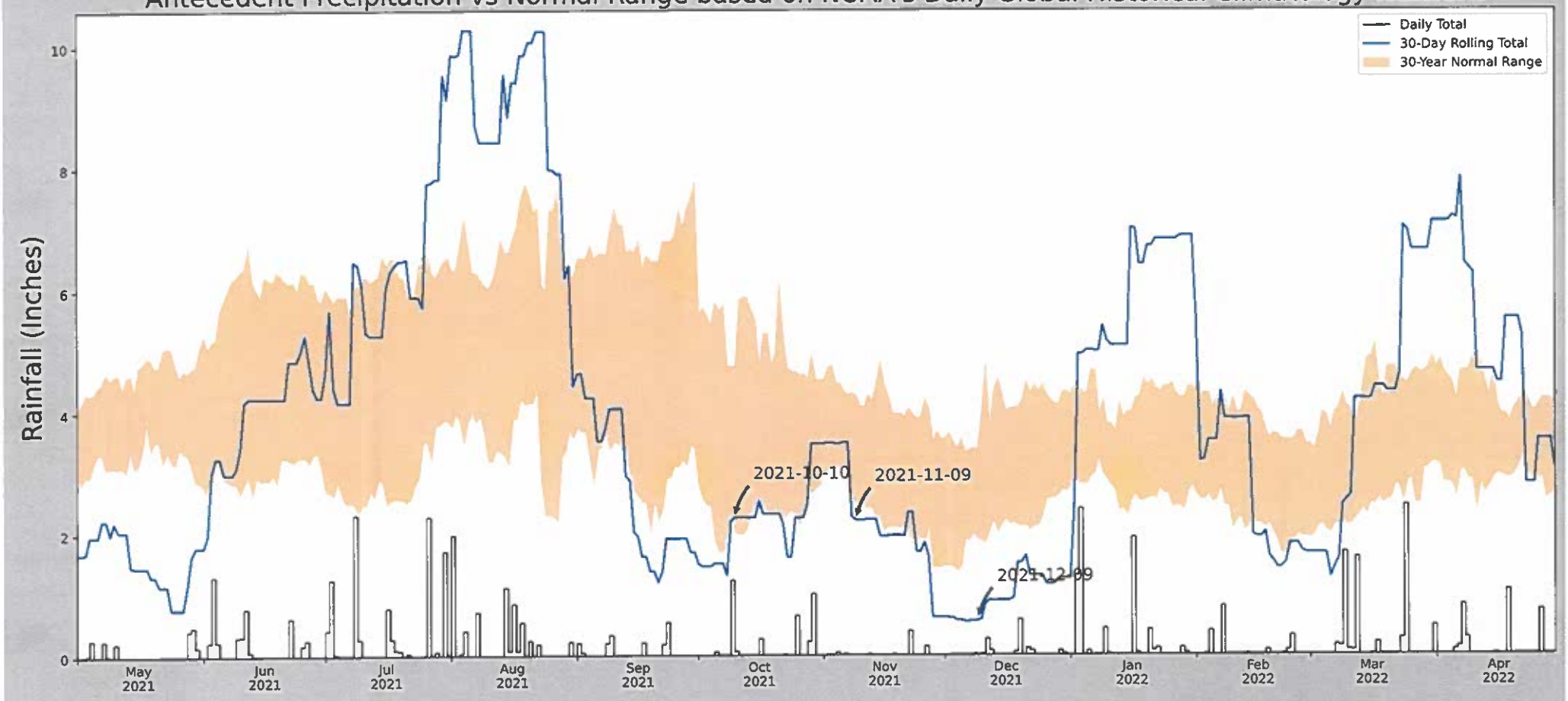
ISLE OF WIGHT COUNTY, VIRGINIA
05/29/2023
FIGURE 4
WETLANDS AND WATERS DELINEATION MAP
SCALE (FEET)
0
125
250

APPENDIX A
USACE ANTECEDENT PRECIPITATION TOOL DATA

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	36.6823048143539, -76.7353589795031
Observation Date	2021-12-09
Elevation (ft)	78.592
Drought Index (PDSI)	Mild drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2021-12-09	1.911417	3.365354	0.566929	Dry	1	3	3
2021-11-09	2.405906	4.266142	2.216536	Dry	1	2	2
2021-10-10	2.015748	4.745276	2.259843	Normal	2	1	2
Result							Drier than Normal - 7

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
WAKEFIELD 1 NW	36.9839, -77.0078	112.861	15.399	34.269	7.457	11119	90
NORFOLK RICH	36.9842, -77.0072	254.921	0.039	142.06	0.023	30	0
HOLLAND 1 E	36.6831, -76.7683	80.052	24.645	32.809	11.899	204	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.029659, -76.732308
Observation Date	2023-03-27
Elevation (ft)	81.772
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-03-27	2.490945	4.665354	1.574803	Dry	1	3	3
2023-02-25	1.991732	3.646851	3.027559	Normal	2	2	4
2023-01-26	2.445669	4.478347	3.019685	Normal	2	1	2
Result							Drier than Normal : 9

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
WAKEFIELD 1 NW	36.9839, -77.0078	112.861	15.526	31.089	7.469	11150	90
NORFOLK RICH	36.9842, -77.0072	254.921	0.039	142.06	0.023	30	0
HOLLAND 1 E	36.6831, -76.7683	80.052	24.645	32.809	11.899	173	0

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1001 Boulders Parkway
Suite 300
Richmond, VA 23225

P 804.200.6500
F 804.560.1016
www.timmons.com

MEMORANDUM

TO: Isle of Wight County Planning and Zoning Department

FROM: Timmons Group on behalf of Moonlight Solar

DATE: February 15, 2024

RE: Moonlight Solar Environmental Resource Impact Analysis

Timmons Group, on behalf of Moonlight Solar, has prepared a limited environmental review of resources that may be present within a one-mile radius of the proposed project location. This report includes a database review protected lands, wetlands and streams, prime farmland, and threatened and/or endangered species potentially present on site. Further review and analysis will be conducted with the appropriate resource agencies during permitting efforts at the state level.

Federal, State, and Local Conservation and Recreation Lands

Moonlight Solar does not intersect any federal, state, or local conservation easement or recreational lands, and there are no such resources within one mile of the project limits. The nearest managed lands are over one mile away: a Wetlands Reserve Program (WRP) site is found approximately 1.6 miles to the west of the site and Isle of Wight Purchase of Agricultural Conservation Easement (PACE) site that is approximately 2.5 miles southeast of the site.

Wetlands and Streams

Wetlands and streams onsite have been delineated by Timmons Group in March 2023 and are awaiting confirmation from the USACE. If wetland or stream impacts are unavoidable, the Applicant will obtain the proper USACE permit for impacts to jurisdictional wetlands and streams.

Wetlands and streams form a natural wildlife corridor, and as they will generally not be impacted by the project, will remain as interior corridors for wildlife utilization. Wetlands and streams are outside the fenced area so free passage of wildlife will be allowed for the duration of the project. The Virginia Department of Wildlife Resources advises that interior passages through solar projects helps reduce potential impacts to wildlife, to which this project will adhere.

Prime Farmland

Based on the Natural Resources Conservation Service (NRCS) soils layer shown on the Prime Farmland Map, there are areas of prime farmland within the development envelope of the site. Prime farmland[1] totals

[1] Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for those uses.

188.6 acres, farmland of statewide importance[2] totals 1.2 acres, prime farmland if drained totals 52.2 acres, and the rest of the development envelope, 30.8 acres, is neither prime farmland nor farmland of statewide importance. The Virginia Cooperative Extension recently developed a prime farmland dataset known as the Virginia Land and Energy Navigator (VaLEN). The results of our analysis of prime farmland using NRCS data is consistent with the VaLEN dataset.

Threatened and Endangered Species

Timmons Group has conducted a threatened and endangered (T&E) species review of the Moonlight Solar project. The following databases were reviewed for the potential presence of T&E species:

- Virginia Department of Conservation and Recreation (VDCR) – Natural Heritage Review Service
- Virginia Department of Wildlife Resources (VDWR) – Virginia Fish and Wildlife Information Service (VaFWIS)
- US Fish and Wildlife Service (USFWS) – Information for Planning and Consultation (IPaC)

Based on the queried databases, there is the potential for three T&E species to occur near the Project.

- Northern Long-eared Bat *Myotis septentrionalis* Federal Endangered USFWS
- Tri-Colored Bat *Perimyotis subflavus* State Endangered, Federal Proposed USFWS
- Eastern Big-eared Bat *Corynorhinus rafinesquii macrotis* State Endangered VDCR
- Barking Treefrog *Hyla gratiosa* Delisted VDCR
- Monarch Butterfly *Danaus plexippus* Candidate Species USFWS

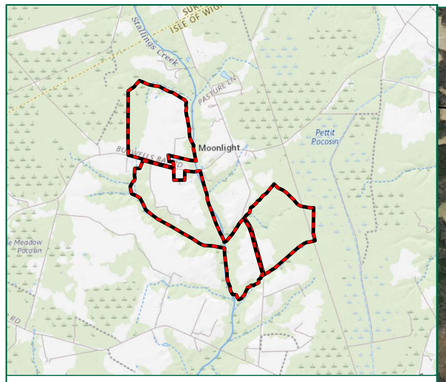
According to USFWS IPaC results, the northern long-eared bat and the tri-colored bat have the potential to occur onsite. According to VDCR, the Project contains predicted suitable habitat for the eastern big-eared bat. There are no known hibernacula or roost trees for these species within the vicinity of the site. VDCR also notes there is predictive suitable habitat for the barking treefrog onsite; the barking treefrog has been delisted. According to VDCR, there are no protected plant or insect species within the project area. During permitting efforts at the state level, the Applicant will coordinate with resource agencies to ensure the protection and avoidance of T&E species.

According to VDCR, the Moonlight Sinkhole Ponds Conservation Site is approximately 1,500LF east of the project area. It is a complex of sinkhole ponds in a matric of loblolly pines and has a biodiversity rank of B2, which represents a site of very high significance. There are no conservation sites within the project area. The project will have minimal impacts to Ecological Cores C3 (High), C4 (Moderate), and C5 (General).

Attachments

- Protected Lands Map
- Prime Farmland Map
- Virginia Land & Energy Navigator (VaLEN) Map
- Wildlife Environmental Review Map
- Ecological Cores Map
- T&E Species Database Reviews

[2] Farmland of statewide importance generally includes areas that almost meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods.



Legend

- Project Study Limits - 522.96 Acres
- One Mile Buffer
- County Boundary
- Conservation Easements

Protected Areas of the US

- Federal
- Local Government
- American Indian Areas - Not Present
- State - Not Present
- Regional Agency Special District - Not Present
- Non-Governmental Organization - Not Present
- Private - Not Present
- Joint - Not Present
- Territorial - Not Present
- Unknown - Not Present

NOTES:

PROTECTED AREAS OF THE US FROM ESRI.
CONSERVATION EASEMENT DATA FROM VDCR.
AERIAL IMAGERY FROM VGIN.

Surry County
Isle of Wight County
Wetlands Reserve Program (WRP)
Isle of Wight Purchase of Agricultural Conservation Easement (PACE)
Isle of Wight Purchase of Agricultural Conservation Easement (PACE)
Isle of Wight Purchase of Agricultural Conservation Easement (PACE)

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TEL 804.200.6500
www.timmons.com

PALLADIUM ENERGY

PROJECT NAME & LOCATION

MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY, VIRGINIA

DATE	03/17/2023
PROJECT NUMBER	49666.001
PROJECT NAME	MOONLIGHT SOLAR
DESIGNED BY / DRAWN BY	M. HILL

NOTES

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REVISIONS

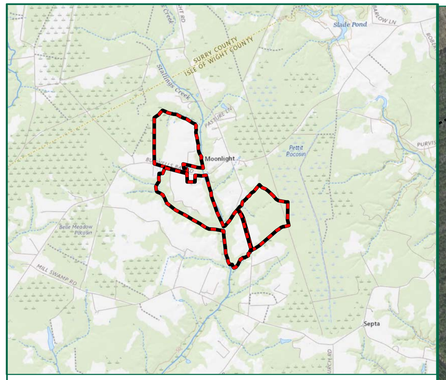
#	MM/DD/YY	DESCRIPTION
1	07/06/23	*Revised per County feedback*

DRAWING DESCRIPTION
PROTECTED LANDS MAP

SCALE (FEET)
0 2,000 4,000
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H: 1" = 2,000'	

Y:\852\49666.001-Moonlight\GIS\Moonlight CUP\Moonlight CUP.aprx



Legend

- Project Study Limits - 522.96 Acres
- Development Envelope - 272.8 Acres
- County Boundary

Farmland Class

- All Areas are Prime Farmland - 188.6 Acres
- Farmland of Statewide Importance - 1.2 Acres
- Prime Farmland if Drained - 52.2 Acres
- Not Prime Farmland - 30.8 Acres

NOTES:

SOILS DATA FROM SSURGO.
COUNTY BOUNDARY DATA FROM VDEM.
AERIAL IMAGERY FROM VGIN.

Isle of Wight County Soils		
Mapunit Symbo	Mapunit Name	Farmland Class
7	Kinston loam	Not prime farmland
9	Myatt fine sandy loam	Prime farmland if drained
10	Nawney loam	Not prime farmland
17B3	Slagle sandy loam, 2 to 6 percent slopes, severely eroded	Not prime farmland
18A	Slagle fine sandy loam, 0 to 2 percent slopes	All areas are prime farmland
18B	Slagle fine sandy loam, 2 to 6 percent slopes	All areas are prime farmland
18C	Slagle fine sandy loam, 6 to 10 percent slopes	Farmland of statewide importance
23	Yemassee fine sandy loam	Prime farmland if drained
W	Water	Not prime farmland

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PALLADIUM ENERGY
4446 HENDRICKS AVENUE, #356
JACKSONVILLE, FL 32207
(904) 683-4884
WWW.PDAENERGY.COM

PROJECT NAME & LOCATION

MOONLIGHT SOLAR

ISLE OF WIGHT COUNTY, VIRGINIA

DATE: 03/17/2023

PROJECT NUMBER: 49666.001

PROJECT NAME: MOONLIGHT SOLAR

DESIGNED BY / DRAWN BY: J. STICKLEY

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REVISIONS

#	MM/DD/YY	DESCRIPTION
1	07/06/23	*Revised per County feedback*
2	02/15/24	*Revised per County feedback*

DRAWING DESCRIPTION

PRIME FARMLAND MAP

SCALE (FEET)

0 500 1,000

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE: H: 1" = 500'

SHEET NUMBER

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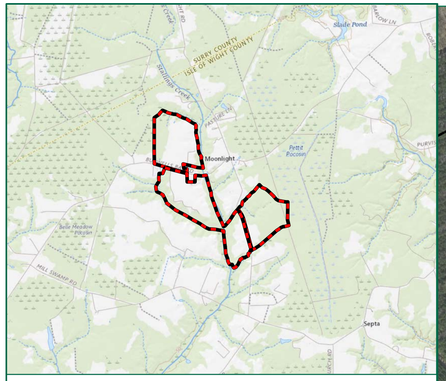
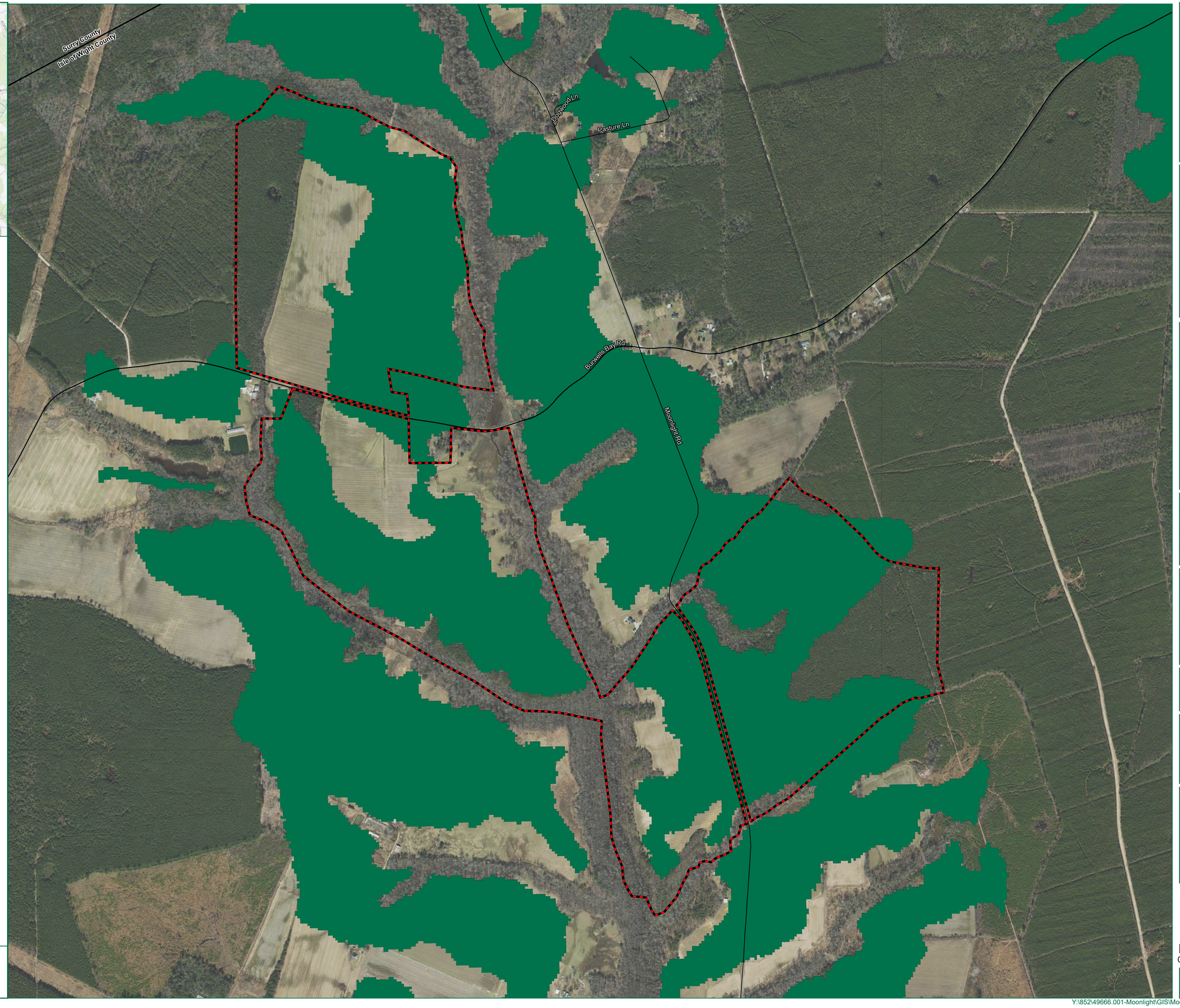


Legend

- Project Study Limits - 522.96 Acres
- Virginia Land & Energy Navigator (VaLEN) Dataset
- County Boundary

NOTES:

PRIME FARMLAND FROM VaLEN.
AERIAL IMAGERY FROM VGIN.



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DATE
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PROJECT NAME
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DESIGNED BY / DRAWN BY
M. HILL

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REVISIONS

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1	07/06/23	Revised per County feedback

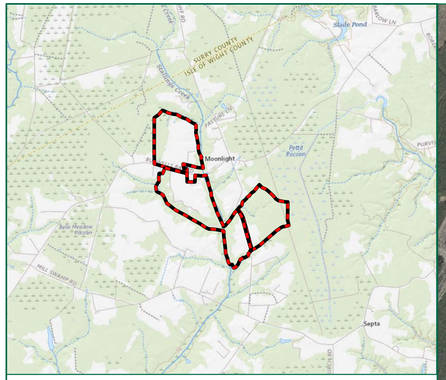
DRAWING DESCRIPTION
VIRGINIA LAND & ENERGY NAVIGATOR (VaLEN) MAP

SCALE (FEET)
0 500 1,000
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE
H:1" = 500'

SHEET NUMBER

Y:\852\49666.001-Moonlight\GIS\Moonlight CUP\Moonlight CUP.aprx



Legend

- Project Study Limits - 522.96 Acres
- Two Mile Buffer
- County Boundary
- NLEB Roost Trees - Not Present
- Trout Streams - Not Present
- Threatened/Endangered Waters - Not Present
- Anadromous Fish Use
- Bald Eagle Concentration Areas and Roosts
- Colonial Water Birds
- Federal or State Listed Observation Area - Not Present
- Bat Hibernacula (0.5 Mile Buffer) - Not Present
- Bat Hibernacula (5.5 Mile Buffer) - Not Present

Federal Status, State Status

- Non-Threatened, Non-Endangered

Species Observed within Two Miles		
Common Name	**Federal Status**	**State Status**
Bullhead, yellow	NT / NE	NT / NE
Chub, creek	NT / NE	NT / NE
Chubsucker, creek	NT / NE	NT / NE
Dace, blacknose	NT / NE	NT / NE
Dace, rosyside	NT / NE	NT / NE
Darter, tessellated	NT / NE	NT / NE
Eagle, bald	NT / NE	NT / NE
Eel, American	NT / NE	NT / NE
Flier	NT / NE	NT / NE
Frog, southern cricket	NT / NE	NT / NE
Heron, great blue	NT / NE	NT / NE
Lamprey, least brook	NT / NE	NT / NE
Mosquitofish, eastern	NT / NE	NT / NE
Mudminnow, eastern	NT / NE	NT / NE
Peeper, spring	NT / NE	NT / NE
Perch, pirate	NT / NE	NT / NE
Pickerel, redfin	NT / NE	NT / NE
Pumpkinseed	NT / NE	NT / NE
Salamander, eastern red-backed	NT / NE	NT / NE
Shiner, golden	NT / NE	NT / NE
Sunfish, bluespotted	NT / NE	NT / NE
Sunfish, redear	NT / NE	NT / NE
Treefrog, barking	NT / NE	NT / NE
Treefrog, pine woods	NT / NE	NT / NE
Treefrog, squirrel	NT / NE	NT / NE
Warmouth	NT / NE	NT / NE
NT = Non-Threatened, NE = Non-Endangered		

NOTES:

WERMS DATA FROM DWR.
BAT HIBERNACULA INCLUDE IDENTIFICATIONS OF NORTHER LONG-EARED BAT, TRI-COLORED BAT, LITTLE BROWN BAT, VIRGINIA BIG-EARED BAT, GRAY BAT, AND INDIANA BAT.
AERIAL IMAGERY FROM VGIN.

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.
1001 Boulders Parkway, Suite 300
Richmond, VA 23225
TEL 804.200.6500
www.timmons.com

PALLADIUM ENERGY

PROJECT NAME & LOCATION

MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY, VIRGINIA

DATE: 03/17/2023
PROJECT NUMBER: 47666.001
PROJECT NAME: MOONLIGHT SOLAR
DESIGNED BY / DRAWN BY: M. HILL

NOTES

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REVISIONS

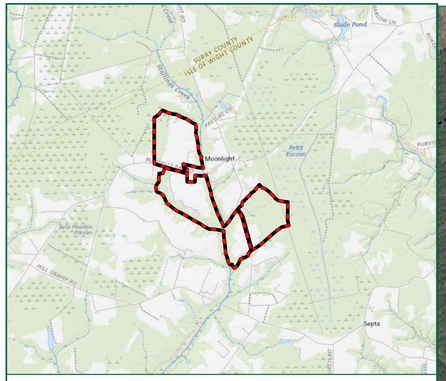
#	MM/DD/YY	DESCRIPTION
1	07/06/23	*Revised per County feedback*

DRAWING DESCRIPTION
WILDLIFE ENVIRONMENTAL REVIEW MAP

SCALE (FEET)
0 1,500 3,000
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE: H: 1" = 1,500'
SHEET NUMBER:

Y:\852\49666.001-Moonlight\GIS\Moonlight CUP\Moonlight CUP.aprx



Legend

- Project Study Limits - 522.96 Acres
- Development Envelope - 272.8 Acres
- County Boundary

Ecological Cores within Developmental Envelope

- C3: High - 8.9 Acres
- C5: General - 12.6 Acres

NOTES:

ECOLOGICAL CORES DATA FROM VDCR.
COUNTY BOUNDARY DATA FROM VDEM.
AERIAL IMAGERY FROM VGIN.

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1001 Boulders Parkway, Suite 300
Richmond, VA 23225
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www.timmons.com

PALLADIUM ENERGY

PROJECT NAME & LOCATION

MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY, VIRGINIA

DATE: 10/09/2023

PROJECT NUMBER: 49666.001

PROJECT NAME: MOONLIGHT SOLAR

DESIGNED BY / DRAWN BY: M. HILL

NOTES

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REVISIONS

#	MM/DD/YY	DESCRIPTION
1	07/14/23	*Revised per County feedback*
2	02/15/24	*Revised per County feedback*

DRAWING DESCRIPTION

ECOLOGICAL CORES MAP

SCALE (FEET)

0 500 1,000

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE: H:1" = 500'

SHEET NUMBER

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To: March 28, 2023
Project code: 2023-0061092
Project Name: Moonlight Solar
IPaC Record Locator: 578-124233281

Federal Nexus: no
Federal Action Agency (if applicable):

Subject: Technical assistance for 'Moonlight Solar'

Dear Timmons Group:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on March 28, 2023, for 'Moonlight Solar' (here forward, Project). This project has been assigned Project Code 2023-0061092 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements are not complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter.

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis, your project is not reasonably certain to cause incidental take of the northern long-eared bat. Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Candidate

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species and/or critical habitat listed above. Note that if a new species is listed that may be affected by the identified action before it is complete, additional review is recommended to ensure compliance with the Endangered Species Act.

Next Steps

Coordination with the Service is complete. This letter serves as technical assistance. All conservation measures should be implemented as proposed. Thank you for considering federally listed species during your project planning.

We are uncertain where the northern long-eared bat occurs on the landscape outside of known locations. Because of the steep declines in the species and vast amount of available and suitable forest habitat, the presence of suitable forest habitat alone is a far less reliable predictor of their presence. Based on the best available information, most suitable habitat is now expected to be unoccupied. During the interim period, while we are working on potential methods to address this uncertainty, we conclude take is not reasonably certain to occur in areas of suitable habitat where presence has not been documented.

If no changes occur with the Project or there are no updates on listed species, no further consultation/coordination for this project is required for the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place before project implements any changes which are final or commits additional resources.

If you have any questions regarding this letter or need further assistance, please contact the Virginia Ecological Services Field Office and reference Project Code 2023-0061092 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Moonlight Solar

2. Description

The following description was provided for the project 'Moonlight Solar':

> Proposed utility scale solar project

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.0251376,-76.71628196622214,14z



DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of "may affect, but not likely to adversely affect" for the Endangered northern long-eared bat (*Myotis septentrionalis*).

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Your project overlaps with an area where northern long-eared bats may be present year-round. Time-of-year restrictions may not be appropriate for your project due to bats being active all year.

   Do you understand that your project may impact bats at any time during the year and time-of-year restrictions may not apply to your project?

   Yes

3. Do you have data that indicates that northern long-eared bats may be present in the action area?

   No

4. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions, answer 'yes' if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   No

PROJECT QUESTIONNAIRE

IPAC USER CONTACT INFORMATION

Agency: Timmons Group
Name: Timmons Group
Address: 1001 Boulders Pkwy
City: Richmond
State: VA
Zip: 23225
Email 804@timmons.com
Phone: 8042006500

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To:
Project Code: 2023-0061092
Project Name: Moonlight Solar

March 28, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

PROJECT SUMMARY

Project Code: 2023-0061092
Project Name: Moonlight Solar
Project Type: Power Gen - Solar
Project Description: Proposed utility scale solar project
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.0251376,-76.71628196622214,14z



Counties: Isle of Wight County, Virginia

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Kestrel *Falco sparverius paulus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9587	Breeds Apr 1 to Aug 31
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Aug 31

NAME	BREEDING SEASON
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Brown-headed Nuthatch *Sitta pusilla* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Jul 15
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see

below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

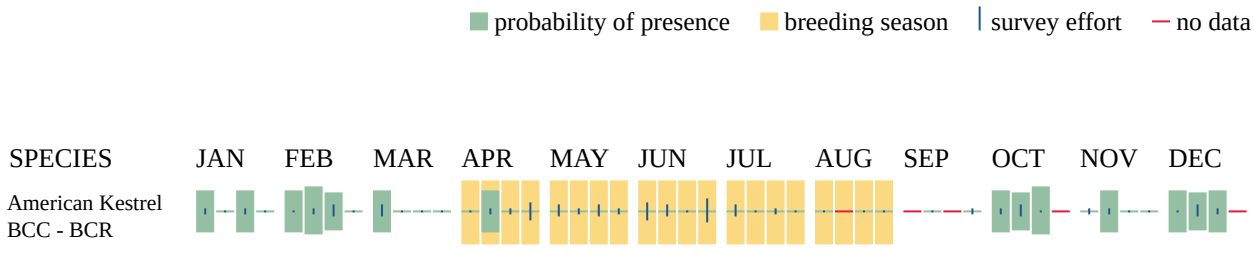
1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in

the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of

certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

IPAC USER CONTACT INFORMATION

Agency: Timmons Group
Name: Timmons Group
Address: 1001 Boulders Pkwy
City: Richmond
State: VA
Zip: 23225
Email 804@timmons.com
Phone: 8042006500

VaFWIS - Department of Game and Inland Fisheries

37.02954 -76.72453
is the Search Point
Submit Cancel

Search Point
- **Change** to "clicked" map point
- **Fixed** at 37.02954 -76.72453

Show Position Rings
Yes No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
Yes No
2 Search distance miles buffer

Search Point is at map center

Base Map Choices
BW Aerial Photography

Map Overlay Choices
Current List: Anadromous, TEWaters, BAEANests, BECAR, Trout, TierII, Habitat, Search

Map Overlay Legend

T & E Waters
Federal
State

Predicted Habitat WAP Tier I & II
Aquatic
Terrestrial

Trout Waters
Class I - IV
Class V - VI

Anadromous Fish Reach
Confirmed
Potential

123 Impediment

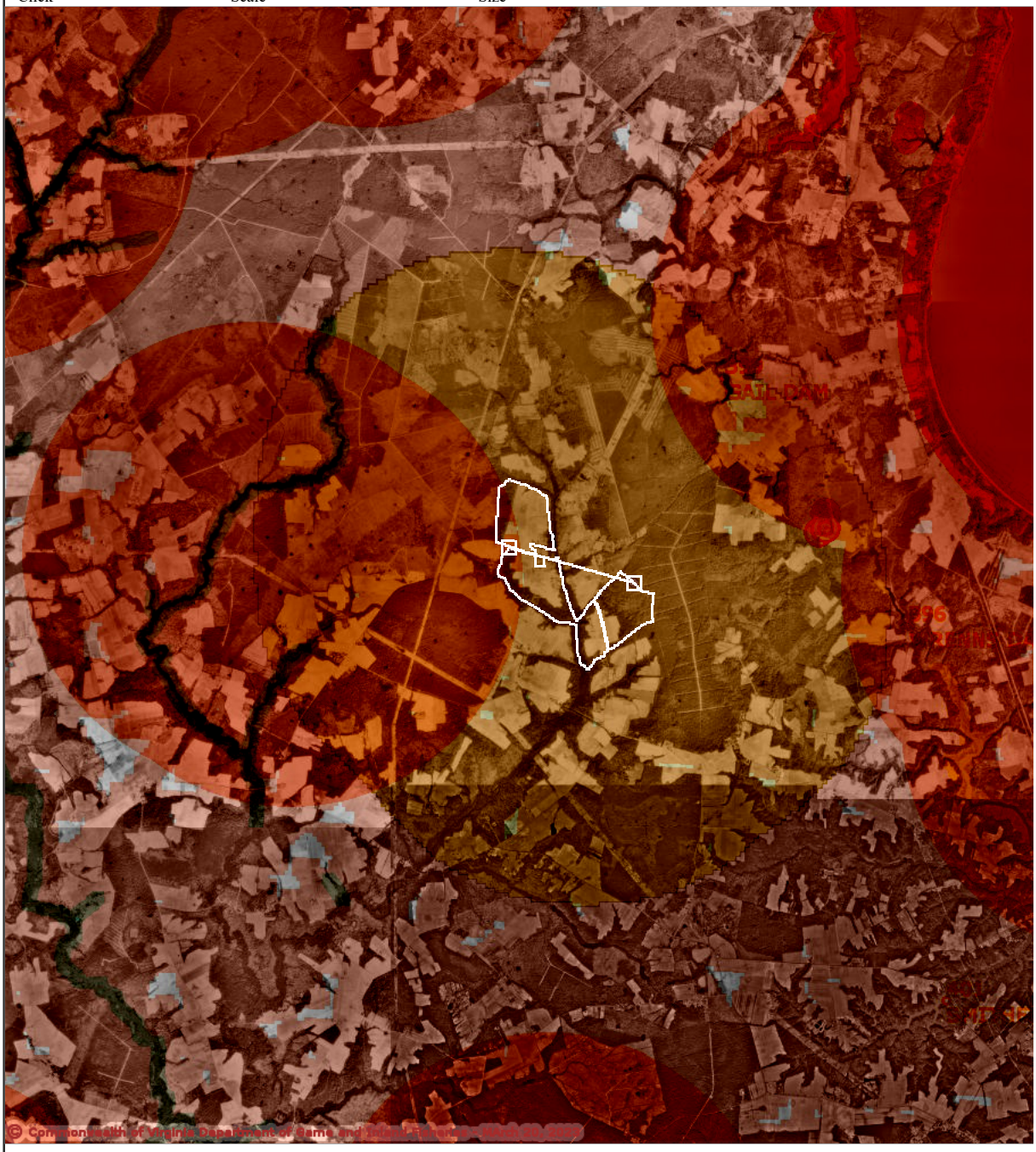
2 mile radius Search Area

Bald Eagle Concentration Areas and Roosts

Bald Eagle nests 660 and 330 foot management zones

Data Observation Site

back
Map Click Pan Id M
Refresh Browser Page
Map Scale In Zoom Out
Screen Size Small Size Big
Help



N
1 0 1 2 3 4 Kilometers
1 0 1 2 3 4 Miles

Point of Search 37.02954 -76.72453
Map Location 37.02954 -76.72453

Select **Coordinate System:**
- Degrees,Minutes,Seconds Latitude - Longitude
- Decimal Degrees Latitude - Longitude
- Meters UTM NAD83 East North Zone
- Meters UTM NAD27 East North Zone

Base Map source: Black & White USGS Aerial Photography (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 338613 and top 4107540. Pixel size is 16 meters . Coordinates displayed are decimal Degrees North and West. Map is currently displayed as 1000 columns by 1000 rows for a total of 1000000 pixles. The map display represents 16000 meters east to west by 16000 meters north to south for a total of 256.0 square kilometers. The map display represents 52502 feet east to west by 52502 feet north to south for a total of 98.8 square miles.

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2023-03-20 13:19:21 (qa/qc March 21, 2016 12:20 - tn=1467810 dist=3218 I
)
$poi=37.0287900 -76.7151300

| DGIF | Credits | Disclaimer | Contact vafwis_support@dgif.virginia.gov |Please view our privacy policy |
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VaFWIS Initial Project Assessment Report Compiled on 3/20/2023, 1:20:31 PM

Help

Known or likely to occur within a **2 mile buffer around line beginning 37.0287900 -76.7151299** in **093 Isle of Wight County, 181 Surry County, VA**

View Map of Site Location

533 Known or Likely Species ordered by Status Concern for Conservation (displaying first 33) (33 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
040228	FESE	Ia	Woodpecker, red-cockaded	Picoides borealis		BOVA
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
030071	FTST	Ia	Turtle, loggerhead sea	Caretta caretta		BOVA
040144	FTST	Ia	Knot, red	Calidris canutus rufa		BOVA
040110	FTSE	Ia	Rail, eastern black	Laterallus jamaicensis jamaicensis		BOVA
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon		BOVA,Habitat
030064	SE	Ia	Turtle, eastern chicken	Deirochelys reticularia reticularia		BOVA
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050034	SE	Ia	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis		BOVA
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
020052	SE	IIa	Salamander, eastern tiger	Ambystoma tigrinum		BOVA
030013	SE	IIa	Rattlesnake, canebrake	Crotalus horridus		Habitat
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei		BOVA,Habitat
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100079	FC	IIIa	Butterfly, monarch	Danaus plexippus		BOVA
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin		BOVA,Habitat
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA
010077		Ia	Shiner, bridle	Notropis bifrenatus		BOVA
070131		Ic	Isopod, Phreatic	Caecidotea phreatica		BOVA
020063		IIa	Toad, oak	Anaxyrus quercicus		BOVA,Habitat
020002		IIa	Treefrog, barking	Hyla gratiosa	Yes	BOVA,SppObs
040052		IIa	Duck, American black	Anas rubripes		BOVA

040033		IIa	Egret, snowy	Egretta thula		BOVA
040029		IIa	Heron, little blue	Egretta caerulea caerulea		BOVA
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040181		IIa	Tern, common	Sterna hirundo		BOVA
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA
040140		IIa	Woodcock, American	Scolopax minor		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii		BOVA

To view **All 533 species** View 533

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need;
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

View Map of All Query Results from All Observation Tables

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Colonial Water Bird Survey (1 records)

View Map of All Query Results Colonial Water Bird Survey

Colony_Name	N Obs	Latest Date	N Species			View Map
			Different Species	Highest TE*	Highest Tier**	
Warren Creek	1	Jun 1 1993	1			Yes

Displayed 1 Colonial Water Bird Survey

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests (1 records)

View Map of All Query Results
Bald Eagle Nests

Nest	N Obs	Latest Date	DGIF Nest Status	View Map
IW8601	35	Apr 23 2008	Unknown	Yes

Displayed 1 Bald Eagle Nests

Habitat Predicted for Aquatic WAP Tier I & II Species (2 Reaches)

View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

Stream Name	Tier Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Passenger Swamp (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes
Pouches Swamp (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species (4 Species)

View Map of Combined Terrestrial Habitat Predicted for 4 WAP Tier I & II Species Listed Below

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
030013	SE	IIa	Rattlesnake, canebrake	Crotalus horridus	Yes
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Yes
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Yes
020063		IIa	Toad, oak	Anaxyrus quercicus	Yes

Public Holdings:

N/A

Compiled on 3/20/2023, 1:20:31 PM I1467810.0 report=IPA searchType= L dist= 3218 poi= 37.0287900 -76.7151299 siteDD= 37.0287945 -76.7151318;37.0284905 -76.7147378;37.0280135 -76.7142598;37.0278875 -76.7140838;37.0277415 -76.7137618;37.0277045 -76.7135368;37.0275305 -76.7124758;37.0275185 -76.7120718;37.0275355 -76.7120128;37.0247985 -76.7121288;37.0239575 -76.7119058;37.0239135 -76.7121498;37.0237965 -76.7128138;37.0238195 -76.7129498;37.0236735 -76.7134028;37.0234855 -76.7137288;37.0233345 -76.7139968;37.0232675 -76.7141588;37.0224605 -76.7153478;37.0210125 -76.7175288;37.0208825 -76.7178128;37.0207875 -76.7180178;37.0207255 -76.7181158;37.0206085 -76.7183208;37.0205475 -76.7184798;37.0204395 -76.7187638;37.0203555 -76.7189128;37.0204615 -76.7189468;37.0207435 -76.7190368;37.0210005 -76.7191328;37.0229705 -76.7197478;37.0249835 -76.7203898;37.0252915 -76.7205088;37.0255615 -76.7206358;37.0257225 -76.7207288;37.0258755 -76.7208348;37.0259835 -76.7209228;37.0262575 -76.7211478;37.0265945 -76.7214348;37.0267155 -76.7212888;37.0268235 -76.7212258;37.0269155 -76.7211158;37.0269735 -76.7209788;37.0270835 -76.7208118;37.0271645 -76.7207118;37.0272355 -76.7206678;37.0273775 -76.7206418;37.0274785 -76.7206058;37.0275875 -76.7205758;37.0276655 -76.7205318;37.0276915 -76.7205048;37.0277395 -76.7204548;37.0277825 -76.7203228;37.0278545 -76.7201718;37.0279655 -76.7200658;37.0280725 -76.7199088;37.0281305 -76.7198048;37.0282345 -76.7197318;37.0283345 -76.7196408;37.0283765 -76.7195788;37.0284525 -76.7194648;37.0284845 -76.7193278;37.0286055 -76.7192038;37.0287545 -76.7190638;37.0288505 -76.7189728;37.0289755 -76.7188338;37.0290555

-76.7186778;37.0291145 -76.7185498;37.0292315 -76.7183558;37.0293865 -76.7181928;37.0295305 -76.7180348;37.0296925 -76.7178628;37.0298045 -76.7177658;37.0298995 -76.7176278;37.0300395 -76.7174798;37.0301915 -76.7173088;37.0297685 -76.7167988;37.0295225 -76.7161408;37.0292445 -76.7156808;37.0287945 -76.7151318;37.0326304 -76.7329356;37.0336537 -76.7370243;37.0356558 -76.7370160;37.0406249 -76.7368691;37.0410663 -76.7360151;37.0412960 -76.7358180;37.0414943 -76.7355670;37.0417087 -76.7353155;37.0415093 -76.7347177;37.0413286 -76.7342844;37.0412057 -76.7337746;37.0411114 -76.7332447;37.0410488 -76.7326569;37.0407294 -76.7319542;37.0404832 -76.7313790;37.0403627 -76.7308482;37.0400130 -76.7302040;37.0396922 -76.7295791;37.0395606 -76.7292371;37.0392877 -76.7290114;37.0389530 -76.7290826;37.0386851 -76.7290041;37.0383048 -76.7291004;37.0378293 -76.7290166;37.0374700 -76.7288903;37.0371290 -76.7288552;37.0367417 -76.7287671;37.0363837 -76.7286761;37.0361034 -76.7286916;37.0356592 -76.7286630;37.0353762 -76.7286053;37.0349992 -76.7284222;37.0345592 -76.7281155;37.0341921 -76.7281746;37.0338036 -76.7280676;37.0333114 -76.7279661;37.0328632 -76.7278443;37.0329881 -76.7289213;37.0333121 -76.7303600;37.0335452 -76.7316047;37.0328749 -76.7314825;37.0328039 -76.7309368;37.0321844 -76.7308874;37.0326304 -76.7329356;37.0330234 -76.7350410;37.0320914 -76.7309018;37.0308256 -76.7308954;37.0308153 -76.7294326;37.0318176 -76.7293815;37.0316917 -76.7281575;37.0317890 -76.7273297;37.0296457 -76.7266382;37.0291670 -76.7264308;37.0287297 -76.7264272;37.0282120 -76.7262479;37.0274509 -76.7259027;37.0261288 -76.7253527;37.0249007 -76.7246984;37.0243883 -76.7243850;37.0240925 -76.7242571;37.0239849 -76.7242270;37.0240717 -76.7239530;37.0248538 -76.7230752;37.0256665 -76.7223739;37.0259839 -76.7221396;37.0264590 -76.7215828;37.0261976 -76.7212676;37.0255313 -76.7208083;37.0247520 -76.7204878;37.0229659 -76.7199506;37.0202878 -76.7190578;37.0202380 -76.7192929;37.0201537 -76.7192905;37.0199683 -76.7193800;37.0199012 -76.7195574;37.0198151 -76.7196636;37.0197238 -76.7196664;37.0195144 -76.7196437;37.0194402 -76.7198137;37.0193128 -76.7202073;37.0192059 -76.7203718;37.0192413 -76.7206214;37.0191941 -76.7207745;37.0190781 -76.7208230;37.0189984 -76.7211637;37.0189422 -76.7211974;37.0188535 -76.7212116;37.0186583 -76.7213709;37.0182339 -76.7216177;37.0180237 -76.7218464;37.0177988 -76.7220792;37.0177027 -76.7224052;37.0178375 -76.7225171;37.0182237 -76.7227149;37.0182744 -76.7232213;37.0184385 -76.7233461;37.0187432 -76.7235173;37.0191354 -76.7235555;37.0195671 -76.7237653;37.0199938 -76.7239197;37.0206045 -76.7239341;37.0224303 -76.7241770;37.0229094 -76.7242261;37.0232617 -76.7241838;37.0233180 -76.7241880;37.0235766 -76.7256729;37.0236272 -76.7262714;37.0236533 -76.7269546;37.0239016 -76.7275995;37.0244733 -76.7286156;37.0251175 -76.7300036;37.0258535 -76.7314601;37.0265978 -76.7331559;37.0273201 -76.7342788;37.0276648 -76.7347946;37.0283735 -76.7351782;37.0289482 -76.7355324;37.0292034 -76.7360346;37.0294186 -76.7366508;37.0298070 -76.7367745;37.0302367 -76.7368220;37.0307396 -76.7364597;37.0308941 -76.7362472;37.0310832 -76.7361800;37.0314537 -76.7362314;37.0321872 -76.7361669;37.0321719 -76.7354796;37.0330234 -76.7350410;;

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Travis A. Voyles
Secretary of Natural and Historic Resources

Matthew S. Wells
Director

Andrew W. Smith
Chief Deputy Director

Frank N. Stovall
Deputy Director for Operations

Darryl Glover
Deputy Director for Dam Safety, Floodplain Management and Soil and Water Conservation

Laura Ellis
Deputy Director for Administration and Finance

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

July 11, 2023

Jillian Stickley
Timmons Group
1001 Boulders Parkway
North Chesterfield, VA 23225

Re: 49666.001, Moonlight Solar

Dear Ms. Stickley:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to a DCR biologist and predicted suitable habitat modeling, there is a potential for Barking treefrog (*Hyla gratiosa*, G5/S2S3/NL/NL) to occur in the project area if suitable habitat exists on site. The Barking treefrog ranges through the coastal plain from North Carolina to Florida and west to Mississippi and eastern Louisiana (NatureServe, 2009). There are disjunct populations in Delaware, Maryland, Kentucky and Tennessee, and southeastern Virginia (NatureServe, 2009). Across its range, it inhabits areas near shallow ponds in pine savannas and in low wet woods and swamps (Martof et al., 1980). In Virginia, this species breeds in fish-free vernal ponds (Pague & Young, 1991). When inactive during cold or dry seasons, they burrow under tree roots, vegetation, or in the soil; otherwise, this species is mostly arboreal and thus dependent on trees near the water (Pague & Young, 1991). Adult frogs feed on insects and other invertebrates; tadpoles consume primarily algae (VDGIF, 1993).

Major threats to the Barking treefrog include continued logging of native pine, destruction of breeding ponds, and over collecting (Pague & Young, 1991).

Due to the potential for this site to support populations of Barking treefrog, DCR recommends a habitat assessment for the resource in the study area. With the habitat assessment results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources. If possible, please include photos and plant and animal species composition information for the isolated pond in the wooded section of the northwest portion of the project site.

DCR-Division of Natural Heritage biologists are qualified to conduct inventories for rare, threatened, and endangered species. Please contact Anne Chazal, Natural Heritage Chief Biologist, at anne.chazal@dcr.virginia.gov or 804-786-9014 to discuss availability and rates for field work.

In addition, according to predicted suitable habitat modeling, there is potential for Eastern big-eared bat (*Corynorhinus rafinesquii macrotis*, G3G4T3/S2/NL/LE) to occur in the project area if suitable habitat exists on site. The Eastern big-eared bat is named for its enormous ears twice the length of its head, is extremely rare in Virginia and is currently known only from the southeastern portion of the state. Although widespread throughout the southeast, they are never found in large numbers. These bats roost singly or in small groups in hollow trees or abandoned buildings. They forage only after dark primarily in mature forests of both upland and lowland areas along permanent bodies of water (NatureServe, 2009). The details of this bat's feeding behavior and much of its natural history remain a mystery. Lack of information regarding the ecology of the Eastern big-eared bat, and their sensitivity to disturbance, make them particularly vulnerable to destruction of roost sites and feeding areas where their presence goes undetected (Handley and Schwab 1991, Harvey 1992).

Threats to this species include forest destruction, particularly hollow tree removal, decreasing availability of abandoned buildings, and possibly, insecticides. Please note that this species is currently classified as endangered by the Virginia Department of Wildlife Resources (VDWR).

DCR recommends avoiding tree removal in bottomland habitats along Stallings Creek and tributaries and assessing any large potential roost trees and/or abandoned structures on the property for bat presence/absence. DCR also recommends coordination with DWR if removal of potential roost habitat for the Eastern big-eared bat becomes necessary to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

DCR recommends the development of an invasive species management plan for the project and the planting of Virginia native pollinator plant species that bloom throughout the spring and summer, to maximize benefits to native pollinators. DCR recommends planting these species in at least the buffer areas of the planned facility, and optimally including other areas within the project site. For screening zones outside the perimeter fencing, DCR recommends native species appropriate for the region be used. Guidance on plant species can be found here: http://www.dcr.virginia.gov/natural-heritage/solar-site-native-plants-finder. In addition, Virginia native species alternatives to the non-native species listed in the Virginia Erosion and Sediment Control Handbook (Third Edition 1992), can be found in the 2017 addendum titled "Native versus Invasive Plant Species", here: https://www.deq.virginia.gov/home/showpublisheddocument?id=2466. Page 3 of the addendum provides a list of native alternatives for non-natives commonly used for site stabilization including native cover crop species (i.e. Virginia wildrye).

In addition, the proposed project will impact Ecological Cores **(C3, C4, C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Ecological Cores are areas of at least 100 acres of continuous interior, natural cover that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Interior core areas begin 100 meters inside core edges and continue to the deepest parts of cores. Cores also provide the natural, economic, and quality of life benefits of open space, recreation, thermal moderation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including sequestration of carbon, absorption of gaseous pollutants, and production of oxygen). Cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of natural heritage resources they contain.

Impacts to cores occur when their natural cover is partially or completely converted permanently to developed land uses. Habitat conversion to development causes reductions in ecosystem processes, native biodiversity, and

habitat quality due to habitat loss; less viable plant and animal populations; increased predation; and increased introduction and establishment of invasive species.

DCR recommends avoidance of impacts to cores. When avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months (January 11, 2024) has passed before it is utilized.

A fee of $395.00 has been assessed for the service of providing this information. Please find attached an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, DCR Finance, 600 East Main Street, 24th Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The Virginia Department of Wildlife Resources (VDWR) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Amy Martin at (804-367-2211) or amy.martin@dwr.virginia.gov.

Should you have any questions or concerns, please contact me at 804-225-2429. Thank you for the opportunity to comment on this project.

Sincerely,

Tyler Meader

Tyler Meader
Natural Heritage Locality Liaison

Cc: Amy Martin, VDWR
Susan Tripp, DEQ
Randy Keaton, Isle of Wight County Administrator

Literature Cited

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APOGEE

Environmental & Archaeological, Inc.

PHASE I HISTORIC ARCHITECTURE SURVEY AND EFFECTS ASSESSMENT FOR THE PROPOSED MOONLIGHT SOLAR FACILITY ISLE OF WIGHT COUNTY, VIRGINIA

Prepared For
Timmons Group, Inc.
1001 Boulders Parkway, Suite 300
Richmond, Virginia 23225

Prepared By
Apogee Environmental & Archaeological, Inc.
6425 Living Place, Suite 200
Pittsburgh, PA 15206
info@apogee-environmental.com
Apogee Project No. 22-1135.00

Garrett Silliman, RPA
Principal Investigator

Amanda Commins, MA
Architectural Historian

David S. Hanley, RPA
Field Director

Lead Agency
Virginia Department of Environmental Quality
DHR File No. 2023-4075

June 2023 (Finalized August 2023)

Abstract

On behalf of Timmons Group, Apogee Environmental & Archaeological, Inc. conducted a Phase I architectural survey and effects assessment for the proposed Moonlight Solar Facility in Isle of Wight County, Virginia. Phase I survey serves as the secondary step in meeting compliance requirements for The Virginia Department of Environmental Equality (DEQ). All activities were conducted in accordance with the Virginia Department of Historic Resources (DHR), as published in *Guidelines for Conducting Historic Resources Survey in Virginia* (2017).

The project consists of the development of a solar energy facility located approximately 5.2 miles northwest of Smithfield, Virginia, situated west and south of the intersection between Moonlight Road and Burwells Bay Road. The archaeological area of potential effects (APE) contains parcels of mixed-use rural land totaling 516.9 acres (209.2 hectares). The architectural APE encompasses the archaeological APE, as well as a .5-mile buffer extending outward. A desktop analysis cultural resources assessment was conducted in March 2023. The Phase IA cultural resources assessment was conducted in March 2023, with a site visit from March 27th to 29th, 2023.

As a result of the architectural survey, Apogee identified 21 historic resources. 11 previously recorded resources were identified within the 0.5-mile buffer. Of the 11 resources, 9 had been surveyed within the past 5 years. The remaining 2 previously recorded resources and 19 newly identified resources were surveyed within the architectural APE. No historic properties potentially eligible for listing in the National Register of Historic Places (NRHP) were identified within the architectural APE. Effects were assessed to gauge the potential direct and indirect effects on historic properties located within the architectural APE.

Overall, it is Apogee's finding that the proposed Project will have **no adverse effects** on the 21 properties surveyed within the architectural APE.

APOGEE

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1.0 INTRODUCTION TO THE PROJECT

On behalf of Timmons Group, Inc. (Timmons), Apogee Environmental & Archaeological, Inc. (Apogee) conducted a Phase I architectural survey and effects assessment for the proposed Moonlight Solar Facility in Isle of Wight County, Virginia. Phase I survey serves as the secondary step in meeting compliance requirements for The Virginia Department of Environmental Equality (DEQ). All activities were conducted in accordance with the Virginia Department of Historic Resources (DHR), as published in *Guidelines for Conducting Historic Resources Survey in Virginia* (2017).

The project consists of the development of a solar energy facility located approximately 5.2 miles northwest of Smithfield, Virginia, situated west and south of the intersection between Moonlight Road and Burwells Bay Road. The archaeological area of potential effects (APE) contains parcels of mixed-use rural land totaling 516.9 acres (209.2 hectares). The architectural APE encompasses the archaeological APE, as well as a .5-mile buffer extending outward. A desktop analysis cultural resources assessment and Phase IA site visit were conducted in March 2023. The Phase I architectural survey was conducted in May 2023.

Amanda Commins, MA conducted the historic architectural survey on May 10th that involved surveying all structures 45 years and older within the project boundaries and within the 0.5-mile buffer. A total of 21 primary resources were identified as a result of the architectural history survey. 2 previously identified resources were revisited.

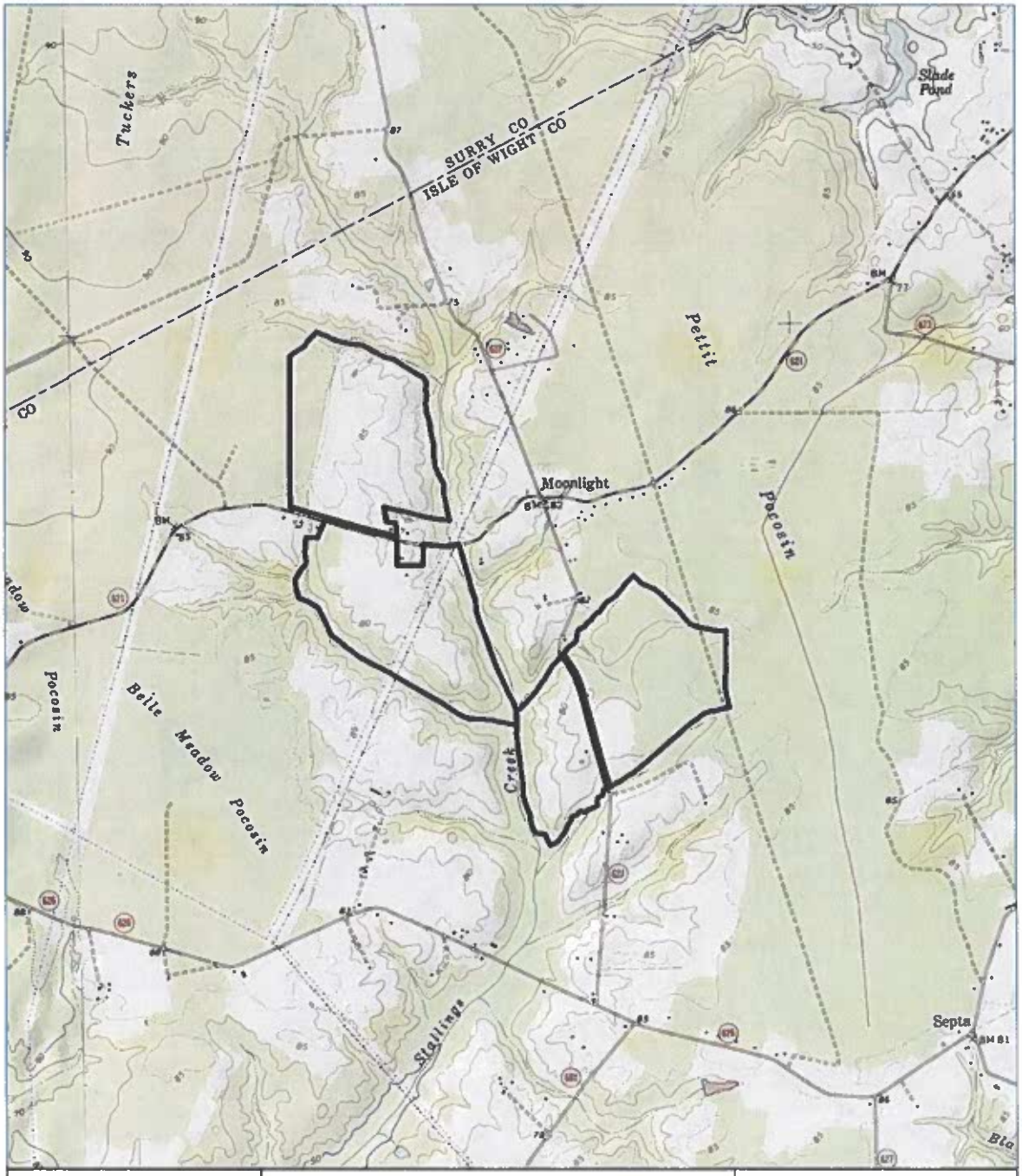

Figure 1: Project area depicted on modern topographic map.



Figure 2: Project area depicted on modern aerial imagery.

2.0 RESEARCH DESIGN

Apogee conducted an architectural survey and effects assessment for the proposed Project. The purpose of the architectural survey and effects assessment was to identify historic properties and to assess the effects of the proposed Project on those properties. All field investigations and technical reporting meet the qualifications specified in the Secretary of the Interior's (SOI) *Standards and Guidelines for Archeology and Historic Preservation* (Federal Register 48:190:44716–44742) and the *Guidelines for Conducting Historic Resources Survey in Virginia* (2017).

Prior to fieldwork, Apogee completed a review of the Virginia Cultural Resource Information System (V-CRIS) to identify previous architectural surveys and previously recorded architectural resources within a .5-mile buffer of the project area. Newly identified historic resources were identified through a combination of methods. Utilizing readily available Isle of Wight County tax maps and GIS files, all parcels were reviewed for pre-1977 build dates (45 years of age). Historic county maps, topographic maps and aerial imagery were also reviewed to identify potential historic-age resources and to verify the accuracy of build dates obtained via GIS-based tax data. Field survey will include exterior photographs of the primary resources and each secondary resource; a description of the property with information needed to properly evaluate NRHP eligibility; and an interview of the property owner if available. The location of each resource will be recorded on field maps and incorporated into a GIS dataset as part of the documentation record. Following fieldwork, all previously recorded (last evaluated over five years ago) and newly identified resources within the architectural APE will be documented in V-CRIS and evaluated for listing in the VLR/NRHP based on guidance provided in National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation (NPS 1990). Historic physical integrity will be determined from site observations, field data, and photographic documentation.

Fieldwork was conducted to verify build dates for all parcels containing historic-age buildings throughout the architectural APE. The field survey was conducted on foot from the public right-of-way. Field survey included exterior photographs of the primary resources and each secondary resource; and a description of the property with information needed to properly evaluate NRHP eligibility.

Following fieldwork, all previously recorded and newly identified resources within the architectural APE were evaluated for listing in the NRHP based on guidance provided in *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation* (NPS 1990), as well as *Guidelines for Conducting Historic Resources Survey in Virginia* (2017). Historic physical integrity was determined from site observations, field data, and photographic documentation. To be recommended eligible for inclusion in the NRHP, a resource must demonstrate quality of significance in American history, architecture, archeology, engineering, and culture in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of significant persons in or past; or

C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded or may be likely to yield, information important in history or prehistory.

Per *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation*, a significant property's integrity is evaluated by applying the Seven Aspects of Integrity to determine the property's ability to convey its significance:

Location is the place where the historic property was constructed or the place where the historic event occurred.

Design is the combination of elements that create the form, plan, space, structure, and style of a property.

Setting is the physical environment of a historic property.

Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.

Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.

Feeling is a property's expression of the aesthetic or historic sense of a particular period of time.

Association is the direct link between an important historic event or person and a historic property.

Additionally, an effects assessment was completed. An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association. Examples include, but are not limited to:

- Physical destruction, damage, or alteration of all or part of the property;
- Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's significance;
- Introduction of a significant change to visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
- Neglect of a property resulting in its deterioration or destruction; and
- Transfer, lease or sale of the property without protective restrictions.

A summary of all NRHP recommendations and the results of the effects assessment are included in this report. Photographs for each resource and representative secondary structures are included in this report. The locations of all previously recorded and newly identified resources are depicted on aerial imagery showing parcel boundaries and the architectural APE.

3.0 LITERATURE REVIEW

This section provides a literature review of the regional history, results of the Virginia Cultural Resource Information System (V-CRIS) file review, and historic map research.

3.1 Literature Review

The project area is located within the Southern Coastal Plain geographical and cultural region of Virginia as defined by VDHR's Regional Boundaries and Differences: Geography and Culture map (2017). This region is bound by the Atlantic Ocean/Chesapeake Bay to the east, the Virginia-North Carolina border to the south, the Fall Line to the west, and the Northern Coastal Plain to the north (VDHR 2017: 101-102). The Southern Coastal Plain features the earliest European settlement in Virginia: the colony at Jamestown founded in 1607. From here, European colonists would move westward throughout the 17th century using the region's many rivers. Due to the self-sufficient nature of the Southern Coastal Plain's plantations in the 17th century, there were very few central town centers until the mid-18th century.

Below is an outline of a partial account primarily based on archaeological data. After first arriving in Virginia in 1607, European colonists started moving along the many rivers in the Southern Coastal Plain into the western portions of the region (VDHR 2017: 101). Due to the self-sufficient nature of the Southern Coastal Plain's plantations in the 17th century, there were very few central town centers until the mid-18th century. This region was settled both for its agricultural potential, but also for its industrial potential and access to the Atlantic Ocean.

Isle of Wight County Historic Period

Settlement to Society (1607 to 1750)

Prior to its establishment, the area now known as Isle of Wight County was once home to many Native American tribes that settled along the James River. The Warraskoyak are the first documented Indigenous group to make contact with European settlers. European settlers at the Jamestown settlement first made contact with the Warraskoyak in 1607 after crossing the James River in search of food (Boddie 1973). In 1632, English colonists constructed a fort in order to defend their settlements from Native American and Spanish attackers (Isle of Wight County Museum 2014). This fort, first known as The Castle, was later expanded during the Revolutionary War and was renamed Fort Boykin.

In 1634, Isle of Wight County was officially established under the name Warraskoyak Shire as one of the eight shires first established by the English. The initial population was approximately 522 people (Boddie 1973; Morrison 2001). In 1637, Warraskoyak Shire was renamed Isle of Wight County after the English island (Isle of Wight County 2023). In 1674, Isle of Wight County gained a porti on of the now extinct Nansemond County (Boddie 1973; Morrison 2001). However, the current boundary of the county was not set until 1732 when a considerable portion was added to neighboring Brunswick County, which was subsequently turned into Southampton County in 1748 (Morrison 2001)

Since its founding, Isle of Wight County largely exhibits rural character and encompasses approximately 350 square miles (Morrison 2001). Many streams and roads intersect the county with an east/west connecting road playing a significant role in the area's history as it controlled access to Richmond via the James River. The county's location along the James River also demonstrates why the first English plantations were constructed within the county and mainly grew tobacco.



Figure 3: A map of Isle of Wight County showing the general location of the project area (Selection from Campbell et al 1864).

Colony to Nation (1750 to 1789)

The Isle of Wight County courts were established in 1751 in Smithfield through the appointment of eight justices (Morrison 2001). Four of these judges could make up a court and were required to meet monthly. This would continue until the county courts were abolished in the 1902 constitution when the judicial power of counties was given to circuit courts. The following year, Smithfield officially became an incorporated town and is still the largest town in the county. The original courthouse and its associated tavern, The Smithfield Inn, are still standing today.

While there were no official Revolutionary War battles fought within Isle of Wight County, its residents served in the Continental Army and the county's location allowed it to serve as an important place for commerce and agriculture (Morrison 2001). During the Revolutionary War, British troops raided Smithfield in an effort to destroy country records (Morrison 2001). The wife of Mr. Francis Young, an officer in the Continental Army, was able to remove the records prior to the raid. The records were hidden until the British forces surrendered at Yorktown. In March of 1782, the county court made an order describing the county's location and how its inhabitants have been strongly impacted by the invading British forces (Morrison 2001). The proximity to British landing caused a great strain on the county's militia as they were forced to be on constant duty due to threat of attack. However, no significant battles were fought within the county.

Early National Period (1789 to 1830)

At the beginning of the 19th century, Isle of Wight County saw its economic impact shift away from tobacco farming towards other crops such as cotton, wheat, and corn (Morrison 2001). Its location along the James River also allowed the county to begin building ships, though not at the scale of nearby coastal cities such as Norfolk. The economic focus on agriculture required the use of plantations which heavily utilized slave labor.

While Isle of Wight County is situated close to the coastline of Virginia, it played a minor role during the War of 1812 (Morrison 2001). During the war, the county mainly served as a defensive position to protect access to Richmond via the James River with Fort Boykin, which was refortified during the war (Isle of Wight County Museum 2014). While the county is located along the James River with access to Richmond, no battles were fought within the county's borders. The county helped finance the United States forces to fend off British invaders as well as supplied troops.

Antebellum Period (1830 to 1860)

Leading up to the Civil War, Isle of Wight County's wealthy plantation owners and politicians heavily supported the continuation of slavery in the United States (Morrison 2001). However, the county's Quaker population supported the abolitionist movement. Leading up to Virginia seceding from the Union and joining the Confederate States of America, a vote was held in Isle of Wight County to determine if the county wanted to secede or remain with the Union. Among the 861 registered voters in the county, every vote went in favor of secession (Morrison 2001).

The county's population during this time period rose from 9,028 in 1790 up to 9,977 in 1860 with the highest population being 10,517 in 1830 (USCB). This rise in population led the county

to move the courthouse to a more central location within Smithfield (Morrison 2001). The new courthouse, constructed in 1800, along with its associated tavern (Boykin's Tavern) are still standing.

Civil War (1860 to 1865)

During the Civil War, the James River served as the backbone for supplies to get from the Atlantic coast to the Confederate capital of Richmond. Isle of Wight County's location between Norfolk and Richmond required Confederate forces to construct earthwork fortifications in order to defend against Union naval attacks on supply runners (Morrison 2001). Part of these new fortifications were centered around Fort Boykin and also led to the construction of Fort Huger, named after the commander of the Confederate States Army's Department of Norfolk Major General Benjamin Huger (Morrison 2001).

Unlike previous wars, Isle of Wight County was home to many skirmishes and battles. On May 8, 1862, a Union flotilla bombarded Fort Boykin and forced Confederate troops to abandon the structure. The Union boats continued up the James River and bombarded Fort Huger to the point where the Confederate soldiers needed to abandon the structure as well. After the Union discovered Fort Boykin was empty, Confederate forces took Fort Boykin back as a signaling station and served as a key piece in the communication line to Richmond from the coast (Isle of Wight County Museum 2014).

The most significant Civil War battle to take place in Isle of Wight County is the Battle of Smithfield. On January 31, 1864, Union forces sailed up the Pagan River to investigate Confederate activity (Isle of Wight County Museum 2014). After engaging in a small skirmish, Union forces went back to Smithfield to leave the area. However, the Union gunboat departed without the shore party, leaving the Union troops to camp on shore for the night. This led to a three-hour-long skirmish to break out along Main Street on February 1 that resulted in Confederate forces destroying the Union gunboat *Smith-Briggs* and capturing the Union forces before they could retreat.

A noteworthy regiment of the Virginia Infantry is the 61st regiment. While the regiment formed in Petersburg under the command of Lieutenant Colonel Samuel H. Wilson, F Company was known as the "Isle of Wight Avengers" (Isle of Wight County Museum 2014).

Reconstruction and Growth (1865 to 1917)

After the Civil War defeat, the former Confederate states underwent a period of Reconstruction. Since Virginia's postwar government enacted laws restricting the rights of former slaves, Congress took control of the state via military rule until a new state constitution was adopted in 1870 (VMHC 2023). The Underwood Constitution as it's known reformed local government on the more democratic model of the New England township, required the General Assembly to create a statewide system of free public schools for all children, allowed the governor to veto bills that the assembly had passed, and granted the vote to all 21-year-old men regardless of race except some supporters of the Confederacy (Library of Virginia 2023). The citizens of Isle of Wight County voted in favor of levying a 50-cent tax to fund the new public school in the county (Morrison 2001). While the county's people voted to approve

this tax, the white residents of Isle of Wight County were not initially in favor of funding schools for black citizens (Morrison 2001).

With the defeat during the Civil War, agriculture in Virginia and specifically Isle of Wight County faced forced change. One of the changes that occurred within Isle of Wight County was a shift to include peanut farming (Morrison 2001). This growth in peanut farming percentage coincides with the change in the labor force away from slaves to paid workers as well as improved methods in cultivating peanuts. While there was a change in agricultural practices, the lack of slave labor to exploit led to much of Virginia shifting to a more industrial source of economic development (Morrison 2001). During this time period, the population of the county grew from 8,320 in 1870 up to 14,929 in 1910 (USCB).

World War I to World War II (1917-1945)

The economic impact of a shift from agriculture to industry continued in Isle of Wight County. This shift was helped with the completion of the James River Bridge (US-17) in 1928, which connected Isle of Wight County to Newport News (Kozel 2004). The construction of this bridge allowed people and goods to gain easier access to Isle of Wight County via a road instead of the most direct route being via boat up the James River.

Economic growth also came when Joseph W. Luter Sr. and Jr. founded Smithfield Packing Company in Smithfield, Virginia in 1936 (now known as Smithfield Foods, Inc.) (Smithfield Foods 2023). The founding of Smithfield Packing Company led to an influx of job opportunities for the county's residents and is still the county's main job supplier today. The still present agricultural industry paired with the growing Smithfield Packing Company allowed Isle of Wight County to provide the United States military with supplies during World War I and especially World War II.

New Dominion (1945-Present)

From 1975 to 1982, the James River Bridge was replaced with a wider four lane bridge in order to accommodate the traffic going between Smithfield and Newport News (Kozel 2004). In 1982, the Nansemond River Bridge opened, which allowed for residents of Isle of Wight County to have easier access to the independent city of Suffolk. This bridge crosses over the Nansemond River and is a part of US-17, the same US highway as the James River Bridge.

As of the 2020 United States Census, there were 38,606 people living in the county, up from 14,906 people back in 1950 (USCB). The growth of Smithfield Foods and the easier access to cities like Newport News, Norfolk, and Suffolk are likely key contributors to the large population growth in Isle of Wight County. It is estimated that of this population, 69.5% were White, 23% were Black or African American, 4.2% were Hispanic or Latino, 1.1% were Asian, 0.5% were Native American or Native Alaskan, and 2.8% were of two or more races (USCB).

3.2 Previous Investigations

Apogee conducted a file review via the Virginia Cultural Resource Information System (V-CRIS) website in March 2023. According to the V-CRIS record search there are 11 previously recorded architectural resources (Table 1) within a .5-mile radius of the project area (Figure 4). Of the 11 resources, 2 were revisited (046-0063, 046-5144).

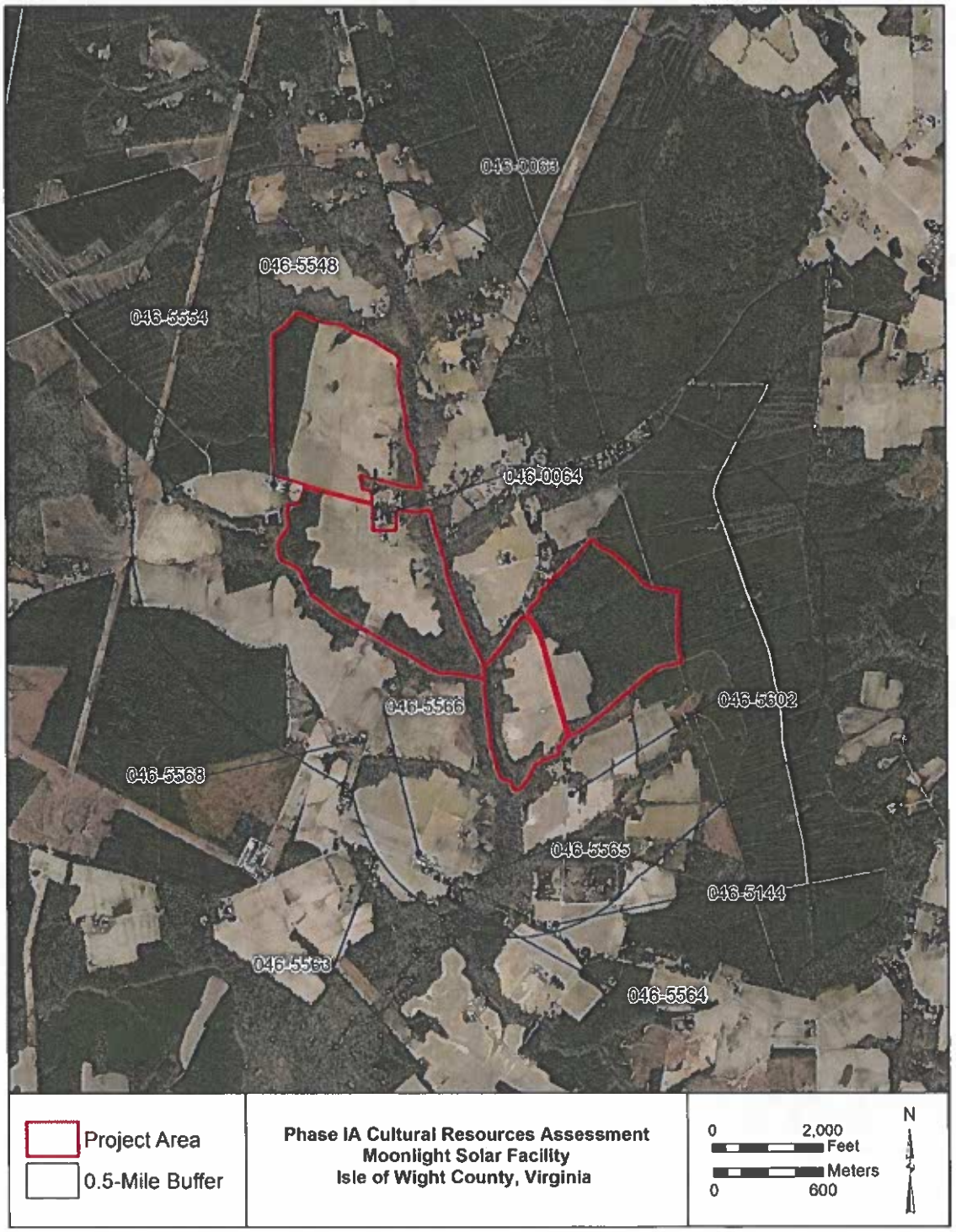

Figure 4: Results from V-CRIS records search of the APE.

Table 1: Previously Recorded Architectural Resources within 0.5 miles of Current Project.

DHR ID	Property Name	NRHP Evaluation	Location Relative to Project Area
046-0063	House, Route 627	DHR Staff: Not Evaluated	outside
046-0064	Carroll Plantation (Current/Historic)/Gary Carroll House (Historic)	DHR Staff: Eligible	outside
046-5144	Dwelling, 9346 Moonlight Road Former Store, 11489 Mill Swamp Road	DHR Staff: Not Evaluated	outside
046-5548	Dwelling, 10522 Burwells Bay Road	DHR Staff: Not Eligible	outside
046-5554	Dwelling, 10338 Burwells Bay Road	DHR Staff: Not Eligible	outside
046-5563	Dwelling, 11128 Mill Swamp Road	DHR Staff: Not Eligible	outside
046-5564	Dwelling, 11292 Mill Swamp Road	DHR Staff: Not Eligible	outside
046-5565	Dwelling, 11301 Mill Swamp Road	DHR Staff: Not Eligible	outside
046-5566	Dwelling, 11231 Mill Swamp Road	DHR Staff: Potentially Eligible	outside
046-5668	Dwelling, 11073 Mill Swamp Road	DHR Staff: Not Eligible	outside
046-5602	Jordan Cemetery	DHR Staff: Recommended for Further Survey (2020)	outside

3.3 Historic Map Review

A review of historic USGS topographic quadrangle maps was conducted to identify any potential historic resources within or adjacent to the project area. The earliest available topographic quadrangle depicting the project area is the Yorktown, VA (1907) USGS 1:62,500 scale quadrangle, on which three historic properties are depicted within the project area. These structures are present on both the 1907 and 1943 Yorktown, VA 1:62,500 scale quadrangle maps. Only one structure is present within the project area on the most recent historic topographic map: Bacons Castle, VA (1983) 1:24,000 quadrangle map.

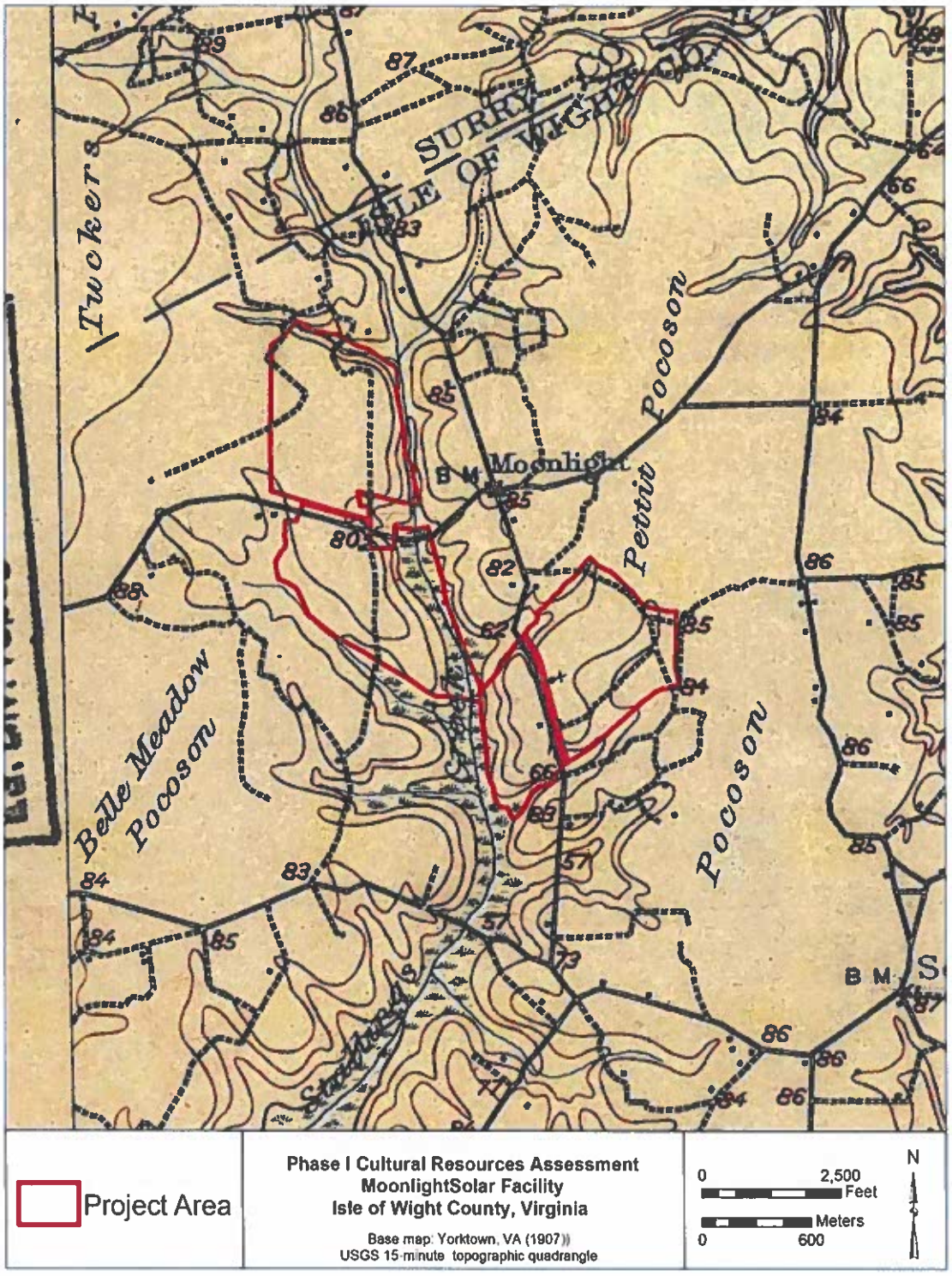

Figure 5: Structures present on the Yorktown, VA (1907) USGA 1:62,500 scale quadrangle.

4.0 RESULTS OF THE ARCHITECTURAL SURVEY

Apogee conducted an architectural survey and effects assessment for the proposed Project located in Isle of Wight County, Virginia. The purpose of the survey was to identify historic properties, those listed in or eligible for listing in the NRHP, and to assess the effects of the proposed Project on those properties. The architectural APE encompasses the project parcels of the proposed undertaking, as well as areas within 0.5-miles of the project area.

A total of 21 historic resources (2 previously recorded and 19 newly identified) were surveyed within the architectural APE. Table 2 provides relevant information for each of the resources identified, including VDHR ID, name/address, property description, location relative to APE, and Apogee's recommendations for NRHP listing.

The 21 resources are recommended not eligible for listing in the NRHP. They include residential and agricultural resources ranging in date from the late 1700s to the 1970s. Many of the resources are Minimal Traditional or Ranch-type single dwellings of a common design and lacking significant associations to notable events or people. There are also a couple larger Colonial and Georgian farmhouses with minimal ornamentation and replacement exterior fabric. Overall, these resources generally lack architectural distinction, no longer retain sufficient integrity of materials to convey significance, or do not have significant associations with events or people.

Table 2: Architectural Resources Documented during the Field Investigation.

VDHR ID	Site Name/ Address	Property Description	Location Relative to Direct APE	NRHP Recommendation
046-0063	House, Route 627	1770 Georgian brick dwelling	outside	Not Eligible
046-5144	House, 9346 Moonlight Road	1930 Minimal Traditional dwelling	outside	Not Eligible
046-5721	House, 7296 Moonlight Road	1976 Ranch-style dwelling	outside	Not Eligible
046-5722	House, 7286 Moonlight Road	1976 Ranch-style dwelling	outside	Not Eligible
046-5723	House, 8190 Moonlight Road	1902 Colonial-style Farmhouse	outside	Not Eligible
046-5724	House, 8179 Moonlight Road	1975 Ranch-style dwelling	outside	Not Eligible
046-5725	House, 7364 Moonlight Road	1898 Vernacular-style dwelling	outside	Not Eligible
046-5726	House, 7283 Moonlight Road	1975 Vernacular-style dwelling	outside	Not Eligible
046-5727	House, 8063 Moonlight Road	1973 Ranch-style dwelling	outside	Not Eligible
046-5728	House, 11482 Burwells Bay Road	1969 Ranch-style dwelling	outside	Not Eligible
046-5729	House, 11504 Burwells Bay Road	1973 Ranch-style dwelling	outside	Not Eligible
046-5780	House, 11522 Burwells Bay Road	1972 Ranch-style dwelling	outside	Not Eligible
046-5781	House, 12002 Burwells Bay Road	1973 Ranch-style dwelling	outside	Not Eligible
046-5782	House, 12024 Burwells Bay Road	1973 Ranch-style dwelling	outside	Not Eligible
046-5783	House, 12046 Burwells Bay Road	1970 Ranch-style dwelling	outside	Not Eligible
046-5784	House, 12064 Burwells Bay Road	1963 Ranch-style dwelling	outside	Not Eligible
046-5785	House, 12078 Burwells Bay Road	1971 Minimal Traditional dwelling	outside	Not Eligible
046-5786	House, 9076 Moonlight Road	1954 Ranch-style dwelling	outside	Not Eligible

VDHR ID	Site Name/ Address	Property Description	Location Relative to Direct APE	NRHP Recommendation
046-5787	House, 9211 Moonlight Road	1921 Minimal Traditional dwelling	outside	Not Eligible
046-5788	House, 9290 Moonlight Road	1880 Gabled-ell Farmhouse	outside	Not Eligible
046-5789	Barn, 8462 Moonlight Road	Ca. 1950 Barn	inside	Not Eligible

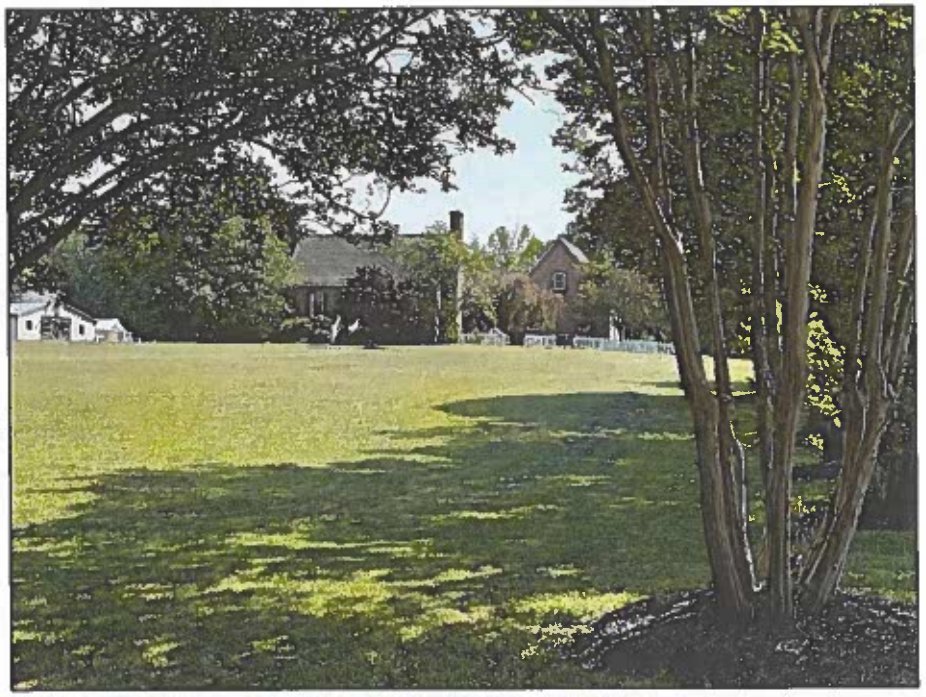

Photo 1: House, Route 627 (046-0063), view to east.



Photo 2: 11489 Mill Swamp Road (046-5144), view to north.

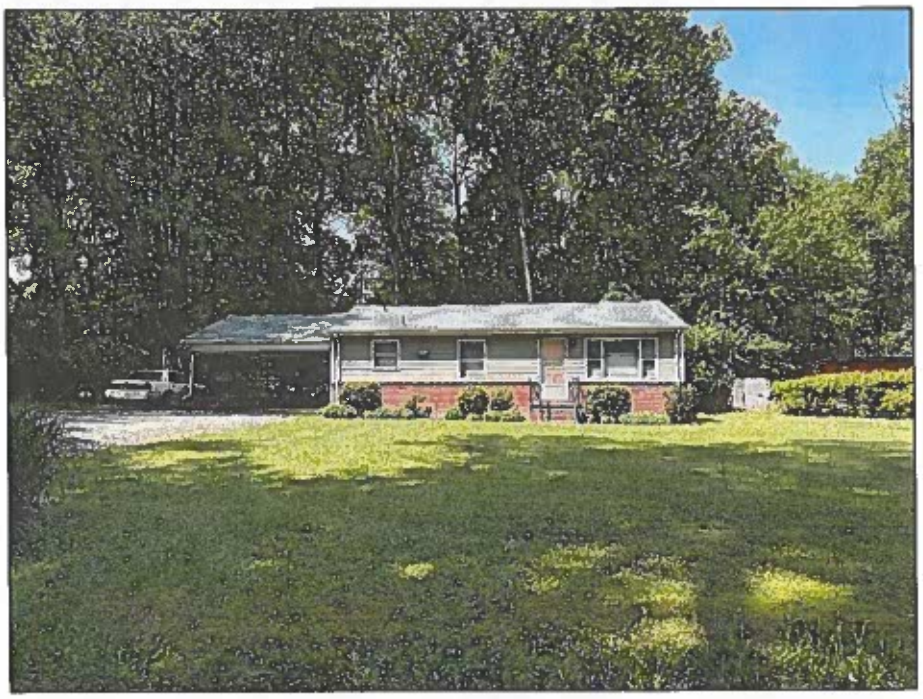

Photo 3: 7296 Moonlight Road (046-5721), view to southwest.



Photo 4: 7286 Moonlight Road (046-5722), view to southwest.



Photo 5: 8190 Moonlight Road (046-5723), view to southwest.



Photo 6: 8179 Moonlight Road (046-5724), view to northeast.



Photo 7: 7364 Moonlight Road (046-5725), view to southwest.



Photo 8: 7283 Moonlight Road (046-5726), view to northeast.



Photo 9: 8063 Moonlight Road (046-5727), view to southeast.

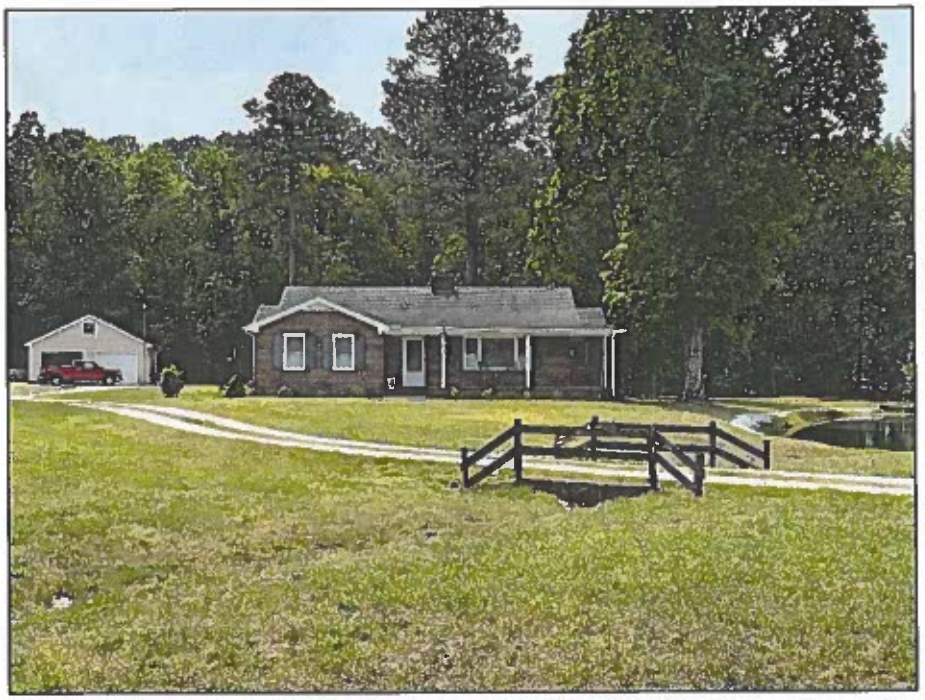

Photo 10: 11482 Burwells Bay Road (046-5728), view to south.



Photo 11: 11504 Burwells Bay Road (046-5729), view to south.



Photo 12: 11522 Burwells Bay Road (046-5780), view to south.



Photo 13: 12002 Burwells Bay Road (046-5781), view to south.



Photo 14: 12024 Burwells Bay Road (046-5782), view to south.



Photo 15: 12046 Burwells Bay Road (046-5783), view to south.



Photo 16: 12064 Burwells Bay Road (046-5784), view to southeast.



Photo 17: 12078 Burwells Bay Road (046-5785), view to southeast.



Photo 18: 9076 Moonlight Road (046-5786), view to west.

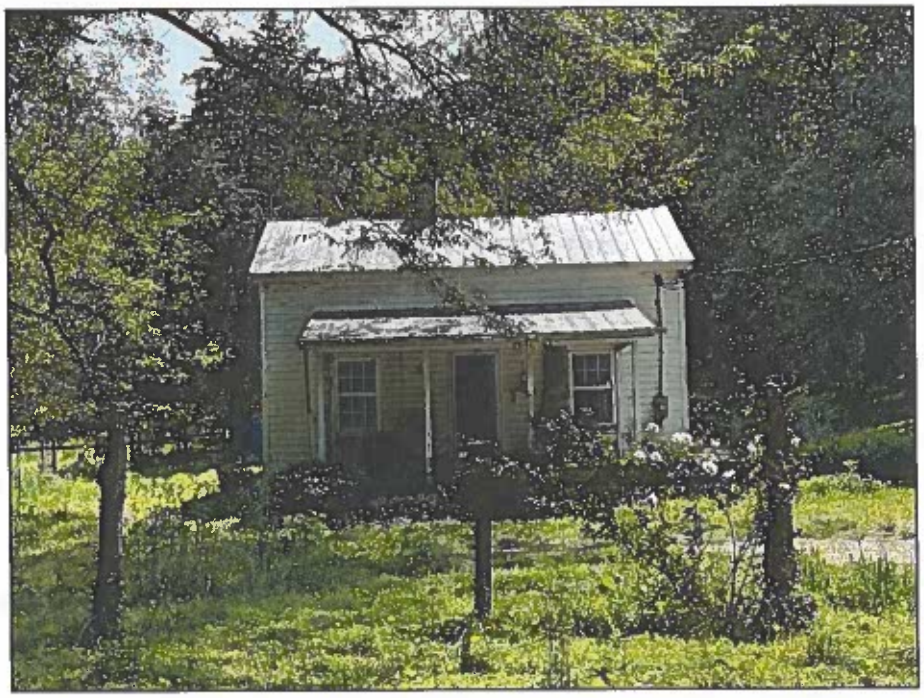

Photo 19: 9211 Moonlight Road (046-5787), view to east.

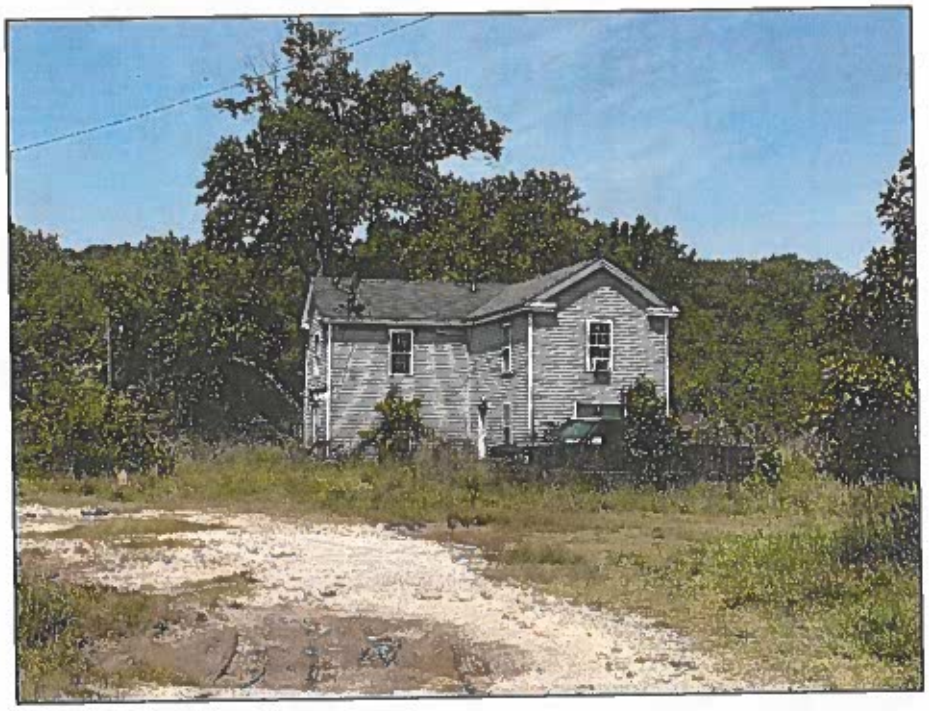

Photo 20: 9290 Moonlight Road (046-5788), view to west.

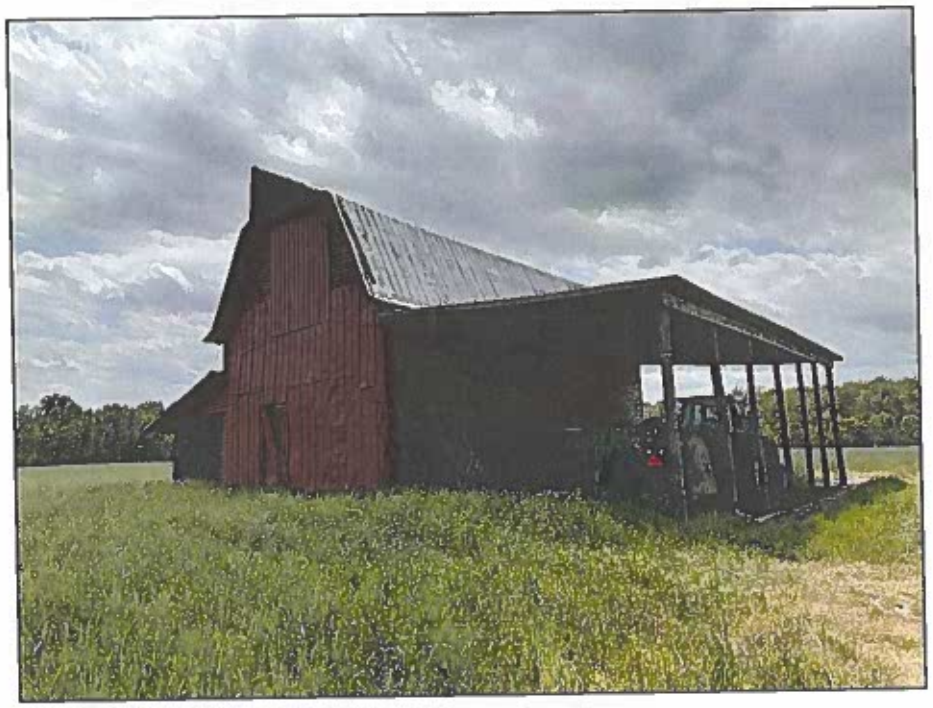

Photo 21: 8462 Moonlight Road (046-5789), view to southwest.

5.0 SUMMARY AND CONCLUSIONS

On behalf of Timmons, Apogee conducted an architectural survey and effects assessment for the proposed Moonlight Solar Facility in Isle of Wight County, Virginia. The purpose of the architectural survey and effects assessment was to identify historic properties, those listed in or eligible for listing in the NRHP, and to assess the effects of the proposed Project on those properties. A total of 21 historic resources were surveyed within the architectural APE (2 previously recorded and 19 newly identified). Effects were assessed to gauge the potential direct and indirect effects on historic properties located within the architectural APE.

Overall, it is Apogee's finding that the proposed Project will have an **no adverse effect** on the 21 properties surveyed within the architectural APE.

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https://virginiahistory.org/learn/story-of-virginia/chapter/reconstruction,

Appendix A: DHR VCRIS Inventory Forms

Property Information

Property Names

Name Explanation	Name
Function/Location	House, Route 627

Property Evaluation Status

Property Addresses

Current - 7141 Moonlight Road Route 627

County/Independent City(s): Isle of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): *No Data*
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 9.35
Site Description:

May 2023: This house is located in a rural area on the east side of Moonlight Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Smithfield is located 8.5-miles southeast of the property. The roughly 9-acre property is comprised of grass and pastures that spans the majority of the property with a long gravel driveway that leads to the rear south of the main house from Moonlight Road. Mature trees are located throughout the parcel, primarily along the southern edge of the parcel's boundary and along Moonlight Road.

Surveyor Assessment:

1973: The house on Route 627 is typical of an early 19th century center hall story and a half one room deep plan found in Surry (Warren Crossroads House) Nansemond Pulley House, W. Holliday House) and Isle of Wight (original block of the Nurney Farm), per intensive survey.

May 2023: Overall, this property retains a moderate level of integrity. The exterior alterations, including multiple additions have diminished this house's integrity of materials. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: ca 1770
Date Source: Local Records
Historic Time Period: Early National Period (1790 - 1829)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Georgian
Form: *No Data*
Number of Stories: 1.5
Condition: Good
Interior Plan: Central Passage, Single Pile
Threats to Resource: Vacant

Cultural Affiliations: Indeterminate

Cultural Affiliation Details: *No Data*

Architectural Description:

Architecture Summary, October 1973: Frame with some early beaded weatherboard surviving at the end gables, the House on Route 627 has an exterior chimney at each end laid in three course American bond with stepped double weatherings., intensive survey.

May 2023: The 1.5-story, side-gabled Georgian Revival farmhouse has an irregular plan with many additions added over the years. The west elevation has a side-gabled roof and is covered with composite shingles with two brick chimneys on the roof edges. The front door is centered on the south elevation and is accessed a full-width wood porch. The windows are all double-hung sash and vary between six-over-six and nine-over-nine.

Exterior Components

Component	Component Type	Material	Material Treatment
Chimneys	Exterior End	Brick	Other
Roof	Gable	Asphalt	Shingle
Windows	Sash, Double-Hung	Wood	4/4
Foundation	Solid/Continuous	Brick	*No Data*
Structural System and Exterior Treatment	Frame	Wood	Weatherboard
Windows	Sash, Double-Hung	Wood	9/6
Structural System and Exterior Treatment	Masonry	*No Data*	*No Data*
Porch	1-Story Full-Width	Wood	Posts

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic

Resource Type: Kitchen

NR Resource Type: Building

Not Observed: This resource was not observed during the last survey.

Date of Construction: *No Data*

Date Source: *No Data*

Historic Time Period: *No Data*

Historic Context(s): Domestic

Other ID Number: *No Data*

Architectural Style: *No Data*

Form: *No Data*

Number of Stories: 1.0

Condition: *No Data*

Threats to Resource: *No Data*

Cultural Affiliations: *No Data*

Cultural Affiliation Details: *No Data*

Architectural Description:

October 1973: No additional information

May 2023: Located immediately surrounding the primary dwelling are multiple agricultural outbuildings. From the public ROW, there are no discernable details.

Secondary Resource #2

Resource Category: Agriculture/Subsistence

Resource Type: Smoke/Meat House

NR Resource Type: Building

Not Observed: This resource was not observed during the last survey.

Date of Construction: *No Data*

Date Source: *No Data*

Historic Time Period: *No Data*

Historic Context(s): Domestic

Other ID Number:	*No Data*
Architectural Style:	*No Data*
Form:	*No Data*
Number of Stories:	1.0
Condition:	*No Data*
Threats to Resource:	*No Data*
Cultural Affiliations:	*No Data*
Cultural Affiliation Details:	*No Data*

Architectural Description:

October 1973: No additional information.

May 2023: Located immediately surrounding the primary dwelling are multiple agricultural outbuildings. From the public ROW, there are no discernable details.

Secondary Resource #3

Resource Category:	Agriculture/Subsistence
Resource Type:	Granary
NR Resource Type:	Building
Not Observed:	This resource was not observed during the last survey.
Date of Construction:	*No Data*
Date Source:	*No Data*
Historic Time Period:	*No Data*
Historic Context(s):	Domestic
Other ID Number:	*No Data*
Architectural Style:	*No Data*
Form:	*No Data*
Number of Stories:	1.0
Condition:	*No Data*
Threats to Resource:	*No Data*
Cultural Affiliations:	*No Data*
Cultural Affiliation Details:	*No Data*

Architectural Description:

Architecture Summary, October 1973: 2 granaries

May 2023: Located immediately surrounding the primary dwelling are multiple agricultural outbuildings. From the public ROW, there are no discernable details.

Secondary Resource #4

Resource Category:	Agriculture/Subsistence
Resource Type:	Granary
NR Resource Type:	Building
Not Observed:	This resource was not observed during the last survey.
Date of Construction:	*No Data*
Date Source:	*No Data*
Historic Time Period:	*No Data*
Historic Context(s):	Domestic
Other ID Number:	*No Data*
Architectural Style:	*No Data*
Form:	*No Data*
Number of Stories:	*No Data*
Condition:	*No Data*
Threats to Resource:	*No Data*
Cultural Affiliations:	*No Data*
Cultural Affiliation Details:	*No Data*

Architectural Description:

Architecture Summary, October 1973: 2 granaries

May 2023: Located immediately surrounding the primary dwelling are multiple agricultural outbuildings. From the public ROW, there are no discernable details.

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Event Type: Survey:Phase II/Intensive

Project Review File Number: *No Data*
Investigator: Herman, Bernard L.
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 10/1/1973
Dhr Library Report Number: *No Data*
Project Staff/Notes:
No Data

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 9346 Moonlight Road
Function/Location	Store, 11489 Mill Swamp Road
Function/Location	Store, intersection of Mill Swamp Road and Moonlight Road

Property Evaluation Status

Property Addresses

Current - 9346 Moonlight Road
Alternate - 11489 Mill Swamp Road Route 626

County/Independent City(s): Isle of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): 11-01-025
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 1
Site Description:

2005: This commercial building is situated on the northwest corner of the intersection of Mill Swamp Road (626) and Moonlight Road (627). The building faces southeast to the intersection. The area is characterized by open agricultural fields. There are no visible outbuildings associated with this property.

May 2023: The dwelling is the primary resource on the property located on the west side of Moonlight Road. The former store sits at the corner of Moonlight Road and Mill Swamp Road, and multiple sheds are dotted throughout the parcel.

Surveyor Assessment:

2005: Rural commercial buildings deviated in appearance from their urban counterparts of the turn of the 20th century. While most urban or town commercial buildings exhibited a parapeted front and were constructed of brick, the rural stores dominated rural intersections and waterfront transportation points, and appeared like vernacular dwellings of the period. The gabled-fronted store is the most common with a gable roof surmounting a wood frame building. These buildings were mostly two-story, though more modest commercial buildings could be one-story. The commercial buildings served as general stores, hardware stores, groceries or feed stores. The ease and affordability of erecting such a building allowed small business owners to see the addition of a store to, in many cases, their own property as a viable financial venture. The addition of post offices in the late 19th and early 20th century as well the addition of gasoline services in the 1920s and 1930s guaranteed prosperity of the commercial building during these periods. The commercial building served as a social meeting place for area residents and was a hub of the community.

The characteristics of the building are recognizable on the rural landscape. They are usually sited near the roadway and most often sited near an intersection of roadways. They have a dominant storefront on the first story with a central entrance flanked by oversized fixed storefront windows or grouped double-hung sash windows that are oversized. The second stories feature double-hung sash windows and contained additional commercial space or living space for an owner or operator, if the store was operated by someone other than the person who owned the store. The roof was articulated with brackets in many cases or features decorative cornices. With the addition of gas station services in the 1920s and 1930s, the area in front of the building featured gas pumps with light fixtures set upon a poured concrete foundation. An important feature of the commercial building, which has been lost among numerous buildings, is the signage advertising the gasoline brand or good brands available in the store.

May 2023: Overall, the dwelling retains a moderate level of integrity. The exterior alterations, including a wood deck addition and replacement roof, have diminished this house's integrity of materials. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category:	Domestic
Resource Type:	Single Dwelling
NR Resource Type:	Building
Date of Construction:	1930
Date Source:	Local Records
Historic Time Period:	World War I to World War II (1917 - 1945)
Historic Context(s):	Domestic
Other ID Number:	*No Data*
Architectural Style:	Minimal Traditional
Form:	*No Data*
Number of Stories:	1.0
Condition:	Good
Threats to Resource:	None Known
Cultural Affiliations:	Indeterminate
Cultural Affiliation Details:	*No Data*

Architectural Description:

May 2023: The one-story, front-gabled Minimal Traditional house has a rectangular plan and measures four bays wide and three bays deep. It rests on a raised brick foundation and is clad with horizontal vinyl siding. The front-gabled roof is standing seam metal and features three brick chimneys on the roof slope. The front door is centered and is accessed by a wooden front entry porch. The windows are single-hung sash and vary between six-over-six and two-over-two with decorative shutters. The dwelling has experience some alterations over the years, including two shed-roof additions on the north and south elevations.

Exterior Components

Component	Component Type	Material	Material Treatment
Windows	Single-hung	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Vinyl	Siding
Roof	Front Gable	Metal	*No Data*
Porch	Portico/Entry Porch	*No Data*	*No Data*
Foundation	English/Raised	Brick	*No Data*
Chimneys	Interior Slope	Brick	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category:	Commerce/Trade
Resource Type:	Commercial Building
NR Resource Type:	Building
Date of Construction:	1930
Date Source:	Local Records
Historic Time Period:	World War I to World War II (1917 - 1945)
Historic Context(s):	Architecture/Community Planning, Commerce/Trade
Other ID Number:	*No Data*
Architectural Style:	Vernacular
Form:	*No Data*
Number of Stories:	1.0
Condition:	Good
Threats to Resource:	Vacant
Cultural Affiliations:	Indeterminate
Cultural Affiliation Details:	*No Data*

Architectural Description:

2005: This commercial building is one-story and has a brick pier foundation and wood frame structural system clad in weatherboard. The roof is gable clad in standing-seam metal with exposed rafters under the eaves. The façade is dominated by a central entrance flanked by oversized windows. The windows are covered by wood vertical board shutters. The double door on the southeast façade is board and batten. Sheltering the southeast facade is a five-bay porch with plain wood posts and a hipped roof clad in standing-seam metal roof. There is a central interior brick chimney that is parged. The foundation for gas pumps is situated southeast of the façade. It once had a wood gabled shelter that has been removed.

May 2023: No changes since previous survey.

Exterior Components

Component	Component Type	Material	Material Treatment
Roof	Gable	Metal	Standing Seam
Chimneys	Central interior	Brick	Bond, American
Structural System and Exterior Treatment	Frame	Wood	Weatherboard
Foundation	Piers	Brick	Bond, American
Porch	1-story, 3-bay	Wood	Posts

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: David, Kimble
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 3/1/2005
Dhr Library Report Number: *No Data*
Project Staff/Notes:
2004-2005-0001
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data

Property Notes:
Name: Jesse & Janet Appel
Address 1: 9346 Moonlight Road
City: Smithfield
State: Virginia
ZIP: 23430
Owner Relationship: Owner of property

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 7296 Moonlight Road

Property Evaluation Status

Property Addresses

Current - 7296 Moonlight Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: .73
Site Description:

May 2023: This house is located in a rural area on the west side of Moonlight Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 8-miles southeast of the property. The nearly 1-acre property is comprised of grass that spans the majority of the property with a concrete driveway that leads to an attached carport from Moonlight Road. Mature trees are dotted throughout the parcel and primarily located along the north, west, and south boundaries of the parcel.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-to-late-twentieth century dwelling. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1976
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Ranch
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023. The one-story, side-gabled Ranch-style house has a rectangular plan and measures four bays wide and two bays deep. The foundation is concrete and the dwelling is clad in vinyl siding and stretcher bond brick. The roof is composite shingles. The front door is off-centered and accessed four brick steps and metal railings. The windows are all one-over-one single hung sash. An attached side-gabled carport is located on south elevation.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Slab	Concrete	*No Data*
Roof	Side Gable	Composite	*No Data*
Structural System and Exterior Treatment	Not Visible	Vinyl	Siding
Structural System and Exterior Treatment	Not Visible	Brick	Stretcher Bond
Windows	Single-hung	*No Data*	*No Data*

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 7286 Moonlight Road

Property Evaluation Status

Property Addresses

Current - 7286 Moonlight Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 1.33
Site Description:

May 2023: This house is located in a rural area on the west side of Moonlight Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 8-miles southeast of the property. The roughly 1-acre property is comprised of grass that spans the majority of the property with a concrete driveway that leads to an attached garage from Moonlight Road. Mature trees are dotted throughout the parcel and primarily located along the west and south boundaries of the parcel.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-to-late-twentieth century dwelling. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1976
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Ranch
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The one-story, side-gabled Ranch-style house has a rectangular plan and measures five bays wide and two bays deep. The foundation is not visible and the dwelling is clad in vertical aluminum siding. The roof is composite shingles. The front door is centered under the roof slope porch and accessed from a wood deck. The windows are all one-over-one single-hung sash.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Porch	Stoop/Deck	*No Data*	*No Data*
Roof	Side Gable	Composite	*No Data*
Structural System and Exterior Treatment	Wood Frame	*No Data*	*No Data*
Windows	Single-hung	*No Data*	*No Data*

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 8190 Moonlight Road

Property Evaluation Status

Property Addresses

Current - 8190 Moonlight Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 2.61
Site Description:

May 2023: This house is located in a rural area on the west side of Moonlight Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 7-miles southeast of the property. The nearly 3-acre property is comprised of farmland that spans the majority of the property with a gravel driveway that leads to the main house from Moonlight Road. Mature trees are dotted around the main dwelling and span the north, west, and south boundaries.

Surveyor Assessment:

May 2023: Overall, this property retains a high level of integrity. However, his property is an undistinguished example of a early-twentieth century Colonial Farmhouse. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1902
Date Source: Local Records
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic, Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: Colonial Revival
Form: *No Data*
Number of Stories: 2.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The two-story, side-gabled Colonial farmhouse has a rectangular plan. Public ROW assessment indicates a wood frame dwelling with an exterior brick chimney. A lean-to addition is located on the east elevation.

Exterior Components

Component	Component Type	Material	Material Treatment
Chimneys	Exterior End	Brick	No Data
Structural System and Exterior Treatment	Wood Frame	No Data	No Data
Roof	Side Gable	No Data	No Data

Secondary Resource Information

Secondary Resource #1

Resource Category: Agriculture/Subsistence
Resource Type: Agricultural Outbuildings
NR Resource Type: Building
Not Observed: This resource was not observed during the last survey.
Date of Construction: No Data
Date Source: No Data
Historic Time Period: No Data
Historic Context(s): No Data
Other ID Number: No Data
Architectural Style: No Data
Form: No Data
Number of Stories: No Data
Condition: No Data
Threats to Resource: No Data
Cultural Affiliations: No Data
Cultural Affiliation Details: No Data
Architectural Description:

May 2023: Located immediately surrounding the primary dwelling are multiple agricultural outbuildings. From the public ROW, there are not discernable details.

Historic District Information

Historic District Name: No Data
Local Historic District Name: No Data
Historic District Significance: No Data

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: No Data
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: No Data
Project Staff/Notes:

Amanda Commins, Architectural Historian

Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data

Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 8179 Moonlight Road

Property Evaluation Status

Property Addresses

Current - 8179 Moonlight Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 1.07
Site Description:

May 2023: This house is located in a rural area on the east side of Moonlight Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 7-miles southeast of the property. The roughly 1-acre property is comprised of grass that spans the majority of the property with a gravel driveway that leads to the rear of the main house from Moonlight Road. Mature trees are dotted throughout the parcel.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-twentieth century dwelling. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1975
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Ranch
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The one-story, side-gabled Ranch-style house has a rectangular plan and measures four bays wide and two bays deep. The foundatio n is concrete and the dwelling is clad vinyl siding. The roof is composite shingles with a lean-to wood entry porch accessed by four wood steps. The windows are all one-over-one single-hung sash with decorative shutters.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	English/Raised	Concrete	*No Data*
Porch	Portico/Entry Porch	Wood	Posts
Roof	Side Gable	Composite	*No Data*
Structural System and Exterior Treatment	Unknown	Vinyl	Siding
Windows	Single-hung	*No Data*	*No Data*

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 7364 Moonlight Road

Property Evaluation Status

Property Addresses

Current - 7364 Moonlight Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 29.38
Site Description:

May 2023: This house is located in a rural area on the west side of Moonlight Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 7-miles southeast of the property. The nearly 30-acre property is comprised of farmland that spans the majority of the property with a gravel driveway that leads from Moonlight Road and circles to the rear of the property. Mature trees are dotted around the main dwelling and span the north, west, and south boundaries.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, this property is an undistinguished example of a Vernacular late-nineteenth century dwelling. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1898
Date Source: Local Records
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Vernacular
Form: *No Data*
Number of Stories: 1.0
Condition: Fair
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The one-story, side-gabled Vernacular house has a square rectangular plan and measures three bays wide and five bays deep. It rests on a raised stone foundation and is clad with wood siding. The side-gabled roof is covered with composite shingles and features one brick chimney on the rear addition. The front door is centered and is accessed by three steps. The windows are all one-over-one replacement single-hung sash. A gable addition is located at the rear of the property on the west elevation.

Exterior Components

Component	Component Type	Material	Material Treatment
Chimneys	Interior Slope	Brick	*No Data*
Foundation	English/Raised	*No Data*	*No Data*
Roof	Side Gable	Composite	*No Data*
Structural System and Exterior Treatment	Wood Frame	*No Data*	*No Data*
Windows	Single-hung	*No Data*	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Agriculture/Subsistence
Resource Type: Agricultural Outbuildings
NR Resource Type: Building
Not Observed: This resource was not observed during the last survey.
Date of Construction: *No Data*
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): *No Data*
Other ID Number: *No Data*
Architectural Style: *No Data*
Form: *No Data*
Number of Stories: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Cultural Affiliations: *No Data*
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: Located in the rear of the main dwelling are a few agricultural outbuildings not observed from the public ROW. According to maps, they appear to be in fair condition.

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc
Photographic Media: Digital
Survey Date: 5/10/2023

Dhr Library Report Number: *No Data*

Project Staff/Notes:

Amanda Commins, Architectural Historian

Project Bibliographic Information:

Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 7283 Moonlight Road

Property Evaluation Status

Property Addresses

Current - 7283 Moonlight Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 1
Site Description:

May 2023: This house is located in a rural area on the east side of Moonlight Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 8-miles southeast of the property. The 1-acre property is comprised of grass and mature trees that spans the majority of the property with a metal entry gate just off of Moonlight Road.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-to-late-twentieth century dwelling. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1975
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Vernacular
Form: *No Data*
Number of Stories: 2.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The two-story, side-gabled Vernacular dwelling has a rectangular plan. Public ROW assessment indicates a wood frame dwelling

clad in plaster and wood siding with a standing seam metal roof. A full-width wood porch is located on the second story.

Exterior Components

Component	Component Type	Material	Material Treatment
Porch	1-Story Full-Width	Wood	Posts
Roof	Side Gable	Metal	*No Data*
Structural System and Exterior Treatment	Wood Frame	Wood	Siding
Structural System and Exterior Treatment	Wood Frame	*No Data*	Stuccoed

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Secondary Dwelling
NR Resource Type: Building
Not Observed: This resource was not observed during the last survey.
Date of Construction: *No Data*
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): *No Data*
Other ID Number: *No Data*
Architectural Style: *No Data*
Form: *No Data*
Number of Stories: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Cultural Affiliations: *No Data*
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: Located adjacent to the primary dwelling is a secondary dwelling with little visibility from the public ROW due to increased foliage.

Secondary Resource #2

Resource Category: Domestic
Resource Type: Garage
NR Resource Type: Building
Date of Construction: 1975
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: *No Data*
Number of Stories: 1.0
Condition: Fair
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: Located adjacent to the primary dwelling is a two-story wood frame garage. The roof is standing seam metal front gable and the primary facade features fixed windows.

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 8063 Moonlight Road

Property Evaluation Status

Property Addresses

Current - 8063 Moonlight Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 1.39
Site Description:

May 2023: This house is located in a rural area on the east side of Moonlight Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 7.5-miles southeast of the property. The nearly 1.5-acre property is comprised of grass that spans the majority of the property with a gravel driveway that leads to the rear of the main house from Moonlight Road. Mature trees are dotted throughout the parcel.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-twentieth century dwelling. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1973
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Ranch
Form: *No Data*
Number of Stories: 1.0
Condition: Fair
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The one-story, cross-gabled Ranch-style house has a rectangular plan and measures five bays wide and two bays deep. The foundation is concrete block and the dwelling is vinyl siding. The roof is composite shingles and has one chimney on the center. The front door is off-centered under a lean-to wood entry porch accessed four wood steps. The windows are all single-hung sash and vary between six-over-six and one-over-one.

Exterior Components

Component	Component Type	Material	Material Treatment
Chimneys	Interior Central	*No Data*	*No Data*
Foundation	English/Raised	Concrete	Block
Porch	Portico/Entry Porch	Wood	Posts
Roof	Cross Gable	Composite	*No Data*
Structural System and Exterior Treatment	Wood Frame	Vinyl	Siding
Windows	Single-hung	*No Data*	*No Data*

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 11482 Burwells Bay Road

Property Evaluation Status

Property Addresses

Current - 11482 Burwells Bay Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 1.5
Site Description:

May 2023: This house is located in a rural area on the south side of Burwells Bay Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 8-miles southeast of the property. The 1.5-acre property is comprised of grass that spans the majority of the property with a gravel driveway that leads to the rear detached garage and carport from Burwells Bay Road. Mature trees are dotted throughout the parcel.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-to-late-twentieth century Ranch. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1969
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Ranch
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023. The one-story, cross-gabled Ranch-style house has a rectangular plan and measures four bays wide and two bays deep. It rests on a brick foundation and clad in stretcher bond brick. The side-gabled roof is covered with composite shingles and features a brick chimney on the central slope. The front door is off-centered under a partial width posted porch and accessed by two brick steps. The windows are one-over-one single-hung sash with decorative shutters.

Exterior Components

Component	Component Type	Material	Material Treatment
Chimneys	Interior Central	Brick	*No Data*
Foundation	Solid/Continuous	*No Data*	*No Data*
Porch	1-Story Partial Width	*No Data*	Posts
Roof	Cross Gable	Composite	*No Data*
Structural System and Exterior Treatment	Not Visible	Brick	Stretcher Bond
Windows	Single-hung	*No Data*	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Garage
NR Resource Type: Building
Date of Construction: 1969
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: Located in the rear of the property is a two-car garage. The structure has a front-gable composite roof and is clad in vinyl siding. A fixed window with 12 panes is located on the primary facade.

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023

Dhr Library Report Number: *No Data*

Project Staff/Notes:

Amanda Commins, Architectural Historian

Project Bibliographic Information:

Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 11504 Burwells Bay Road

Property Evaluation Status

Property Addresses

Current - 11504 Burwells Bay Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 1
Site Description:

May 2023: This house is located in a rural area on the south side of Burwells Bay Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 8 miles southeast of the property. The 1-acre property is comprised of grass that spans the majority of the property with a gravel driveway that leads to the attached carport and to the rear detached garage from Burwells Bay Road. Mature trees are dotted throughout the parcel.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-to-late-twentieth century Ranch. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1973
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Ranch
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The one-story, side-gabled Ranch-style house has a rectangular plan and measures five bays wide and three bays deep. It rests on a brick foundation and clad in vinyl siding. The cross-gabled roof is covered with composite shingles. The front door is off-centered and accessed by three brick steps. The windows are one-over-one single-hung sash with decorative shutters. An attached carport is located off the west elevation.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	English/Raised	Brick	*No Data*
Roof	Cross Gable	Composite	*No Data*
Structural System and Exterior Treatment	Not Visible	Brick	Stretcher Bond
Structural System and Exterior Treatment	Not Visible	Vinyl	Siding
Windows	Single-hung	*No Data*	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Garage
NR Resource Type: Building
Date of Construction: 1973
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: Located in the rear of the property is a vinyl sided single garage with attached carport. The roof is front-gable and the carport has a shed roof.

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023

Dhr Library Report Number: *No Data*

Project Staff/Notes:

Amanda Commins, Architectural Historian

Project Bibliographic Information:

Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 11522 Burwells Bay Road

Property Evaluation Status

Property Addresses

Current - 11522 Burwells Bay Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 1
Site Description:

May 2023: This house is located in a rural area on the south side of Burwells Bay Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 8-miles southeast of the property. The 1-acre property is comprised of grass that spans the majority of the property with a gravel driveway that leads to the rear of the main house from Burwells Bay Road. Mature trees are dotted throughout the parcel.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-to-late-twentieth century Ranch. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1972
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Ranch
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The one-story, cross-gabled Ranch-style house has a rectangular plan and measures six bays wide and two bays deep. The dwelling i s clad in stretcher bond brick and the roof is covered with composite shingles. The front door is off-centered under the roof slope and accessed by four brick steps. The windows are six-over-six single-hung sash with decorative shutters. The main facade features a single garage.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Not Visible	*No Data*	*No Data*
Roof	Cross Gable	Brick	*No Data*
Structural System and Exterior Treatment	Not Visible	Brick	Stretcher Bond
Windows	Single-hung	*No Data*	*No Data*

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	**Name**
Function/Location	Dwelling, 12002 Burwells Bay Road

Property Evaluation Status

Property Addresses

Current - 12002 Burwells Bay Road

County/Independent City(s):	Isle Of Wight (County)
Incorporated Town(s):	*No Data*
Zip Code(s):	23430
Magisterial District(s):	*No Data*
Tax Parcel(s):	*No Data*
USGS Quad(s):	BACONS CASTLE

Additional Property Information

Architecture Setting:	Rural
Acreage:	1

Site Description:

May 2023: This house is located in a rural area on the south side of Burwells Bay Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 8-miles southeast of the property. The 1-acre property is comprised of grass that spans the majority of the property with a gravel driveway that leads to the rear of the main house from Burwells Bay Road. Mature trees are dotted throughout the parcel.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-to-late-twentieth century Ranch. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	**Ownership Entity**
Private	*No Data*

Primary Resource Information

Resource Category:	Domestic
Resource Type:	Single Dwelling
NR Resource Type:	Building
Date of Construction:	1973
Date Source:	Local Records
Historic Time Period:	The New Dominion (1946 - 1991)
Historic Context(s):	Domestic
Other ID Number:	*No Data*
Architectural Style:	Ranch
Form:	*No Data*
Number of Stories:	1.0
Condition:	Good
Threats to Resource:	None Known
Cultural Affiliations:	Indeterminate
Cultural Affiliation Details:	*No Data*
Architectural Description:	

May 2023: The one-story, cross-gabled Ranch-style house has a rectangular plan and measures seven bays wide and two bays deep. The dwelling is clad in stretcher bond brick and the roof is covered with composite shingles and features two brick chimneys. The front door is off-centered under the roof slope. The windows are one-over-one single-hung sash with decorative shutters.

Exterior Components

Component	Component Type	Material	Material Treatment
Chimneys	Exterior End	Brick	*No Data*
Foundation	Not Visible	*No Data*	*No Data*
Roof	Cross Gable	Composite	*No Data*
Structural System and Exterior Treatment	Not Visible	Brick	Stretcher Bond
Windows	Single-hung	*No Data*	*No Data*

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 12024 Burwells Bay Road

Property Evaluation Status

Property Addresses

Current - 12024 Burwells Bay Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 1
Site Description:

May 2023: This house is located in a rural area on the south side of Burwells Bay Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 8-miles southeast of the property. The 1-acre property is comprised of grass that spans the majority of the property with a asphalt driveway that leads to the rear of the main house and curves in front of the property from Burwells Bay Road. Mature trees are dotted throughout the parcel.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-to-late-twentieth century Ranch. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1973
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Ranch
Form: *No Data*
Number of Stories: 1.0
Condition: Fair
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The one-story, side-gabled Ranch-style house has a rectangular plan and measures seven bays wide and two bays deep. It rests on a concrete foundation and composed of stretcher bond brick. The side-gabled roof is covered with composite shingles. The front door is off-centered and accessed by three brick steps with wood railing. The windows are all two-over-single single-hung sash with decorative shutters.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Slab	Concrete	*No Data*
Roof	Side Gable	Composite	*No Data*
Structural System and Exterior Treatment	Masonry	Brick	*No Data*
Windows	Single-hung	*No Data*	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Garage
NR Resource Type: Building
Date of Construction: 1973
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: Located in the rear of the dwelling is a steep composite shingle front-gabled two-car garage clad in vinyl siding.

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Amanda Commins, Architectural Historian

Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data

Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 12046 Burwells Bay Road

Property Evaluation Status

Property Addresses

Current - 12046 Burwells Bay Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 1
Site Description:

May 2023: This house is located in a rural area on the south side of Burwells Bay Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 8-miles southeast of the property. The 1-acre property is comprised of grass that spans the majority of the property with a concrete driveway that leads to the attached garage and rear of the main house from Burwells Bay Road. Mature trees are dotted throughout the parcel.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-to-late-twentieth century Ranch. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1970
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Ranch
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The one-story, side-gabled Ranch-style house has a rectangular plan and measures seven bays wide and two bays deep. The dwelling is clad in stretcher bond brick and the side-gabled roof is covered with composite shingles. The front door is centered on the original structure and accessed by four brick brick steps. The windows are single-hung sash and fixed with decorative shutters and vary between eight-over-over and six-over-six. An addition is located on the west elevation and is clad with vinyl siding.

Exterior Components

Component	Component Type	Material	Material Treatment
Chimneys	Interior Slope	Brick	*No Data*
Roof	Side Gable	Composite	*No Data*
Structural System and Exterior Treatment	Not Visible	Brick	Stretcher Bond
Windows	Single-hung	*No Data*	*No Data*
Windows	Fixed	*No Data*	*No Data*

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 12064 Burwells Bay Road

Property Evaluation Status

Property Addresses

Current - 12064 Burwells Bay Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 1
Site Description:

May 2023: This house is located in a rural area on the south side of Burwells Bay Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 8-miles southeast of the property. The 1-acre property is comprised of grass that spans the majority of the property with a gravel driveway that leads to the rear of the main house from Burwells Bay Road. Mature trees are dotted throughout the parcel.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-to-late-twentieth century Ranch. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1963
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Ranch
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The one-story, side-gabled Ranch-style house has a rectangular plan and measures four bays wide and three bays deep. It rests on a brick foundation and clad in stretcher bond brick. The side-gabled roof is covered with composite shingles. The front door is off-centered under a front gabled wood pediment front posted porch and accessed by two brick steps. The windows are six-over-six single-hung sash with decorative shutters. A secondary entry is accessible from the west elevation via a set of wood steps.

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	*No Data*	*No Data*
Porch	Portico/Entry Porch	*No Data*	Posts
Roof	Side Gable	Composite	*No Data*
Structural System and Exterior Treatment	Masonry	Brick	Stretcher Bond
Windows	Single-hung	*No Data*	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Garage
NR Resource Type: Building
Date of Construction: pre 1994
Date Source: Map
Historic Time Period: Post Cold War (1992 - Present)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: Located in the rear of the dwelling is a two-car garage with a gambrel roof. The structure has vinyl siding and a fixed window on the north elevation.

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*

Project Staff/Notes:

Amanda Commins, Architectural Historian

Project Bibliographic Information:

Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 12078 Burwells Bay Road

Property Evaluation Status

Property Addresses

Current - 12078 Burwells Bay Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: .95
Site Description:

May 2023: This house is located in a rural area on the far north side of Flat Rock Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 5-miles southeast of the property. The 1.5-acre property is comprised of grass that spans the majority of the property with a long gravel driveway that leads to the carport east of the main house from Flat Rock Road. Mature trees are located throughout the parcel, primarily along the western edge of the parcel's boundary.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a mid-twentieth century dwelling. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1971
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Minimal Traditional
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023. The one-story, side-gabled Minimal Traditional house has a rectangular plan and measures four bays wide and two bays deep. It rests on a concrete block foundation and is clad with horizontal vinyl siding. The side-gabled roof is covered with composite shingles and features one brick chimney on exterior end. The front door is off-centered under a front gabled pediment front posted porch and accessed by four wood steps. The windows are one-over-one double-hung sash and fixed.

Exterior Components

Component	Component Type	Material	Material Treatment
Chimneys	Exterior End	Concrete	*No Data*
Foundation	English/Raised	Concrete	*No Data*
Porch	Portico/Entry Porch	*No Data*	*No Data*
Roof	Side Gable	Composite	*No Data*
Structural System and Exterior Treatment	Masonry	*No Data*	*No Data*
Windows	Double-hung	*No Data*	*No Data*

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 9076 Moonlight Road

Property Evaluation Status

Property Addresses

Current - 9076 Moonlight Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 34.08

Site Description:

May 2023: This dwelling is located in a rural area on the west side of Moonlight Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 6-miles southeast of the property. The roughly 34-acre property is comprised of farmland and grass that spans the majority of the property. Mature trees border the parcel along the north, south, and west boundaries.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. The exterior alterations, including replacement siding, have diminished this house's integrity of materials. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1954
Date Source: Local Records
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic, Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: Ranch
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*

Architectural Description:

May 2023: The one-story, side-gabled Ranch-style house has a square rectangular plan and measures five bays wide and two bays deep. It rests

on a brick foundation and is clad with horizontal vinyl siding. The cross-gabled roof is covered with composite shingles and features one brick chimney on the roof slope. The front door is off-centered and is accessed by two brick and concrete steps under a small gabled awning. The windows are all six-over-six single-hung sash. A wooden deck addition is located at the rear of the property and an attached carport is located on the south elevation.

Exterior Components

Component	Component Type	Material	Material Treatment
Chimneys	Interior Slope	Brick	*No Data*
Foundation	English/Raised	Brick	*No Data*
Porch	Portico/Entry Porch	*No Data*	*No Data*
Roof	Cross Gable	Composite	*No Data*
Structural System and Exterior Treatment	Unknown	Vinyl	*No Data*
Windows	Single-hung	*No Data*	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Garage
NR Resource Type: Building
Date of Construction: pre 1966
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic, Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: Located in the rear of the dwelling is a front-gabled garage with a lean-to addition and flat roof covered porch. The roof is clad in composite shingle and the walls are vinyl siding.

Secondary Resource #2

Resource Category: Domestic
Resource Type: Garage
NR Resource Type: Building
Date of Construction: pre 1989
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic, Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: *No Data*
Number of Stories: 1.0
Condition: Fair
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: Located in the rear of the dwelling is a flat roof garage with a square shape. The roof and siding is standing seam metal and one garage door is located on the west east elevation.

Secondary Resource #3

Resource Category:	Domestic
Resource Type:	Mobile Home/Trailer
NR Resource Type:	Building
Date of Construction:	ca 2008
Date Source:	Map
Historic Time Period:	Post Cold War (1992 - Present)
Historic Context(s):	Domestic
Other ID Number:	*No Data*
Architectural Style:	No discernible style
Form:	*No Data*
Number of Stories:	1.0
Condition:	Fair
Threats to Resource:	None Known
Cultural Affiliations:	Indeterminate
Cultural Affiliation Details:	*No Data*

Architectural Description:

May 2023: Located northwest of the primary dwelling is a secondary mobile home. The rectangular plan is constructed of concrete and aluminum siding with four-over-four single-hung sash windows.

Historic District Information

Historic District Name:	*No Data*
Local Historic District Name:	*No Data*
Historic District Significance:	*No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number:	*No Data*
Investigator:	Chris Swisher
Organization/Company:	Apogee Environmental & Archaeological, Inc.
Photographic Media:	Digital
Survey Date:	5/10/2023
Dhr Library Report Number:	*No Data*

Project Staff/Notes:

Amanda Commins, Architectural Historian

Project Bibliographic Information:

Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 9211 Moonlight Road

Property Evaluation Status

Property Addresses

Current - 9211 Moonlight Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 2

Site Description:

May 2023: This dwelling is located in a rural area on the east side of Moonlight Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 6.5-miles southeast of the property. The 2-acre property is comprised of grasses and mature trees that border the entire parcel. A gravel driveway circles the driveway.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. However, his property is an undistinguished example of a early-twentieth century dwelling. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1921
Date Source: Local Records
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Minimal Traditional
Form: *No Data*
Number of Stories: 1.0
Condition: Fair
Threats to Resource: Neglect
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The one-story, side-gabled vernacular house has a square plan and measures three bays wide and two bays deep. It rests on a concrete block foundation and is clad with horizontal wood siding. The side-gabled roof is clad in standing seam metal and features two brick chimneys centered on the roof slope and rear shed roof addition. The front door is centered and is accessed by two concrete steps. The windows are all double-hung sash and vary between six-over-six and one-over-one. A shed-roofed extension is located at the rear of the property on the east elevation.

Exterior Components

Component	Component Type	Material	Material Treatment
Chimneys	Interior Slope	Brick	*No Data*
Foundation	English/Raised	Concrete	Block
Porch	Portico/Entry Porch	*No Data*	Posts
Roof	Side Gable	Metal	*No Data*
Structural System and Exterior Treatment	Wood Frame	*No Data*	*No Data*
Windows	Double-hung	*No Data*	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Agriculture/Subsistence
Resource Type: Barn
NR Resource Type: Building
Not Observed: This resource was not observed during the last survey.
Date of Construction: *No Data*
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): *No Data*
Other ID Number: *No Data*
Architectural Style: *No Data*
Form: *No Data*
Number of Stories: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Cultural Affiliations: *No Data*
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: Located in the rear of the main dwelling is a barn not observed from the public ROW. According to maps, it appears to be in fair condition.

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc.
Photographic Media: Digital

Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Dwelling, 9290 Moonlight Road

Property Evaluation Status

Property Addresses

Current - 9290 Moonlight Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 9.76
Site Description:

May 2023: This dwelling is located in a rural area on the west side of Moonlight Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 6-miles southeast of the property. The nearly 10-acre property is comprised of grass immediately surrounding the dwelling with mature trees making up the majority of the parcel along the north and west boundaries.

Surveyor Assessment:

May 2023: Overall, this property retains a moderate level of integrity. The exterior alterations, including replacement siding and windows, have diminished this house's integrity of materials. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Date of Construction: 1880
Date Source: Local Records
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic, Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: Vernacular
Form: *No Data*
Number of Stories: 2.0
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The two-story, cross-gabled ell-style house has a rectangular plan and measures two bays wide and five bays deep. It rests on a raise d foundation and is clad with horizontal vinyl siding. The cross-gabled roof is covered with asphalt shingles and features cornice returns. The front door is located in the ell on the south elevation. The windows are all six-over-six single-hung sash A one-story gabled addition is located in the rear of the property.

Exterior Components

Component	Component Type	Material	Material Treatment
Windows	Single-hung	*No Data*	*No Data*
Structural System and Exterior Treatment	Wood Frame	Vinyl	Siding
Roof	Cross Gable	Asphalt	*No Data*

Secondary Resource Information

Secondary Resource #1

Resource Category: Agriculture/Subsistence
Resource Type: Shed
NR Resource Type: Building
Date of Construction: pre 1966
Date Source: Map
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic, Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: *No Data*
Number of Stories: 1.0
Condition: Fair
Threats to Resource: Structural Failure
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: Located adjacent to the main dwelling is a small stone structure used as a storage shed. The gabled roof is standing seam metal.

Secondary Resource #2

Resource Category: Agriculture/Subsistence
Resource Type: Agricultural Outbuildings
NR Resource Type: Building
Not Observed: This resource was not observed during the last survey.
Date of Construction: *No Data*
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): *No Data*
Other ID Number: *No Data*
Architectural Style: *No Data*
Form: *No Data*
Number of Stories: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Cultural Affiliations: *No Data*
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: Located in the rear of the main dwelling are a few agricultural outbuildings not observed from the public ROW. According to maps, they appear to be in poor condition and not currently in use.

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	Barn, 8462 Moonlight Road

Property Evaluation Status

Property Addresses

Current - 8462 Moonlight Road

County/Independent City(s): Isle Of Wight (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23430
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): BACONS CASTLE

Additional Property Information

Architecture Setting: Rural
Acreage: 77

Site Description:

May 2023: This barn is located in a rural area on the far west side of Moonlight Road. The buildings in the immediate vicinity of the house are residential and agricultural, and downtown Alberta is located 6.5-miles southeast of the property. The 77-acre property is comprised of farmland that spans the majority of the property. Mature trees border the parcel along the north, south, and west boundaries.

Surveyor Assessment:

May 2023: Overall, this property retains a high level of integrity. However, his property is an undistinguished example of a mid-twentieth century barn. It does not embody distinctive characteristics or possess significant or unique architectural or design features. Furthermore, the building has no significant association or linkage to events or persons of demonstrable significance in the past and does not appear to have the ability to yield important and unique information for research based on physical evidence. This architectural resource is recommended as not eligible for the NRHP under Criteria A, B, C, or D.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Agriculture/Subsistence
Resource Type: Barn
NR Resource Type: Building
Date of Construction: ca 1950
Date Source: Map
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Subsistence/Agriculture
Other ID Number: *No Data*
Architectural Style: Vernacular
Form: *No Data*
Number of Stories: 1.0
Condition: Fair
Threats to Resource: Neglect
Cultural Affiliations: Indeterminate
Cultural Affiliation Details: *No Data*
Architectural Description:

May 2023: The one-story, barn has a standing seam metal gambrel roof. The structure is wood-frame and partially clad in painted metal board. A shed roof open porch is located on the north elevation and an enclosed shed roof addition is located on the south elevation.

Exterior Components

Component	Component Type	Material	Material Treatment
Roof	Gambrel	Metal	*No Data*
Roof	Shed	Metal	*No Data*
Structural System and Exterior Treatment	Wood Frame	*No Data*	*No Data*

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Chris Swisher
Organization/Company: Apogee Environmental & Archaeological, Inc
Photographic Media: Digital
Survey Date: 5/10/2023
Dhr Library Report Number: *No Data*
Project Staff/Notes:
Amanda Commins, Architectural Historian
Project Bibliographic Information:
Historic Architectural Reconnaissance Survey for the Proposed Moonlight Solar Facility in Isle of Wight County, Virginia

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Appendix B: Principal Author Resume

Amanda Commins
amanda@apogee-environmental.com

Architectural Historian
Mobile: (909) 762-3145

Education

University of California, San Diego, CA (2022)
- Extended Studies, Introduction to NEPA Certification

Savannah College of Art and Design, Savannah, GA (2020)
- Master of Arts, Preservation Design

University of California, Berkeley, CA (2017)
- Bachelor of Arts, Urban Studies
- Minor in Sustainable Design

Professional Affiliations

Amanda Commins specializes in Middle Atlantic architectural history, historic preservation design, and transportation planning. Ms. Commins completed her Master of Arts in Preservation Design at Savannah College of Art and Design in 2020. Her course work included examining global preservation practices, performing historic building surveys, documenting and analyzing the form, material, and condition of building features, and designing adaptive reuse solutions. She has completed 2 Historic American Building Surveys in Washington, DC that provided detailed descriptions of the structures, summaries of their architectural significance, and hand-measured and digital drawings of key architectural features. These surveys were conducted at the former Gate House at Gallaudet University and the former Carriage House at the Old Naval Hospital on Pennsylvania Avenue. She has conducted a historic district survey in the Capitol Hill neighborhood in Washington, DC through an in-depth assessment of 22 contiguous rowhouses. She has completed a National Register of Historic Places nomination form for the Rutherford B. Hayes School in Washington, DC for both its contribution to history as well as significance in architectural design. Ms. Commins has over 2 years of experience in architectural history and exceeds the Professional Qualifications Standards in Architectural History (36 CFR Part 61).

Project Experience

Architectural Historian – Apogee, Inc. – Alexandria, VA
September 2021 – present
- Reconnaissance Architectural Phase IB Survey for Bellflower Solar 3 Project, Brunswick County, VA
- Cultural Resources Assessment for the proposed Stone43 Apartments Multifamily Construction Project, Seattle, WA
- State Level Historic Documentation for Haymond Highway over Elk Creek Bridge Replacement Project, Harrison County, WV
- Reconnaissance Architectural Phase IA Survey for Bellflower Solar Project, Brunswick and Lunenburg Counties, VA
- Architectural Survey and Effects Assessment for Manchester Redevelopment Project, Pittsburgh, PA
- Reconnaissance Architectural Phase IA Survey for Beldale Solar Project, Powhatan County, VA
- Reconnaissance Architectural Phase IA Historic Property Inventory Forms for Wild Hill Solar Project, Jefferson County, WV

Architectural Historian – Commonwealth Heritage Group – Alexandria, VA
May 2021 – September 2021

- Reconnaissance Architectural Survey for Kensington Solar Project, Franklin Township, Columbiana County, OH
- Cultural Resources Survey for American Beech 1 & 2 Solar Addendum, Mineral, VA
- Cultural Resources Survey for the Braddock Road Multimodal Improvements, Fairfax County, VA
- Reconnaissance Architectural Survey, Route 20 & 33 Barboursville Roundabout, Orange County, VA

Distinctive Destinations Marketing Intern – National Trust for Historic Preservation – Washington, DC
January 2020 – May 2020

- Expanded Distinctive Destinations program through outreach to eligible historic sites. Developed marketing campaigns to drive additional visibility for the program. Surpassed goal of 300 participants.

Program Assistant – Union Station Redevelopment Corporation – Washington, DC
January 2019 – May 2019

- Marble Condition Report for Union Station in Washington, DC. Surveyed individual tiles in Main Hall, created a floor plan to indicate areas in need of restoration or replacing, and assisted preservation architect in determining level of repair needed.
- 2nd Century Plan for Union Station in Washington DC. Created comprehensive timeline of station expansion project and compiled key information for environmental review and planning studies.

Transportation Associate – Metro – Los Angeles, CA
January 2018 – August 2018

I-605 Corridor Hot Spots Program in Los Angeles County, California. Developed environmental review documents under the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA).

SR-710 North Project in Los Angeles County, California. Produced list of potential road projects along corridor for increased safety and mobility in the region.

Volunteer Experience

Volunteer – Heurich House Museum – Washington, DC

- Answered questions pertaining to the history of the house and monitored historic art and interior furniture during major events (2 months)

Educational Course Work

Undergraduate Course Work

University of California, Berkeley, CA

Urban Studies (Major)	Sustainable Design (Minor)
Planning for Sustainability	People and the Environment
Global Cities	Environmental Science
Design and Activism	Food and the Environment
History of Architecture	Environmental Philosophy & Ethics
Intro to Transportation Planning	Cultural Resource Management
Urban Design	Sustainable Landscapes

APOGEE

Graduate Course Work

Savannah College of Art and Design, Savannah, GA

Preservation Design (Core)
Digital Foundations
Practicing Preservation in a Global Context
Style and Elegance in the Classical Tradition
Defining Place: Research and Survey
Preservation Through Public Policy
Construction Technology and Assessment
Conserving the Built Environment
Entrepreneurship for Community Revitalization
Adapting Existing Buildings

University of California, San Diego, CA

Introduction to NEPA

Appendix C: DHR Project Communications

COMMONWEALTH of VIRGINIA

Travis A. Voyles
Secretary of Natural and Historic Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director
Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

August 16, 2023

Garrett Silliman
Apogee
1493 Butler Plank Road, Suite 6
Glenshaw, Pennsylvania 15116

RE- Moonlight Solar Facility
Isle of Wight County, VA
DHR File No. 2023-4075

Dear. Mr. Silliman

We have received for review two reports, *Phase IB Archaeological Survey for the Proposed Moonlight Facility, Isle of Wight County, Virginia,* and *Phase I Historic Architecture Survey and Effects Assessment for the Proposed Moonlight Solar Facility, Isle of Wight County, Virginia* prepared by Apogee Environmental & Archaeological, Inc. (Apogee) on behalf of Timmons Group Inc in support of an application to the Department of Environmental Quality for a Permit-by-Rule application to construct and operate a small solar project in Isle of Wight County. Our comments are provided as technical assistance to DEQ. We have not been notified by any Federal agency of their involvement in this project; however, we reserve the right to provide additional comment pursuant to the National Historic Preservation Act, if applicable.

Archaeology

The report documents an archaeological survey of 516.9 acres for Moonlight Solar Facility. During the course of the survey, Apogee identified five archaeological sites (44IW0390, 44IW0391, 44IW0392, 44IW0393, and 44IW0394). Site 44IW0390 is a mid-19th to early-20th century domestic trash scatter. site 44IW0391 is a low-density artifact scatter dating to the mid- to late-19th century. Site 44IW0392 and 44IW0393 are a low-density artifact scatters dating to the mid-19th to mid-20th century potentially associated with the agricultural structure across Moonlight Road. Site 44IW0394 is a late-19th to early-20th century domestic artifact scatter. Apogee recommends that all five sites (**44IW0390, 44IW0391, 44IW0392, 44IW0393,** and **44IW0394)** are *not eligible* for listing the National Register of Historic Places (NRHP). No additional work is recommended for the project area. DHR agrees with these recommendations.

Please revise the VCRIS forms to remove the temporary site names (e.g. Apogee 1). Please submit comb-bound hard copies of the report.

Historic Architecture

Apogee identified a total of twenty-one (21) historic architectural resources. Eleven (11) previously recorded resources were identified within the 0.5-mile buffer. Of the eleven (11) resources, nine (9) had been surveyed within the past 5 years. The remaining two (2) previously recorded resources and nineteen (19) newly identified resources were surveyed. Apogee recommends none of the surveyed resources as eligible for listing in the National Register of Historic Places (NRHP) and Virginia Landmarks Register (VLR) and DHR concurs. See the attached table for details.

If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,

Jenny Bellville-Marrion
Project Review Archaeologist
Review and Compliance Division

Cc: Chris Egghart, DEQ
Amber Foster, DEQ

DHR ID #	Resource Name	Apogee Eligibility	DHR Eligibility	Apogee Impact	DHR Impact
046-0063	House	Not Eligible	Not Eligible	N/A	N/A
046-5144	House	Not Eligible	Not Eligible	N/A	N/A
046-5721	House	Not Eligible	Not Eligible	N/A	N/A
046-5722	House	Not Eligible	Not Eligible	N/A	N/A
046-5723	House	Not Eligible	Not Eligible	N/A	N/A
046-5724	House	Not Eligible	Not Eligible	N/A	N/A
046-5725	House	Not Eligible	Not Eligible	N/A	N/A
046-5726	House	Not Eligible	Not Eligible	N/A	N/A
046-5727	House	Not Eligible	Not Eligible	N/A	N/A
046-5728	House	Not Eligible	Not Eligible	N/A	N/A
046-5729	House	Not Eligible	Not Eligible	N/A	N/A
046-5780	House	Not Eligible	Not Eligible	N/A	N/A
046-5781	House	Not Eligible	Not Eligible	N/A	N/A
046-5783	House	Not Eligible	Not Eligible	N/A	N/A
046-5784	House	Not Eligible	Not Eligible	N/A	N/A
046-5785	House	Not Eligible	Not Eligible	N/A	N/A
046-5786	House	Not Eligible	Not Eligible	N/A	N/A

TABLE KEY:	Warrants Mitigation	Needs Attention	DHR does not concur

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

APOGEE
Environmental & Archaeological, Inc.

PHASE IB ARCHAEOLOGICAL SURVEY FOR THE PROPOSED MOONLIGHT SOLAR FACILITY ISLE OF WIGHT COUNTY, VIRGINIA

Prepared For
Timmons Group, Inc.
1001 Boulders Parkway, Suite 300
Richmond, VA 23225

Prepared By
Apogee Environmental & Archaeological, Inc.
6425 Living Place, Suite 200
Pittsburgh, PA 15206
Apogee Project No. 23-1188.01



Garrett Silliman, RPA
Principal Investigator

David S. Hanley, MA, RPA
Field Director

Lead Agency
Virginia Department of Environmental Quality
DHR File No. 2023-4075

June 2023 (Finalized August 2023)

Abstract

On behalf of Timmons Group, Inc. (Timmons), Apogee Environmental & Archaeological, Inc. (Apogee) conducted a Phase IB archaeological survey for the proposed Moonlight Solar Facility in Isle of Wight County, Virginia. The Phase IB survey serves as a secondary step in meeting compliance requirements for the Virginia Department of Environmental Quality (DEQ). All activities were conducted in accordance with the Virginia Department of Historic Resources (DHR), as published in *Guidelines for Conducting Historic Resources Survey in Virginia* (2017).

The project consists of the development of a solar energy facility located approximately 5.2 miles northwest of Smithfield, Virginia, situated west and south of the intersection between Moonlight Road and Burwells Bay Road. The archaeological area of potential effects (APE) contains parcels of mixed-use rural land totaling 516.9 acres (209.2 hectares). A desktop analysis cultural resources assessment was conducted in March 2023. The Phase I cultural resources survey was conducted between April 17th and May 5th, 2023.

As a result of the archaeological survey, Apogee identified five archaeological sites (44IW0390, 44IW0391, 44IW0392, 44IW0393, and 44IW0394) and 22 isolated artifacts. All archaeological resources identified during the survey have been recommended as not eligible for the National Register of Historic Places. Therefore, no further work is recommended.

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1.0 INTRODUCTION TO THE PROJECT

On behalf of Timmons Group, Inc. (Timmons), Apogee Environmental & Archaeological, Inc. (Apogee) conducted a Phase IB archaeological survey for the proposed Moonlight Solar Facility in Isle of Wight County, Virginia. The cultural resources survey serves as a secondary step in meeting compliance requirements for the Virginia Department of Environmental Quality (DEQ). All activities were conducted in accordance with the Virginia Department of Historic Resources (DHR), as published in *Guidelines for Conducting Historic Resources Survey in Virginia* (2017).

The project consists of the development of a solar energy facility located approximately 5.2 miles northwest of Smithfield, Virginia. Figure 1 depicts the project area on the Bacons Castle, VA and Runnymede, VA USGS 7.5-minute topographic quadrangles. The archaeological area of potential effects (APE) contains parcels of mixed-use rural land totaling 516.9 acres (209.2 hectares). Timmons will only be utilizing 323.6 acres (130.9 hectares) of the property (Figure 1). A Phase IA reconnaissance survey was conducted in March 2023 to develop appropriate methodology for the Phase I survey. The Phase IB survey was conducted starting in April 2023 and concluded in May 2023.

From April 17th to May 5th, 2023, Apogee personnel, under the direction of David Hanley, Registered Professional Archaeologist (RPA), conducted a Phase IB archaeological investigation including systematic shovel testing, judgmental shovel testing, and systematic pedestrian survey within the combined 516.9-acre area of investigation. A total of 999 shovel tests were excavated across the different sections of the APE. As a result of the archaeological survey, Apogee identified five archaeological sites (44IW0390, 44IW0391, 44IW0392, 44IW0393, and 44IW0394) and 22 isolated artifacts.

Garrett Silliman, RPA, served as Principal Investigator and was responsible for project management, report writing, and research design. David Hanley, RPA, was responsible for leading fieldwork, artifact analysis, and was report co-author. Resumes for key project staff are provided in Appendix B.

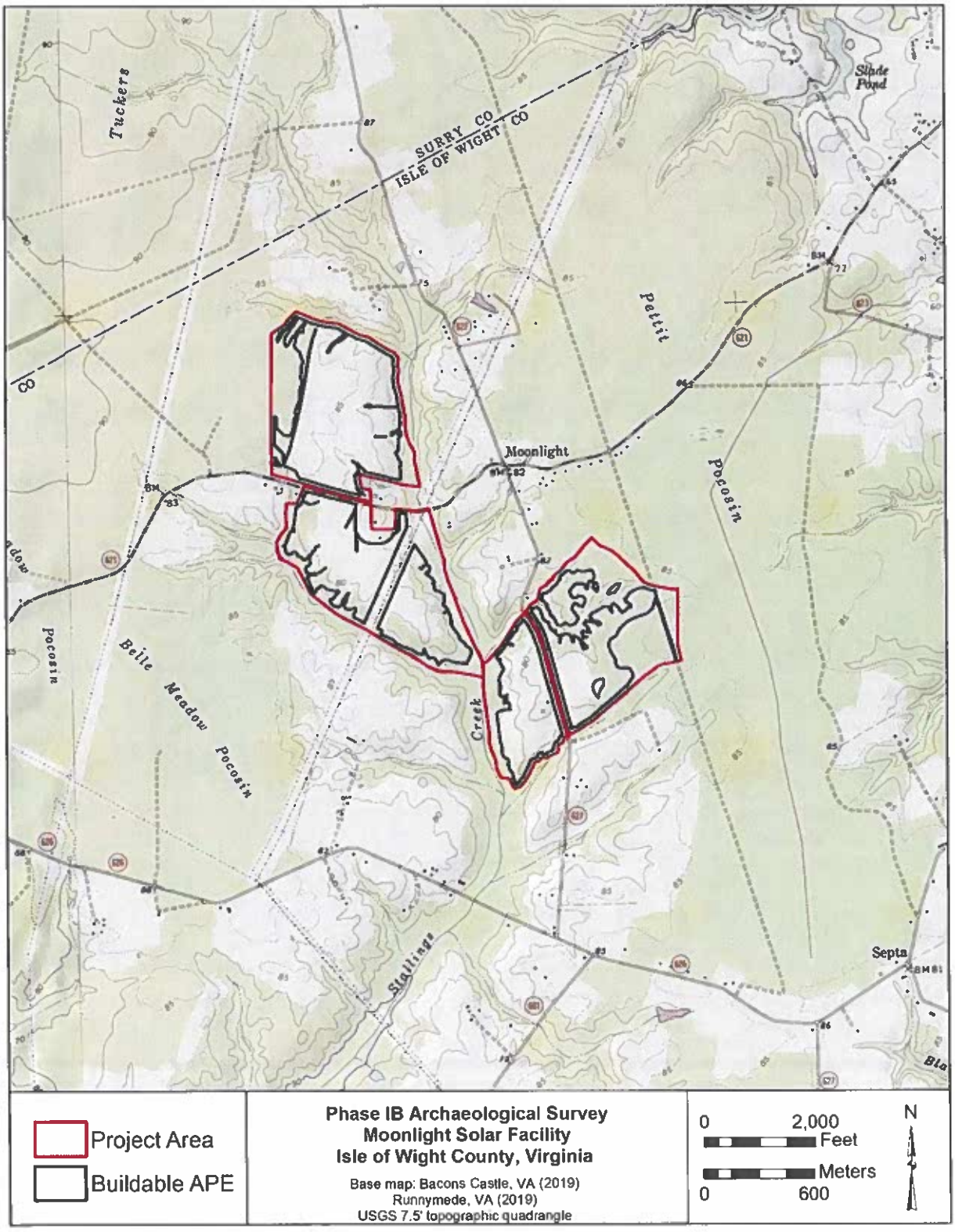

Figure 1: Project area depicted on USGS 7.5-minute topographic quadrangle.

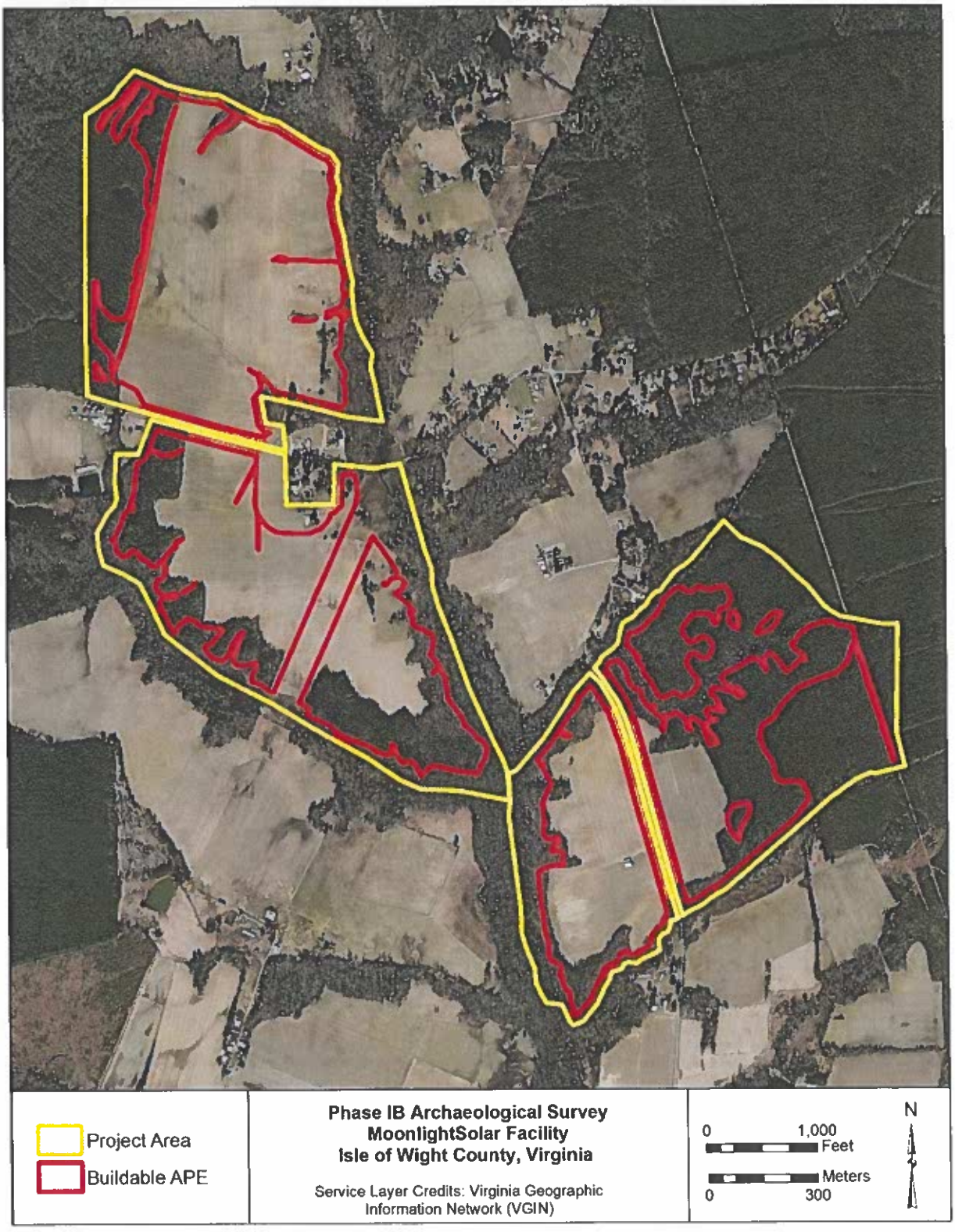

Figure 2: Project area depicted on modern aerial imagery.

2.0 RESEARCH DESIGN

2.1 Archaeology

Apogee utilized a staged approach to develop an archaeological probability model for the project area according to DHR guidance. First, the environmental setting of the project area was reviewed to identify areas with contributing factors to archaeological site probability (e.g., well-drained alluvial soils, stream confluences, etc.) and those that reduce the potential for encountering archaeological sites (e.g., slope, poor soil drainage, observable ground disturbances, etc.). Following the review of the environmental setting, investigators conducted a literature review including an overview of regional history/prehistory, and the identification of previously recorded cultural resources within or immediately adjacent to the project area.

A site visit was then conducted to observe the present conditions at key locales selected during background research. Areas within the project area selected for a site visit consisted of those with a high potential to contain archaeological resources, previously recorded cultural resources, historic buildings and structures identified on historic maps, and past ground disturbance. Photographs were taken at each locale and throughout the project area to document the landscape. Limited shovel testing was also conducted to observe and record soil profiles within the project area. Cylindrical shovel test pits (STPs) 38 cm (15 in) in diameter were excavated by natural stratigraphic sequence 10 cm (4 in) into sterile subsoil. All soils were screened through 1/4-in hardware cloth. Notes on all STPs were recorded and included information on survey/site/transect identification and location, either a profile drawing or detailed description of strata, soil types, Munsell descriptions, depth measurement, and a list of artifacts (both those kept and discarded). The environmental conditions under which any testing strategy was employed were also noted (for example, adverse weather, condition of ground surface, etc.).

Results from the site visit were then considered with the results of the desktop assessment to develop an archaeological probability model. A four-tiered archaeological probability scheme was used categorize all areas within the project area based on similar projects completed in the past. The following four probability tiers will be used: 1) *High Probability*; 2) *Medium Probability*; 3) *Low Probability*; and 4) *Visual Inspection Only* (DEQ 2018).

> ***High Probability*** designation is typically assigned to locations that exhibit multiple, independent site predictive attributes, or locations where map or other historic documents suggest the presence of archaeological resources.
>
> ***Medium Probability*** can be assigned to areas that do not exhibit specific site predictive attributes but also do not contain site limiting environmental conditions. Examples could include broad, undifferentiated upland terraces well removed from water and/or historic transportation corridors.
>
> ***Low Probability*** can be assigned to areas that have site potential limiting characteristics such as slope or slow soil drainage but with these conditions not so pronounced or widespread as to preclude the possibility of intact archaeological resources being present.

Visual Inspection Only (or similar terminology) areas exhibit characteristics such as slope, poor soil drainage or disturbance as to reasonably preclude the possibility intact archaeological resources being present.

Once the probability assessment was completed for the project area, recommendations for Phase IB archaeological survey methodology were developed based on the four probability tiers above. Full shovel test coverage at 50-foot intervals is required for *High Probability* areas (DEQ 2018). *Medium probability* areas require a shovel test sampling strategy at a rate of approximately 25 percent, with *Low Probability* areas at approximately 10 percent sampling coverage. Areas designated as *Visual Inspection Only* need not be shovel tested but should be subject to a walkover visual inspection.

As a result of the Phase IA survey (Silliman et al. 2023), Moonlight consists of 176.92 acres of high probability areas, 135.23 acres of medium probability areas, 60.77 acres of low probability areas, and 143.98 acres of visual inspection only (Figure 3).

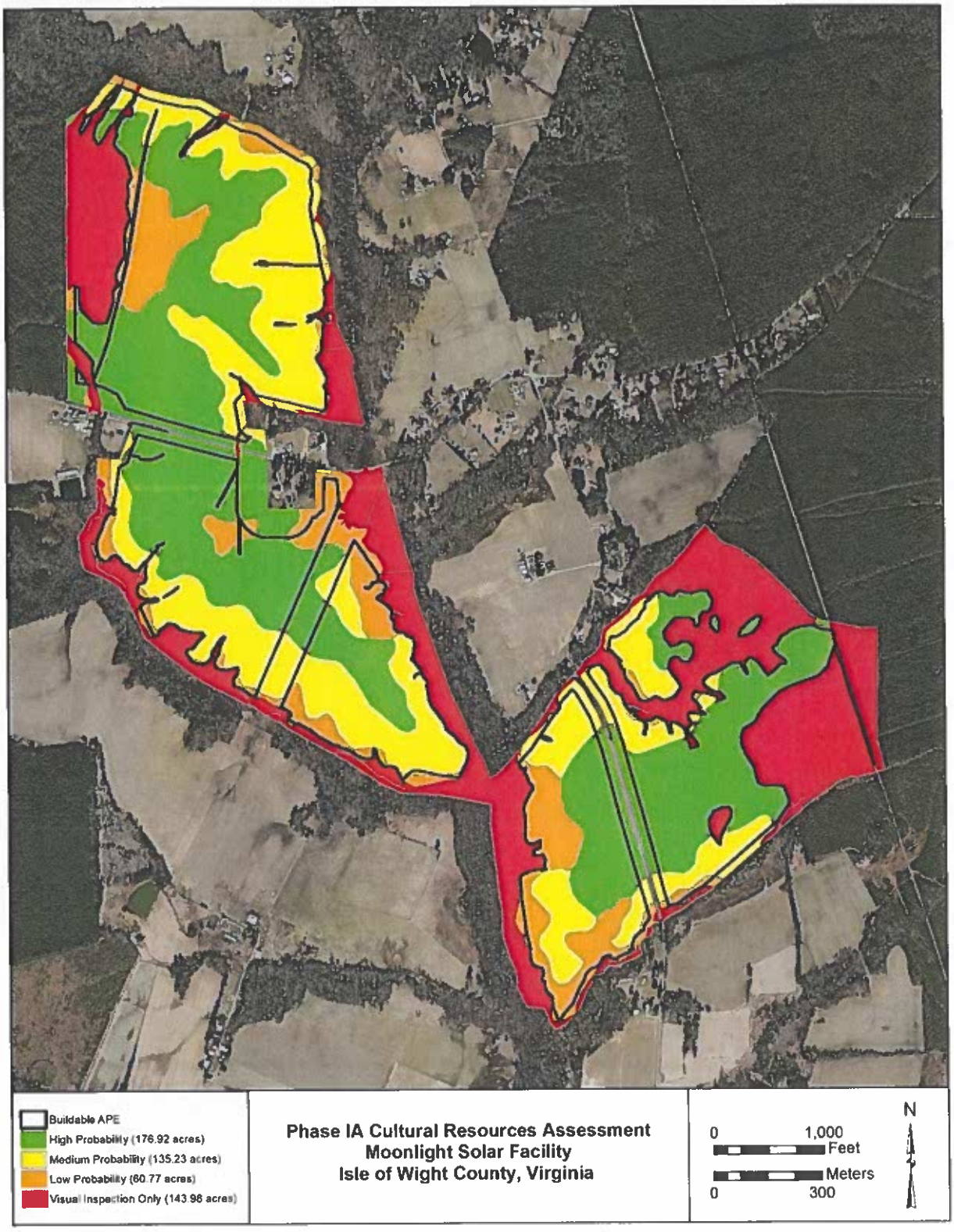

Figure 3: Results of Phase IA Archaeological Probability Assessment for Moonlight.

3.0 ENVIRONMENTAL CONTEXT

This section of the report describes the present environment of the project area as well as the major environmental factors influencing the selection of appropriate archaeological survey methods utilized.

3.1 Physiography and Geology

The project area is situated in southeastern Virginia within the Coastal Plain physiographic province, also known as the Coastal Lowland subregion. The Coastal Plain is bound by the Fall Zone and Piedmont to the west, and by the Atlantic coastline to the east. The Coastal Lowland subregion topography is characterized as a terrace landscape that descends eastward towards the coast and the major rivers, with a sedimentary wedge that thickens as you get closer to the coastline (CMW 2021). The project area lies atop portions of rock formations running west to east. Much of the project area lies atop the Windsor Formation, a Tertiary-Quaternary-aged formation composed of gravel and sand. (DGMR 2021). Vein quartz, composed of silica dioxide deposits commonly found as transparent vitreous veins within igneous rock outcrops (i.e., granite) on the ground surface, is the most common lithic material found in the region which was utilized by precontact peoples in the Coastal Plain and beyond (DHR 2018).

3.2 Hydrology

The project area is located within the Blackwater (Albemarle-Chowan) River Basin. The Blackwater basin drains 741.64 square miles of southeastern Virginia. Within and immediately adjacent to the project area are a series of streams mapped in the National Hydrography Dataset (NHD), including Stallings Creek. These waterways meet Blackwater River approximately 8.7 miles to the southwest.

3.3 Soils

According to the USDA Web Soil Survey, there were eight soil types identified within the project area (Figure 3, Table 1) (USDA 2023). Two soil types have a greater potential to contain archaeologically sensitive stratigraphy due to its location on flat floodplains and stream terraces: Slagle fine sandy loam (18A) and Yemassee fine sandy loam (23). Slagle fine sandy loam, 0 to 2 percent slopes, is formed in loamy marine deposits and located on marine terraces and uplands. The Slagle fine sandy loam soil series makes up about 27.9% of the soils within project area. A typical soil profile for 18A consists of a H1 with 0 to 13 inches of fine sandy loam, a H2 with 13 to 25 inches of sandy clay loam, and a H3 with 25 to 60 inches of sandy clay loam, with a depth to water table at 18 to 36 inches. Yemassee fine sandy loam, 0 to 2 percent slopes, is also formed in loamy marine deposits and located marine terraces and uplands. The Yemassee fine sandy loam soil series makes up about 16.3% of the soils within the project area. A typical soil profile for 23 consists of a H1 with 0 to 10 inches of fine sandy loam, a H2 with 10 to 52 inches of sandy clay loam, and a H3 with 52 to 60 inches of fine sandy loam, with a depth to water table at 12 to 18 inches.

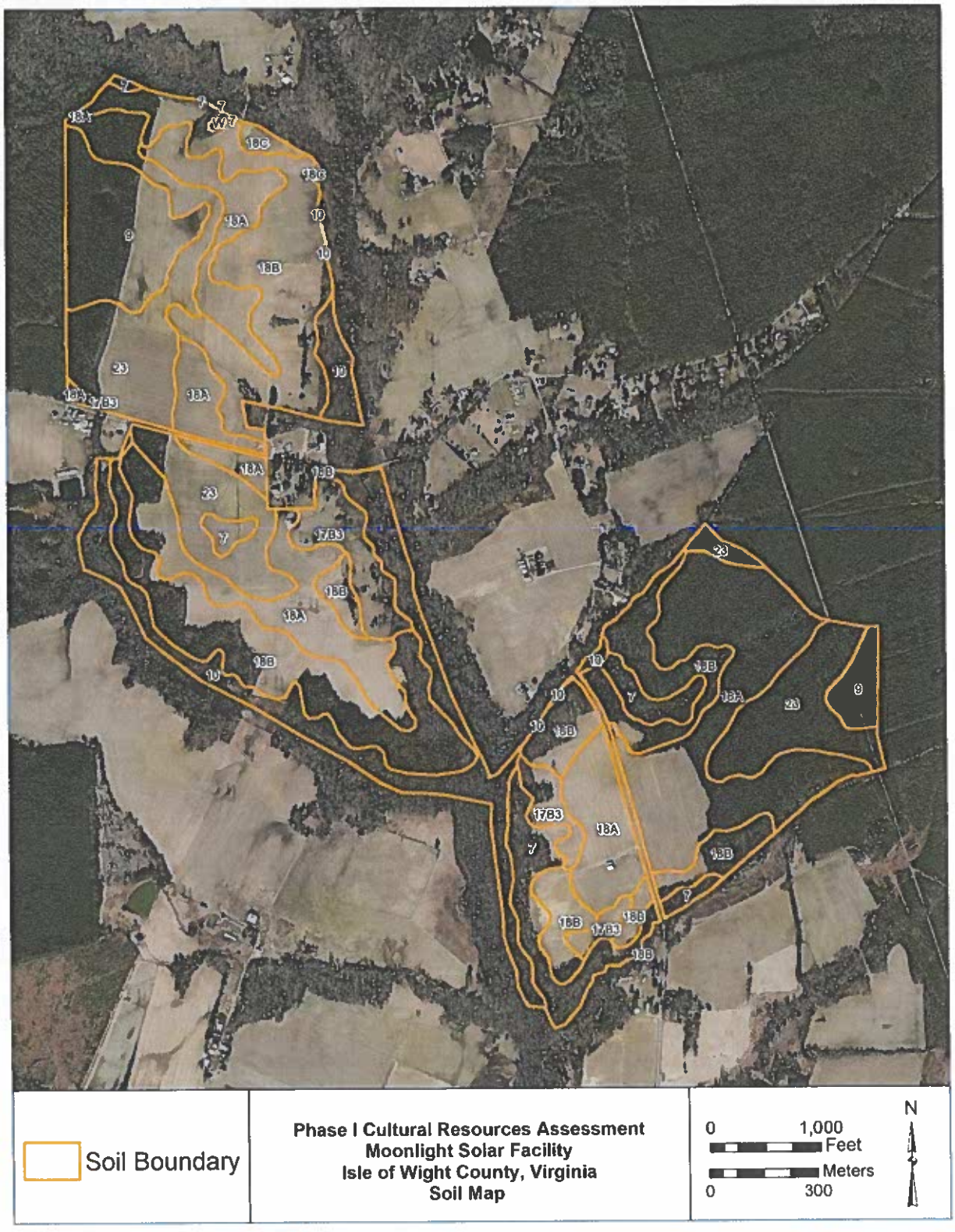

Figure 4: Soil types identified within the project area.

Table 1: Soil Types Identified within Project Area.

Map Unit Symbol	Map Unit Name	Acres in Project Area	Percent of Project Area
7	Kinston loam	28.7	5.6%
9	Myatt fine sandy loam	36.4	7.0%
10	Nawney loam	50.2	9.7%
17B3	Slagle sandy loam, 2 to 6 percent slopes, severely eroded	22.9	4.4%
18A	Slagle fine sandy loam, 0 to 2 percent slopes	144.2	27.9%
18B	Slagle fine sandy loam, 2 to 6 percent slopes	147.5	28.5%
18C	Slagle fine sandy loam, 6 to 10 percent slopes	2.5	0.5%
23	Yemassee fine sandy loam	84.2	16.3%
W	Water	0.4	0.1%
	Totals for Area of Interest	516.9	100.0%

3.1 Prehistoric Environment

Since the last glacial maximum episode of the Pleistocene Epoch and the arrival of humans in North America, there have been significant oscillations in regional climate that have affected the occupation and settlement patterns of prehistoric peoples. During the last glacial maximum, mixed conifer/northern hardwood forest was prevalent throughout much of the continent. This forest type contained hemlocks, pines, spruces, firs, oaks, birches, elms, ashes, ironwood, maples and beeches (Grayson and Meltzer 2003). However, as temperatures warmed and glaciers retreated during the Late Pleistocene, there was a general change from boreal forest towards mixed conifer/northern hardwood forest (Anderson 2001). During the Terminal Pleistocene around 10,900 B.C., a rapid shift towards glacial conditions occurred throughout the northern hemisphere. This abrupt cooling event, called the Younger Dryas Cold Episode, quickly heralded the extinction of mega-fauna in the Americas (Anderson 2001). The Early Holocene Climatic Episode, starting at approximately 9,300 B.C., began a period of rapid warming with the proliferation of mesic deciduous woodlands in North America (Anderson 2001). The mid-Holocene interval, also referred to as the Hypsithermal Climatic Episode, began around 7,000 B.C. This period brought about conditions that were generally dryer and warmer than the present day. This drier weather resulted in more prairie vegetation and greater local climatic variability (Anderson 2001). During the Hypsithermal Climatic Episode, prairie grasses and vegetation including xeric oak and hickory species typified the local floral assemblage (Grayson and Meltzer 2003). The Late Holocene Climatic Episode, beginning at approximately 3,000 B.C., heralded a climate like our present-day condition with modern deciduous forests (Anderson 2001).

3.2 Current Land Use

The project area is located within the Rolling Coastal Plain ecoregion (65m) (Woods et al. 1998). The topography of the ecoregion is a dissected portion of the Inner Coastal Plain featuring rolling hills made up of sedimentary rock. Natural soils for the ecoregion support forests filled with oak, hickory, and pine. It is believed these forests are the original forest cover as well. Dominant land use within the region is split between forestry and agriculture. Within the project area, most forested areas have been logged and replanted cyclically as tree farms. Much of the project area is agricultural fields with some pine tree farms along the edges of the project areas. The agricultural fields had a cover crop present during the field visit. Some intermittent less densely

forested areas are also present near waterways. An overhead electric line cuts through one of the project parcels and Stallings Creek are present in the northern edge and center of the project area. These conditions were observed during Apogee's background research and field visit.

As part of Apogee's investigation of current land use and terrain, LiDAR data was studied. These data were accessed via the Isle of Wight County's online mapping resources and downloaded for comparison with the proposed project's boundaries. LiDAR data were imported as hillshade modeling based on elevation to capture potential subtleties of landform variation or potential manmade features (Figure 5). These data indicate a series of level/leveled landforms flanked by creeks and intermittent streams, which represent the agricultural fields (and former agricultural fields) and the stream or wetland boundaries that align with the project/survey limits. Roads, consistent with those observed in the field, are present as are the outlines of buildings located outside of the parcel boundaries.

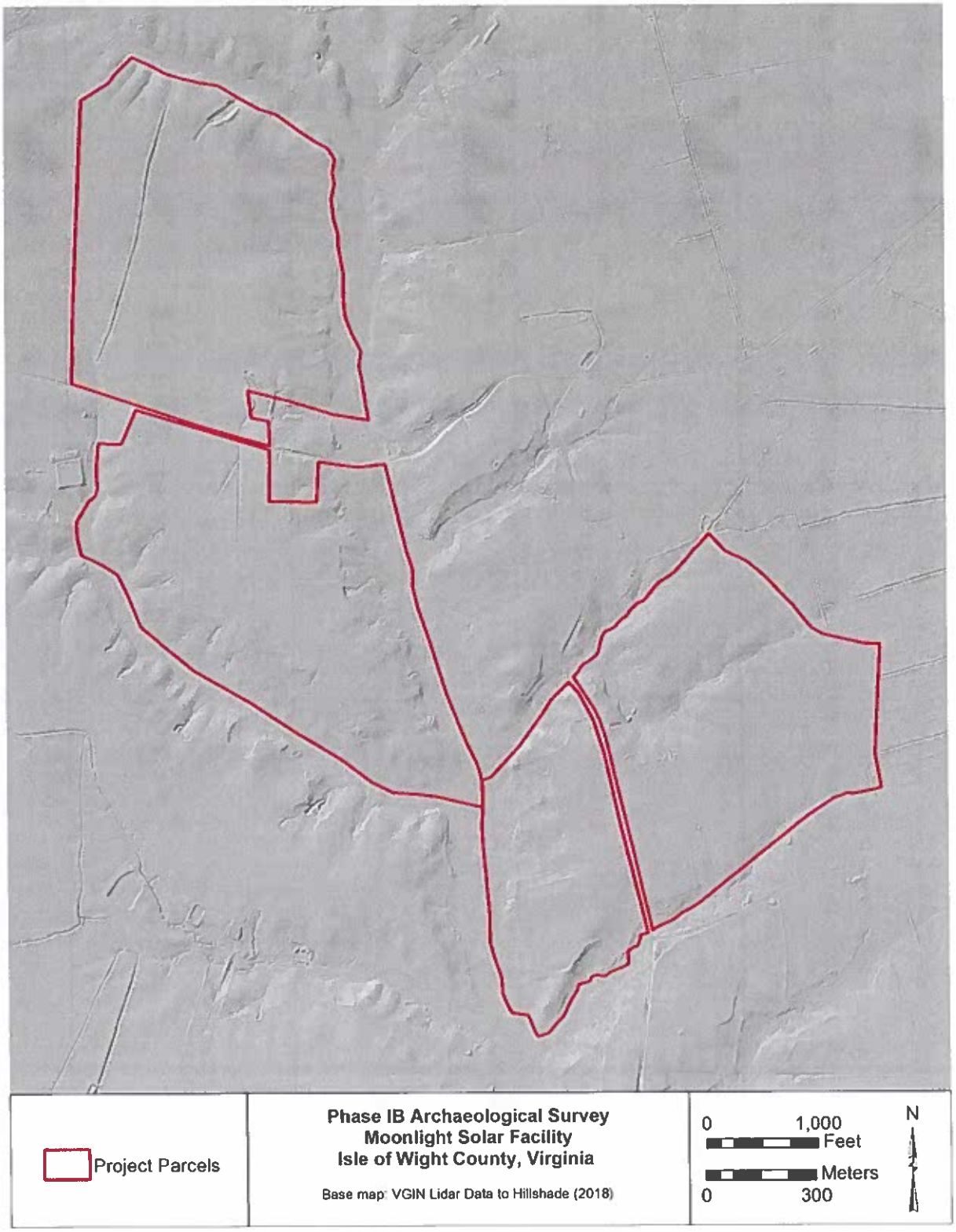

Figure 5: LiDAR data as hillshade, showing project area.

4.0 LITERATURE REVIEW

This section provides a literature review of the regional prehistory and history, results of the Virginia Cultural Resource Information System (V-CRIS) file review, and historic map research.

4.1 Literature Review

This literature review summarizes the prehistory and history of Virginia. It provides details on the six major time periods documented by the Virginia Department of Historic Resources (DHR): Early Hunters and Dispersed Foragers, Sedentary Foragers, Farmers, European Contact and Historic Period.

The project area is located within the Southern Coastal Plain geographical and cultural region of Virginia as defined by VDHR's Regional Boundaries and Differences: Geography and Culture map (2017). This region is bound by the Atlantic Ocean/Chesapeake Bay to the east, the Virginia-North Carolina border to the south, the Fall Line to the west, and the Northern Coastal Plain to the north (VDHR 2017: 101-102). The Southern Coastal Plain features the earliest European settlement in Virginia: the colony at Jamestown founded in 1607. From here, European colonists would move westward throughout the 17th century using the region's many rivers. Due to the self-sufficient nature of the Southern Coastal Plain's plantations in the 17th century, there were very few central town centers until the mid-18th century.

Below is an outline of a partial account primarily based on archaeological data. After first arriving in Virginia in 1607, European colonists started moving along the many rivers in the Southern Coastal Plain into the western portions of the region (VDHR 2017: 101). Due to the self-sufficient nature of the Southern Coastal Plain's plantations in the 17th century, there were very few central town centers until the mid-18th century. This region was settled both for its agricultural potential, but also for its industrial potential and access to the Atlantic Ocean.

Early Hunters and Dispersed Foragers

Paleoindian Period (ca. 15000 to 8000 B.C.)

This period marks the end of the last glacial episode in the late Pleistocene Period and the transition into the Holocene Period in Virginia (Custer 1990). Due to the cool temperatures, the Paleoindian Period is marked by a mobile, hunting and gathering adaptation, known primarily as big game hunters of now-extinct megafauna. The Paleoindian tool kit is heavily defined by chipped stone fluted points of local material known as Clovis points, which focused on procurement and processing of megafauna (Custer 1990). During this almost six thousand years long period, there is a consistent settlement practice of small familial bands following alongside game movements. A very small number of Paleoindian sites have been encountered in modern day Virginia (VDHR 2017: 107). One consideration for the area is the use of overhangs as shelter as well as temporary camps (Custer 1990). The small number of Paleoindian sites is likely attributed to the age of the sites as well as low population density (VDHR 2017: 107).

Despite the scarcity of Paleoindian sites in Virginia, there are three significant site complexes in Virginia: Flint Run in Warren County, Williamson in Dinwiddie County, and Cactus Hill in Sussex County (VDHR 2017: 107; Gardner 1983; Peck 2010; Hranicky 2010). The Williamson and Cactus

Hill sites are both located within the Southern Coastal Plain. Within the Flint Run site complex, the Thunderbird and Fifty sites provide the complex with its chronological order (Gardner 1983:49). By using these three sites, archaeologists were able to create the "Flint Run Lithic Deterministic Model," a model that helps understand settlement strategies of Paleoindian groups (Anderson and Sassaman 1996:23). According to the model, high-quality lithic material was the main factor in the settlement patterns of Paleoindian and Early Archaic Indigenous groups. Another factor that contributed to Paleoindian and Early Archaic settlement patterns was food collection. These two factors help explain why many Paleoindian sites are located in floodplains or adjacent alluvial fans (Turner 1989).

Fluted point concentrations have been recorded in the Southern Coastal Plain region of Virginia, which has been attributed to local outcrops of chert, jasper, and chalcedony (Turner 1989). The end of the Paleoindian period and the transition to the Early Archaic period is traditionally seen through the change from fluted points to unfluted, triangular points.

Early Archaic and Middle Archaic Period (8000 to 2500 B.C.)

The Early Archaic period marks a shift in the types of lithic points that were produced as well as a drastic shift in environment. The once cool temperatures receded and were replaced by a warm and dry climate. The hunting lifestyle shifted to include gathering of fruit and nuts, and the extinction of megafauna led to the hunting of smaller game, for which a smaller toolkit became necessary (Custer 1990). While there are drastic environmental changes during the Early Archaic period, the tool kits, settlement patterns, and subsistence patterns of the Indigenous groups is very similar to those used during the Paleoindian Period. This is consistent with the fact that many of the Paleoindian sites in Virginia also have an Early Archaic component (Gardner 1983; Peck 2010; Hranicky 2010).

As populations responded to the dramatic changes to the plant and animal communities of the early Holocene, small mobile groups developed a more diversified subsistence strategy. As a result, the Archaic tool kit also diversifies. More plant processing tools are encountered, including grinding stones, and mortars and pestles. Another shift includes an increase in group size, but the locational pattern stays relatively the same.

There are a limited number of Archaic sites located in Virginia (Custer 1990, Egloff and Woodward 2006). This could be a result of many sites being inundated by changing sea levels over time, but it could also be a symptom of the low population density during the period (Turner 1989; Gardner 1989). It could also be symptomatic of poor survey coverage as Custer (1990) suggests. The currently available data suggest Archaic settlements were usually associated with freshwater wetlands, bogs, and swamps (Custer 1990). Custer (1990) also proposes that the rapid rise in sea level during the Early and Middle Archaic may have not allowed coastal resources to have been as rich with shellfish beds as they were at later times.

Sedentary Foragers

Late Archaic, Early and Middle Woodland Period (2500 B.C to 900 A.D.)

The Late Archaic Period, while marked by distinctive projectile point types, does not differ much to the adaptations of the Middle Archaic period. The primary attributes of the Late Archaic period are small groups, non-sedentary settlement patterns, infrequent aggregation phases, and minimal regional integration or interaction (Mouer 1991:10). Sites during the Late Archaic period seem to

differ greatly depending upon their location in either upland of near river settings (Mouer 1991). The Woodland Period correlates to a pronounced warm and dry period in the region, where this climatic alteration with increasing sea levels creates extensive brackish marshes along the coast. In addition to the dramatic climatic changes, Woodland settlements become larger and start to congregate along major river floodplains and estuaries, and the construction of homes correlates with a sedentary lifestyle (Klein and Klatka 1991). With an overall tendency of increases in population densities, there is an increased efficient utilization of horticulture. The Woodland tool kit continues to utilize chipped stone tools and plant processing tools like in the Archaic, but now starts to incorporate non-local lithic raw materials that indicate larger interaction spheres.

Due to increased success in food production and incorporation of storage containers, such as ceramics, there is corresponding proliferation in social development and the beginnings of ranked societies around 1200 B.C. From the Late Archaic through the Middle Woodland Periods, the archaeological record in Virginia also corroborates the appearance and general incorporation of agricultural practices with a general trend towards larger village sizes and population growth. This corresponding increase in population size was similarly witnessed in the overall larger sizes of coeval base camps and seasonal camps compared to previous periods. These larger overall trend in sites' sizes could be the result of an initial fissioning of these bourgeoning large populations into smaller, more manageable groups versus the proliferation of social complexity to compensate for unsustainable densities and the additional energy to maintain it. This period may also be characterized by rock shelter and small camp sites (Egloff and Woodward 2006, VP 2015).

Ceramics found from the Early Woodland Period in the Coastal Plain province include Bushnell Ware, Croaker Landing Ware, Ware Plain, and Waterlily Ware (Egloff and Potter 1982). Bushnell Ware is one of the earliest pottery types in Virginia, dating to between 1200 and 1000 BCE (DHR 2020). This ware type has a schist temper with smooth surfaces. Croaker Landing Ware usually has a clay or grog temper with smoothed surfaces that features some cord markings on its surface. Ware Plain is a crushed-quartz temper that typically does not have any exterior decoration. Waterlily Ware is a shell-tempered ware that usually has a bumpy exterior surface.

Wares that were found in the Coastal Plain include Accokeek Ware, Chesterfield Ware, Mockley Ware, Prince George Ware, Stony Creek Ware, and Varina Ware (Egloff and Potter 1982). Accokeek Ware is a sand-tempered or crushed-quartz tempered ware with cord-marked exterior surfaces (DHR 2020). Chesterfield Ware is sand-tempered that is usually knotted-net or cord-marked. Mockley Ware is shell-tempered with net-impressed and cord-marked surfaces that have a clayey texture. Prince George Ware is characterized by either a pebble-tempered or sand-and-pebble-tempered paste and is infrequently decorated. When decorated, there are usually cord marks, net marks, or fabric impressions. Stony Creek Ware is a sand-tempered ware that sometimes features a cord-marked surface. Varina Ware is made of a very coarse sand-temper and is usually knotted-net marked.

Farmers

Late Woodland (A.D. 900 to 1600)

The Late Woodland period is characterized by large villages with incredibly organized social, economic, and political structures, as such, the material culture expanded immensely to include a wide variety of pottery, lithic and bone tools, and jewelry made from shell and copper (Turner 1992). This period is also characterized by an increased dependence upon agricultural practices. However, the reliance on agriculture led to greater population growth, larger villages, and an

increase in social complexity. Burial practices became more elaborate, and different areas began developing distinct identities. Farming became a main source of food, with the three main crops being beans, corn, and squash. Site types for this period include large settlements, burial mounds, and camps (Egloff and Woodward 2006).

Ceramics in Virginia during this period become more localized, which is consistent with the increased evidence of territorial behaviors (Turner 1992). Ceramics commonly found in this province during the Late Woodland Period are Branchville Ware, Hercules Ware, Potomac Creek Ware, and Townsend Ware (DHR 2020). Branchville Ware is tempered with small quartzite granules and can be fabric-impressed, cord-marked, simple-stamped, or plain. Hercules Ware, commonly seen as a late Middle Woodland or early Late Woodland pottery, is tempered with quartz, granite, and gneiss and has a wicker-fabric-impressed surface. Potomac Creek Ware is tempered with either crushed quartz or fine to medium grain sand that can be elaborately cord-decorated beneath their rims. Townsend Ware is a shell-tempered ware with a silty paste and a fabric impressed exterior surface.

European Contact

Contact Period (A.D. 1600 to 1800)

After A.D. 1600, the native cultural groups and their lifeways become heavily influenced by European economies, diseases, and technology. The Contact Period is poorly understood as there are very few archaeological sites dating to that period in the region. The settlement distribution and pattern would have been like the Woodland Period, with a general decrease in population sizes. The period ended with the almost extinction of the native population by early European explorers and illnesses. Some examples of site types may include battlefields and mass graves (Egloff and Woodward 2006).

Brunswick County Historic Period

Settlement to Society (1607 to 1750)

Prior to its establishment, the area now known as Isle of Wight County was once home to many Native American tribes that settled along the James River. The Warraskoyak are the first documented Indigenous group to make contact with European settlers. European settlers at the Jamestown settlement first made contact with the Warraskoyak in 1607 after crossing the James River in search of food (Boddie 1973). In 1632, English colonists constructed a fort in order to defend their settlements from Native American and Spanish attackers (Isle of Wight County Museum 2014). This fort, first known as The Castle, was later expanded during the Revolutionary War and was renamed Fort Boykin.

In 1634, Isle of Wight County was officially established under the name Warraskoyak Shire as one of the eight shires first established by the English. The initial population was approximately 522 people (Boddie 1973; Morrison 2001). In 1637, Warraskoyak Shire was renamed Isle of Wight County after the English island (Isle of Wight County 2023) (Figure 6). In 1674, Isle of Wight County gained a portion of the now extinct Nansemond County (Boddie 1973; Morrison 2001). However, the current boundary of the county was not set until 1732 when a considerable portion was added to neighboring Brunswick County, which was subsequently turned into Southampton County in 1748 (Morrison 2001)

Since its founding, Isle of Wight County largely exhibits rural character and encompasses approximately 350 square miles (Morrison 2001). Many streams and roads intersect the county with an east/west connecting road playing a significant role in the area's history as it controlled access to Richmond via the James River. The county's location along the James River also demonstrates why the first English plantations were constructed within the county and mainly grew tobacco.

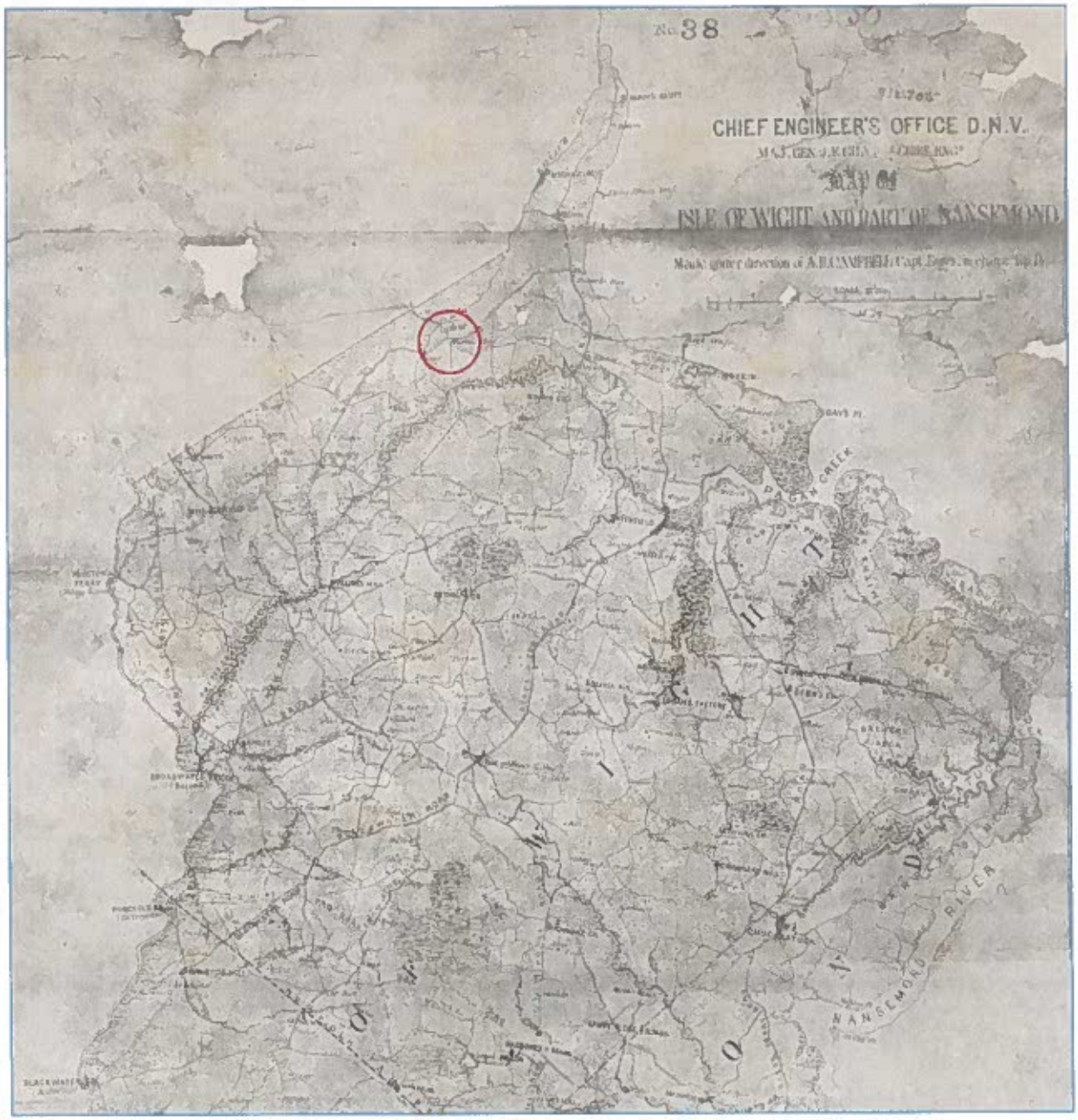

Figure 6: A map of Isle of Wight County showing the general location of the project area (Selection from Campbell et al 1864).

Colony to Nation (1750 to 1789)

The Isle of Wight County courts were established in 1751 in Smithfield through the appointment of eight justices (Morrison 2001). Four of these judges could make up a court and were required to meet monthly. This would continue until the county courts were abolished in the 1902 constitution when the judicial power of counties was given to circuit courts. The following year, Smithfield officially became an incorporated town and is still the largest town in the county. The original courthouse and its associated tavern, The Smithfield Inn, are still standing today.

While there were no official Revolutionary War battles fought within Isle of Wight County, its residents served in the Continental Army and the county's location allowed it to serve as an important place for commerce and agriculture (Morrison 2001). During the Revolutionary War, British troops raided Smithfield in an effort to destroy country records (Morrison 2001). The wife of Mr. Francis Young, an officer in the Continental Army, was able to remove the records prior to the raid. The records were hidden until the British forces surrendered at Yorktown. In March of 1782, the county court made an order describing the county's location and how its inhabitants have been strongly impacted by the invading British forces (Morrison 2001). The proximity to British landing caused a great strain on the county's militia as they were forced to be on constant duty due to threat of attack. However, no significant battles were fought within the county.

Antebellum Period (1789 to 1860)

At the beginning of the 19th century, Isle of Wight County saw its economic impact shift away from tobacco farming towards other crops such as cotton, wheat, and corn (Morrison 2001). Its location along the James River also allowed the county to begin building ships, though not at the scale of nearby coastal cities such as Norfolk. The economic focus on agriculture required the use of plantations which heavily utilized slave labor.

While Isle of Wight County is situated close to the coastline of Virginia, it played a minor role during the War of 1812 (Morrison 2001). During the war, the county mainly served as a defensive position to protect access to Richmond via the James River with Fort Boykin, which was refortified during the war (Isle of Wight County Museum 2014). While the county is located along the James River with access to Richmond, no battles were fought within the county's borders. The county helped finance the United States forces to fend off British invaders as well as supplied troops.

Leading up to the Civil War, Isle of Wight County's wealthy plantation owners and politicians heavily supported the continuation of slavery in the United States (Morrison 2001). However, the county's Quaker population supported the abolitionist movement. Leading up to Virginia seceding from the Union and joining the Confederate States of America, a vote was held in Isle of Wight County to determine if the county wanted to secede or remain with the Union. Among the 861 registered voters in the county, every vote went in favor of secession (Morrison 2001).

The county's population during this time period rose from 9,028 in 1790 up to 9,977 in 1860 with the highest population being 10,517 in 1830 (USCB). This rise in population led the county to move the courthouse to a more central location within Smithfield (Morrison 2001). The new courthouse, constructed in 1800, along with its associated tavern (Boykin's Tavern) are still standing.

Civil War (1860 to 1865)

During the Civil War, the James River served as the backbone for supplies to get from the Atlantic coast to the Confederate capital of Richmond. Isle of Wight County's Location between Norfolk and Richmond required Confederate forces to construct earthwork fortifications in order to efend against Union naval attacks on supply runners (Morrison 2001). Part of these new fortifications were centered around Fort Boykin and also led to the construction of Fort Huger, named after the commander of the Confederate States' Army's Department of Norfolk Major General Benjamin Huger (Morrison 2001).

Unlike previous wars, Isle of Wight County was home to many skirmishes and battles. On May 8th, 1862, a Union flotilla bombarded Fort Boykin and forced Confederate troops to abandon the structure. The Union boats continued up the James River and bombarded Fort Huger to the point where Confederate soldiers needed to abandon the structure as well. After the Union discovered Fort Boykin was empty, Confederate forces took Fort Boykin back as a signaling station and served as a key piece in the communication line between Richmond and the Atlantic coast (Isle of Wight County Museum 2014).

The most significant Civil War battle to take place in Isle of Wight County is the Battle of Smithfield. On January 31, 1864, Union forces sailed up the Pagan River to investigate Confederate activity (Isle of Wight County Museum 2014). After engaging in a small skirmish, Union forces went back to Smithfield to leave the area. However, the Union gunboat departed without the shore party, leaving the Union troops to camp on shore for the night. This led to a three-hour-long skirmish to break out along Main Street on February 1 that resulted in Confederate forces destroying the Union gunboat *Smith-Briggs* and capturing the Union forces before they could retreat.

A noteworthy regiment of the Virginia Infantry is the 61st regiment. While the regiment formed in Petersburg under the command of Lieutenant Colonel Samuel H. Wilson, F Company was known as the "Isle of Wight Avengers" (Isle of Wight County Museum 2014).

Reconstruction and Growth (1866 to 1917)

The economic impact of a shift from agriculture to industry continued in Isle of Wight County. This shift was helped with the completion of the James River Bridge (US-17) in 1928, which connected Isle of Wight County to Newport News (Kozel 2004). The construction of this bridge allowed people and goods to gain easier access to Isle of Wight County via a road instead of the most direct route being via boat up the James River.

Economic growth also came when Joseph W. Luter Sr. and Jr. founded Smithfield Packing Company in Smithfield, Virginia in 1936 (now known as Smithfield Foods, Inc.) (Smithfield Foods 2023). The founding of Smithfield Packing Company led to an influx of job opportunities for the county's residents and is still the county's main job supplier today. The still present agricultural industry paired with the growing Smithfield Packing Company allowed Isle of Wight County to provide the United States military with supplies during World War I and especially World War II.

World War I to World War II (1917-1945)

In 1920, nearly five million pounds of tobacco were produced in the area. In addition to tobacco, the raising of chickens and dairy products represented a major sector of the agrarian based economy. Brunswick thrived prior to the Great Depression, continuing as a major market center for the rich agricultural areas evidenced by the tobacco warehouses, cotton gins, and creameries

(Brunswick County 2018). However, the population of the county steadily declined over the next forty years with the number of farms also declining.

New Dominion (1945-Present)

From 1975 to 1982, the James River Bridge was replaced with a wider four lane bridge in order to accommodate the traffic going between Smithfield and Newport News (Kozel 2004). In 1982, the Nansemond River Bridge opened, which allowed for residents of Isle of Wight County to have easier access to the independent city of Suffolk. This bridge crosses over the Nansemond River and is a part of US-17, the same US highway as the James River Bridge.

As of the 2020 United States Census, there were 38,606 people living in the county, up from 14,906 people back in 1950 (USCB). The growth of Smithfield Foods and the easier access to cities like Newport News, Norfolk, and Suffolk are likely key contributors to the large population growth in Isle of Wight County. It is estimated that of this population, 69.5% were White, 23% were Black or African American, 4.2% were Hispanic or Latino, 1.1% were Asian, 0.5% were Native American or Native Alaskan, and 2.8% were of two or more races (USCB).

4.2 Previous Investigations

Apogee conducted a file review via the Virginia Cultural Resource Information System (V-CRIS) website in January 2022 (Figure 7). According to the V-CRIS record search, there are no previously recorded archaeological sites, one previous Phase I archaeological survey (Table 2), and 11 previously recorded architectural resources (Table 3) within a half-mile radius of the project area.

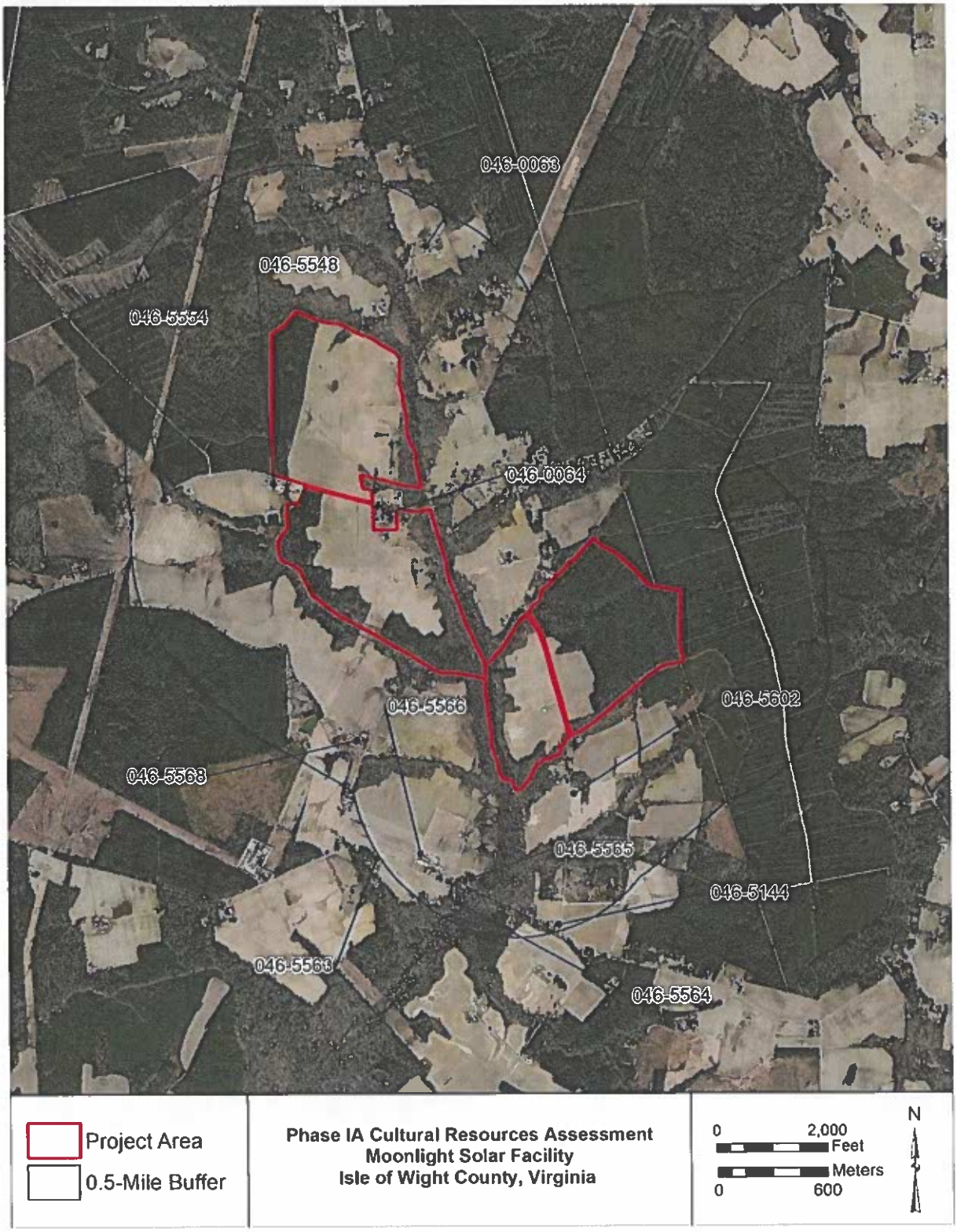

Figure 7: V-CRIS resources map within 0.5-mile buffer of Project Area.

Table 2: Previously Phase I Archaeological Surveys within 0.5-mile Buffer of Current Project.

Survey Year	Report Title	Author(s)	Company	Location Relative to APE
2020	Phase I Cultural Resource Survey of the +/- 2,106.02-Hectare (+/-5.204.1-Acre) Cavalier Solar Study Area, Isle of Wight and Surry Counties, Virginia	Hope Smith and Dara Friedberg	Dutton and Associates	outside

Table 3: Previously Recorded Architectural Resources within 0.5 miles of Project Area.

DHR ID	Site Name	NRHP Evaluation	Location Relative to APE
046-0063	House, Route 627	DHR Staff: Not Evaluated	outside
046-0064	Carroll Plantation (Current/Historic)/Gary Carroll House (Historic)	DHR Staff: Eligible	outside
046-5144	Dwelling, 9346 Moonlight Road	DHR Staff: Not Evaluated	outside
046-5548	Dwelling, 10522 Burwells Bay Road	DHR Staff: Not Eligible	outside
046-5554	Dwelling, 10338 Burwells Bay Road	DHR Staff: Not Eligible	outside
046-5563	Dwelling, 11128 Mill Swamp Road	DHR Staff: Not Eligible	outside
046-5564	Dwelling, 11292 Mill Swamp Road	DHR Staff: Not Eligible	outside
046-5565	Dwelling, 11301 Mill Swamp Road	DHR Staff: Not Eligible	outside
046-5566	Dwelling, 11231 Mill Swamp Road	DHR Staff: Potentially Eligible	outside
046-5568	Dwelling, 11128 Mill Swamp Road	DHR Staff: Not Eligible	outside
046-5602	Jordan Cemetery	DHR Staff: Not Evaluated	outside

4.3 Historic Map Review

A review of historic USGS topographic quadrangle maps was conducted to identify any potential historic resources within or adjacent to the project area. The earliest available topographic quadrangle depicting the project area is the Yorktown, VA (1907) USGS 1:62,500 scale quadrangle, on which three historic properties are depicted within the project area (Figure 8). These structures are present on both the 1907 and 1943 Yorktown, VA 1:62,500 scale quadrangle maps. Only one structure is present within the project area on the most recent historic topographic map: Bacons Castle, VA (1969) 1:24,000 quadrangle map (Figure 9).

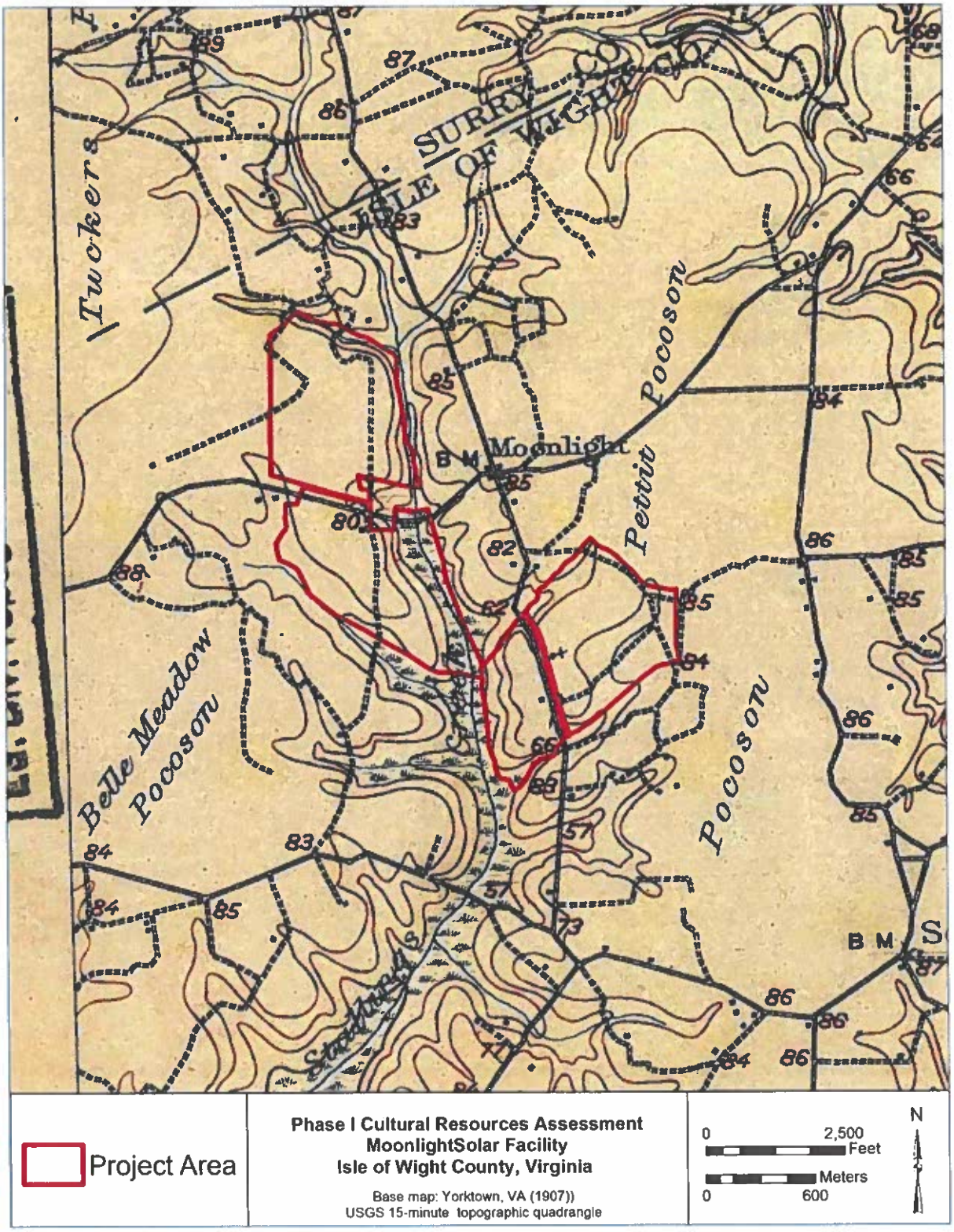

Figure 8: Project area depicted on the Yorktown, VA (1907) USGA 1:62,500 scale quadrangle.

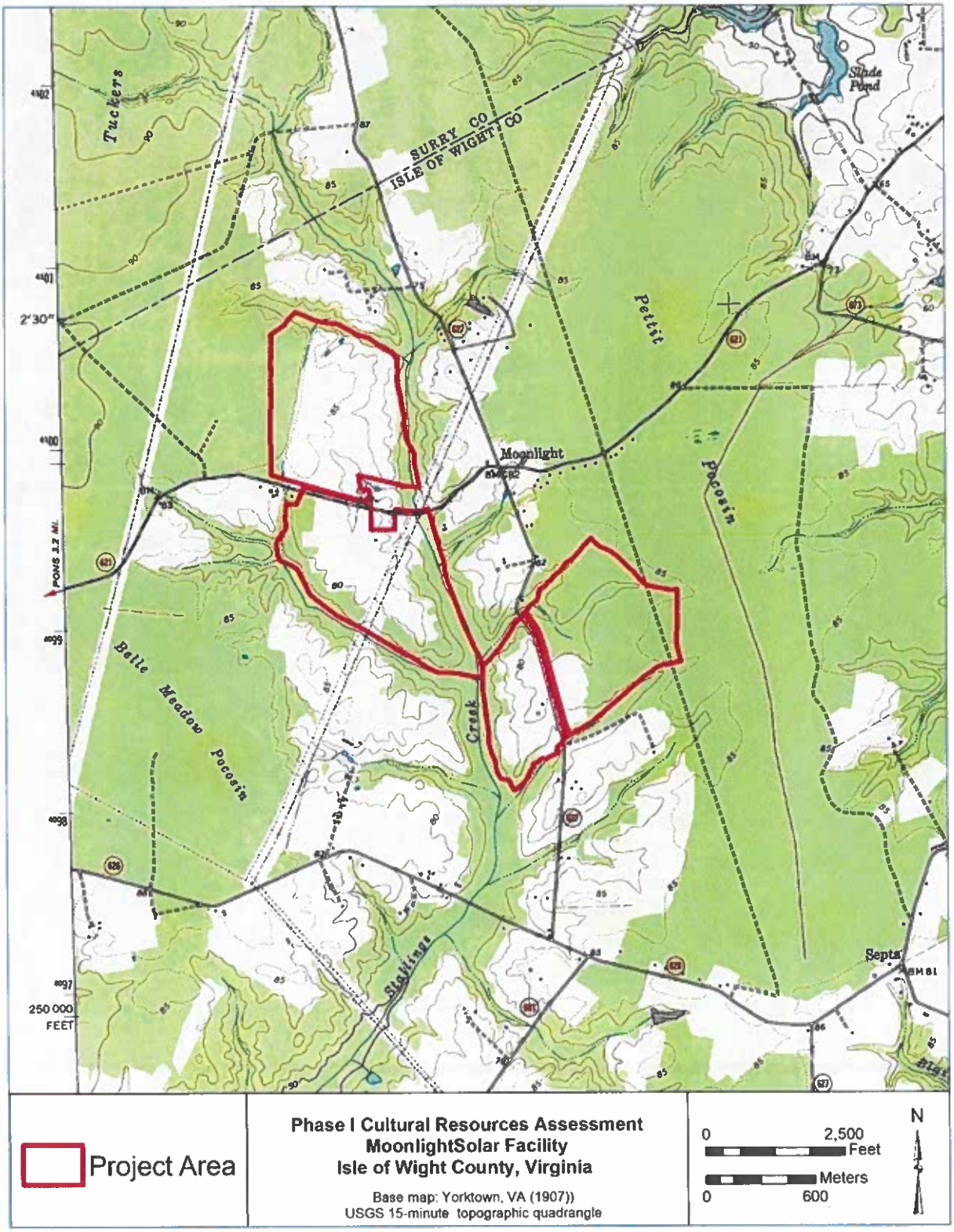

Figure 9: Project area depicted on the Bacons Castle, VA (1969) 1:24,000 scale quadrangle.

5.0 PHASE I ARCHAEOLOGICAL SURVEY RESULTS

5.1 Results Overview

From April 17th to May 5th, 2023, Apogee personnel, under the direction of David Hanley, MA, RPA, conducted a Phase I archaeological investigation including systematic shovel testing at a 15-m interval, judgmental shovel testing, and systematic pedestrian survey at a 10-m interval within the combined 516.9-acre areas of investigation (Figures 10-13). In areas that could not be tested via pedestrian survey, systematic shovel testing was conducted. Shovel testing was focused in the high probability areas where Timmons noted there would be building activities occurring. A total of 999 shovel tests were excavated across the four different portions of the APE (Appendices D and E). As a result of the cultural resources survey, Apogee identified five archaeological sites (44IW0390, 44IW0391, 44IW0392, 44IW0393, and 44IW0394) and 22 isolated artifacts across high, medium, and low probability areas.

High probability areas for this project included soils with flat topography surrounding waterways that were located outside of delineated wetlands. Medium probability areas within the project area consist of landforms with relatively flat topography removed from water sources.

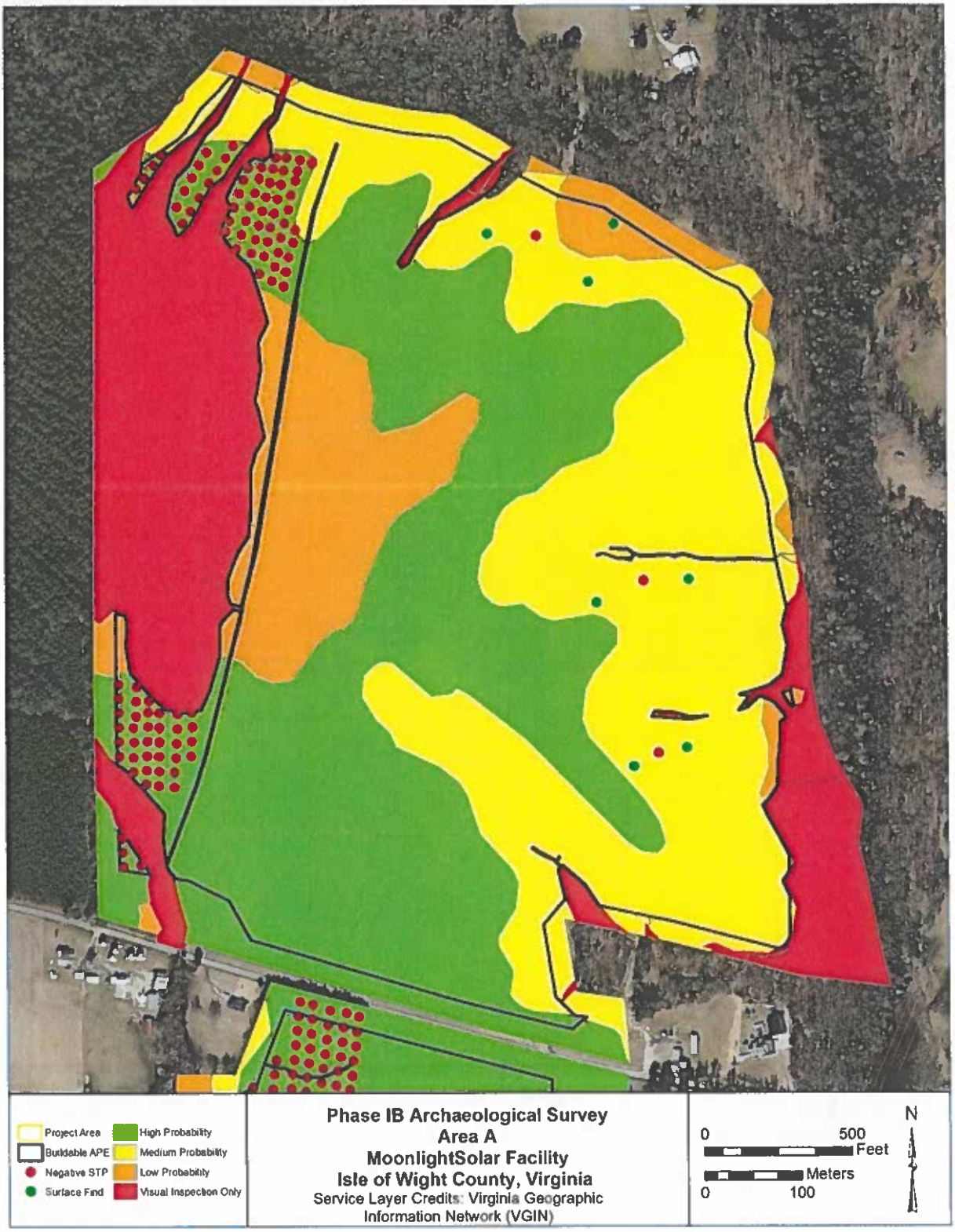

Figure 10: Results map for Area A.

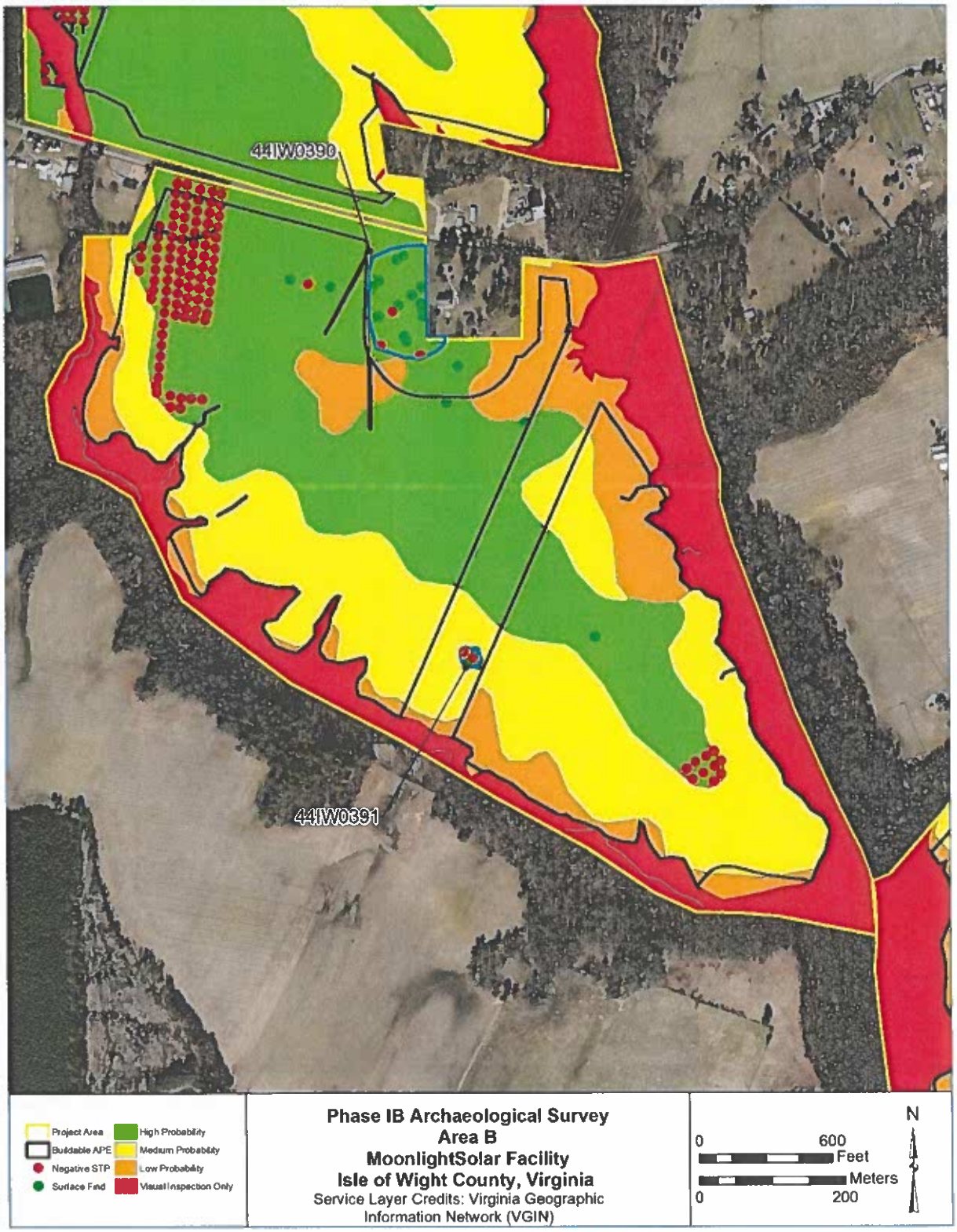

Figure 11: Results map for Area B.

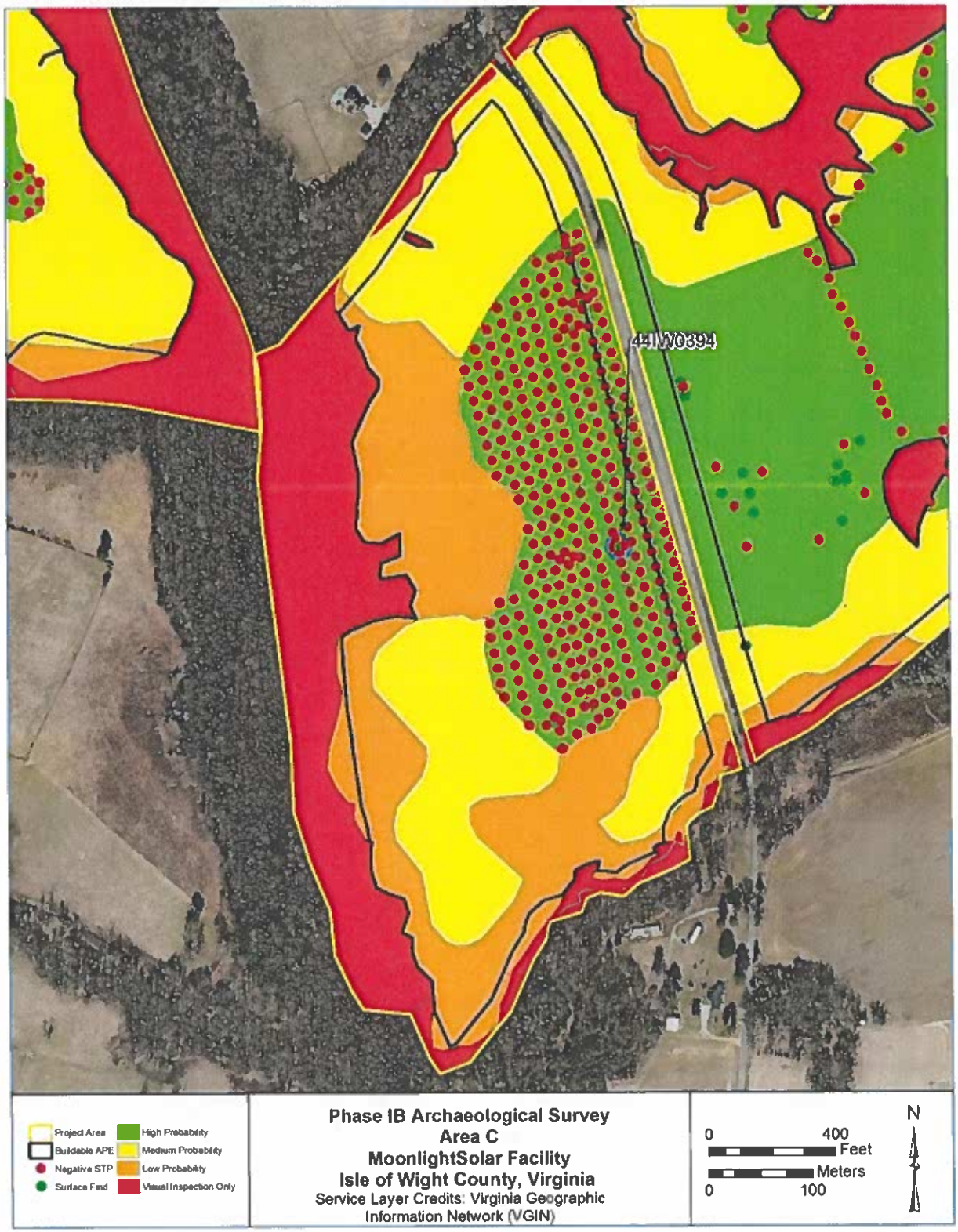

Figure 12: Results map for Area C.

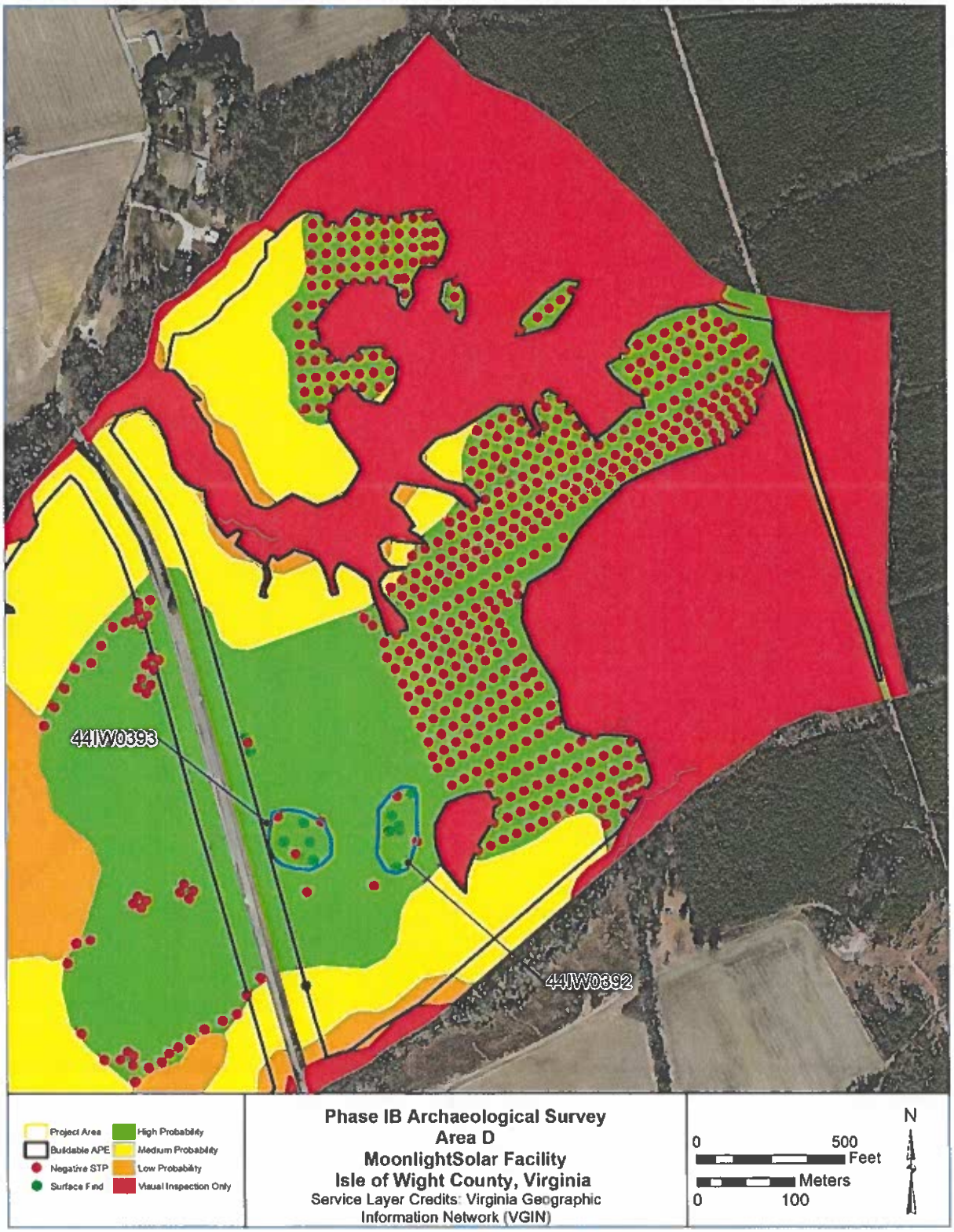

Figure 13: Results map for Area D.

5.1 Area A

Apogee archaeologists surveyed an approximate total of 157 acres of mixed probability areas within Area A (Figures 14-16). Current land use within Area A consists of active agricultural fields, planted pine, deciduous forest, and delineated wetland (Photos 1-4). Surveying included the use of both systematic pedestrian survey and systematic shovel testing. A total of 105 shovel tests were excavated within Area A: three judgmental shovel tests in between isolated finds encountered during the pedestrian survey and 102 in high probability wooded areas. A typical soil profile for the active agricultural fields portion of Area A consisted of a brown (10YR 5/3) sandy loam Ap horizon that clearly transitions to a strong brown (7.5YR 5/6) clay loam subsoil (Photo 5). A typical soil profile for the forested portion of Area A consisted of a dark grayish brown (10YR 4/2) sandy loam that clearly transitioned to a pale brown (2.5Y 7/3) clay loam subsoil (Photo 6). In some instances, an E horizon was present in the forested areas that consisted of a light brownish gray (10YR 6/2) sandy loam. All shovel tests were negative for cultural material. No archaeological sites and seven isolated finds were encountered within Area A.

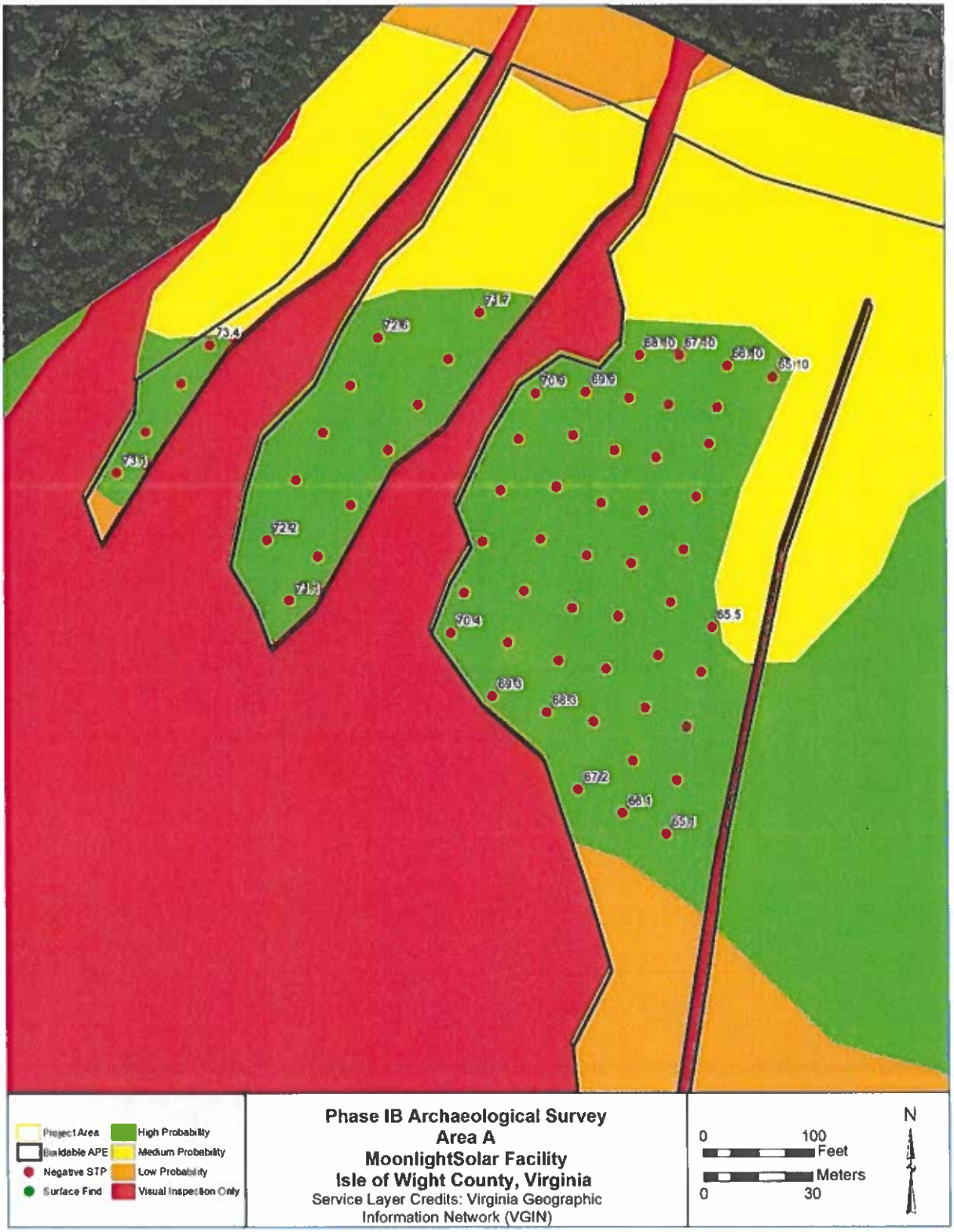

Figure 14: Results map for Area A with labeled ST transects (Northwest Section).



Figure 15: Results map for Area A with labeled ST transects (Southwest Section).

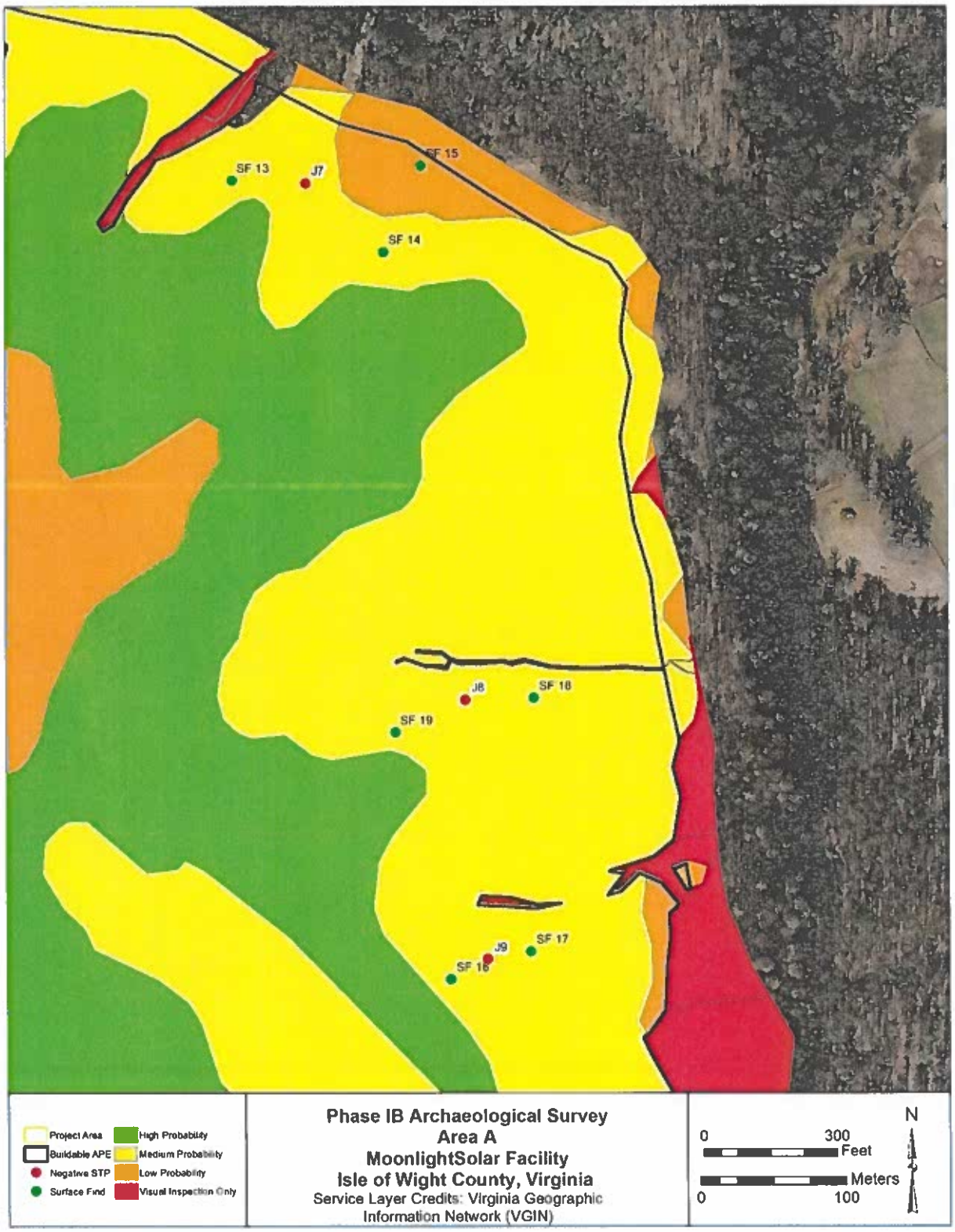

Figure 16: Results map for Area A with labeled surface finds and judgmental STs.



Photo 1: Overview of agricultural fields in Area A, facing north.



Photo 2: View of wooded areas in Area A, facing west.



Photo 3: View of ditch and berm in Area A wooded area, facing northwest.



Photo 4: View of wetland delineated area in Area A, facing southeast.



Photo 5: Fully excavated shovel test profile in agricultural field portion of Area A.



Photo 6: Fully excavated shovel test profile in wooded portion of Area A.

A total of seven isolated artifacts were recovered from the pedestrian survey of Area A: five historic in nature and two potentially precontact artifacts (Photo 7) (Appendix). The five recovered historic artifacts include two milk glass canning lid liner fragments, one blue transfer printed whiteware sherd, one undecorated soft paste porcelain sherd, and one light green bottle glass fragment. The two recovered precontact artifacts include one quartzite biface/preform fragment and one possible quartz core fragment.



Photo 7: Isolated surface finds recovered from Area A.

5.2 Area B

Apogee archaeologists surveyed approximately 159 acres of mixed probability areas within Area B (Figures 17-19). Current land use for Area B consists of pasture, active agricultural fields, planted pine, forested areas, and delineated wetland (Photos 8-11). A total of 106 shovel tests were excavated within Area B: six judgmental shovel tests to delineate surface find sites and determine if isolated finds were sites as well as 100 shovel tests within high probability areas. A typical soil profile within the agricultural field portion of Area B consisted of a brown (10YR 4/3) sandy loam Ap horizon that clearly transitions to a strong brown (7.5YR 5/6) clay loam subsoil (Photo 12). A typical soil profile within the wooded portions of Area B consisted of a very dark grayish brown (10YR 3/2) sandy loam Ap horizon that clearly transitions to a very pale brown (10YR 7/3) sandy loam E horizon. After a clear transition from the E horizon is a brownish gray (10YR 6/6) sandy clay subsoil (Photo 13). In some instances, the E horizon was not present. All shovel tests were negative for cultural material. A total of two archaeological sites (44IW0390 and 44IW0391) and six isolated finds were identified within medium probability areas.

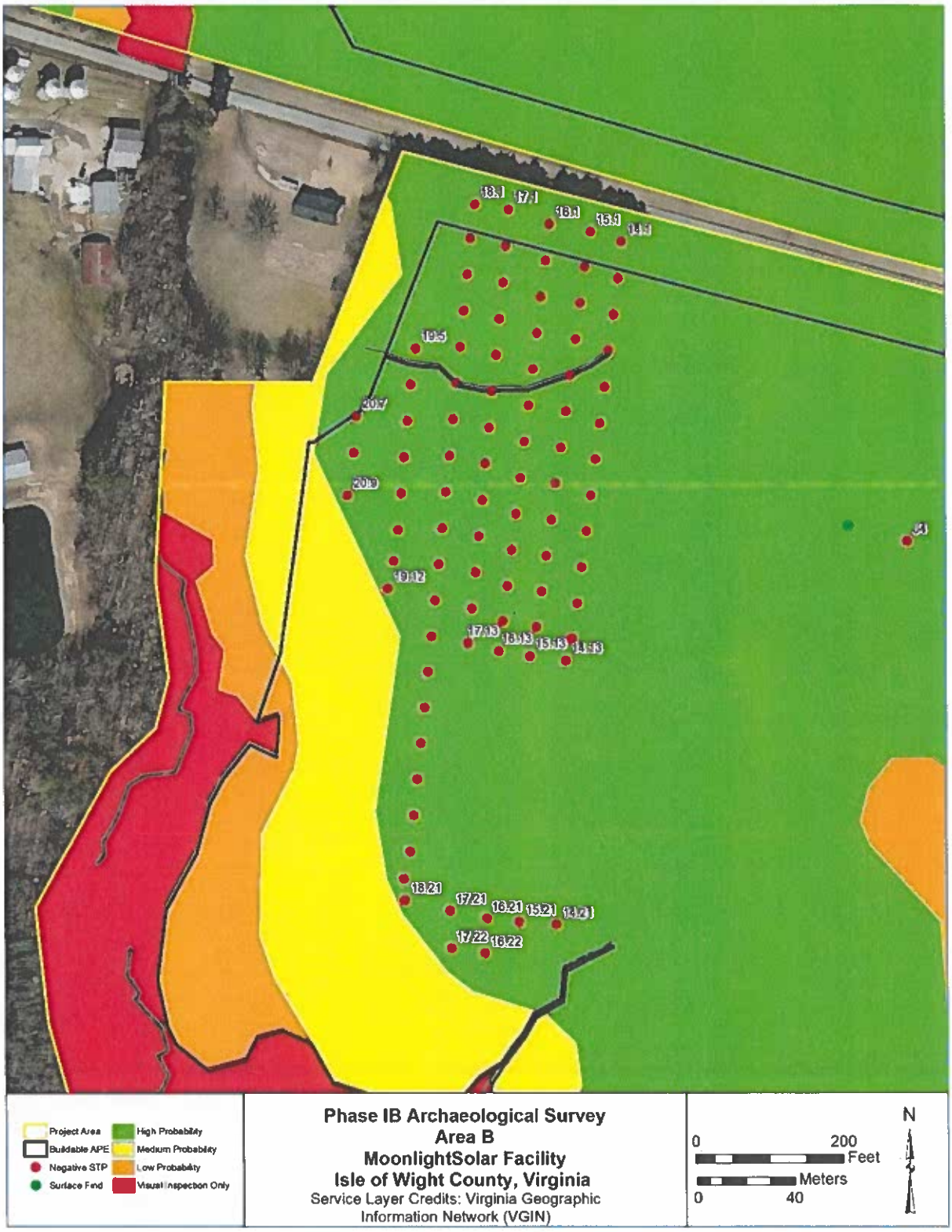

Figure 17: Results map for Area B with labeled STs (Northwest Section).

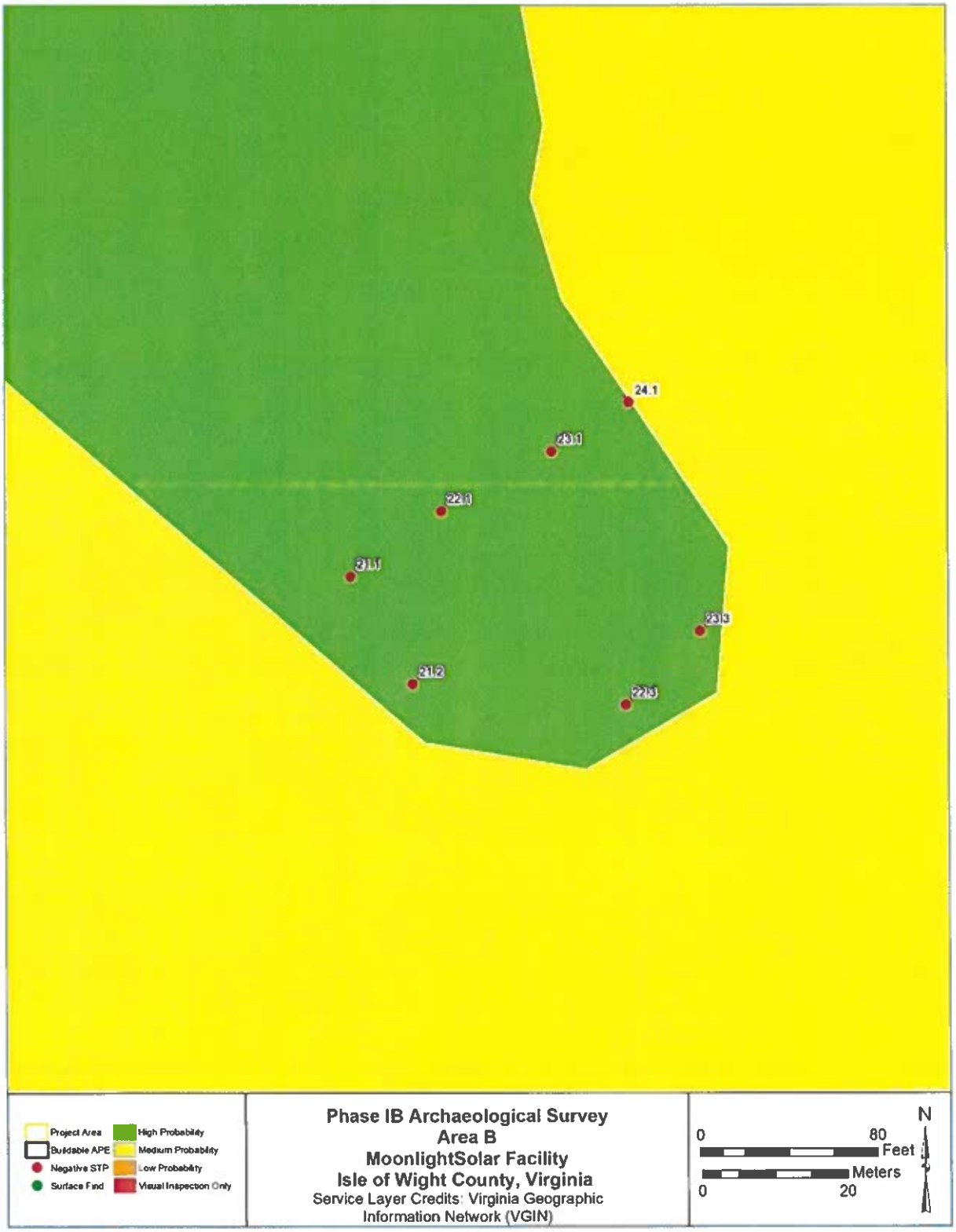

Figure 18: Results map for Area B with labeled STs (Southeast Section).

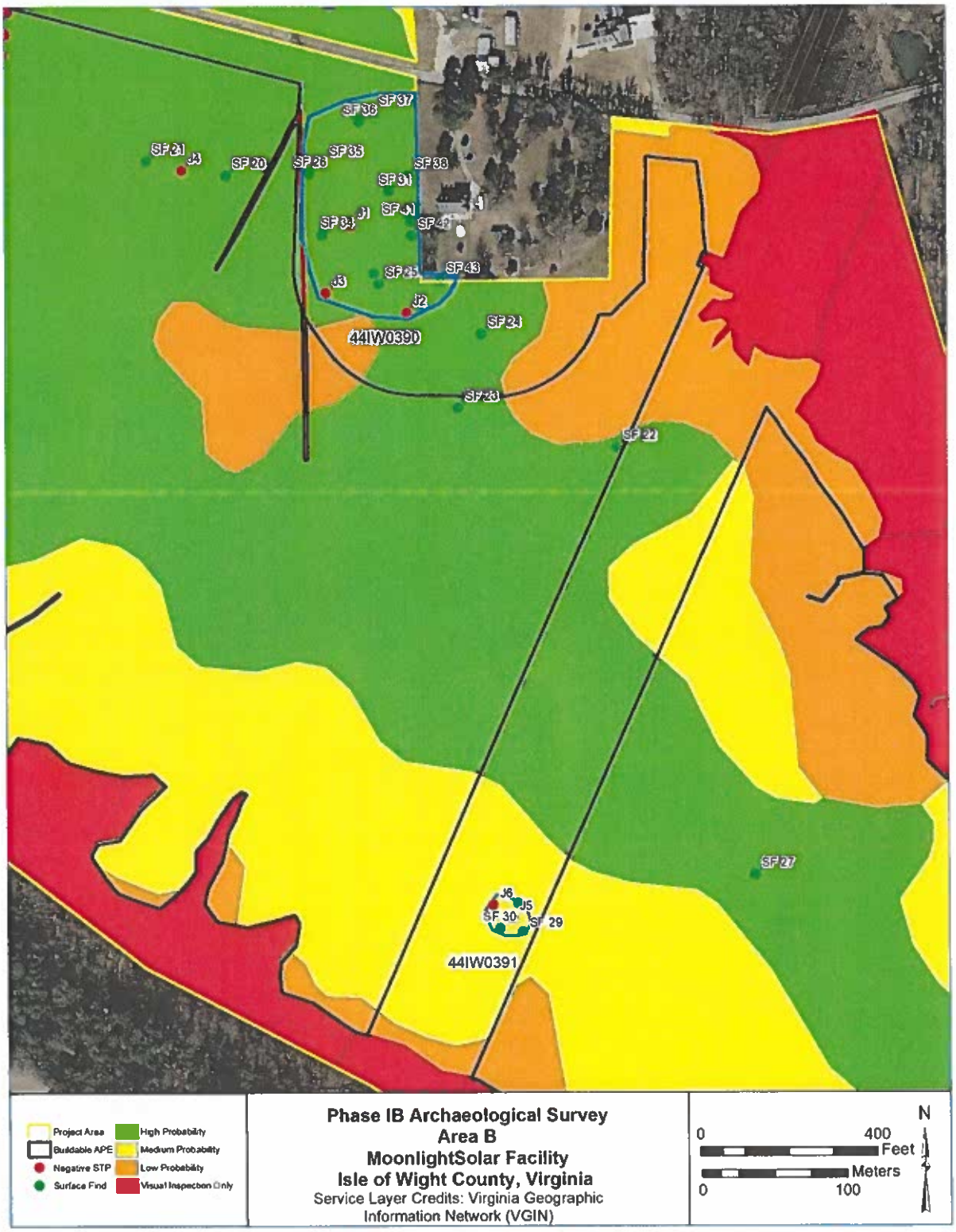

Figure 19: Results map for Area B with labeled site boundaries, surface finds, and judgmental STs.



Photo 8: Overview of agricultural fields in Area B, facing south.



Photo 9: Overview of wooded areas in Area B, facing southeast.

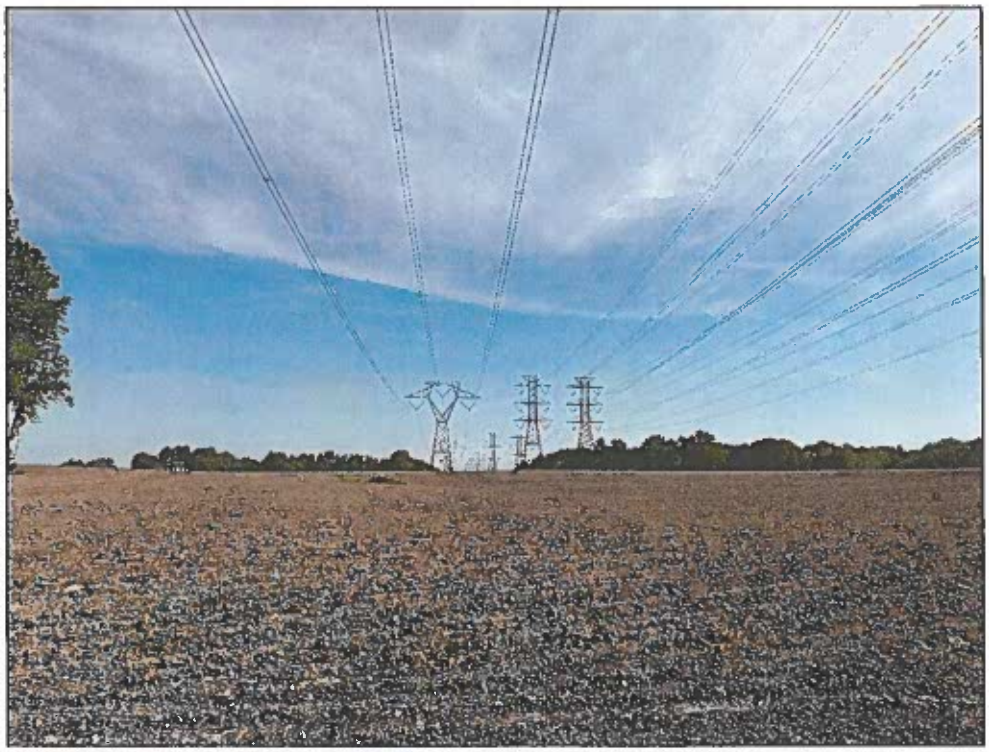

Photo 10: Overview of powerline corridor within Area B, facing northeast.



Photo 11: Overview of drainage culvert in delineated wetland within Area B, facing east.



Photo 12: Fully excavated shovel test profile in agricultural field portion of Area B (44IW0390).



Photo 13: Fully excavated shovel test profile in wooded portion of Area B.

44IW0390

Site 44IW0390 was identified during pedestrian survey of an agricultural field within a high probability portion of Area B (Photo 14). Site 44IW0390 is located south of the Burwells Bay Road directly west of architectural recourse 046-0064 (Figure 20). A total of four shovel test pits (STPs) were excavated to determine the boundary for site 44IW0390. All excavated STPs were negative. A typical STP profile for site 44IW0390 consisted of a brown (10YR 5/3) sandy loam Ap horizon that clearly transitions to a strong brown (7.5YR 5/6) clay loam subsoil (See Photo 12).

A total of 35 artifacts were recovered from the pedestrian survey of site 44IW0390. While most of the artifacts recovered did not have a discernable date range, eight artifacts allowed for a better understanding of when the site was potentially used. These artifacts with discernable date ranges include: three flow blue whiteware sherds, two blue shell edge decorated whiteware sherd, one blue dipped whiteware sherd, one blue transfer print whiteware sherd, and one black transfer print whiteware sherd (Photo 15) (APPENDIX). Flow blue printed whiteware became common around 1844 and stopped being commonly produced at the turn of the 20th century (Miller 1991). Among the two blue shell edge sherds, one sherd is impressed and scalloped and the other features a molded motif. The impressed and scalloped shell edge sherd typically dates between the 1830s and the 1890s while the molded motif sherd has a more exact date range of between the 1820s and 1830s (Hunter and Miller 1994). The sherd of blue dipped whiteware likely features the design of a cat's eye or cabling. These decorations are both multi-chambered slip decorations, which were produced between 1830 and 1900 (Sussman 1997; Rickard 2006). Finally, the two transfer printed sherds (one blue and one black) both date to the mid-19th century with the date range for blue transfer print ending around 1867 and black around 1864 (Miller 1980; Majewski and O'Brien 1986). Based on these recovered artifacts, site 44IW0390 is likely a mid-19th to early-20th century domestic trash scatter. Due to its proximity to architectural resource No. 046-0064, it is likely that 44IW0390 is the refuse from the structure's occupants that has been incidentally distributed in the agricultural field over the years.

All artifacts were recovered from the surface of the Ap horizon with no buried or sealed historic deposits encountered. The site lacks integrity and research potential as the absence of stratified deposits and features limits the potential for research questions addressing lives of rural populations in the mid-19th to early-20th century. No further work is recommended at this site.



Figure 20: 44IW0390 Site Map.



Photo 14: Overview of 44IW0390, facing northeast.



Photo 15: Recovered artifact sample from 44IW0390.

44IW0391

Site 44IW0391 was identified during pedestrian survey of an agricultural field within a medium probability portion of Area B (Photo 16). Site 44IW0391 is located south of Burwells Bay Road and south of 44IW0390 within a powerline corridor (Figure 21). A total of two STPs were excavated to determine the boundary of site 44IW0391, both of which were negative for cultural material. A typical STP profile for site 44IW0391 consisted of a brown (10YR 4/3) sandy loam Ap horizon that clearly transitions to a yellowish brown (10YR 5/6) clay loam subsoil (Photo 17).

A total of three artifacts were recovered from within the site 44IW0391 boundary, all of which were historic in nature: two flow blue transfer printed whiteware sherds and one undecorated whiteware sherd (Photo 18) (APPENDIX). While whiteware has been produced since 1820 and is still seen today (Miller 1980; Majewski and O'Brien 1986), flow blue printed whiteware became common around 1844 and stopped being commonly produced at the turn of the 20th century (Miller 1991). Based on these three recovered artifacts, it is likely that site 44IW0391 is a low-density artifact scatter dating to the mid- to late-19th century.

All artifacts were recovered from the Ap horizon with no buried or sealed historic deposits encountered. The site lacks integrity and research potential as the absence of stratified deposits and features limits the potential for research questions addressing lives of rural populations in the mid- to late-19th century. No further work is recommended at this site.



Figure 21: 44IW0391 Site Map.



Photo 16: Overview of 44IW0391, facing west.



Photo 17: Example soil profile for 44IW0391.



Photo 18: Artifact assemblage from 44IW0391.

A total of six isolated artifacts were recovered from the pedestrian survey of Area B: five historic in nature and one potentially precontact artifact (Photo 19) (Appendix). The five recovered historic artifacts include three undecorated whiteware sherds and two brick fragments. The one recovered precontact artifact is a possible biface/preform manufactured from Mitchell Chert.



Photo 19: Isolated surface finds recovered from Area B.

5.3 Area C

Apogee archaeologists surveyed approximately 17.7 acres of high probability area within Area C (Figure 22). Current land use for Area C consists of active agricultural fields, forested areas, and delineated wetland (Photos 20-21). An active barn/farming structure sits towards the southern end of Area C (Photo 22). Shovel testing was focused on the high probability portion of Area C, which consisted exclusively of active agricultural fields. A total of 307 shovel tests were excavated within Area C, all of which were surveying high probability areas. No pedestrian survey was able to be conducted within Area C due to low ground visibility. Of the 307 shovel tests, six were positive for cultural materials. A typical soil profile within the high probability portion of Area C consisted of a brownish yellow (10YR 6/6) sandy loam Ap horizon that clearly transitions to a strong brown (7.5YR 5/6) clay loam subsoil (Photo 23). In some instances, an E horizon was present between the Ap horizon and subsoil. The E horizon, when present, consisted of a very pale brown (10YR 7/3) sandy loam. All shovel tests were negative for cultural material. One archaeological site (44IW0394) and six isolated finds were identified via shovel testing.



Figure 22: Results map for Area C with labeled STs.

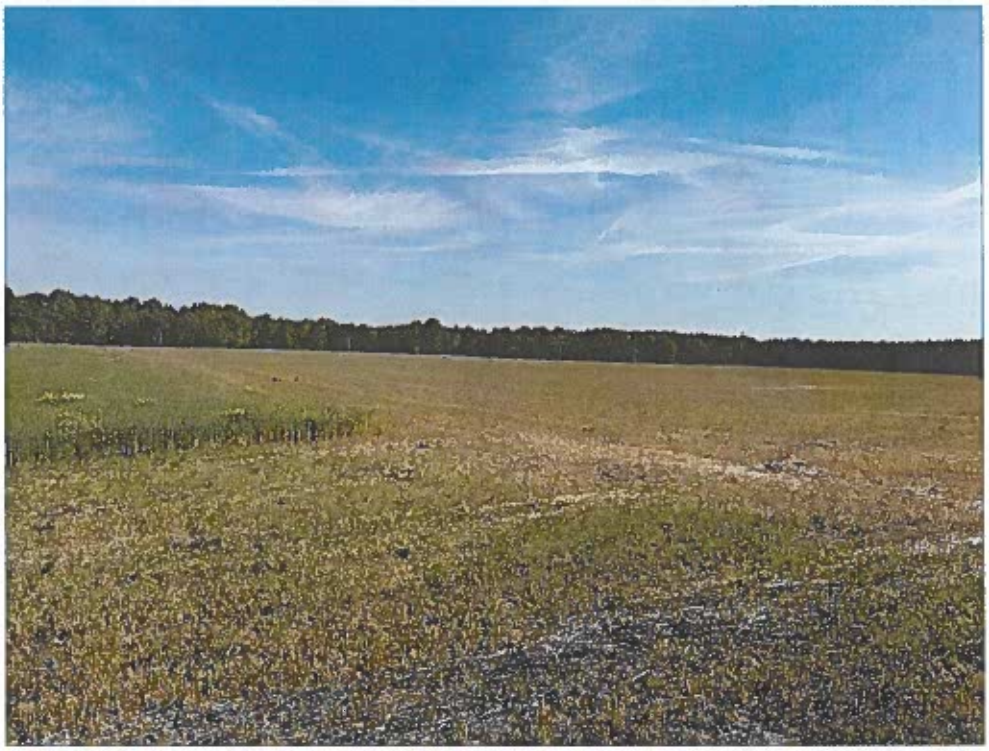

Photo 20: Overview of agricultural field in Area C, facing northeast.



Photo 21: Overview of wooded areas/wetlands in Area C, facing west.



Photo 22: Active barn/farming structure in Area C, facing northeast.



Photo 23: Fully excavated shovel test profile in Area C.

44IW0394

Site 44IW0394 was identified during systematic shovel testing of an agricultural field within a high probability portion of Area C (Photo 24). 44IW0394 is located west of Moonlight Road directly north of a barn present on the property (Figure 23). A total of five STPs were excavated to determine the boundary for site 44IW0394, with only the original STP being positive for historic materials. A typical soil profile for 44IW0394 consisted of a brownish yellow (10YR 6/6) sandy loam that clearly transitions to a strong brown (7.5YR 5/6) clay loam subsoil (Photo 25).

A total of seven historic artifacts were recovered from one STP, most of which do not possess a definitive date range: two aqua bottle glass fragments, two colorless bottle glass fragments, one oyster shell fragment, one brick fragment, and one undecorated whiteware sherd (Photo 26). The only artifact recovered with a date range is the whiteware sherd, which started to be produced in 1820 and is still produced today (Miller 1980; Majewski and O'Brien 1986). Due to the site's proximity to a barn to the south, site 44IW0394 is likely a late-19th to early-20th century domestic artifact scatter.

All artifacts were recovered from the Ap horizon with no buried or sealed historic deposits encountered. The site lacks integrity and research potential as the absence of stratified deposits and features limits the potential for research questions addressing lives of rural populations in the late-19th to early-20th century. No further work is recommended at this site.

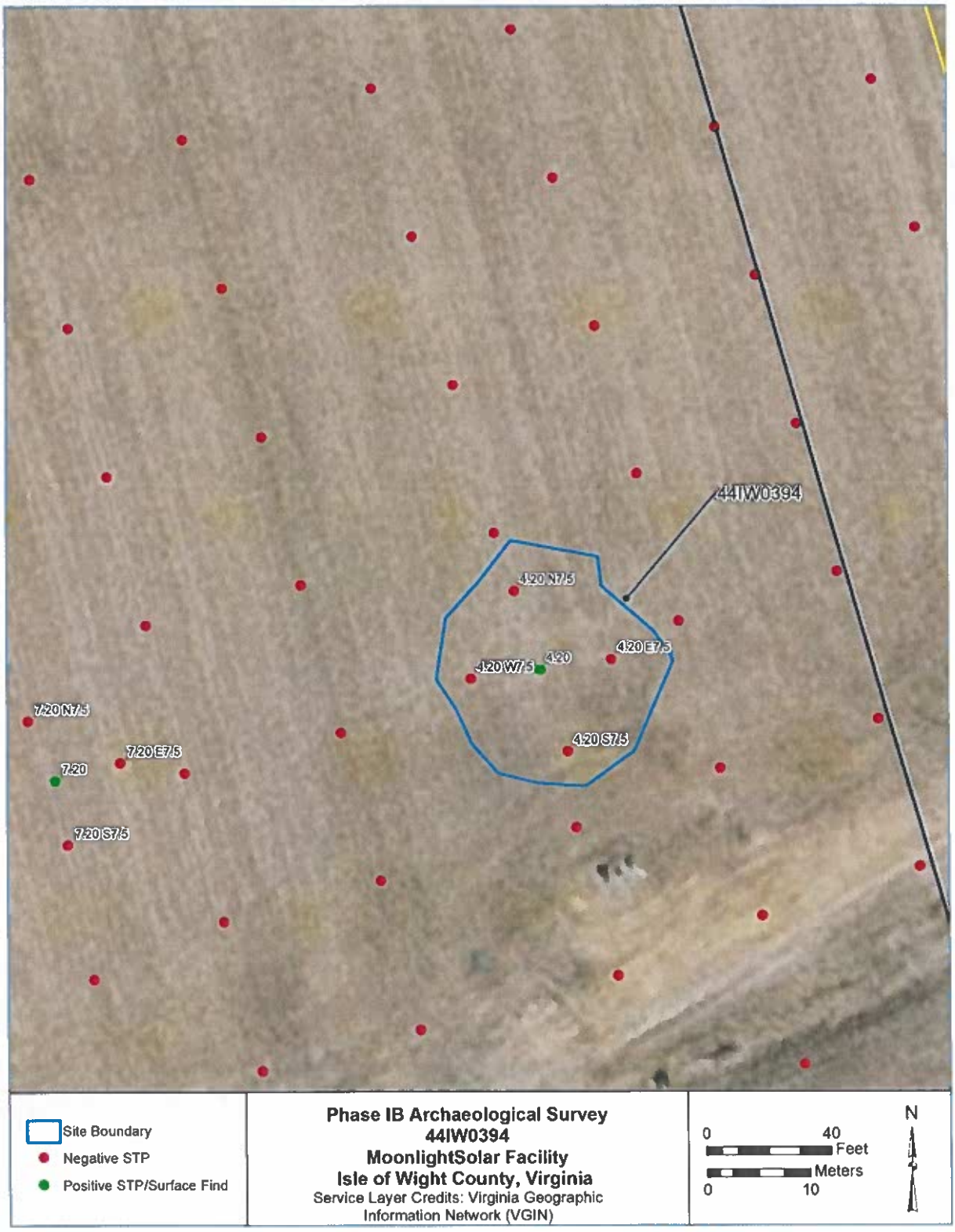

Figure 23: Site map for 44IW0394.



Photo 24: Overview of 44IW0394, facing east.

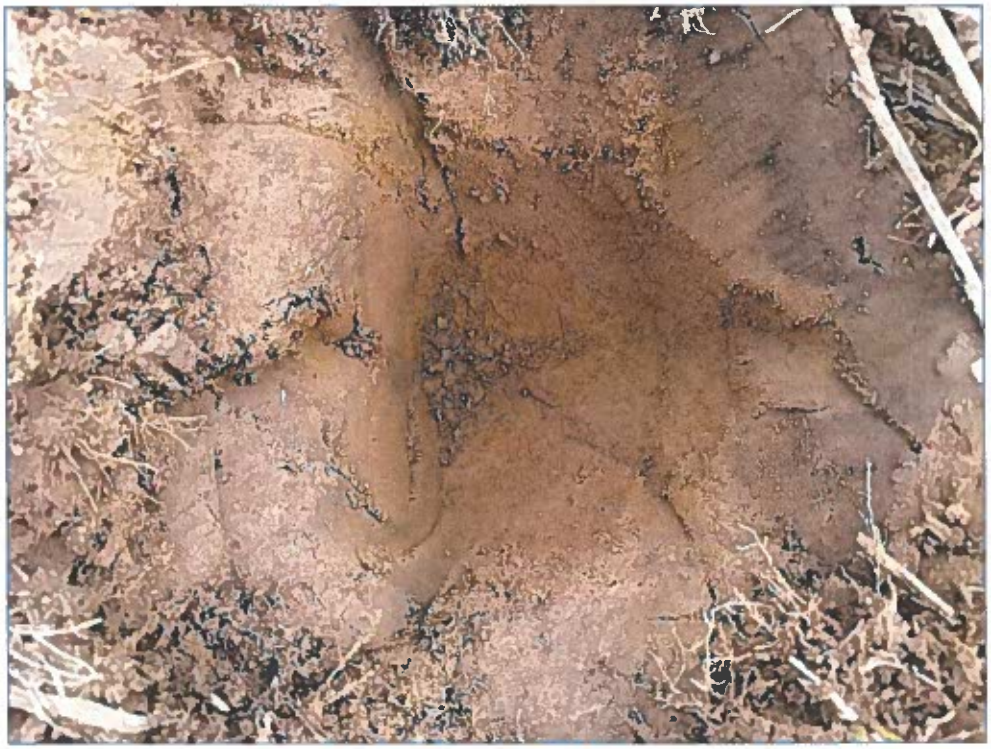

Photo 25: Soil profile for 44IW0394, facing northeast.



Photo 26: Artifact assemblage from 44IW0394.

A total of six isolated artifacts were recovered from the pedestrian survey of Area C: four historic in nature and two precontact artifacts (Photo 27) (Appendix). The four recovered historic artifacts include one blue edge decorated whiteware sherd, one salt glaze American gray stoneware sherd, one hand wrought nail, and one "black" glass bottle fragment. The two recovered precontact artifacts are one tertiary flake manufactured from quartz and one tertiary flake with retouch manufactured from rhyolite.



Photo 27: Isolated surface finds recovered from Area C.

The hand wrought nail and the "black" bottle glass fragment were recovered within 30 meters of each other, and given the lack of additional material, led Apogee archaeologists to further investigate due to their age. Apogee archaeologists returned to the area to metal detect in the

vicinity of the positive shovel test (ST 11.29), which contained the hand wrought nail. A series of cruciform survey lines, using the shovel test as a datum, were investigated. Investigations extended as far as the original glass surface find in each cardinal direction. One operator, using a Teknetics G7 metal detector, swept the area for one half day. No additional artifacts, or viable metal targets, were recovered as a result of metal detection.

5.4 Area D

Apogee archaeologists surveyed approximately 137.75 acres of mixed probability areas within Area D (Figures 24-26). Current land use for Area D consists of active agricultural fields, forested areas, and delineated wetland (Photos 28-30). Significant disturbance from previous logging activities were encountered in the wooded portions of Area D (Photo 31). Systematic shovel testing was focused on the high probability portions of Area D that were wooded. A total of 481 shovel tests were excavated within Area D: eight judgmental shovel tests used to determine site boundaries and 463 shovel tests in high probability areas that could not be pedestrian surveyed. All excavated shovel tests within Area D were negative for cultural material. A typical soil profile within an agricultural field consisted of a brownish yellow (10YR 6/6) sandy loam Ap horizon that clearly transitions to a strong brown (7.5YR 5/6) clay loam subsoil (Photo 32). A typical shovel test within the wooded portion of Area D consisted of a dark grayish brown (10YR 4/2) sandy loam Ap horizon that clearly transitions to a brownish yellow (10YR 6/8) sandy clay subsoil (Photo 33). In some instances, an E horizon was present between the Ap horizon and the subsoil. When the E horizon was present, it consisted of a very pale brown (10YR 7/3) sandy loam. All shovel tests were negative for cultural material. Two archaeological sites (44IW0392 and 44IW0393) and six isolated finds were identified via pedestrian survey.

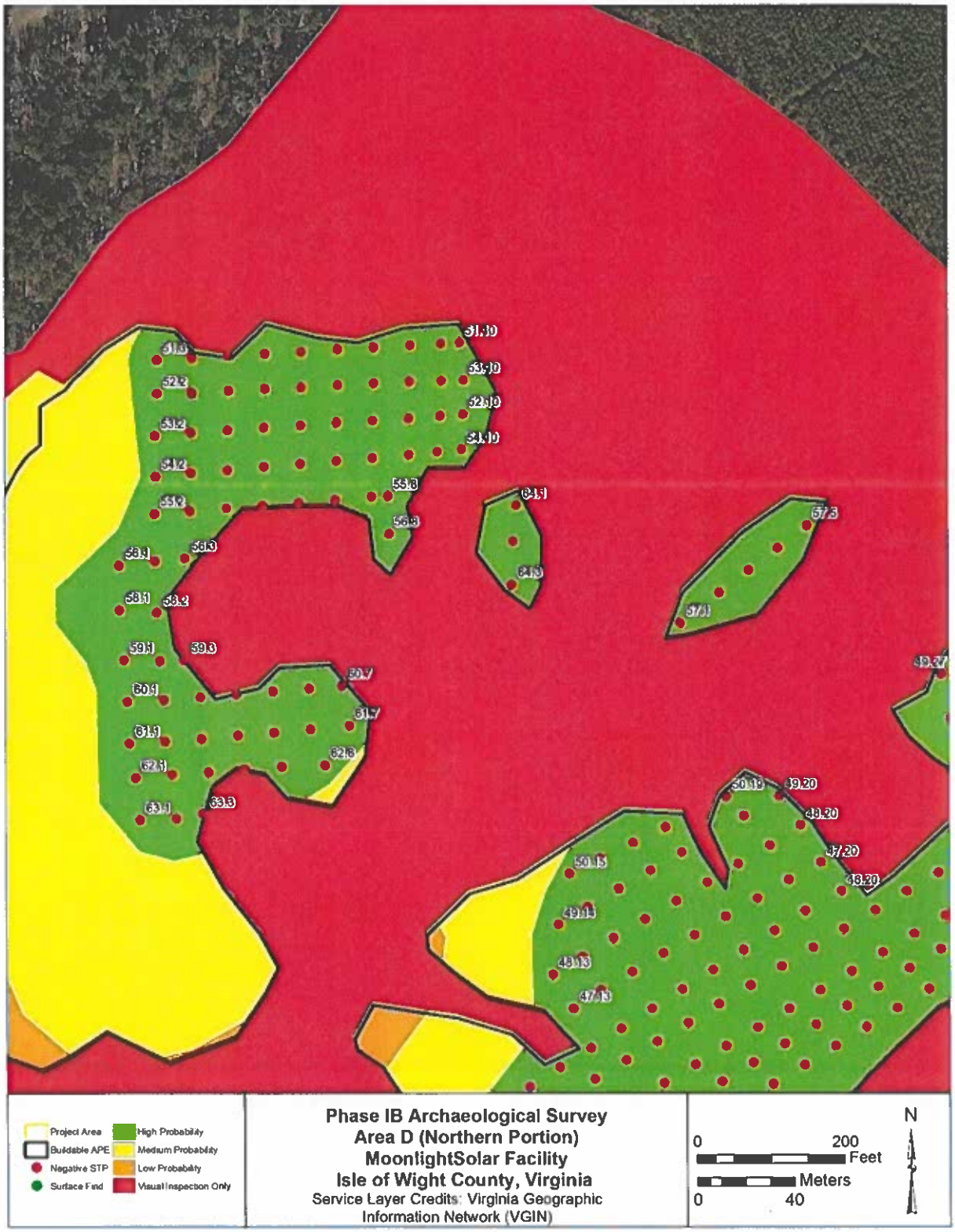

Figure 24: Results map for Area D with labeled STs (Northern Section).

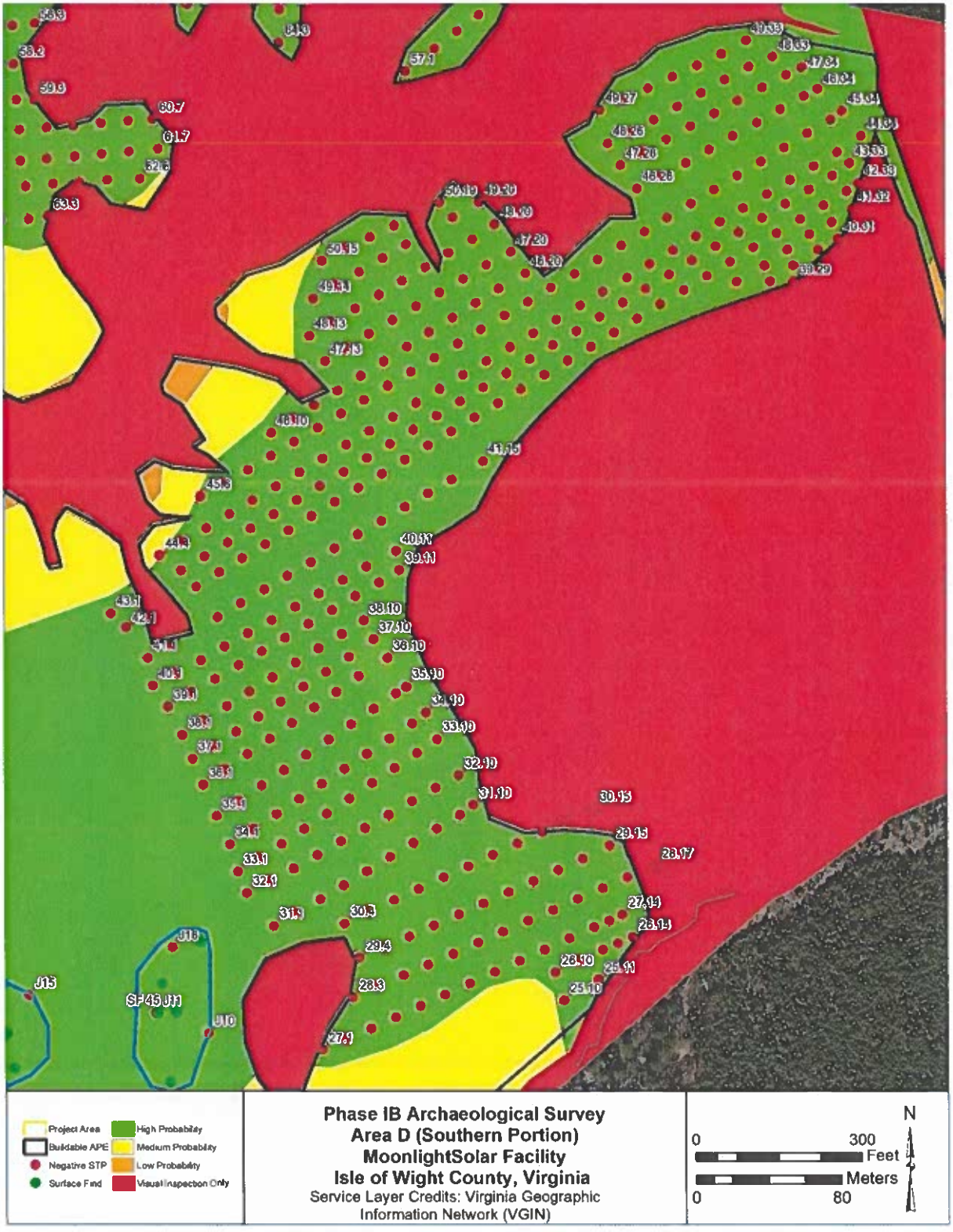

Figure 25: Results map for Area D with labeled STs (Southern Section).

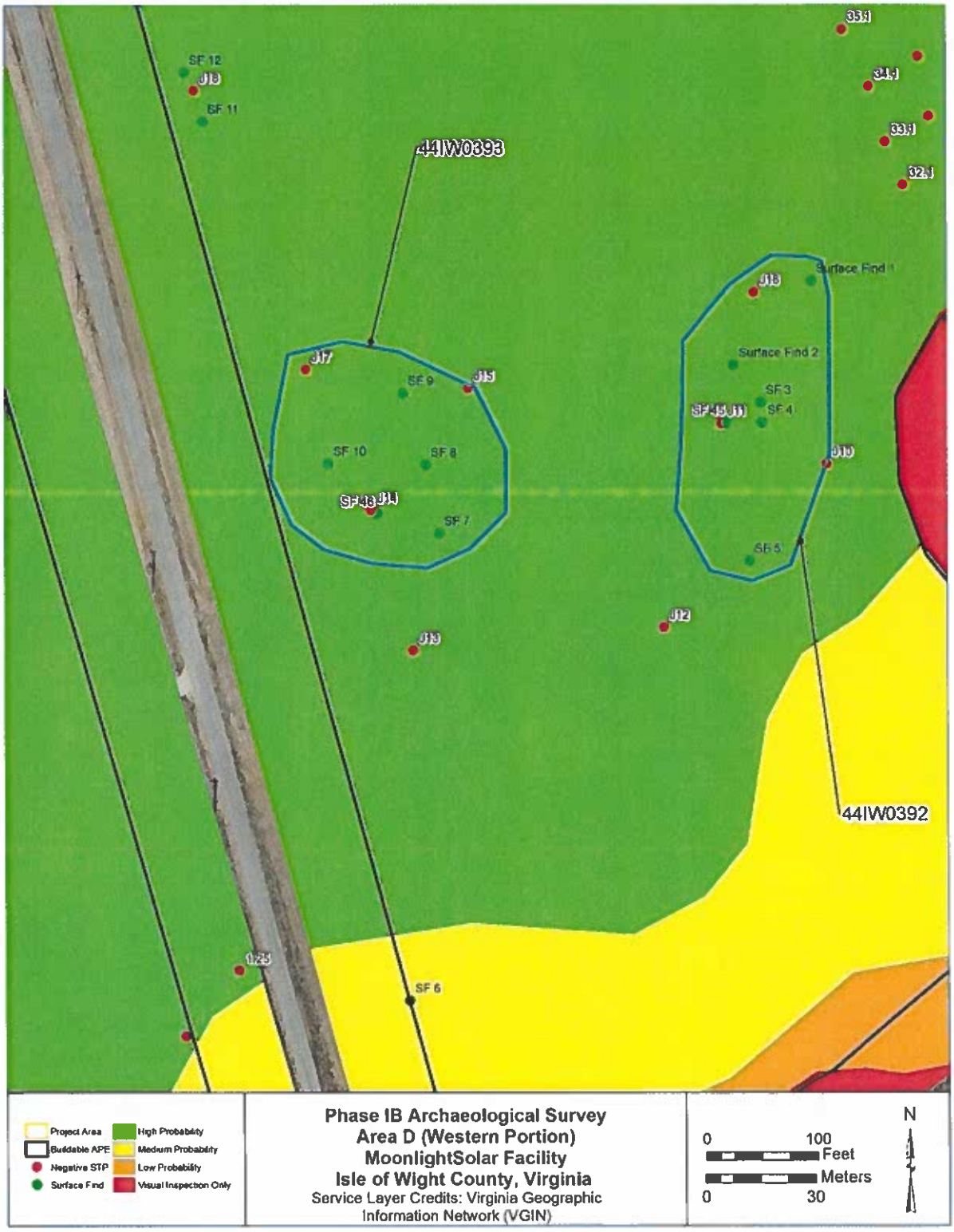

Figure 26: Results map for Area D with labeled site boundaries, surface finds, and judgmental STs.



Photo 28: Overview of agricultural field in Area D, facing northwest.



Photo 29: Overview of wooded portion in Area D, facing east.



Photo 30: Delineated wetland in Area D, facing north.



Photo 31: Example of logging disturbance in Area D, facing south.



Photo 32: Fully excavated shovel test soil profile within an agricultural field of Area D.



Photo 33: Fully excavated shovel test soil profile within the wooded portion of Area D.

44IW0392

Site 44IW0392 was identified during pedestrian survey of a plowed field within a high probability portion of Area D (Photo 34). 44IW0393 is located east along Moonlight Road northeast of site 44IW0393 (Figure 27). A total of four STPs were excavated to determine the boundary of site 44IW0392, all of which were negative. A typical STP profile for 44IW0392 consisted of a brown (10YR 5/3) sandy loam Ap horizon that clearly transitions to a strong brown (7.5YR 5/6) clay loam subsoil (Photo 35).

A total of seven artifacts were recovered from the pedestrian survey of site 44IW0392, all of which were historic in nature. Recovered artifacts include: two cobalt blue glass bottle fragments, two undecorated whiteware sherds, one milk glass canning jar lid liner fragment, one undecorated hard-paste porcelain sherd, and one "black" bottle glass fragment (Photo 36) (APPENDIX). These artifacts provide a large date range for potential use of the site. For instance, cobalt blue glass was commonly used for glass bottle production during the late-19th to the early-20th century (SHA 2023a), milk glass started to be used for canning jar lid liners during the 1930s (Toulouse 1969), and "black" glass (otherwise known as a dark olive green) was most commonly used in bottle production between the 1840s and the 1880s (SHA 2023b). Therefore, it is likely that site 44IW0392 is a low-density artifact scatter dating to the mid-19th to mid-20th century potentially associated with the agricultural structure across Moonlight Road in Area C.

All artifacts were recovered from the surface of the Ap horizon with no buried or sealed historic deposits encountered. The site lacks integrity and research potential as the absence of stratified deposits and features limits the potential for research questions addressing lives of rural populations in the mid-19th to mid-20th century. No further work is recommended at this site.

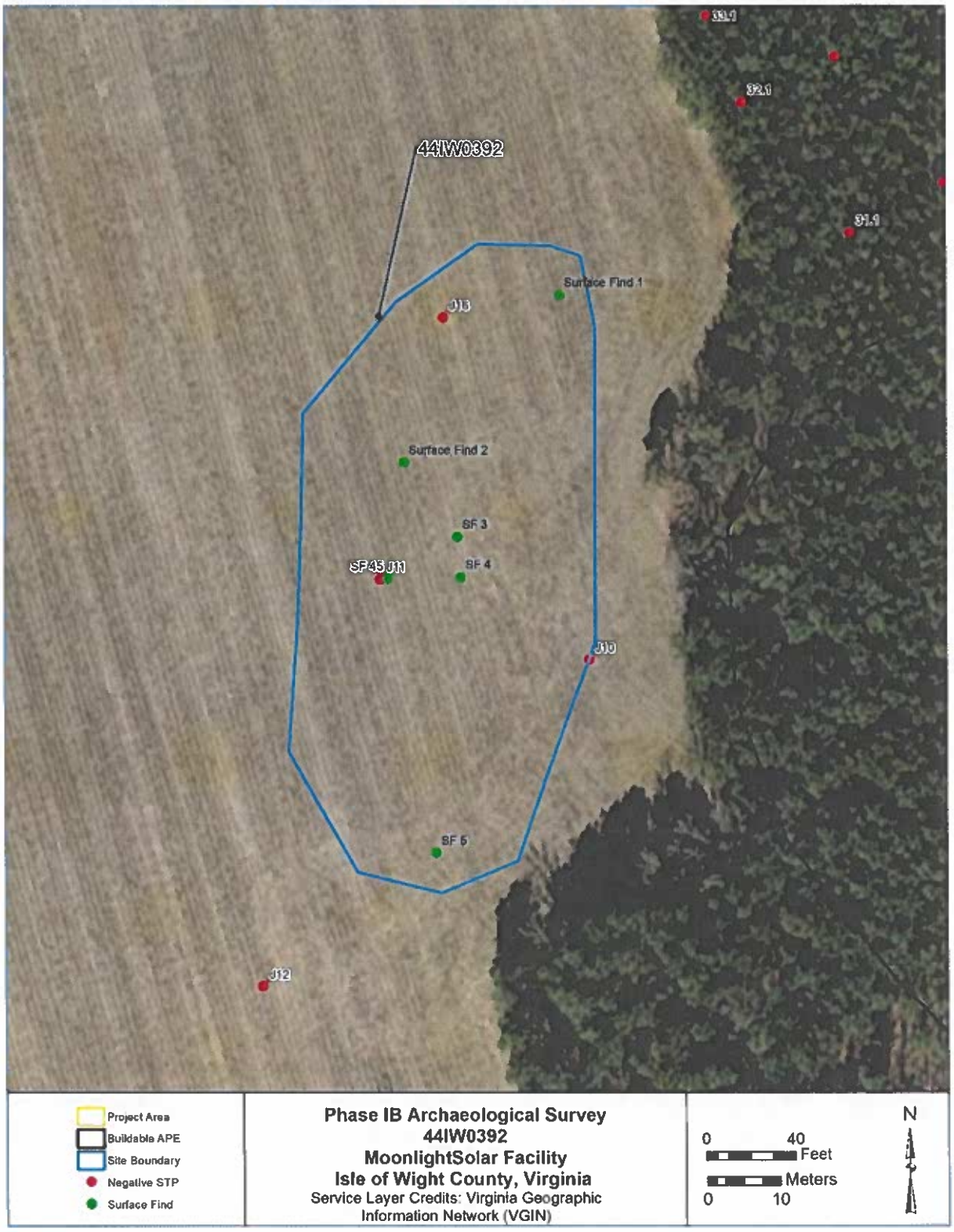

Figure 27: Site map for 44IW0392.



Photo 34: Overview of 44IW0392, facing southwest.



Photo 35: Fully excavated shovel test soil profile for 44IW0392.



Photo 36: Artifact assemblage from 44IW0392.

44IW0393

Site 44IW0393 was identified during pedestrian survey of an agricultural field within a high probability portion of Area D (Photo 37). Site 44IW0393 is located east of Moonlight Road southwest of site 44IW0392 (Figure 28). A total of four STPs were excavated to determine the boundary of site 44IW0393, none of which were positive for cultural material. A typical STP profile for site 44IW0393 consisted of a brown (10YR 5/3) sandy loam Ap horizon that clearly transitions to a strong brown (7.5YR 5/6) clay loam subsoil (Photo 38).

A total of 12 artifacts were recovered from the surface of site 44IW0393, all of which were historic in nature. Among the 12 recovered artifacts are five aqua bottle glass fragments, one color glazed whiteware sherd, one oyster shell fragment, two amethyst glass bottle fragments, one light green bottle glass fragment, one brick fragment, and one black transfer printed whiteware sherd (Photo 39) (APPENDIX). Two artifacts out of these 12 have a discernable date range that can assist in dating the site: the black transfer print whiteware sherd, and the light green glass fragment. As seen in site 44IW0390, black transfer printed wares were at the height of their production between 1820 and 1864 (Miller 1980; Majewski and O'Brien 1986). However, light green bottle glass started to be produced around 1940 and is still in use today (Toulouse 1971). Based on the recovered artifacts, Apogee determined that site 44IW0393 is likely a low-density artifact scatter dating to the mid-19th to mid-20th century potentially associated with the agricultural structure across Moonlight Road in Area C.

All artifacts were recovered from the Ap horizon with no buried or sealed historic deposits encountered. No diagnostic precontact artifacts were recovered. The site lacks integrity and research potential as the absence of stratified deposits and features limits the potential for research questions addressing lives of precontact Native American populations. No further work is recommended at this site.



Figure 28: Site map for 44IW0393.



Photo 37: Overview of 44IW0393, facing south.



Photo 38: Soil profile for 44IW0393, facing northeast.



Photo 39: Artifact assemblage from 44IW0393.

A total of three isolated artifacts were recovered from the pedestrian survey of Area D, all of which are historic in nature (Photo 40) (Appendix). The three recovered historic artifacts include one undecorated whiteware sherd, one plain salt glaze American gray stoneware sherd, and one cobalt blue bottle glass fragment.



Photo 40: Isolated surface finds recovered from Area D.

6.0 SUMMARY AND CONCLUSIONS

On behalf of Timmons, Apogee conducted a Phase IB archaeological survey for the proposed Moonlight Solar Facility in Isle of Wight County, Virginia. This survey was conducted based on guidance by the Virginia Department of Historic Resources and the Virginia State Corporation Commission, with an emphasis on flat landforms near water sources and the locations of buildings identified in historic map research. As a result of the cultural resources survey, Apogee identified five archaeological sites (44IW0390, 44IW0391, 44IW0392, 44IW0393, and 44IW0394), and 22 isolated artifacts.

All archaeological sites identified and revisited during the survey did not possess qualities to be potentially eligible for listing on the National Register of Historic Places. Therefore, no further work is recommended within the APE.

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Appendix A: DHR VCRIS Inventory Forms

Snapshot

Date Generated: May 18, 2023

Site Name:	No Data
Site Classification:	Terrestrial, open air
Year(s):	1830 - 1860, 1861 - 1865, 1866 - 1916, 1917 - 1945, 1946 - 1991
Site Type(s):	Artifact scatter
Other DHR ID:	No Data
Temporary Designation:	No Data

Site Evaluation Status

Locational Information

USGS Quad:	BACONS CASTLE
County/Independent City:	Isle Of Wight (County)
Physiographic Province:	No Data
Elevation:	No Data
Aspect:	No Data
Drainage:	Albemarle-Chowan
Slope:	0-2%
Acreage:	2.900
Landform:	Other
Ownership Status:	Private
Government Entity Name:	No Data

Site Components

Component 1

Category:	Domestic
Site Type:	Artifact scatter
Cultural Affiliation:	Euro-American
Cultural Affiliation Detail:	No Data
DHR Time Period:	Antebellum Period (1830 - 1860), Civil War (1861 - 1865), Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991)
Start Year:	No Data
End Year:	No Data
Comments:	44IW0390 was identified during pedestrian survey of a planted field within a high probability portion of Area B. Apogee 1 is located south of the Burwells Bay Road directly west of architectural recourse 046-0064. A total of four shovel test pits (STPs) were excavated to determine the boundary for 44IW0390. All excavated STPs were negative. A typical STP profile for Apogee 1 consisted of a brown (10YR 5/3) sandy loam Ap horizon that clearly transitions to a strong brown (7.5YR 5/6) clay loam subsoil.

Bibliographic Information

Bibliography:

No Data

Informant Data:

No Data

CRM Events

Event Type: Survey:Phase I

Project Staff/Notes:

Garrett Silliman - Principal Investigator
David Hanley - Archaeological Field Director
Amanda Commins - Architectural Historian
Matthew Donathan - Archaeological Field Technician
Robert Kotlarek - Archaeological Field Technician
Dallon Olive - Archaeological Field Technician

Project Review File Number: No Data

Sponsoring Organization: No Data

Organization/Company: Apogee Environmental & Archaeological, Inc.

Investigator: David Hanley

Survey Date: 5/5/2023

Survey Description:

On behalf of Timmons Group, Inc. (Timmons), Apogee Environmental & Archaeological, Inc. (Apogee) conducted a Phase IB archaeological survey for the proposed Moonlight Solar Facility in Isle of Wight County, Virginia. The Phase IB survey serves as secondary step in meeting compliance requirements for The Virginia Department of Environmental Quality (DEQ). All activities were conducted in accordance with the Virginia Department of Historic Resources (DHR), as published in Guidelines for Conducting Historic Resources Survey in Virginia (2017). The project consists of the development of a solar energy facility located approximately 5.2 miles northwest of Smithfield, Virginia, situated west and south of the intersection between Moonlight Road and Burwells Bay Road. The archaeological area of potential effects (APE) contains parcels of mixed-use rural land totaling 516.9 acres (209.2 hectares). A desktop analysis cultural resources assessment was conducted in March 2023. The Phase I cultural resources survey was conducted between April 17th and May 5th, 2023.

Current Land Use	Date of Use	Comments
Agricultural field	5/5/2023	No Data

Threats to Resource: Development, Erosion

Site Conditions: Unknown Portion of Site Destroyed

Survey Strategies: Subsurface Testing, Surface Testing

Specimens Collected: Yes

Specimens Observed, Not Collected: No

Artifacts Summary and Diagnostics:

A total of 35 artifacts were recovered from the pedestrian survey of the site. While most of the artifacts recovered did not have a discernable date range, eight artifacts allowed for a better understanding of when the site was potentially used. These artifacts with discernable date ranges include: three flow blue whiteware sherds, two blue shell edge decorated whiteware sherd, one blue dipped whiteware sherd, one blue transfer print whiteware sherd, and one black transfer print whiteware sherd. Flow blue printed whiteware became common around 1844 and stopped being commonly produced at the turn of the 20th century. Among the two blue shell edge sherds, one sherd is impressed and scalloped and the other features a molded motif. The impressed and scalloped shell edge sherd typically dates between the 1830s and the 1890s while the molded motif sherd has a more exact date range of between the 1820s and 1830s. The sherd of blue dipped whiteware likely features the design of a cat's eye or cabling. These decorations are both multi-chambered slip decorations, which were produced between 1830 and 1900. Finally, the two transfer printed sherds (one blue and one black) both date to the mid-19th century with the date range for blue transfer print ending around 1867 and black around 1864. Based on these recovered artifacts, the site is likely a mid-19th to early-20th century domestic trash scatter. Due to its proximity to architectural resource No. 046-0064, it is likely that the site is the refuse from the structure's occupants thrown out in the agricultural field over the years.

Summary of Specimens Observed, Not Collected:

No Data

Current Curation Repository: Apogee

Permanent Curation Repository: VDHR

Field Notes: Yes

Field Notes Repository: VDHR

Photographic Media: Digital

Survey Reports: Yes

Survey Report Information:

Silliman, Garrett and David S. Hanley, 2023, Phase I Cultural Resources Survey for the Proposed Moonlight Solar Facility, Isle of Wight County, Virginia, Report Prepared for Timmons Group, Inc., Richmond, Virginia, from Apogee Environmental and Archaeological, Inc., Pittsburgh, Pennsylvania.

Survey Report Repository: VDEQ

DHR Library Reference Number: No Data

Significance Statement: All artifacts were recovered from the surface of the Ap horizon with no buried or sealed historic deposits encountered. The site lacks integrity and research potential as the absence of stratified deposits and features limits the potential for research questions addressing lives of rural populations in the mid-19th to early-20th century. No further work is recommended

	at this site.
Surveyor's Eligibility Recommendations:	Recommended Not Eligible
Surveyor's NR Criteria Recommendations:	No Data
Surveyor's NR Criteria Considerations:	No Data

Snapshot

Date Generated: May 18, 2023

Site Name:	No Data
Site Classification:	Terrestrial, open air
Year(s):	1866 - 1916
Site Type(s):	Artifact scatter
Other DHR ID:	No Data
Temporary Designation:	No Data

Site Evaluation Status

Locational Information

USGS Quad:	BACONS CASTLE
County/Independent City:	Isle Of Wight (County)
Physiographic Province:	Coastal Plain
Elevation:	No Data
Aspect:	No Data
Drainage:	Albemarle-Chowan
Slope:	2-6%
Acreage:	0.150
Landform:	Other
Ownership Status:	Private
Government Entity Name:	No Data

Site Components

Component 1

Category:	Indeterminate
Site Type:	Artifact scatter
Cultural Affiliation:	Euro-American
Cultural Affiliation Detail:	No Data
DHR Time Period:	Reconstruction and Growth (1866 - 1916)
Start Year:	No Data
End Year:	No Data
Comments:	44IW0391 was identified during pedestrian survey of a plowed field within a medium probability portion of Area B. 44IW0391 is located south of Burwells Bay Road and south of 44IW0390. A total of two shovel test pits (STPs) were excavated to determine the boundary of Apogee 2, both of which were negative for cultural material. A typical STP profile for Apogee 2 consisted of a brown (10YR 4/3) sandy loam Ap horizon that clearly transitions to a yellowish brown (10YR 5/6) clay loam subsoil.

Bibliographic Information

Bibliography:

No Data

Informant Data:

No Data

Archaeological site data is protected under the Archaeological Resource Protection Act (ARPA 1979).

CRM Events

Event Type: Survey:Phase I

Project Staff/Notes:

Garrett Silliman - Principal Investigator
David Hanley - Archaeological Field Director
Amanda Commins - Architectural Historian
Matthew Donathan - Archaeological Field Technician
Robert Kotlarek - Archaeological Field Technician
Dallon Olive - Archaeological Field Technician

Project Review File Number: No Data

Sponsoring Organization: No Data

Organization/Company: Apogee Environmental & Archaeological, Inc.

Investigator: David Hanley

Survey Date: 5/5/2023

Survey Description:

On behalf of Timmons Group, Inc. (Timmons), Apogee Environmental & Archaeological, Inc. (Apogee) conducted a Phase IB archaeological survey for the proposed Moonlight Solar Facility in Isle of Wight County, Virginia. The Phase IB survey serves as secondary step in meeting compliance requirements for The Virginia Department of Environmental Quality (DEQ). All activities were conducted in accordance with the Virginia Department of Historic Resources (DHR), as published in Guidelines for Conducting Historic Resources Survey in Virginia (2017). The project consists of the development of a solar energy facility located approximately 5.2 miles northwest of Smithfield, Virginia, situated west and south of the intersection between Moonlight Road and Burwells Bay Road. The archaeological area of potential effects (APE) contains parcels of mixed-use rural land totaling 516.9 acres (209.2 hectares). A desktop analysis cultural resources assessment was conducted in March 2023. The Phase I cultural resources survey was conducted between April 17th and May 5th, 2023.

Current Land Use	Date of Use	Comments
Agricultural field	5/5/2023	No Data

Threats to Resource: Development, Erosion

Site Conditions: Surface Deposits Present But With No Subsurface Integrity

Survey Strategies: Subsurface Testing, Surface Testing

Specimens Collected: Yes

Specimens Observed, Not Collected: No

Artifacts Summary and Diagnostics:

A total of three artifacts were recovered from within the site boundary, all of which were historic in nature: two flow blue transfer printed whiteware sherds and one undecorated whiteware sherd. While whiteware has been produced since 1820 and is still seen today, flow blue printed whiteware became common around 1844 and stopped being commonly produced at the turn of the 20th century. Based on these three recovered artifacts, it is likely that the site is a low-density artifact scatter dating to the mid- to late-19th century.

Summary of Specimens Observed, Not Collected:

No Data

Current Curation Repository: Apogee

Permanent Curation Repository: VDHR

Field Notes: Yes

Field Notes Repository: VDHR

Photographic Media: Digital

Survey Reports: Yes

Survey Report Information:

Silliman, Garrett and David S. Hanley, 2023, Phase I Cultural Resources Survey for the Proposed Moonlight Solar Facility, Isle of Wight County, Virginia, Report Prepared for Timmons Group, Inc., Richmond, Virginia, from Apogee Environmental and Archaeological, Inc., Pittsburgh, Pennsylvania.

Survey Report Repository: VDEQ

DHR Library Reference Number: No Data

Significance Statement: All artifacts were recovered from the Ap horizon with no buried or sealed historic deposits encountered. The site lacks integrity and research potential as the absence of stratified deposits and features limits the potential for research questions addressing lives of rural populations in the mid- to late-19th century. No further work is recommended at this site.

Surveyor's Eligibility Recommendations: Recommended Not Eligible

Surveyor's NR Criteria Recommendations: No Data

Surveyor's NR Criteria Considerations: No Data

Snapshot

Date Generated: May 18, 2023

Site Name:	No Data
Site Classification:	Terrestrial, open air
Year(s):	1866 - 1916, 1917 - 1945, 1946 - 1991
Site Type(s):	Artifact scatter
Other DHR ID:	No Data
Temporary Designation:	No Data

Site Evaluation Status

Locational Information

USGS Quad:	BACONS CASTLE
County/Independent City:	Isle Of Wight (County)
Physiographic Province:	Coastal Plain
Elevation:	No Data
Aspect:	No Data
Drainage:	Albemarle-Chowan
Slope:	0-2%
Acreage:	0.750
Landform:	Other
Ownership Status:	Private
Government Entity Name:	No Data

Site Components

Component 1

Category:	Domestic
Site Type:	Artifact scatter
Cultural Affiliation:	Euro-American
Cultural Affiliation Detail:	No Data
DHR Time Period:	Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991)
Start Year:	No Data
End Year:	No Data
Comments:	44IW0392 was identified during pedestrian survey of a plowed field within a high probability portion of Area D. 44IW0392 is located east along Moonlight Road northeast of 44IW0393. A total of four shovel test pits (STPs) were excavated to determine the boundary of 44IW0392, all of which were negative. A typical STP profile for 44IW0392 consisted of a brown (10YR 5/3) sandy loam that clearly transitions to a strong brown (7.5YR 5/6) clay loam subsoil.

Bibliographic Information

Bibliography:

No Data

Informant Data:

No Data

CRM Events

Event Type: Survey:Phase I

Project Staff/Notes:

Garrett Silliman - Principal Investigator
David Hanley - Archaeological Field Director
Amanda Commins - Architectural Historian
Matthew Donathan - Archaeological Field Technician
Robert Kotlarek - Archaeological Field Technician
Dallon Olive - Archaeological Field Technician

Project Review File Number: No Data

Sponsoring Organization: No Data

Organization/Company: Apogee Environmental & Archaeological, Inc

Investigator: David Hanley

Survey Date: 5/5/2023

Survey Description:

On behalf of Timmons Group, Inc. (Timmons), Apogee Environmental & Archaeological, Inc. (Apogee) conducted a Phase IB archaeological survey for the proposed Moonlight Solar Facility in Isle of Wight County, Virginia. The Phase IB survey serves as secondary step in meeting compliance requirements for The Virginia Department of Environmental Quality (DEQ). All activities were conducted in accordance with the Virginia Department of Historic Resources (DHR), as published in Guidelines for Conducting Historic Resources Survey in Virginia (2017). The project consists of the development of a solar energy facility located approximately 5.2 miles northwest of Smithfield, Virginia, situated west and south of the intersection between Moonlight Road and Burwells Bay Road. The archaeological area of potential effects (APE) contains parcels of mixed-use rural land totaling 516.9 acres (209.2 hectares). A desktop analysis cultural resources assessment was conducted in March 2023. The Phase I cultural resources survey was conducted between April 17th and May 5th, 2023.

Current Land Use	Date of Use	Comments
Agricultural field	5/5/2023	No Data

Threats to Resource: Development, Erosion

Site Conditions: Surface Deposits Present But With No Subsurface Integrity

Survey Strategies: Subsurface Testing, Surface Testing

Specimens Collected: Yes

Specimens Observed, Not Collected: No

Artifacts Summary and Diagnostics:

A total of seven artifacts were recovered from the pedestrian survey of this site, all of which were historic in nature. Recovered artifacts include: two cobalt blue glass bottle fragments, two undecorated whiteware sherds, one milk glass canning jar lid liner fragment, one undecorated hard-paste porcelain sherd, and one "black" bottle glass fragment. These artifacts provide a large date range for potential use of the site. For instance, cobalt blue glass was commonly used for glass bottle production during the late-19th to the early-20th century, milk glass started to be used for canning jar lid liners during the 1930s, and "black" glass (otherwise known as a dark olive green) was most commonly used in bottle production between the 1840s and the 1880s. Therefore, it is likely that this site is a low-density artifact scatter dating to the mid-19th to mid-20th century potentially associated with the agricultural structure across Moonlight Road in Area C.

Summary of Specimens Observed, Not Collected:

No Data

Current Curation Repository: Apogee

Permanent Curation Repository: VDHR

Field Notes: Yes

Field Notes Repository: VDHR

Photographic Media: Digital

Survey Reports: Yes

Survey Report Information:

Silliman, Garrett and David S. Hanley, 2023, Phase I Cultural Resources Survey for the Proposed Moonlight Solar Facility, Isle of Wight County, Virginia, Report Prepared for Timmons Group, Inc., Richmond, Virginia, from Apogee Environmental and Archaeological, Inc., Pittsburgh, Pennsylvania.

Survey Report Repository: VDEQ

DHR Library Reference Number: No Data

Significance Statement: All artifacts were recovered from the surface of the Ap horizon with no buried or sealed historic deposits encountered. The site lacks integrity and research potential as the absence of stratified deposits and features limits the potential for research questions addressing lives of rural populations in the mid-19th to mid-20th century. No further work is recommended at this site.

Surveyor's Eligibility Recommendations: Recommended Not Eligible

Surveyor's NR Criteria Recommendations: No Data

Surveyor's NR Criteria Considerations:	No Data

Snapshot

Date Generated: May 18, 2023

Site Name:	No Data
Site Classification:	Terrestrial, open air
Year(s):	1866 - 1916, 1917 - 1945, 1946 - 1991
Site Type(s):	Artifact scatter
Other DHR ID:	No Data
Temporary Designation:	No Data

Site Evaluation Status

Locational Information

USGS Quad:	BACONS CASTLE
County/Independent City:	Isle Of Wight (County)
Physiographic Province:	Coastal Plain
Elevation:	No Data
Aspect:	No Data
Drainage:	Albemarle-Chowan
Slope:	0-2%
Acreage:	0.790
Landform:	Other
Ownership Status:	Private
Government Entity Name:	No Data

Site Components

Component 1

Category:	Domestic
Site Type:	Artifact scatter
Cultural Affiliation:	Euro-American
Cultural Affiliation Detail:	No Data
DHR Time Period:	Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991)
Start Year:	No Data
End Year:	No Data
Comments:	44IW0393 was identified during pedestrian survey of a plowed field within a high probability portion of Area D. 44IW0393 is located east of Moonlight Road southwest of 44IW0392. A total of four shovel test pits (STPs) were excavated to determine the boundary of 44IW0393, none of which were positive for cultural material. A typical STP profile for 44IW0393 consisted of a light gray (10YR 7/1) silt loam that clearly transitions to either a brown (10YR 5/3) or strong brown (7.5YR 5/6) clay loam subsoil.

Bibliographic Information

Bibliography:

No Data

Informant Data:

No Data

CRM Events

Event Type: Survey:Phase I

Project Staff/Notes:

Garrett Silliman - Principal Investigator
David Hanley - Archaeological Field Director
Amanda Commins - Architectural Historian
Matthew Donathan - Archaeological Field Technician
Robert Kotlarek - Archaeological Field Technician
Dallon Olive - Archaeological Field Technician

Project Review File Number: No Data

Sponsoring Organization: No Data

Organization/Company: Apogee Environmental & Archaeological, Inc.

Investigator: David Hanley

Survey Date: 5/5/2023

Survey Description:

On behalf of Timmons Group, Inc. (Timmons), Apogee Environmental & Archaeological, Inc. (Apogee) conducted a Phase IB archaeological survey for the proposed Moonlight Solar Facility in Isle of Wight County, Virginia. The Phase IB survey serves as secondary step in meeting compliance requirements for The Virginia Department of Environmental Quality (DEQ). All activities were conducted in accordance with the Virginia Department of Historic Resources (DHR), as published in Guidelines for Conducting Historic Resources Survey in Virginia (2017). The project consists of the development of a solar energy facility located approximately 5.2 miles northwest of Smithfield, Virginia, situated west and south of the intersection between Moonlight Road and Burwells Bay Road. The archaeological area of potential effects (APE) contains parcels of mixed-use rural land totaling 516.9 acres (209.2 hectares). A desktop analysis cultural resources assessment was conducted in March 2023. The Phase I cultural resources survey was conducted between April 17th and May 5th, 2023.

Current Land Use	Date of Use	Comments
Agricultural field	5/5/2023	No Data

Threats to Resource: Development, Erosion

Site Conditions: Surface Deposits Present But With No Subsurface Integrity

Survey Strategies: Subsurface Testing, Surface Testing

Specimens Collected: Yes

Specimens Observed, Not Collected: No

Artifacts Summary and Diagnostics:

A total of 12 artifacts were recovered from the surface of the site, all of which were historic in nature. Among the 12 recovered artifacts are five aqua bottle glass fragments, one color glazed whiteware sherd, one oyster shell fragment, two amethyst glass bottle fragments, one light green bottle glass fragment, one brick fragment, and one black transfer printed whiteware sherd. Two artifacts out of these 12 have a discernable date range that can assist in dating the site: the black transfer print whiteware sherd, and the light green glass fragment. As seen in another site, black transfer printed wares were at the height of their production between 1820 and 1864. However, light green bottle glass started to be produced around 1940 and is still in use today. Based on the recovered artifacts, Apogee determined that the site is likely a low-density artifact scatter dating to the mid-19th to mid-20th century potentially associated with the agricultural structure across Moonlight Road in Area C.

Summary of Specimens Observed, Not Collected:

No Data

Current Curation Repository: Apogee

Permanent Curation Repository: VDHR

Field Notes: Yes

Field Notes Repository: VDHR

Photographic Media: Digital

Survey Reports: Yes

Survey Report Information:

Silliman, Garrett and David S. Hanley, 2023, Phase I Cultural Resources Survey for the Proposed Moonlight Solar Facility, Isle of Wight County, Virginia, Report Prepared for Timmons Group, Inc., Richmond, Virginia, from Apogee Environmental and Archaeological, Inc., Pittsburgh, Pennsylvania

Survey Report Repository: VDEQ

DHR Library Reference Number: No Data

Significance Statement: All artifacts were recovered from the Ap horizon with no buried or sealed historic deposits encountered. No diagnostic precontact artifacts were recovered. The site lacks integrity and research potential as the absence of stratified deposits and features limits the potential for research questions addressing lives of precontact Native American populations. No further work is recommended at this site.

Surveyor's Eligibility Recommendations: Recommended Not Eligible

Surveyor's NR Criteria Recommendations: No Data

Surveyor's NR Criteria Considerations:	No Data

Snapshot

Date Generated: May 18, 2023

Site Name:	No Data
Site Classification:	Terrestrial, open air
Year(s):	1866 - 1916, 1917 - 1945, 1946 - 1991
Site Type(s):	Artifact scatter
Other DHR ID:	No Data
Temporary Designation:	No Data

Site Evaluation Status

Locational Information

USGS Quad:	BACONS CASTLE
County/Independent City:	Isle Of Wight (County)
Physiographic Province:	Coastal Plain
Elevation:	No Data
Aspect:	No Data
Drainage:	Albemarle-Chowan
Slope:	0-2%
Acreage:	0.090
Landform:	Other
Ownership Status:	Private
Government Entity Name:	No Data

Site Components

Component 1

Category:	Domestic
Site Type:	Artifact scatter
Cultural Affiliation:	Euro-American
Cultural Affiliation Detail:	No Data
DHR Time Period:	Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991)
Start Year:	No Data
End Year:	No Data
Comments:	44IW0394 was identified during systematic shovel testing of an agricultural field within a high probability portion of Area C. 44IW0394 is located west of Moonlight Road directly north of a barn present on the property. A total of five shovel test pits (STPs) were excavated to determine the boundary for 44IW0394, with only the original STP being positive for historic materials. A typical soil profile for 44IW0394 consisted of a brownish yellow (10YR 6/6) sandy loam that clearly transitions to a strong brown (7.5YR 5/6) clay loam subsoil.

Bibliographic Information

Bibliography:

No Data

Informant Data:

No Data

Archaeological site data is protected under the Archaeological Resource Protection Act (ARPA 1979).

CRM Events

Event Type: Survey:Phase I

Project Staff/Notes:

Garrett Silliman - Principal Investigator
David Hanley - Archaeological Field Director
Amanda Commins - Architectural Historian
Matthew Donathan - Archaeological Field Technician
Robert Kotlarek - Archaeological Field Technician
Dallon Olive - Archaeological Field Technician

Project Review File Number: No Data

Sponsoring Organization: No Data

Organization/Company: Apogee Environmental & Archaeological, Inc.

Investigator: David Hanley

Survey Date: 5/5/2023

Survey Description:

On behalf of Timmons Group, Inc. (Timmons), Apogee Environmental & Archaeological, Inc. (Apogee) conducted a Phase IB archaeological survey for the proposed Moonlight Solar Facility in Isle of Wight County, Virginia. The Phase IB survey serves as secondary step in meeting compliance requirements for The Virginia Department of Environmental Quality (DEQ). All activities were conducted in accordance with the Virginia Department of Historic Resources (DHR), as published in Guidelines for Conducting Historic Resources Survey in Virginia (2017). The project consists of the development of a solar energy facility located approximately 5.2 miles northwest of Smithfield, Virginia, situated west and south of the intersection between Moonlight Road and Burwells Bay Road. The archaeological area of potential effects (APE) contains parcels of mixed-use rural land totaling 516.9 acres (209.2 hectares). A desktop analysis cultural resources assessment was conducted in March 2023. The Phase I cultural resources survey was conducted between April 17th and May 5th, 2023.

Current Land Use	Date of Use	Comments
Agricultural field	5/5/2023	No Data

Threats to Resource: Development, Erosion

Site Conditions: Unknown Portion of Site Destroyed

Survey Strategies: Subsurface Testing

Specimens Collected: Yes

Specimens Observed, Not Collected: No

Artifacts Summary and Diagnostics:

A total of seven historic artifacts were recovered from one STP, most of which do not possess a definitive date range: two aqua bottle glass fragments, two colorless bottle glass fragments, one oyster shell fragment, one brick fragment, and one undecorated whiteware sherd. The only artifact recovered with a date range is the whiteware sherd, which started to be produced in 1820 and is still produced today. Due to the site's proximity to a barn to the south, the site is likely a late-19th to early-20th century domestic artifact scatter.

Summary of Specimens Observed, Not Collected:

No Data

Current Curation Repository: Apogee

Permanent Curation Repository: VDHR

Field Notes: Yes

Field Notes Repository: VDHR

Photographic Media: Digital

Survey Reports: Yes

Survey Report Information:

Silliman, Garrett and David S. Hanley, 2023, Phase I Cultural Resources Survey for the Proposed Moonlight Solar Facility, Isle of Wight County, Virginia, Report Prepared for Timmons Group, Inc., Richmond, Virginia, from Apogee Environmental and Archaeological, Inc., Pittsburgh, Pennsylvania.

Survey Report Repository: VDEQ

DHR Library Reference Number: No Data

Significance Statement: All artifacts were recovered from the Ap horizon with no buried or sealed historic deposits encountered. The site lacks integrity and research potential as the absence of stratified deposits and features limits the potential for research questions addressing lives of rural populations in the late-19th to early-20th century. No further work is recommended at this site.

Surveyor's Eligibility Recommendations: Recommended Not Eligible

Surveyor's NR Criteria Recommendations: No Data

Surveyor's NR Criteria Considerations: No Data

Archaeological site data is protected under the Archaeological Resource Protection Act (ARPA 1979).

Appendix B: Key Staff Curriculum Vitae

Garrett W. Silliman, RPA

Apogee Environmental and Archaeological, Inc.

garrett@apogee-environmental.com 919-748-7712

Education

BA/Archaeology, The College of Wooster, 1996

MHP/Master of Heritage Preservation (Public History /Archaeology), Georgia State University, 2008

Registration

Registered Professional Archaeologist, No. 28577953

Years of Experience

26

Mr. Silliman has over 25 years of experience in archaeology, history, and cultural resource management, with a research focus on the archaeology of American battlefields, sites associated with the African American and Indigenous experience, and historic landscapes throughout the United States and Central America. He has extensive experience in all phases of archaeological investigations (Phase I, II, and III), teaching and public archaeology, remote sensing, artifact analysis and curation, archaeological site and historic structure assessment and mitigation, and site management. Through his background in cultural resource management archaeology, he has experience with and has received formal training in Native American consultation, Section 106 and 110 of the National Historic Preservation Act (1966), and the Archaeological Resources Protection Act (1979). From 2019 through 2020, he was Lecturer and Senior Archaeologist in the Department of Sociology and Anthropology at North Carolina State University. He is currently Senior Archaeologist and Principal Investigator for Apogee Environmental & Archaeological, Inc.

Career History

Principal Investigator
Apogee Environmental & Archaeological, Inc.
Chapel Hill, NC
June 2021 – Present

Senior Archaeologist/Principal Investigator
Johnson, Mirmiran & Thompson (JMT)
Chapel Hill, NC
September 2015 – June 2021

Senior Archaeologist/Lecturer
North Carolina State University
Raleigh, NC
December 2019 – October 2020

Senior Staff Archaeologist
Cardno
Raleigh, NC
March 2014 – September 2015

Founder/Archaeologist
Terminus Archaeological Research
Atlanta, GA
September 2011 – September 2015

Adjunct Faculty, History and Anthropology Departments
Georgia State University
Atlanta, GA
January 2013 – August 2014

Adjunct, History Department
Shorter University
Rome, GA
July 2011 – January 2012

Principal Investigator
Edwards-Pitman Environmental, Inc.
Atlanta, GA
July 2004 – September 2011

Archaeologist
Prentice Thomas and Associates, Inc.
Savannah, GA
September 2003 – July 2004

Archaeological Field Director
TRC Companies, Inc.
El Paso, TX
February 2003 – September 2003

Archaeological Field Director
Mesa Field Services
New Mexico
December 2001 – February 2003

Garrett W. Silliman, RPA

Apogee Environmental and Archaeological, Inc.

garrett@apogee-environmental.com 919-748-7712

Archaeology and Cultural Resource Management Experience (selected)

Archaeological Investigation Jockey Hollow Unit, Morristown National Historic Site, Morristown, New Jersey. PEPC Number: 109295; ARPA 2022.MORR.01. *Principal Investigator.* Directed archaeological research and field efforts for Phase I investigations at site of the Continental Army's 1778-1779 winter cantonment at Jockey Hollow. Successfully conducted shovel testing and metal detection within 40 discrete loci prior to the NPS construction of new signage, trail maintenance and drainage bars. 2022

Archaeological Survey and Assessment for the Goonies Solar Project in Lycoming County, Pennsylvania. *Principal Investigator and Project Manager.* Directed and managed all aspects of the archaeological survey and assessment for the proposed +/- 1,200 acres solar facility. Field team conducted pedestrian survey, systematic shovel testing, and limited metal detection around structures during the Phase Ib of the Goonies Solar Project in Lycoming County. Bolstered with the geophysical and geoarchaeological data, test units measuring 1x1, 1x2, and 2x2 meter were employed in the tested areas to determine the presence of deeply buried precontact sites along the floodplain. These collective data were successfully used to avoid significant encountered deposits while allowing for the completion of the project in non-sensitive areas. 2021-2022

Fort Bragg Archaeological Project and Sandhills Archaeological Context Study.
Senior Archaeologist. Directed archaeological research and field efforts for North Carolina State University (NCSU). NCSU was awarded a four-year federal research grant to conduct Section 110 work at Fort Bragg Military Reservation. As part of this award, a region-wide archaeological context is being developed to provide future research directions in North Carolina. 2019-2020

Phase I Archaeological Survey and Phase II Archaeological Testing, Assessment and NRHP Evaluation, Currituck National Wildlife Refuge, Currituck County, North Carolina. *Principal Investigator and Project Manager.* US Fish and Wildlife Service. Phase I archaeological survey for 10 land tracts within the Currituck National Wildlife Refuge. Additionally, JMT conducted the Phase II archaeological testing and NRHP evaluation of four previously recorded archaeological sites located within the survey tracts. 2017-2018

Phase I Archaeological Investigations of Hawtree Solar Farm, Warren County, North Carolina. *Project Manager and Principal Investigator.* Mr. Silliman conducted this project at the request of the OSA on behalf of Carolina Solar II, LLC (Carolina Solar) in advance of their intention to install a solar farm. Approximately 520 acres were surveyed, which identified eighteen archaeological sites, ranging from single prehistoric artifacts to the remains of a historic farmstead. Due to their significant nature, the avoidance of two resources, the remains of a nineteenth century farmstead and abandoned African American cemetery, were recommended. Mr. Silliman worked in coordination with Carolina Solar and the OSA to ensure the successful documentation, evaluation, and avoidance of these resources. 2018.

Phase II Archaeological Testing, Assessment, and NRHP Evaluation, Savannah Harbor Expansion, Chatham County Georgia. *Senior Consultant.* Archaeological assessment and NRHP evaluation of 9CH1312, a historic rice trunk, Chatham County, Georgia. The purpose of this investigation was to document and evaluate site 9CH1312 for NRHP eligibility prior to the proposed Savannah Harbor Expansion Project. The site is located in the Savannah National Wildlife Refuge and was historically associated with the early nineteenth-century Red Knoll Plantation. JMT was sub-contracted for services as senior consultant to assist in the evaluation, historic research, and reporting. 2017

Phase II and III Archaeological Testing, Assessment/NRHP Evaluation, and Data Recovery/Mitigation, US 301 over the Potomac River, King George County, Virginia and Charles County, Maryland. *Principal Investigator.* Mr. Silliman has overseen all archaeological work associated with the project since September 2015, including the NRHP evaluation of two archaeological sites (one in MD and one in VA) associated with the replacement of the Harry Nice Bridge/US 301 over the Potomac by the Maryland Transportation Administration. This includes all background research, client and agency coordination, supervision of fieldwork, reporting, artifact analysis and curation. Geophysical work conducted in evaluating the Civil War component of the Barnesfield Plantation (44KG0171)/Battle of Mathias Point (June 1861). 2015-Present.

Archaeological and Historic Architecture Limited Services Contracts, North Carolina Department of Transportation. *North Carolina Cultural Resource Lead.* JMT was selected by the North Carolina Department of Transportation to provide all phases of architectural history and historic preservation work, particularly as it relates to Section 106 compliance. JMT anticipates projects

Garrett W. Silliman, RPA

Apogee Environmental and Archaeological, Inc.

garrett@apogee-environmental.com 919-748-7712

ranging from small scale projects requiring documentation of a single resource (buildings, structures [including bridges], historic districts and linear resources) to large scale projects requiring the documentation of more than one hundred resources. In 2017, JMT was selected for the 3-year open-end Archaeological Services contract. Between January 2016 and the present, JMT has successfully completed 13 tasks for the department. 2015-Present.

Phase I Archaeological Survey Fredericksburg and Spotsylvania National Military Park, Chancellorsville, VA, Contract No. GS-00F-194-CA. *Principal Investigator.* This survey was conducted at the request of the NPS, which provided for cultural resource compliance services prior to the proposed installation of a security fence around an existing water tower north of the Chancellorsville Battlefield Visitor Center. A key element in the evaluation of the area was the employment of systematic metal detection sampling. Enough data was collected from the project area to identify what is tentatively interpreted as a small portion of a May 3, 1863 Confederate firing line with associated artifacts. 2016-2017

Archeological Monitoring for the Rehabilitation of Cemetery Ridge, Gettysburg National Military Park, Gettysburg, PA, Contract No. NPS.GETT 220829. *Principal Investigator.* JMT provided archeological monitoring services to identify and document any archeological deposits or features that may be revealed during vegetation removal and grading in Zeigler's Grove and Cemetery Ridge at the Gettysburg National Military Park. JMT provided on-site archeological monitoring of those activities with the potential to cause subsurface disturbance to significant historic resources. 2016

Archaeological Monitoring/Delaware Water Gap National Recreation Area. *Principal Investigator, archaeology*. Responsible for monitoring on-site contractors conducting earth-disturbing activities within NPS boundaries, and recording/evaluating any potential archaeological material. The project was associated with mitigation for impacts from construction of the new Susquehanna to Roseland Electric Transmission Line constructed through the Delaware Water Gap. 2015

HTVA Floating House EIS, Tennessee Valley Authority, Virginia, North Carolina, Georgia, Kentucky, Tennessee, Mississippi, and Alabama: *Cultural Resources Lead.* Conducted background research, alternatives analysis, and authored cultural resources sections for the Tennessee Valley Authority's (TVA) Environmental Impact Statement (EIS) concerning the treatment of floating houses on 13 TVA reservoirs in a 7-state area. Data generated by the study will be utilized by the TVA concerning their policy towards the presence of floating houses on lands and reservoirs managed by the authority. Of particular concern are the impacts to potential cultural resources located in the littoral and benthic zones as well overall shoreline erosion. July 2015.

Dalton Expansion Project, Transco-Williams/FERC., Coweta, Carroll, Douglas, Paulding, Bartow, Gordon, Whitfield and Murray Counties, Georgia: *Project Manager and Field Lead.* Project Manager and Cultural Resources field lead for the Phase I archaeological investigations of the proposed Dalton Expansion project, a natural gas pipeline extending 110 miles through an eight-county area of north Georgia. Project required the coordination with the GA SHPO, tribal groups, FERC, local stakeholders/preservation groups, and Transco-Williams. Project resulted in the identification and documentation of over 180 archaeological sites, of which 19 were recommended for evaluative testing as potentially eligible for listing to the NRHP. 2014-2015.

Archaeological and Historical Investigations in Talladega National Forest, USDA Forest Service, Alabama. *Principal Investigator.* Mr. Silliman served as Principal Investigator for cultural resources, project manager, and contract administrator for cultural resource survey of over 2200 acres in the Talladega National Forest near Heflin, Alabama. Project resulted in the identification and evaluation of 68 pre-Columbian and Historic period sites. Project conducted during 2014 contract year.

Archaeological and Historical Investigations in Chattahoochee and Oconee National Forests, USDA Forest Service, Georgia. As a sub consultant, directed archaeological field investigations for intensive survey of approximately 2500 acres for the Chattahoochee and Oconee National Forests in Georgia. Project resulted in the identification and evaluation of 112 pre-Columbian and Historic period sites. 2012-2013.

Appendix C: Artifact Catalogs

Provenience	Historic/Precontact	Functional Category	Material	Artifact Type	Count	Notes
Surface Find 25	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	2	
Surface Find 26	Historic	Kitchen	Ceramic	Undecorated Soft Paste Porcelain Body Sherd	1	
Surface Find 26	Historic	Kitchen	Ceramic	Undecorated Redware Body Sherd	1	
Surface Find 31	Historic	Kitchen	Ceramic	Flow Blue Transfer Print Whiteware Rim Sherd	1	1840-1900
Surface Find 31	Historic	Kitchen	Shell	Oyster Shell Fragment	1	
Surface Find 32	Historic	Kitchen	Glass	Unidentified Aqua Bottle Glass Body Fragment	1	
Surface Find 33	Historic	Architectural	Glass	Colorless Window Glass Fragment	1	
Surface Find 33	Historic	Architectural	Brick	Unidentified Brick Fragment	1	
Surface Find 34	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1	
Surface Find 35	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1	
Surface Find 36	Historic	Architectural	Brick	Unidentified Brick Fragment	1	
Surface Find 36	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1	
Surface Find 37	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1	
Surface Find 38	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1	
Surface Find 39	Historic	Kitchen	Ceramic	Blue Shell Edge Decorated Whiteware Rim Sherd	1	incised and scalloped (1830s-1890s)
Surface Find 39	Historic	Kitchen	Ceramic	Blue Dipped Whiteware Body Sherd	1	cats eye or cabeled (1830-1900)
Surface Find 40	Historic	Kitchen	Ceramic	Undecorated Soft Paste Porcelain Body Sherd	1	
Surface Find 40	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1	
Surface Find 40	Historic	Kitchen	Ceramic	Blue Transfer Print Whiteware Rim Sherd	1	1820-1867
Surface Find 40	Historic	Kitchen	Ceramic	Blue Salt Glazed American Gray Stoneware Body Sherd	1	
Surface Find 40	Historic	Kitchen	Glass	Unidentified Colorless Glass Bottle Base Fragment	1	
Surface Find 41	Historic	Architectural	Brick	Unidentified Brick Fragment	2	
Surface Find 41	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1	
Surface Find 41	Historic	Kitchen	Ceramic	Molded Blue Shell Edge Whiteware Rim Sherd	1	incised (1820s-1830s)
Surface Find 42	Historic	Kitchen	Ceramic	Undecorated Ironstone Rim Sherd	1	1840-present
Surface Find 42	Historic	Architectural	Brick	Unidentified Brick Fragment	2	1 burnt
Surface Find 42	Historic	Kitchen	Shell	Oyster Shell Fragment	1	
Surface Find 42	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	2	
Surface Find 42	Historic	Kitchen	Ceramic	Flow Blue Transfer Print Whiteware Rim Sherd	1	1840-1900
Surface Find 43	Historic	Kitchen	Ceramic	Black Transfer Print Whiteware Body Sherd	1	1820-1864
Surface Find 43	Historic	Kitchen	Ceramic	Flow Blue Transfer Print Whiteware Body Sherd	1	1840-1900
				Total	35	mid-19th to early-20th century

Provenience	Historic/Precontact	Functional Category	Material	Artifact Type	Count	Notes
Surface Find 28	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1	
Surface Find 29	Historic	Kitchen	Ceramic	Flow Blue Decorated Whiteware Rim Sherd	1	1840-1900
Surface Find 30	Historic	Kitchen	Ceramic	Flow Blue Decorated Whiteware Rim Sherd	1	scalloped edge (1840-1900)
				Total	3	mid- to late-19th century

Provenience	Historic/Precontact	Functional Category	Material	Artifact Type	Count	Notes
Surface Find 1	Historic	Kitchen	Glass	Cobalt Blue Bottle Glass Base Fragment	1	late-19th to early-20th century
Surface Find 2	Historic	Kitchen	Glass	Milk Glass Canning Lid Liner Fragment	1	1930s
Surface Find 3	Historic	Kitchen	Glass	Cobalt Blue Bottle Glass Fragment	1	late-19th to early-20th century
Surface Find 3	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1	
Surface Find 4	Historic	Kitchen	Ceramic	Undecorated Hard-Paste Porcelain Body Sherd	1	
Surface Find 5	Historic	Kitchen	Glass	"Black" Bottle Glass Body Fragment	1	1840s-1880s
Surface Find 5	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1	
				Total:	7	mid-19th to mid-20th century

Provenience	Historic/Precontact	Functional Caterogy (Historic)	Material	Artifact Type	Count	Notes
Surface Find 7	Historic	Kitchen	Glass	Aqua Bottle Glass Fragment	2	
Surface Find 7	Historic	Kitchen	Ceramic	Brown Glaze Interior Whiteware Body Sherd	1	
Surface Find 8	Historic	Kitchen	Glass	Aqua Bottle Glass Fragment	1	
Surface Find 8	Historic	Kitchen	Glass	Amethyst/Solarized Bottle Glass Fragment	1	
Surface Find 8	Historic	Kitchen	Shell	Oyster Shell Fragment	1	
Surface Find 9	Historic	Kitchen	Glass	Aqua Bottle Glass Fragment	1	
Surface Find 10	Historic	Kitchen	Glass	Amethyst/Solarized Bottle Glass Fragment	1	
Surface Find 10	Historic	Kitchen	Glass	Aqua Bottle Glass Fragment	1	
Surface Find 10	Historic	Kitchen	Glass	Light Green Bottle Glass Fragment	1	1940-present
Surface Find 10	Historic	Architectural	Brick	Unidentified Brick Fragment	1	
Surface Find 46	Historic	Kitchen	Ceramic	Black Transfer Printed Whiteware Body Sherd	1	1820-1864
				Total	12	mid-19th to mid-20th century

Provenience	Historic/Precontact	Functional Category	Material	Artifact Type	Count
ST 4.20 Strat 1 (0-28cm)	Historic	Kitchen	Shell	Oyster Shell Fragment	1
ST 4.20 Strat 1 (0-28cm)	Historic	Kitchen	Glass	Aqua Bottle Glass Fragment	2
ST 4.20 Strat 1 (0-28cm)	Historic	Kitchen	Glass	Colorless Bottle Glass Fragment	2
ST 4.20 Strat 1 (0-28cm)	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1
ST 4.20 Strat 1 (0-28cm)	Historic	Architectural	Brick	Unidentified Brick Fragment	1
				Total	7

Provenience	Historic/Precontact	Functional Category	Material	Artifact Type	Count
Surface Find 13	Historic	Kitchen	Glass	Milk Glass Canning Lid Liner Fragment	1
Surface Find 14	Historic	Kitchen	Ceramic	Blue Transfer-Printed Hard-Paste Porcelain Body Sherd	1
Surface Find 15	Historic	Kitchen	Glass	Milk Glass Canning Lid Liner Fragment	1
Surface Find 16	Historic	Kitchen	Ceramic	Undecorated Soft Paste Porcelain Handle Sherd	1
Surface Find 17	Historic	Kitchen	Glass	Unidentified Light Green Bottle Glass Base Fragment	1
Surface Find 18	Precontact	N/A	Quartzite (White)	Biface/Preform Fragment	1
Surface Find 19	Precontact	N/A	Quartz	Possible Core Fragment	1
				Total	7

Provenience	Historic/Precontact	Functional Category	Material	Artifact Type	Count
Surface Find 20	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1
Surface Find 21	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1
Surface Find 22	Historic	Kitchen	Ceramic	Undecorated Whiteware Body Sherd	1
Surface Find 23	Historic	Architectural	Brick	Unidentified Brick Fragment	1
Surface Find 24	Precontact	N/A	Mitchell Chert	Possible Biface/Preform	1
Surface Find 27	Historic	Architectural	Brick	Glazed Brick Edge Fragment	1
				Total	6

Provenience	Historic/Precontact	Functional Category	Material	Artifact Type	Count
ST 2.2 Strat 1 (0-30cm)	Historic	Kitchen	Ceramic	Blue Edge Decorated Whiteware Rim Sherd	1
ST 2.5 Strat 1 (0-29cm)	Precontact	N/A	Quartz	Tertiary Flake	1
ST 3.6 Strat 2 (14-27cm)	Precontact	N/A	Rhyolite	Tertiary Flake (Possible Scraper)	1
ST 7.20 Strat 1 (0-24cm)	Historic	Kitchen	Ceramic	Salt Glaze American Gray Stoneware Body Sherd	1
ST 11.29 Strat 1 (0-24cm)	Historic	Architectural	Iron	Hand Wrought Nail	1
Surface Find 44	Historic	Kitchen	Glass	Unidentified "Black" Glass Bottle Fragment	1
				Total	6

Provenience	Historic/Precontact	Functional Category	Material	Artifact Type	Count
Surface Find 6	Historic	Kitchen	Ceramic	Undecorated Whiteware Rim Sherd	1
Surface Find 11	Historic	Kitchen	Ceramic	Plain Salt Glaze American Gray Stoneware Base Sherd	1
Surface Find 12	Historic	Kitchen	Glass	Unidentified Cobalt Blue Bottle Glass Body Fragment	1
				Total	3

Appendix D: Representative Shovel Test Profiles

Area	Transect	ST Number	Strat 1: Depth (cm), Soil Color, and Texture	Strat 2: Depth (cm), Soil Color, and Texture	Strat 3: Depth (cm), Soil Color, and Texture	Positive or Negative
A	68	5	0-17 cm dark grayish brown (10YR 4/2) sandy loam	17-25 cm light brownish gray (10YR 6/2) sandy loam	25-35 cm pale brown (2.5Y 7/3) sandy clay	Negative
	72	3	0-14 cm very dark brown (10YR 2/2) sandy loam	14-30 cm light yellowish brown (10YR 6/4) sandy clay		Negative
	73	4	0-20 cm dark grayish brown (10YR 4/2) sandy loam	20-25 cm light brownish gray (10YR 6/2) sandy loam	25-35 cm pale brown (2.5Y 7/3) sandy clay	Negative
	77	6	0-19 cm dark grayish brown (10YR 4/2) sandy loam	19-30 cm pale brown (2.5Y 7/2) sandy clay		Negative
	81	3	0-21 cm dark grayish brown (10YR 4/2) sandy loam	21-31 cm light gray (10YR 7/2) sandy cly loam with yellowish red (5YR 5/6) and yellowish brown (10YR 5/6) mottling		Negative
	J8	N/A	0-24 cm brown (10YR 5/3) sandy loam	24-36 cm strong brown (7.5YR 5/6) clay loam		Negative
B	14	21	0-11 cm dark grayish brown (10YR 4/2) sandy loam	11-19 cm very pale brown (10YR 7/4) sandy loam	19-30 cm yellowish brown (10YR 5/8) clay loam	Negative
	17	4	0-17 cm very dark grayish brown (10YR 3/2) sandy loam	17-28 cm pale brown (2.5Y 8/3) loamy sand		Negative
	24	2	0-22 cm brown (10YR 5/3) sandy loam	22-28 cm very pale brown (10YR 7/4) sandy loam	28-40 cm strong brown (7.5YR 5/6) clay loam	Negative
	J4	N/A	0-29 cm brown (10YR 5/3) sandy loam	29-40 cm yellowish brown (10YR 5/6) clay loam		Negative
	J6	N/A	0-27 cm brown (10YR 4/3) sandy loam	27-39 cm yellowish brown (10YR 5/6) clay loam		Negative
C	4	20	0-28 cm brownish yellow (10YR 6/6) sandy loam	28-40 cm strong brown (7.5YR 5/6) clay loam		Positive
	5	27	0-26 cm brown (10YR 5/3) sandy loam	26-30 cm very pale brown (10YR 7/3) sandy loam	30-41 cm strong brown (7.5YR 5/6) clay loam	Negative
	12	28	0-20 cm dark yellowish brown (10YR 5/4) sandy loam	20-30 cm brownish yellow (10YR 6/8) sandy clay		Negative
D	26	11	0-15 cm dark grayish brown (10YR 4/2) sandy loam	15-22 cm very pale brown (10YR 7/3) sandy loam	22-32 cm brownish yellow (10YR 6/6) sandy clay	Negative
	45	34	0-17 cm dark grayish brown (10YR 4/2) sandy loam	17-29 cm pale brown (2.5Y 7/3) sandy clay		Negative
	52	9	0-15 cm dark grayish brown (10YR 4/2) sandy loam	15-17 cm brown (10YR 5/3) sandy loam	17-28 cm very pale brown (10YR 7/3) sandy clay	Negative
	64	2	0-17 cm dark grayish brown (10YR 4/2) sandy loam	17-27 cm pale brown (2.5Y 7/3) sandy clay		Negative
	J11	N/A	0-27 cm brown (10YR 5/3) sandy loam	27-37 cm strong brown (7.5YR 5/6) clay loam		Negative
	J15	N/A	0-27 cm brown (10YR 5/3) sandy loam	27-39 cm strong brown (7.5YR 5/6) clay loam		Negative

Appendix E: DHR Project Communications

COMMONWEALTH of VIRGINIA

Travis A. Voyles
Secretary of Natural and Historic Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director
Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

August 16, 2023

Garrett Silliman
Apogee
1493 Butler Plank Road, Suite 6
Glenshaw, Pennsylvania 15116

RE- Moonlight Solar Facility
Isle of Wight County, VA
DHR File No. 2023-4075

Dear. Mr. Silliman

We have received for review two reports, *Phase IB Archaeological Survey for the Proposed Moonlight Facility, Isle of Wight County, Virginia,* and *Phase I Historic Architecture Survey and Effects Assessment for the Proposed Moonlight Solar Facility, Isle of Wight County, Virginia* prepared by Apogee Environmental & Archaeological, Inc. (Apogee) on behalf of Timmons Group Inc in support of an application to the Department of Environmental Quality for a Permit-by-Rule application to construct and operate a small solar project in Isle of Wight County. Our comments are provided as technical assistance to DEQ. We have not been notified by any Federal agency of their involvement in this project; however, we reserve the right to provide additional comment pursuant to the National Historic Preservation Act, if applicable.

Archaeology

The report documents an archaeological survey of 516.9 acres for Moonlight Solar Facility. During the course of the survey, Apogee identified five archaeological sites (44IW0390, 44IW0391, 44IW0392, 44IW0393, and 44IW0394). Site 44IW0390 is a mid-19th to early-20th century domestic trash scatter. site 44IW0391 is a low-density artifact scatter dating to the mid- to late-19th century. Site 44IW0392 and 44IW0393 are a low-density artifact scatters dating to the mid-19th to mid-20th century potentially associated with the agricultural structure across Moonlight Road. Site 44IW0394 is a late-19th to early-20th century domestic artifact scatter. Apogee recommends that all five sites (**44IW0390, 44IW0391, 44IW0392, 44IW0393,** and **44IW0394)** are *not eligible* for listing the National Register of Historic Places (NRHP). No additional work is recommended for the project area. DHR agrees with these recommendations.

Please revise the VCRIS forms to remove the temporary site names (e.g. Apogee 1). Please submit comb-bound hard copies of the report.

Historic Architecture

Apogee identified a total of twenty-one (21) historic architectural resources. Eleven (11) previously recorded resources were identified within the 0.5-mile buffer. Of the eleven (11) resources, nine (9) had been surveyed within the past 5 years. The remaining two (2) previously recorded resources and nineteen (19) newly identified resources were surveyed. Apogee recommends none of the surveyed resources as eligible for listing in the National Register of Historic Places (NRHP) and Virginia Landmarks Register (VLR) and DHR concurs. See the attached table for details.

If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,

Jenny Bellville-Marrion
Project Review Archaeologist
Review and Compliance Division

Cc: Chris Egghart, DEQ
Amber Foster, DEQ

COMMONWEALTH of VIRGINIA

Travis A. Voyles
Secretary of Natural and Historic Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director
Tel: (804) 367-2323
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Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

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If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,

Jenny Bellville-Marrion
Project Review Archaeologist
Review and Compliance Division

Cc: Chris Egghart, DEQ
Amber Foster, DEQ

DHR ID #	Resource Name	Apogee Eligibility	DHR Eligibility	Apogee Impact	DHR Impact
046-0063	House	Not Eligible	Not Eligible	N/A	N/A
046-5144	House	Not Eligible	Not Eligible	N/A	N/A
046-5721	House	Not Eligible	Not Eligible	N/A	N/A
046-5722	House	Not Eligible	Not Eligible	N/A	N/A
046-5723	House	Not Eligible	Not Eligible	N/A	N/A
046-5724	House	Not Eligible	Not Eligible	N/A	N/A
046-5725	House	Not Eligible	Not Eligible	N/A	N/A
046-5726	House	Not Eligible	Not Eligible	N/A	N/A
046-5727	House	Not Eligible	Not Eligible	N/A	N/A
046-5728	House	Not Eligible	Not Eligible	N/A	N/A
046-5729	House	Not Eligible	Not Eligible	N/A	N/A
046-5780	House	Not Eligible	Not Eligible	N/A	N/A
046-5781	House	Not Eligible	Not Eligible	N/A	N/A
046-5783	House	Not Eligible	Not Eligible	N/A	N/A
046-5784	House	Not Eligible	Not Eligible	N/A	N/A
046-5785	House	Not Eligible	Not Eligible	N/A	N/A
046-5786	House	Not Eligible	Not Eligible	N/A	N/A

TABLE KEY:	Warrants Mitigation	Needs Attention	DHR does not concur

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

610 East Morehead Street
Suite 250
Charlotte, NC 28202

P 704.602.8600
F 704.376.1076
www.timmons.com

MEMORANDUM

TO: Palladium Energy

FROM: Timmons Group

DATE: May 4th, 2023

RE: Isle of Wight County Moonlight Solar Impacts (AG2-137)

Moonlight Solar Impact Study Background

An injection study was performed to detail the impact of the Moonlight Solar Project on the transmission system within Isle of Wight County, VA. Moonlight Solar is a 44 MWac solar project connecting to the Surry – Chuckatuck 230 kV Dominion-owned transmission line and is currently in the PJM queue as project number AG2-137.

The initial set up of the study model included the following steps:

- Adding all queued generation projects with an Interconnection Agreement (IA) within a two-county radius
- Confirming that PJM transmission projects in the local area are considered
- Confirming that PJM's planned decommissioned plants are turned off in the model
- Running a sensitivity with the two sets of offshore wind projects within the queue (AE2-122/123/124 and AF1-123/124/125)

PJM models queued projects as capacity and energy components to separately test different sets of contingencies. When considering single contingency outages, only the capacity of the project is considered since most of these outages can be planned ahead of the actual event. Bus, line, and tower contingencies will consider the full output of the project (capacity and energy). To account for this, two cases were created: the first being the capacity case and the second one including both capacity and energy.

Within the two-county radius there are nine solar projects with an Interconnection Agreement and two sets of offshore wind projects with an interim study performed (AE2-122/123/124 and AF1-123/124/125). The queued solar projects account for 630 MW of energy and 357.5 MW of capacity while the queued offshore wind projects account for 5040.3 MW of energy and 1273.2 MW of capacity. Since the offshore wind projects do not yet have an Interconnection Agreement but do have an interim study that was performed, a secondary sensitivity scenario was evaluated to include the wind projects within the model. Both sets of results are supplied.

There are additional projects within the queue in the vicinity of Moonlight Solar; however, they have not yet completed an Interconnection Agreement. It is unknown at this time which of these queued projects will move forward and were therefore excluded from the study herein.

Only one transmission upgrade was found in PJM's reports to be in the region of study. The upgrade consists of increasing the capacity of a 230 kV line near the City of Colonial Heights.

The listed in-service date of this line was 12/31/2022 and was included to be in the base model used.

As for plant retirements, there are two coal powered units (Chesterfield 5 and 6) and one oil powered unit (Yorktown 3) that are scheduled to be decommissioned in 2023. The two Chesterfield units account for 1014.9 MW capacity and were already turned off in the base model while the Yorktown unit which accounts for 767.1 MW capacity needed to be turned off.

Study and Results

Timmons Group ("Timmons"), on behalf of Palladium Energy, requested and received the 2024 AG1 SIS PJM model. Timmons then updated the model as described above.

Table 1 below shows the amount of power that can be injected at the Moonlight Solar site before overloading any section of the transmission system. Scenario 1 results exclude the offshore wind projects previously mentioned whereas Scenario 2 includes the added 5040.3 MW of energy between the two sets of projects.

Table 1. Limits of the transmission system within the vicinity of Isle of Wight County.

Scenario	Facility at risk of overloading if injection limit exceeded by Moonlight Solar	Injection Limit (MW)
1	Moonlight Solar Tap – Chuckatuck 230 kV Line	474.4
2	Battleboro – Rocky Mount 115 kV Line	-960.1
	Hopewell – Chesterfield A 230 kV Line	-822.6
	Chuckatuck – Ben's Church 230 kV Line	-511.6
	Hopewell – Chesterfield B 230 kV Line	-450.2
	Ben's Church – Copeland 230 kV Line	-193.6
	Prince George 230/115 kV Transformer	-156.1
	Copeland – Newport News 230 kV Line	230
	Moonlight Solar Tap – Chuckatuck 230 kV Line	532.7

Table 1 shows that after considering existing projects with an Interconnection Agreement, the Moonlight Solar Project does not have significant impact to the surrounding transmission system unless it were to exceed 474.4 MW. Since this project is only 44 MW, the 230 kV line from the project's point of interconnection to Chuckatuck would not be overloaded because of Moonlight Solar.

Once considering the more than 5 GW of offshore wind in the model, there are a couple facilities along the 230 kV system that are overloaded (negative injection limits); however, Moonlight Solar would just contribute to these upgrades, not cause them directly. If the offshore wind projects are not considered, then Moonlight Solar does not trigger these upgrades as shown in the Case 1 results as discussed. If the offshore wind projects are considered, then they are directly causing the overloads listed in Table 1 above, not Moonlight Solar.

Based on the results identified herein, there is adequate capacity on the system to accept the 44 MW generation from Moonlight Solar when considering previously queued projects with an interconnection agreement. As other projects are completed in the area, these results could fluctuate.

Kirkland Appraisals, LLC

Richard C. Kirkland, Jr., MAI
9408 Northfield Court
Raleigh, North Carolina 27603
Phone (919) 414-8142
rkirkland2@gmail.com
www.kirklandappraisals.com

April 28, 2023

Chance Zajicek
Palladium Energy
25 N. Market Street
Jacksonville, FL 32202

RE: Moonlight Solar, Burwells Bay Road, Smithfield, Isle of Wight County, VA

Mr. Zajicek

At your request, I have considered the impact of a 44 MW solar farm proposed to be constructed on a portion of approximately 523.75 acres of land off Burwells Bay Road, Smithfield, Isle of Wight County, Virginia. Specifically, I have been asked to give my professional opinion on whether the proposed solar farm will have any impact on adjoining property value and whether "the location and character of the use, if developed according to the plan as submitted and approved, will be in harmony with the area in which it is to be located."

To form an opinion on these issues, I have researched and visited existing and proposed solar farms in Virginia as well as other states, researched articles through the Appraisal Institute and other studies, and discussed the likely impact with other real estate professionals. I have not been asked to assign any value to any specific property.

This letter is a limited report of a real property appraisal consulting assignment and subject to the limiting conditions attached to this letter. My client is Palladium Energy, represented to me by Mr. Chance Zajicek. My findings support the Application. The effective date of this consultation is April 28, 2023.

Conclusion

The adjoining properties are well set back from the proposed solar panels and will use a combination of existing vegetation and planted vegetation to provide a screen from adjoining properties.

The matched pair analysis shows no impact on home values due to abutting or adjoining a solar farm as well as no impact to abutting or adjacent vacant residential or agricultural land where the solar farm is properly screened and buffered. The criteria that typically correlates with downward adjustments on property values such as noise, odor, and traffic all indicate that a solar farm is a compatible use for rural/residential transition areas and that it would function in a harmonious manner with this area.

Data from the university studies, broker commentary, and other appraisal studies support a finding of no impact on property value adjoining a solar farm with proper setbacks and landscaped buffers.

Very similar solar farms in very similar areas have been found by hundreds of towns and counties not to have a substantial negative effect to abutting or adjoining properties, and many of those

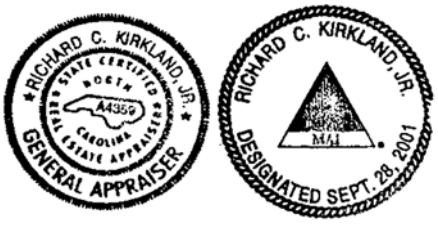
findings of no impact have been upheld by appellate courts. Similar solar farms have been approved with adjoining agricultural uses, schools, churches, and residential developments.

Based on the data and analysis in this report, it is my professional opinion that the solar farm proposed at the subject property will have no impact on the value of adjoining or abutting properties and that the proposed use is in harmony with the area in which it is located. I note that some of the positive implications of a solar farm that have been expressed by people living next to solar farms include protection from future development of residential developments or other more intrusive uses, reduced dust, odor and chemicals from former farming operations, protection from light pollution at night, it's quiet, and there is minimal traffic.

If you have any questions, please let me know.

Sincerely,





Richard C. Kirkland, Jr., MAI
NC Certified General Appraiser #A4359
VA Certified General Appraiser # 4001017291

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I. Proposed Project and Adjoining Uses

Proposed Use Description

This 44 MW solar farm is proposed to be constructed on a portion of approximately 523.75 acres of land off Burwells Bay Road, Smithfield, Isle of Wight County, Virginia.

Adjoining Properties

I have considered adjoining uses and included a map to identify each parcel's location. The closest adjoining home will be 165 feet from the closest solar panel and the average distance to adjoining homes will be 382 feet to the nearest solar panel.

Adjoining land is a mix of residential, agricultural and industrial uses. There is also a religious facility that will adjoin this project, which is common among the solar farms researched for this report.

The breakdown of those uses by acreage and number of parcels is summarized below.

Adjoining Use Breakdown

	Acreage	**Parcels**
Residential	4.85%	41.67%
Agricultural	92.41%	54.17%
Agri/Res	2.73%	4.17%
Total	**100.00%**	**100.00%**

On the following page, I have the GIS tax map shown with the parent tracts and numbered adjoining parcels. I also have the second image of the area proposed to be leased pulled from GoogleEarth.


1
2
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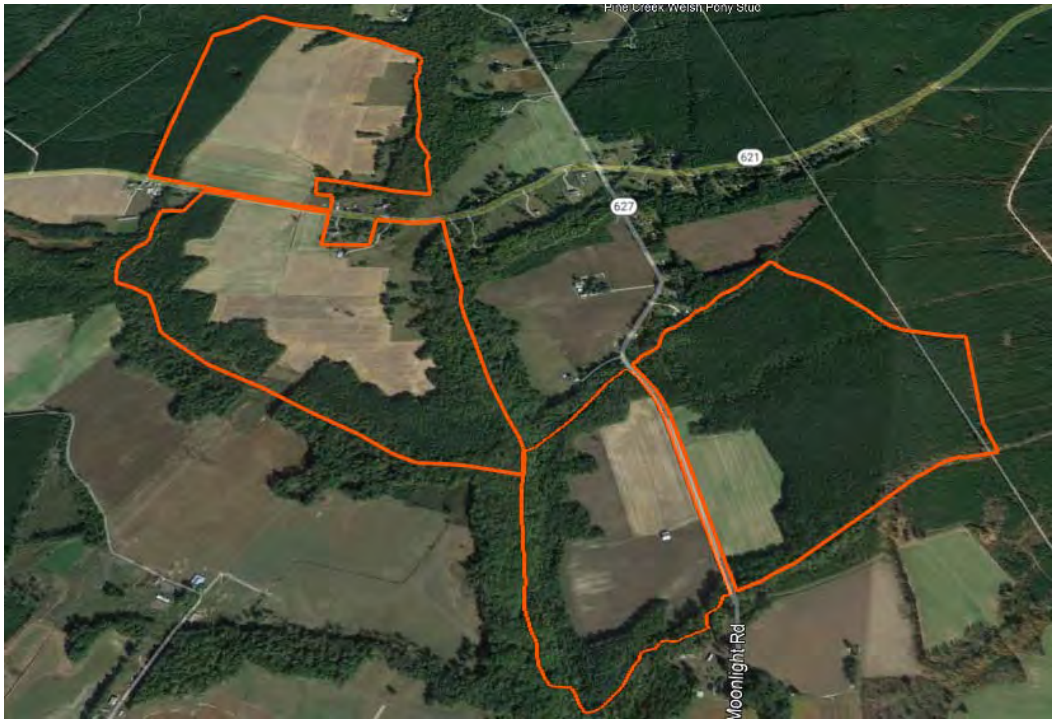
Pine Creek Welsh Pony Stud
621
627
Moonlight Rd

Surrounding Uses

#	MAP ID	Owner	GIS Data Acres	Present Use	Adjoin Acres	Adjoin Parcels	Distance (ft) Home/Panel
1	05-01-002	Doggett	27.00	Agricultural	1.89%	4.17%	N/A
2	05-01-002A	Walling	11.50	Residential	0.81%	4.17%	585
3	11-01-019	Goodrich	28.30	Residential	1.98%	4.17%	1,105
4	11-01-021Y	Edwards	15.00	Residential	1.05%	4.17%	N/A
5	11-01-018A	Edwards	1.00	Residential	0.07%	4.17%	270
6	11-01-017C	Lawton	2.00	Residential	0.14%	4.17%	N/A
7	11-01-017B	Villa	1.93	Residential	0.14%	4.17%	170
8	11-01-021P	Evans	3.27	Residential	0.23%	4.17%	180
9	11-01-022	Edwards	65.00	Agricultural	4.55%	4.17%	N/A
10	11-01-022	Edwards	1.86	Residential	0.13%	4.17%	280
11	11-01-022G	Upton	2.20	Residential	0.15%	4.17%	165
12	11-01-022	Edwards	25.50	Agricultural	1.79%	4.17%	N/A
13	11-01-042	Hofler	148.43	Agricultural	10.40%	4.17%	N/A
14	12-01-008	Hofler	121.47	Agricultural	8.51%	4.17%	N/A
15	11-01-041	Joyner	111.00	Agricultural	7.78%	4.17%	N/A
16	11-01-040	Gwaltney	51.60	Agricultural	3.62%	4.17%	N/A
17	11-01-024	Gwaltney	39.00	Agri/Res	2.73%	4.17%	510
18	11-01-015	Batten	95.00	Agricultural	6.66%	4.17%	N/A
19	11-01-016	Thacker	131.00	Agricultural	9.18%	4.17%	N/A
20	11-01-004	Thacker	55.00	Agricultural	3.85%	4.17%	N/A
21	11-01-003	Thacker	110.00	Agricultural	7.71%	4.17%	N/A
22	11-01-002	Edwards	38.00	Agricultural	2.66%	4.17%	N/A
23	11-01-017A	Edwards	2.20	Residential	0.15%	4.17%	175
24	11-01-001	Hancock	340.00	Agricultural	23.82%	4.17%	N/A
		Total	**1427.260**		**100.00%**	**100.00%**	382

Demographics Around Subject Property

I have pulled demographic data around a 1-mile, 3-mile and 5-mile radius from the middle of the project as shown on the following pages.



Housing Profile

9301-11399 Burwells Bay Rd, Smithfield, Virginia, 23430
Ring: 1 mile radius

Prepared by Esri
Latitude: 37.03196
Longitude: -76.72843

Population		Households	
2010 Total Population	74	2022 Median Household Income	$78,887
2020 Total Population	78	2027 Median Household Income	$97,279
2022 Total Population	79	2022-2027 Annual Rate	4.28%
2027 Total Population	81		
2022-2027 Annual Rate	0.50%		

	Census 2010		2022		2027	
Housing Units by Occupancy Status and Tenure	Number	Percent	Number	Percent	Number	Percent
Total Housing Units	39	100.0%	41	100.0%	42	100.0%
Occupied	32	82.1%	34	82.9%	35	83.3%
Owner	27	69.2%	26	63.4%	27	64.3%
Renter	5	12.8%	8	19.5%	8	19.0%
Vacant	7	17.9%	6	14.6%	7	16.7%

	2022		2027	
Owner Occupied Housing Units by Value	Number	Percent	Number	Percent
Total	27	100.0%	27	100.0%
<$50,000	2	7.4%	1	3.7%
$50,000-$99,999	1	3.7%	0	0.0%
$100,000-$149,999	1	3.7%	0	0.0%
$150,000-$199,999	4	14.8%	2	7.4%
$200,000-$249,999	2	7.4%	1	3.7%
$250,000-$299,999	3	11.1%	2	7.4%
$300,000-$399,999	7	25.9%	8	29.6%
$400,000-$499,999	2	7.4%	3	11.1%
$500,000-$749,999	2	7.4%	3	11.1%
$750,000-$999,999	3	11.1%	6	22.2%
$1,000,000-$1,499,999	0	0.0%	1	3.7%
$1,500,000-$1,999,999	0	0.0%	0	0.0%
$2,000,000+	0	0.0%	0	0.0%
Median Value	$307,143		$393,750	
Average Value	$350,000		$506,481	

Census 2010 Housing Units	Number	Percent
Total	39	100.0%
In Urbanized Areas	0	0.0%
In Urban Clusters	0	0.0%
Rural Housing Units	39	100.0%

Data Note: Persons of Hispanic Origin may be of any race.
Source: Esri forecasts for 2022 and 2027. U.S. Census Bureau 2010 decennial Census data converted by Esri into 2020 geography.

April 20, 2023

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Housing Profile

9301-11399 Burwells Bay Rd, Smithfield, Virginia, 23430
Ring: 3 mile radius

Prepared by Esri
Latitude: 37.03196
Longitude: -76.72843

Population		Households	
2010 Total Population	956	2022 Median Household Income	$80,159
2020 Total Population	947	2027 Median Household Income	$94,375
2022 Total Population	954	2022-2027 Annual Rate	3.32%
2027 Total Population	970		
2022-2027 Annual Rate	0.33%		

	Census 2010		2022		2027	
Housing Units by Occupancy Status and Tenure	Number	Percent	Number	Percent	Number	Percent
Total Housing Units	390	100.0%	406	100.0%	417	100.0%
Occupied	331	84.9%	344	84.7%	352	84.4%
Owner	278	71.3%	261	64.3%	270	64.7%
Renter	53	13.6%	83	20.4%	82	19.7%
Vacant	59	15.1%	62	15.3%	64	15.3%

	2022		2027	
Owner Occupied Housing Units by Value	Number	Percent	Number	Percent
Total	261	100.0%	270	100.0%
<$50,000	13	5.0%	8	3.0%
$50,000-$99,999	8	3.1%	3	1.1%
$100,000-$149,999	12	4.6%	6	2.2%
$150,000-$199,999	33	12.6%	20	7.4%
$200,000-$249,999	30	11.5%	23	8.5%
$250,000-$299,999	28	10.7%	22	8.1%
$300,000-$399,999	73	28.0%	75	27.8%
$400,000-$499,999	25	9.6%	35	13.0%
$500,000-$749,999	14	5.4%	25	9.3%
$750,000-$999,999	22	8.4%	46	17.0%
$1,000,000-$1,499,999	3	1.1%	6	2.2%
$1,500,000-$1,999,999	0	0.0%	1	0.4%
$2,000,000+	0	0.0%	0	0.0%
Median Value	$308,904		$370,667	
Average Value	$349,425		$455,648	

Census 2010 Housing Units	Number	Percent
Total	390	100.0%
In Urbanized Areas	0	0.0%
In Urban Clusters	23	5.9%
Rural Housing Units	368	94.4%

Data Note: Persons of Hispanic Origin may be of any race.
Source: Esri forecasts for 2022 and 2027. U.S. Census Bureau 2010 decennial Census data converted by Esri into 2020 geography.

April 20, 2023

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Housing Profile

9301-11399 Burwells Bay Rd, Smithfield, Virginia, 23430
Ring: 5 mile radius

Prepared by Esri
Latitude: 37.03196
Longitude: -76.72843

Population		Households	
2010 Total Population	4,139	2022 Median Household Income	$82,691
2020 Total Population	3,941	2027 Median Household Income	$96,892
2022 Total Population	3,999	2022-2027 Annual Rate	3.22%
2027 Total Population	4,101		
2022-2027 Annual Rate	0.51%		

	Census 2010		2022		2027	
Housing Units by Occupancy Status and Tenure	Number	Percent	Number	Percent	Number	Percent
Total Housing Units	1,830	100.0%	1,883	100.0%	1,949	100.0%
Occupied	1,618	88.4%	1,642	87.2%	1,694	86.9%
Owner	1,360	74.3%	1,282	68.1%	1,335	68.5%
Renter	258	14.1%	360	19.1%	359	18.4%
Vacant	212	11.6%	241	12.8%	256	13.1%

	2022		2027	
Owner Occupied Housing Units by Value	Number	Percent	Number	Percent
Total	1,283	100.0%	1,335	100.0%
<$50,000	68	5.3%	43	3.2%
$50,000-$99,999	40	3.1%	17	1.3%
$100,000-$149,999	55	4.3%	31	2.3%
$150,000-$199,999	132	10.3%	87	6.5%
$200,000-$249,999	162	12.6%	126	9.4%
$250,000-$299,999	148	11.5%	122	9.1%
$300,000-$399,999	370	28.8%	385	28.8%
$400,000-$499,999	148	11.5%	211	15.8%
$500,000-$749,999	65	5.1%	115	8.6%
$750,000-$999,999	80	6.2%	169	12.7%
$1,000,000-$1,499,999	13	1.0%	26	1.9%
$1,500,000-$1,999,999	2	0.2%	3	0.2%
$2,000,000+	0	0.0%	0	0.0%
Median Value	$309,865		$362,727	
Average Value	$341,621		$427,378	

Census 2010 Housing Units	Number	Percent
Total	1,830	100.0%
In Urbanized Areas	0	0.0%
In Urban Clusters	172	9.4%
Rural Housing Units	1,658	90.6%

Data Note: Persons of Hispanic Origin may be of any race.
Source: Esri forecasts for 2022 and 2027. U.S. Census Bureau 2010 decennial Census data converted by Esri into 2020 geography.

April 20, 2023

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II. Methodology and Discussion of Issues

Standards and Methodology

I conducted this analysis using the standards and practices established by the Appraisal Institute and that conform to the Uniform Standards of Professional Appraisal Practice. The analyses and methodologies contained in this report are accepted by all major lending institutions, and they are used in Virginia and across the country as the industry standard by certified appraisers conducting appraisals, market analyses, or impact studies and are considered adequate to form an opinion of the impact of a land use on neighboring properties. These standards and practices have also been accepted by the courts at the trial and appellate levels and by federal courts throughout the country as adequate to reach conclusions about the likely impact a use will have on adjoining or abutting properties.

The aforementioned standards compare property uses in the same market and generally within the same calendar year so that fluctuating markets do not alter study results. Although these standards do not require a linear study that examines adjoining property values before and after a new use (e.g. a solar farm) is developed, some of these studies do in fact employ this type of analysis. Comparative studies, as used in this report, are considered an industry standard.

The type of analysis employed is a Matched Pair Analysis or Paired Sales Analysis. This methodology is outlined in **The Appraisal of Real Estate**, Twelfth Edition by the Appraisal Institute pages 438-439. It is further detailed in **Real Estate Damages**, Third Edition, pages 33-36 by Randall Bell PhD, MAI. Paired sales analysis is used to support adjustments in appraisal work for factors ranging from the impact of having a garage, golf course view, or additional bedrooms. It is an appropriate methodology for addressing the question of impact of an adjoining solar farm. The paired sales analysis is based on the theory that when two properties are in all other respects equivalent, a single difference can be measured to indicate the difference in price between them. Dr. Bell describes it as comparing a test area to control areas. In the example provided by Dr. Bell he shows five paired sales in the test area compared to 1 to 3 sales in the control areas to determine a difference. I have used 3 sales in the control areas in my analysis for each sale developed into a matched pair.

Determining what is an External Obsolescence

An external obsolescence is a use of property that, because of its characteristics, might have a negative impact on the value of adjacent or nearby properties because of identifiable impacts. Determining whether a use would be considered an external obsolescence requires a study that isolates that use, eliminates any other causing factors, and then studies the sales of nearby versus distant comparable properties. The presence of one or a combination of key factors does not mean the use will be an external obsolescence, but a combination of these factors tends to be present when market data reflects that a use is an external obsolescence.

External obsolescence is evaluated by appraisers based on several factors. These factors include but are not limited to:

1) Traffic. Solar Farms are not traffic generators.

2) Odor. Solar farms do not produce odor.

3) Noise. Solar farms generate minimal noise and are even quieter at night typically with no noise above ambient sounds outside of the fenceline.

4) Environmental. Solar farms do not produce toxic or hazardous waste. Grass is maintained underneath the panels so there is minimal impervious surface area.

5) Appearance/Viewshed. This is the one area that potentially applies to solar farms. However, solar farms are generally required to provide significant setbacks and landscaping buffers to address that concern. Furthermore, any consideration of appearance of viewshed impacts has to be considered in comparison with currently allowed uses on that site. For example if a residential subdivision is already an allowed use, the question becomes in what way does the appearance impact adjoining property owners above and beyond the appearance of that allowed subdivision or other similar allowed uses.

6) Other factors. I have observed and studied many solar farms and have never observed any characteristic about such facilities that prevents or impedes neighbors from fully using their homes or farms or businesses for the use intended.

Relative Solar Farm Sizes

Solar farms have been increasing in size in recent years. Much of the data collected is from existing, older solar farms of smaller size, but there are numerous examples of sales adjoining 75 to 80 MW facilities that show a similar trend as the smaller solar farms. This is understandable given that the primary concern relative to a solar farm is the appearance or view of the solar farm, which is typically addressed through setbacks and landscaping buffers. The relevance of data from smaller solar farms to larger solar farms is due to the primary question being one of appearance. If the solar farm is properly screened, then little of the solar farm would be seen from adjoining property regardless of how many acres are involved.

Larger solar farms are often set up in sections where any adjoining owner would only be able to see a small section of the project even if there were no landscaping screen. Once a landscaping screen is in place, the primary view is effectively the same whether adjoining a 5 MW, 20 MW or 100 MW facility.

I have split out the data for the matched pairs adjoining larger solar farms only to illustrate the similarities later in this report.

Steps Involved in the Analysis

The paired sales analysis employed in this report follows the following process:

1. Identify sales of property adjoining existing solar farms.
2. Compare those sales to similar property that does not adjoin an existing solar farm.
3. Confirmation of sales are noted in the analysis write ups.
4. Distances from the homes to panels are included as a measure of the setbacks.
5. Topographic differences across the solar farms themselves are likewise noted along with demographic data for comparing similar areas.

There are a number of Sale/Resale comparables included in the write ups, but most of the data shown is for sales of homes after a solar farm has been announced (where noted) or after a solar farm has been constructed.

III. Research on Solar Farms

A. Appraisal Market Studies

I have also considered a number of impact studies completed by other appraisers as detailed below.

CohnReznick – Property Value Impact Study: Adjacent Property Values Solar Impact Study: A Study of Eight Existing Solar Facilities

Patricia McGarr, MAI, CRE, FRICS, CRA and Andrew R. Lines, MAI with CohnReznick completed an impact study for a proposed solar farm in Cheboygan County, Michigan completed on June 10, 2020. I am familiar with this study as well as a number of similar such studies completed by CohnReznick. I have not included all of these studies but I submit this one as representative of those studies.

This study addresses impacts on value from eight different solar farms in Michigan, Minnesota, Indiana, Illinois, Virginia and North Carolina. These solar farms are 19.6 MW, 100 MW, 11.9 MW, 23 MW, 71 MW, 61 MW, 40 MW, and 19 MW for a range from 11.9 MW to 100 MW with an average of 31 MW and a median of 31.5 MW. They analyzed a total of 24 adjoining property sales in the Test Area and 81 comparable sales in the Control Area over a five-year period.

The conclusion of this study is that there is no evidence of any negative impact on adjoining property values based on sales prices, conditions of sales, overall marketability, potential for new development or rate of appreciation.

Christian P. Kaila & Associates – Property Impact Analysis – Proposed Solar Power Plant Guthrie Road, Stuarts Draft, Augusta County, Virginia

Christian P. Kaila, MAI, SRA and George J. Finley, MAI developed an impact study as referenced above dated June 16, 2020. This was for a proposed 83 MW facility on 886 acres.

Mr. Kaila interviewed appraisers who had conducted studies and reviewed university studies and discussed the comparable impacts of other development that was allowed in the area for a comparative analysis of other impacts that could impact viewshed based on existing allowed uses for the site. He also discussed in detail the various other impacts that could cause a negative impact and how solar farms do not have such characteristics.

Mr. Kaila also interviewed county planners and real estate assessors in eight different Virginia counties with none of the assessor's identifying any negative impacts observed for existing solar projects.

Mr. Kaila concludes on a finding of no impact on property values adjoining the indicated solar farm.

Fred Beck, MAI, CCIM – Impact Analysis in Lincoln County 2013

Mr. Fred Beck, MAI, CCIM completed an impact analysis in 2013 for a proposed solar farm that concluded on a negative impact on value. That report relied on a single cancelled contract for an adjoining parcel where the contracted buyers indicated that the solar farm was the reason for the cancellation. It also relied on the activities of an assessment impact that was applied in a nearby county.

Mr. Beck was interviewed as part of the Christian Kalia study noted above. From that I quote "Mr. Beck concluded on no effect on moderate priced homes, and only a 5% change in his limited research of higher priced homes. His one sale that fell through is hardly a reliable sample. It also

was misleading on Mr. Beck's part to report the lower re-assessments since the primary cause of the re-assesments were based on the County Official, who lived adjacent to the solar farm, appeal to the assessor for reductions with his own home." In that Clay County Case study the noted lack of lot sales after announcement of the solar farm also coincided with the recession in 2008/2009 and lack of lot sales effectively defined that area during that time.

I further note, that I was present at the hearing where Mr. Beck presented these findings and the predominance of his argument before the Lincoln County Board of Commissioner's was based on the one cancelled sale as well as a matched pair analysis of high-end homes adjoining a four-story call center. He hypothesized that a similar impact from that example could be compared to being adjacent solar farm without explaining the significant difference in view, setbacks, landscaping, traffic, light, and noise. Furthermore, Mr. Beck did have matched pairs adjoining a solar farm in his study that he put in the back of his report and then ignored as they showed no impact on property value.

Also noted in the Christian Kalia interview notes is a response from Mr. Beck indicating that in his opinion "the homes were higher priced homes and had full view of the solar farm." Based on a description of screening so that "the solar farm would not be in full view to adjoining property owners. Mr. Beck said in that case, he would not see any drop in property value."

NorthStar Appraisal Company – Impact Analysis for Nichomus Run Solar, Pilesgrove, NJ, September 16, 2020

Mr. William J. Sapio, MAI with NorthStar Appraisal Company considered a matched pair analysis for the potential impact on adjoining property values to this proposed 150 MW solar farm. Mr. Sapio considered sales activity in a subdivision known as Point of Woods in South Brunswick Township and identified two recent new homes that were constructed and sold adjoining a 13 MW solar farm and compared them to similar homes in that subdivision that did not adjoin the solar farm. These homes sold in the $1,290,450 to $1,336,613 price range and these homes were roughly 200 feet from the closest solar panel.

Based on this analysis, he concluded that the adjoining solar farm had no impact on adjoining property value.

MR Valuation Consulting, LLC – The Kuhl Farm Solar Development and The Fischer Farm Solar Development – June 7, 2012

Mr. Mark Pomykacaz, MAI MRICS with MR Valuation Consulting, LLC considered a matched pair analysis for sales near these solar farms. The sales data presented supported a finding of no impact on property value for nearby and adjoining homes and concludes that there is no impact on marketing time and no additional risk involved with owning, building, or selling properties next to the solar farms.

Mary McClinton Clay, MAI – McCracken County Solar Project Value Impact Report, July 10, 2021

Ms. Mary Clay, MAI reviewed a report by Kirkland Appraisals in this case and also provided a differing opinion of impact. She cites a number of other appraisal studies and interestingly finds fault with heavily researched opinions, while praising the results of poorly researched studies that found the opposing view.

Her analysis includes details from solar farms that show no impact on value, but she dismisses those.

She cites the University of Texas study noted later in this report, but she cites only isolated portions of that study to conclude the opposite of what that study specifically concludes.

She cites the University of Rhode Island study noted alter in this report, but specifically excludes the conclusion of that study that in rural areas they found no impact on property value.

She cites lot sales near Spotsylvania Solar without confirming the purchase prices with brokers as indicative of market impact and has made no attempt to compare lot prices that are contemporaneous. In her 5 lot sales that she identifies, all of the lot prices decline with time from 2015 through 2019. This includes the 3 lot sales prior to the approval of the solar farm. The decrease in lot values shown in this chart are more indicative of the trend in the market, than of any impact related to the solar farm. Otherwise, how does she explain the drop in price from 2015 to 2017 prior to the solar farm approval.

She considers data at McBride Place Solar Farm and does a sale/resale analysis based on Zillow Home Value Index, which is not a reliable indication for appreciation in the market. She then adjusted her initial sales prior to the solar farm over 7 years to determine what she believes the home should have appreciated by and then compares that to an actual sale. She has run no tests or any analysis to show that the appreciation rates she is using are consistent with the market but more importantly she has not attempted to confirm any of these sales with market participants. I have spoken with brokers active in the sales that she cites and they have all indicated that the solar farm was not a negative factor in marketing or selling those homes.

She has considered lot sales at Sunshine Farms in Grandy, NC. She indicates that the lots next to the solar farm are selling for less than lots not near the solar farm, but she is actually using lot sales next to the solar farm prior to the solar farm being approved. She also ignores recent home sales adjoining this solar farm after it was built that show no impact on property value.

She also notes a couple of situations where solar developers have purchased adjoining homes and resold them or where a neighbor agreement was paid as proof of a negative impact on property value. Given that there are over 2,500 solar farms in the USA as of 2018 according to the U.S. Energy Information Administration and there are only a handful of such examples, this is clearly not an industry standard but a business decision. Furthermore, solar developers are not in the business of flipping homes and are in a position very similar to a bank that acquires a home as OREO (Other Real Estate Owned), where homes are frequently sold at discounted prices, not because of any drop in value, but because they are not a typically motivated seller. Market value requires an analysis of a typically motivated buyer and seller. So these are not good indicators of market value impacts.

The comments throughout this study are heavy in adjectives, avoids stating facts contrary to the conclusion and shows a strong selection bias.

Conclusion of Impact Studies

Of the five studies noted two included actual sales data to derive an opinion of no impact on value. The two studies to conclude on a negative impact includes the Fred Beck study based on no actual sales data, and he has since indicated that with landscaping screens he would not conclude on a negative impact. The other study by Mary Clay shows improper adjustments for time, a lack of confirmation of sales comparables, and exclusion of data that does not support her position.

I have relied on these studies as additional support for the findings in this impact analysis.

B. Articles

I have also considered a number of articles on this subject as well as conclusions and analysis as noted below.

Farm Journal Guest Editor, March 22, 2021 – Solar's Impact on Rural Property Values

Andy Ames, ASFMRA (American Society of Farm Managers and Rural Appraisers) published this article that includes a discussion of his survey of appraisers and studies on the question of property value related to solar farms. He discusses the university studies that I have cited as well as Patricia McGarr, MAI.

He also discusses the findings of Donald A. Fisher, ARA, who served six years at the Chair of the ASFMRA's National Appraisal Review Committee. He is also the Executive Vice President of the CNY Pomeroy Appraiser and has conducted several market studies on solar farms and property impact. He is quoted in the article as saying, "Most of the locations were in either suburban or rural areas, and all of those studies found either a neutral impact, or ironically, a positive impact, where values on properties after installation of solar farms went up higher than time trends."

Howard Halderman, AFM, President and CEO of Halderman Real Estate and Farm Management attended the ASFMRA solar talk hosted by the Indiana Chapter of the ASFMRA and he concludes that other rural properties would likely see no impact and farmers and landowners shown even consider possible benefits. "In some cases, farmers who rent land to a solar company will insure the viability of their farming operation for a longer time period. This makes them better long-term tenants or land buyers so one can argue that higher rents and land values will follow due to the positive impact the solar leases offer."

More recently in August 2022, Donald Fisher, ARA, MAI and myself led a webinar on this topic for the ASFMRA discussing the issues, the university studies and specific examples of solar farms having no impact on adjoining property values.

National Renewable Energy Laboratory – Top Five Large-Scale Solar Myths, February 3, 2016

Megan Day reports form NREL regarding a number of concerns neighbors often express. Myth #4 regarding property value impacts addresses specifically the numerous studies on wind farms that show no impact on property value and that solar farms have a significantly reduced visual impact from wind farms. She highlights that the appearance can be addressed through mitigation measures to reduce visual impacts of solar farms through vegetative screening. Such mitigations are not available to wind farms given the height of the windmills and again, those studies show no impact on value adjoining wind farms.

North Carolina State University: NC Clean Energy Technology Center White Paper: Balancing Agricultural Productivity with Ground-Based Solar Photovoltaic (PV) Development (Version 2), May 2019

Tommy Cleveland and David Sarkisian wrote a white paper for NCSU NC Clean Energy Technology Center regarding the potential impacts to agricultural productivity from a solar farm use. I have interviewed Tommy Cleveland on numerous occasions and I have also heard him speak on these issues at length as well. He addresses many of the common questions regarding how solar farms work and a detailed explanation of how solar farms do not cause significant impacts on the soils, erosion and other such concerns. This is a heavily researched paper with the references included.

North Carolina State University: NC Clean Energy Technology Center White Paper: Health and Safety Impacts of Solar Photovoltaics, May 2017

Tommy Cleveland wrote a white paper for NCSU NC Clean Energy Technology Center regarding the health and safety impacts to address common questions and concerns related to solar farms. This is a heavily researched white paper addressing questions ranging from EMFs, fire safety, as well as vegetation control and the breakdown of how a solar farm works.

C. Broker Commentary

In the process of working up the matched pairs used later in this report, I have collected comments from brokers who have actually sold homes adjoining solar farms indicating that the solar farm had no impact on the marketing, timing, or sales price for the adjoining homes. I have included comments from brokers within this report where they discussed specific solar projects including brokers from Kentucky, Virginia, Tennessee, and North Carolina.

I have additional commentary from other states including New Jersey and Michigan that provide the same conclusion.

IV. University Studies

I have also considered the following studies completed by four different universities related to solar farms and impacts on property values.

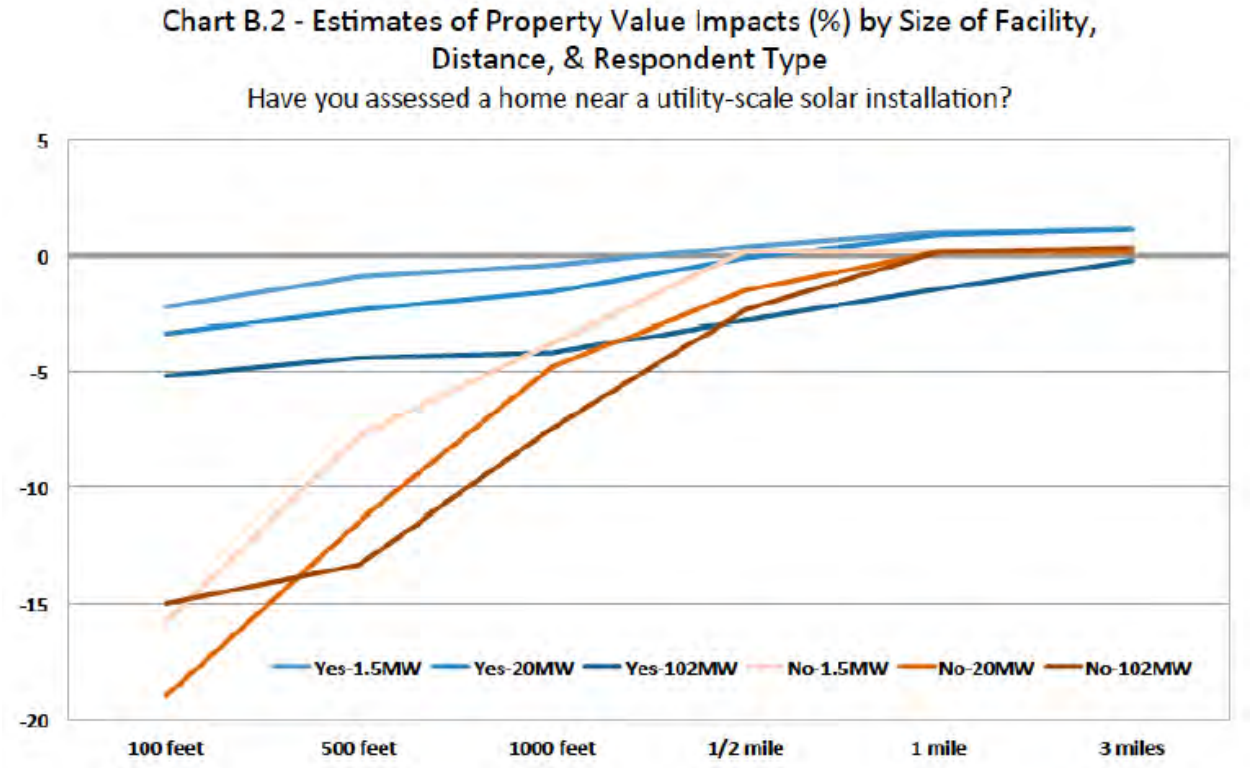
A. University of Texas at Austin, May 2018

An Exploration of Property-Value Impacts Near Utility-Scale Solar Installations

This study considers solar farms from two angles. First it looks at where solar farms are being located and concludes that they are being located primarily in low density residential areas where there are fewer homes than in urban or suburban areas.

The second part is more applicable in that they conducted a survey of appraisers/assessors on their opinions of the possible impacts of proximity to a solar farm. They consider the question in terms of size of the adjoining solar farm and how close the adjoining home is to the solar farm. I am very familiar with this part of the study as I was interviewed by the researchers multiple times as they were developing this. One very important question that they ask within the survey is very illustrative. They asked if the appraiser being surveyed had ever appraised a property next to a solar farm. There is a very noticeable divide in the answers provided by appraisers who have experience appraising property next to a solar farm versus appraisers who self-identify as having no experience or knowledge related to that use.

On Page 16 of that study they have a chart showing the responses from appraisers related to proximity to a facility and size of the facility, but they separate the answers as shown below with appraisers with experience in appraising properties next to a solar farm shown in blue and those inexperienced shown in brown. Even within 100 feet of a 102 MW facility the response from experienced appraisers were -5% at most on impact. While inexperienced appraisers came up with significantly higher impacts. This chart clearly shows that an uninformed response widely diverges from the sales data available on this subject.



Furthermore, the question cited above does not consider any mitigating factors such as landscaping buffers or screens which would presumably reduce the minor impacts noted by experienced appraisers on this subject.

The conclusion of the researchers is shown on Page 23 indicated that "Results from our survey of residential home assessors show that the majority of respondents believe that proximity to a solar installation has either no impact or a positive impact on home values."

This analysis supports the conclusion of this report that the data supports no impact on adjoining property values.

B. University of Rhode Island, September 2020

Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island

The University of Rhode Island published a study entitled **Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island** on September 29, 2020 with lead researchers being Vasundhara Gaur and Corey Lang. I have read that study and interviewed Mr. Corey Lang related to that study. This study is often cited by opponents of solar farms but the findings of that study have some very specific caveats according to the report itself as well as Mr. Lang from the interview.

While that study does state in the Abstract that they found depreciation of homes within 1-mile of a solar farm, that impact is limited to non-rural locations. On Pages 16-18 of that study under Section 5.3 Heterogeneity in treatment effect they indicate that the impact that they found was limited to non-rural locations with the impact in rural locations effectively being zero. For the study they defined "rural" as a municipality/township with less than 850 population per square mile.

They further tested the robustness of that finding and even in areas up to 2,000 population per square mile they found no statistically significant data to suggest a negative impact. They have not specifically defined a point at which they found negative impacts to begin, as the sensitivity study stopped checking at the 2,000-population dataset.

Where they did find negative impacts was in high population density areas that was largely a factor of running the study in Massachusetts and Rhode Island which the study specifically cites as being the 2nd and 3rd most population dense states in the USA. Mr. Lang in conversation as well as in recorded presentations has indicated that the impact in these heavily populated areas may reflect a loss in value due to the scarce greenery in those areas and not specifically related to the solar farm itself. In other words, any development of that site might have a similar impact on property value.

Based on this study I have checked the population for Carrsville District of Isle of Wight County, which has a population of 6,676 for 2022 based on HomeTownLocator.com and a total area of 142.04 square miles. This indicates a population density of 47 people per square mile which puts this well below the threshold indicated by the Rhode Island Study.

I therefore conclude that the Rhode Island Study supports a finding of no impact on adjoining properties for the proposed solar farm.

Carrsville District Data & Demographics (As of July 1, 2022)

POPULATION	
Total Population	6,676 (100%)
Population in Households	6,657 (99.7%)
Population in Families	5,644 (84.5%)
Population in Group Quarters[1]	19 (0.3%)
Population Density	47
Diversity Index[2]	43

HOUSING	
Total HU (Housing Units)	3,034 (100%)
Owner Occupied HU	2,246 (74.0%)
Renter Occupied HU	489 (16.1%)
Vacant Housing Units	299 (9.9%)
Median Home Value	$281,813
Average Home Value	$286,782
Housing Affordability Index[3]	126

INCOME	
Median Household Income	$72,931
Average Household Income	$89,472
% of Income for Mortgage[4]	20%
Per Capita Income	$36,737
Wealth Index[5]	82

HOUSEHOLDS	
Total Households	2,735
Average Household Size	2.43
Family Households	1,977
Average Family Size	3

C. Georgia Institute of Technology, October 2020

Utility-Scale Solar Farms and Agricultural Land Values

This study was completed by Nino Abashidze as Post-Doctoral Research Associate of Health Economics and Analytics Labe (HEAL), School of Economics, Georgia Institute of Technology. This research was started at North Carolina State University and analyzes properties near 451 utility-scale ground-mount solar installations in NC that generate at least 1 MW of electric power. A total of 1,676 land sales within 5-miles of solar farms were considered in the analysis.

This analysis concludes on Page 21 of the study "Although there are no direct effects of solar farms on nearby agricultural land values, we do find evidence that suggests construction of a solar farm may create a small, positive, option -value for land owners that is capitalized into land prices. Specifically, after construction of a nearby solar farm, we find that agricultural land that is also located near transmission infrastructure may increase modestly in value."

This study supports a finding of no impact on adjoining agricultural property values and in some cases could support a modest increase in value.

D. Master's Thesis: ECU by Zachary Dickerson July 2018

A Solar Farm in *My* Backyard? Resident Perspectives of Utility-Scale Solar in Eastern North Carolina

This study was completed as part of a Master of Science in Geography Master's Thesis by Zachary Dickerson in July 2018. This study sets out to address three questions:

1. Are there different aspects that affect resident satisfaction regarding solar farms?

2. Are there variations in satisfaction for residents among different geographic settings, e.g. neighborhoods adjacent to the solar farms or distances from the solar farms?

3. How can insight from both the utility and planning sectors, combined with knowledge gained from residents, fill gaps in communication and policy writing in regard to solar farms?

This was done through survey and interview with adjacent and nearby neighbors of existing solar farms. The positive to neutral comments regarding the solar farms were significantly higher than negative. The researcher specifically indicates on Page 46 "The results show that respondents generally do not believe the solar farms pose a threat to their property values."

The most negative comments regarding the solar farms were about the lack of information about the approval process and the solar farm project prior to construction.

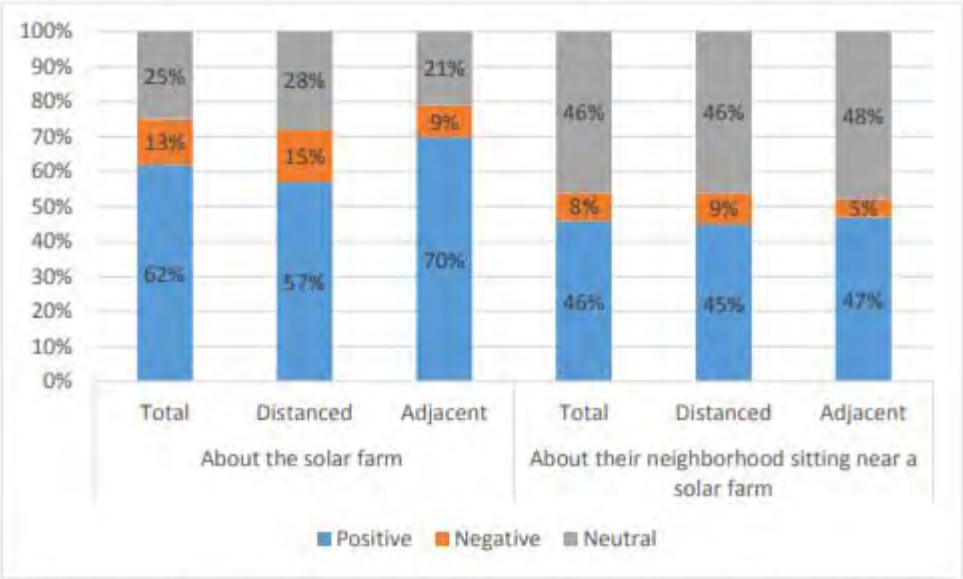


Figure 11: Residents' positive/negative word choices by geographic setting for both questions

E. Honors Thesis: Trinity College of Duke University by Megan Wang with Dr. Christopher Timmins, Faculty Advisor April 2022

Impact of Utility-Scale Solar Farms on Property Values in North Carolina

This study was completed as partial fulfillment of the requirements for Graduation with Distinction in Economics in Trinity College of Duke University.

This analysis focused on solar farms in NC and found a significant 12% increase in sale values for high-income homes within 3 miles of a solar farm, but that low-income homes were associated with a 1.4% decreased in value. This report relied on CoreLogic data and uses sales up to 10 miles from a solar farm for analysis in comparison to sales within 3 miles. No connection is established between how a home 3 miles from a solar farm might be impacted by that solar farm and given the wide range of results I find this to be a good example of how this type of analysis can look impressive, but have significant flaws in reasoning. There is no consideration of whether homes 10 miles out from the site are really in the same market or not. There is no consideration of landscaping buffers or visibility of the site. There is no establishment of any actual relationship in this data and the solar farm other than proximity. There is no indication that any control was performed to look at a similar ring of data to determine if the 3 mile/10 mile comparison really just reflects a difference between rural and suburban/urban areas.

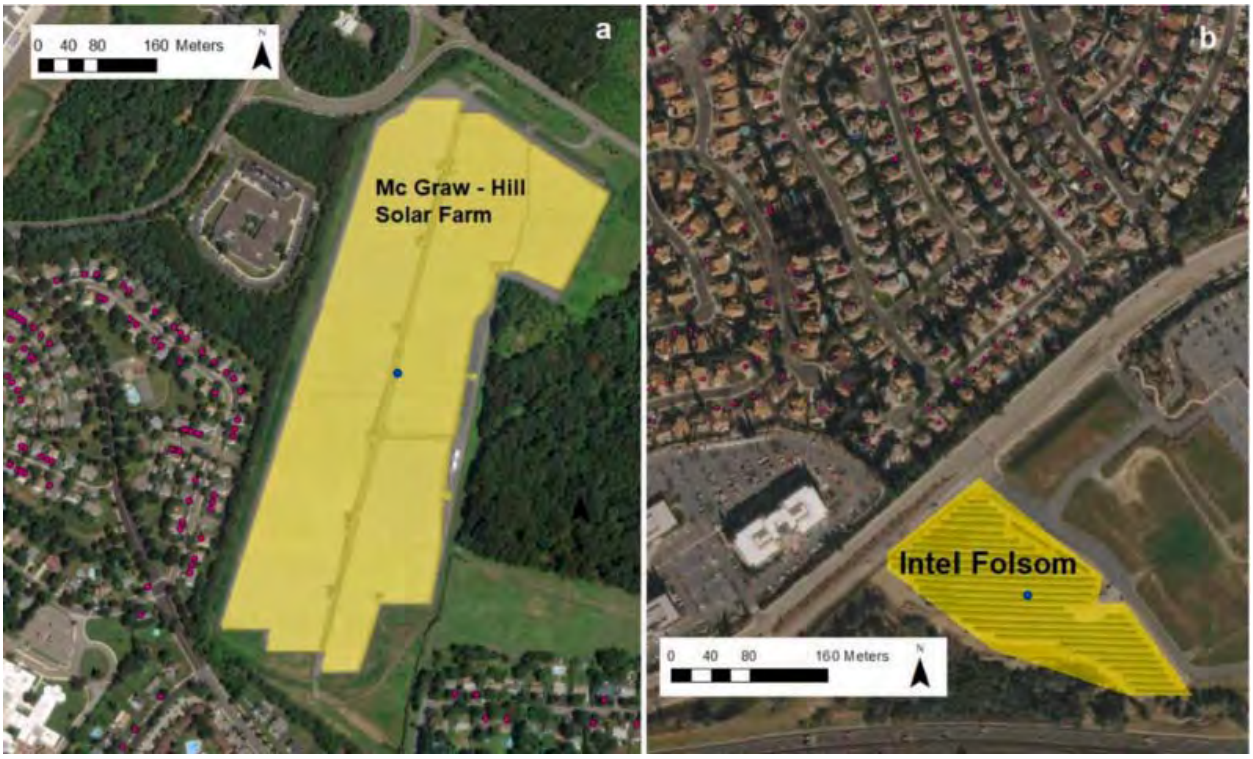
I have included this as it is on point but the conclusion suggests a significant positive relationship from the solar farm in most cases and a negligible impact in others. I have not relied heavily on this study for the reasons stated above.

F. Lawrence Berkeley National Lab, March 2023

Shedding light on large-scale solar impacts: An analysis of property values and proximity to photovoltaics across six U.S. states

This study was completed by researchers including Salma Elmallah, Ben Hoen, K. Sydny Fujita, Dana Robson, and Eric Brunner. This analysis considers home sales before and after solar farms were installed within a 1 mile radius and compared them to home sales before and after the solar farms at a 2-4 mile radius. The conclusion found a 1.5% impact within 1 mile of a solar farm as

compared to homes 2-4 miles from solar farms. This is the largest study of this kind on solar and addresses a number of issues, but also does not address a number of items that could potentially skew these results. First of all, the study found no impact in the three states with the most solar farm activity and only found impacts in smaller sets of data. The data does not in any way discuss actual visibility of solar farms or address existing vegetation screens. This lack of addressing this is highlighted by the fact that they suggest in the abstract that vegetative shading may be needed to address possible impacts. Another notable issue is the fact that they do not address other possible impacts within the radii being considered. This lack of consideration is well illustrated within the study on Figure A.1 where they show satellite images of McGraw Hill Solar Farm in NJ and Intel Folsom in CA. The Folsom image clearly shows large highways separating the solar farm from nearby housing, but with tower office buildings located closer to the housing being considered. In no place do they address the presence of these towers that essentially block those homes from the solar farm in some places. An excerpt of Fig. A.1. is shown below.



For each of these locations, I have panned out a little further on Google Earth to show the areas illustrated to more accurately reflect the general area. For the McGraw Hill Solar Farm you can see there is a large distribution warehouse to the west along with a large offices and other industrial uses. Further to the west is a large/older apartment complex (Princeton Arms). To the east there are more large industrial buildings. However, it is even more notable that 1.67 miles away to the west is Cranbury Golf Club. Given how this analysis was set up, these homes around the industrial buildings are being compared to homes within this country club to help establish impacts from the solar farm. Even considering the idea that each set is compared to itself before and after the solar farm, it is not a reasonable supposition that homes in each area would appreciate at the same rates even if no solar farm was included. Furthermore the site where the solar farm is located an all of the surrounding uses not improved with residential housing to the south is zoned Research Office (RO) which allows for: manufacturing, preparation, processing or fabrication of products, with all activities and product storage taking place within a completely enclosed building, scientific or research laboratories, warehousing, computer centers, pharmaceutical operations, office buildings, industrial office parks among others. Homes adjoining such a district would likely have impacts and influences not seen in areas zoned and surrounded by zoning strictly for residential uses.


East Windsor Township
Windsor Corporate Park
Healthy Kids Pediatric Group
EAG Laboratories
Oak Creek Estates Association
Oak Creek Rd
Oak Creek Dr
Pebble Rd
Princeton Pl
Princeton Dr
Princeton Dr
Princeton Dr


COVENTRY AT NATOMA STATION
NATOMA STATION
Natoma Station Elementary School
Waterford Place
Deer Rabbit Mini Park
Petite Scholars
Redfin | Sacramento Real Estate Agents
RBK Architects
Mylapore South Indian Vegetaria
Safeway
Intel Corporation
Intel - FM7
Intel - FM5
Iron Point Rd
Prairie City Rd
El Dorado Hwy
Alder Creek
50

On the Intel Folsom map I have shown the images of two of the Intel Campus buildings, but there are roughly 8 such buildings on that site with additional solar panels installed in the parking lot as shown in that image. I included two photos that show the nearby housing having clear and close views of adjoining office parking lots. This illustrates that the homes in that 1 mile radius are significantly more impacted by the adjoining office buildings than a solar farm located distantly that are not within the viewshed of those homes. Also, this solar farm is located on land adjoining the Intel Campus on a tract that is zoned M-1 PD, which is a Light Industrial/Manufacturing zoning. Nearby homes. Furthermore, the street view at the solar farm shows not only the divided four-lane highway that separates the office buildings and homes from the solar farm, but also shows that there is no landscaping buffer at this location. All of these factors are ignored by this study. Below is another image of the Folsom Solar at the corner of Iron Point Road and Intel West Driveway which shows just how close and how unscreened this project is.



Compare that image from the McGraw Hill street view facing south from County Rte 571. There is a distant view and much of the project is hidden by a mix of berms and landscaping. The analysis makes no distinction between these projects.



The third issue with this study is that it identifies impacts following development in areas where they note that "more adverse home price impacts might be found where LSPVPS (large-scale

photovoltaic project) displace green space (consistent with results that show higher property values near green space." The problem with this statement is that it assumes that the greenspace is somehow guaranteed in these areas, when in fact, they could just as readily be developed as a residential subdivision and have the same impacts. They have made no effort to differentiate loss of greenspace through other development purposes such as schools, subdivisions, or other uses versus the impact of solar farms. In other words, they may have simply identified the impact of all forms of development on property value. This would in fact be consistent with the comments in the Rhode Island study where the researchers noted that the loss of greenspace in the highly urban areas was likely due to the loss of greenspace in particular and not due to the addition of solar panels.

Despite these three shortcomings in the analysis – the lack of differentiating landscape screening, the lack of consideration of other uses within the area that could be impacting property values, and the lack of consideration of alternative development impacts – the study still only found impacts between 0 and 5% with a conclusion of 1.5% within a 1-mile radius. As discussed later in this report, real estate is an imperfect market and real estate transactions typically sell for much wider variability than 5% even where there are no external factors operating on property value.

I therefore conclude that the minor impacts noted in this study support a finding of no impact on property value. Most appraisals show a variation between the highest and lowest comparable sale that is substantially greater than 1.5% and this measured impact for all it flaws would just be lost in the static of normal real estate transactions.

V. Assessor Surveys

I have been working on a survey of Virginia Assessors regarding property values related to solar farms and whether or not the local assessors have found any data to support any changes to value on property adjoining solar farms. In this process I have contacted every assessor's office by email and I have received responses by email and by phone from a number of these counties. Many of the counties in Virginia rely on outside firms to assist in gathering data for the assessments and where that is the case, we have contacted the outside firms regarding the question of whether or not the assessors are currently making any adjustments to properties adjoining solar farms.

I currently have response from 16 counties that have solar farms in them and of those 16 responses none of the assessors are currently applying a negative impact on property value. One response suggested that adjoining values may go up.

I did speak with Randy Willis with Pearson Assessors. His company assists in the assessments in many of the counties south of Richmond. He indicated that they had found no data to suggest a negative impact on property value and they have looked as they were concerned about that issue. He indicated that they would make no negative impact adjustments and that he recognizes that there are a number of agricultural adjoining uses that have a greater impact on adjoining properties in terms of noise, dust and odor than a solar farm would have. He did indicate that there could be situations where an individual home might have a greater visual impact and those should be looked at on a case-by-case basis, but he also agreed that many allowed agricultural uses could have similar visual impacts on such properties as well.

VIRGINIA Commissioner of the Revenue

County	Assessor Name	Number of Farms in Operation	Change in adjacent property value
Appomattox	Sara Henderson	1, plus one in process	No
Augusta	W. Jean Shrewsbury	no operational	No
Buckingham	Stephanie D. Love	1	No
Charlotte	Naisha Pridgen Carter	1, several others in the works	No
Clarke	Donna Peake	1	No
Frederick	Seth T. Thatcher	none, 2 appoved for 2022	No, assuming compatible with rural area
Goochland	Mary Ann Davis		No
Hanover	Ed Burnett	1	No
Louisa	Stacey C. Fletcher	2 operational by end of year	No, only if supported by market data
Mecklenburg	Joseph E. "Ed" Taylor		No
Nottoway	Randy Willis with Pearson Assessors		No
Powhatan	Charles Everest	2 approved, 1 built	Likely increase in value
Rockingham	Dan Cullers	no operational	Likely no
Southampton	Amy B. Carr	1	Not normally
Surry	Jonathan F. Judkins	1	None at this time
Westmoreland	William K. Hoover	4	No

Responses: 16
Negative Impact on Adjoining Value = Yes: 0
Negative Impact on Adjoining Value = No: 16

I have also attempted to contact all of the assessor departments in North Carolina to determine how local assessors are handling solar farms and adjoining property values. I have spoken personally with a number of assessors, but much of this data was obtained via email. I have 39 counties in NC that have both responded to these questions on property value and also have solar farms in that county. I have excluded responses from assessors from counties where there are no current solar farms.

As can be seen in the chart below, of the 39 responses all of the responses have indicated that they make no adjustment to properties adjoining solar farms. Several assessors indicated that it would require an adjoining property owner to appeal their property value with data showing a negative impact before they would make any adjustment and to date they have not had that happen.

I also point out specifically Clay County. I spoke with the assessor there specifically about adjustments that were applied to some properties near a solar farm back in 2008. She was unaware of the details of that event as she was not in this position at that time. As discussed earlier in this report the lower re-assessments at that solar farm were based on a County Official, who owned property adjacent to the solar farm, who made an appeal to the assessor for reductions for his own property. The noted lack of lot sales after announcement of the solar farm however coincided with the recession in 2008/2009 and lack of lot sales effectively defined that area during that time, but without relying on any data the assessor made that change in that time frame based on conversations with the assessor. Since then, Clay County has confirmed that they do not currently make any changes to adjoining property values and the current county assessor was not even aware that they had in the past done so.

NC Assessor Survey on Solar Farm Property Value Impacts

County	Assessor's Name	Number of Farms	Change in Adjacent Property Value
Alexander	Doug Fox	3	No
Buncombe	Lisa Kirbo	1	No
Burke	Daniel Isenhour	3, 2 on 1 parcel, 1 on 3 parcels	No
Cabarrus	Justin	less than 10, more in the works	No
Caldwell	Monty Woods	3 small	No, but will look at data in 2025
Catawba	Lori Ray	14	No
Chatham	Jenny Williams	13	No
Cherokee	Kathy Killian	9	No
Chowan	Melissa Radke	3, I almost operational	No
Clay	Bonnie L. Lyvers		No
Davidson	Libby	1	No
Duplin	Gary Rose	34, 2 more in planning	No
Franklin	Marion Cascone	11	No
Gaston	Traci Hovis	3	No
Gates	Chris Hill	3	No
Granville	Jenny Griffin	8	No
Halifax	C. Shane Lynch	Multiple	No
Hoke	Mandi Davis	4	No
Hyde	Donnie Shumate	1 to supplement egg processing plant	No
Iredell	Wes Long	2, 3 others approved	No
Lee	Lisa Faulkner	8	No
Lincoln	Susan Sain	2	No
Moore	Michael Howery	10	No
New Hanover	Rhonda Garner	35	No
Orange	Chad Phillip	2 or 7 depending on breakdown	No
Pender	Kayla Bolick Futrell	6	No
Person	Russell Jones	9	No
Pitt	Russell D. Hill	8, 1 in planning	No
Randolph	Mark Frick	19	No
Rockingham	Mark C McClintock	6	No
Rutherford	Kim Aldridge	20	No
Sampson	Jim Johnson	9, 1 in construction	No
Scotland	James Brown	15, 1 in process	No
Stokes	Richard Brim	2	No
Surry	Penny Harrison	4, 2 more in process	No
Union	Robin E. Merry	6	No
Vance	Cathy E. Renn	13	No
Warren	John Preston	7	No
Wayne	Alan Lumpkin	32	No
Wilson	William (Witt) Putney	~16	No, mass appraisal standards applied

Responses: 39
Negative Impact on Adjoining Value = Yes: 0
Negative Impact on Adjoining Value = No: 39

I have also completed surveys in Colorado, New Mexico, and Mississippi as shown below.

I have so far found no responses from any assessor that they make negative adjustments to adjoining properties. I currently have 39 responses in North Carolina, 16 responses from Virginia, 4 from Mississippi, and 15 from Colorado. Adding in the 5 responses in New Mexico, I have a total of 79 assessor responses and all 79 indicate either no negative impacts on adjoining property values, or else they did not respond to that part of the question. A total of 69 of the responses were definitively "No" with an additional 10 being "No response" to that question.

I have included the breakdown of that data on the following pages.

New Mexico Tax Assessors

County	Number of Farms in Operation	Change in adjacent property value
Colfax	3, 1 in planning	No
Curry	1, quite a few in talks	No
Dona Ana	2 owned by city and county	No
Lincoln	1	No
Union	1	No
	Total Responses With Solar	5
	Total Responses "No"	5
	Total Responses "Yes"	0

MS Assessor Survey on Solar Farm Property Value Impacts

County	Assessor's Name	Number of Farms	Change in Adjacent Property Value
Desoto	Jeff Fitch	1, 1 in planning	No response
Monroe	Mitzi Presley	2 in planning	No response
Stone	Charles Williams, Jr.	1 in planning	No
Union	Tameri Dunnam	1	No

CO Assessor Survey on Solar Farm Property Value Impacts

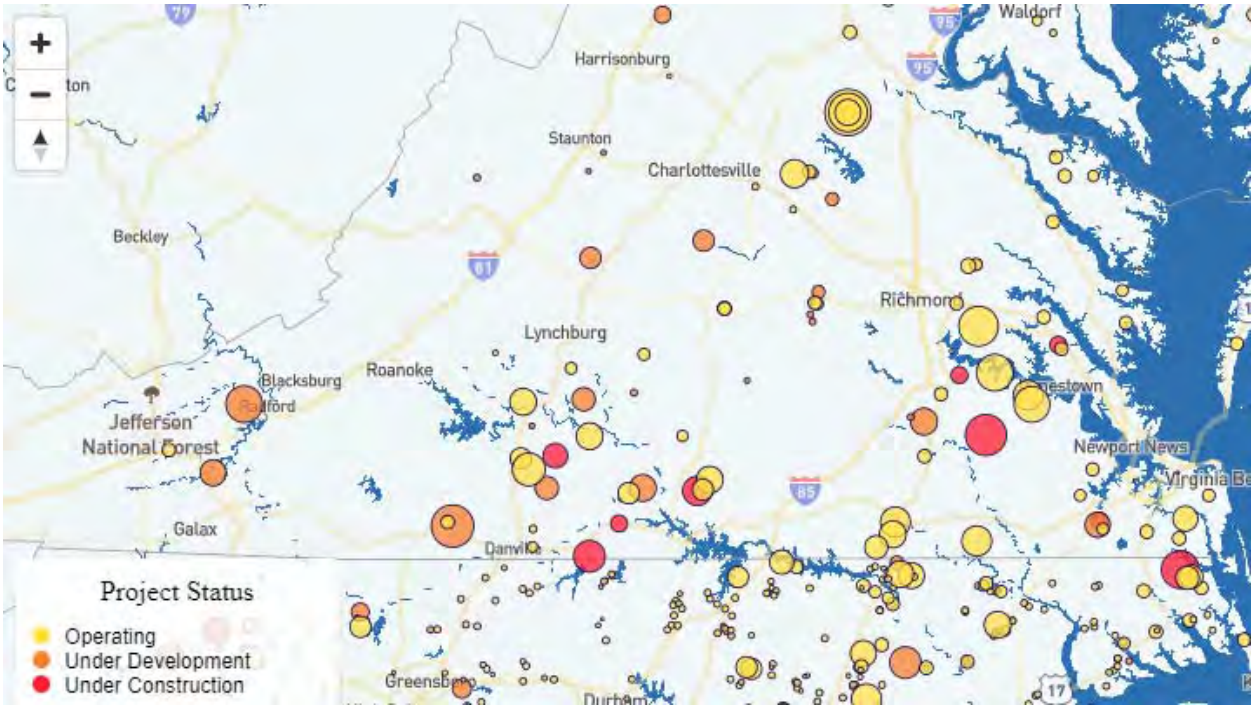
County	Assessor's Name	Number of Farms	Change in Adjacent Property Value
Conejos	Naomi Keys	3 or 4	No response
Denver	Keith Erffmeyer	3	No
Garfield	Jim Yellico (Vicki Riley)	No response	Classification and value could change
Kiowa	Marci Miller	0, 2 in planning	No
La Plata	Carrie Woodson	0, 1 in planning	No response
Las Animas	Jodi Amato	1 operational, 1 in planning	No
Moffat	Charles "Chuck" Cobb	0, 5 in planning	No
Montezuma	Leslie Bugg	3 approved	No
Montrose	Brad Hughes	2, 1 in planning	Maybe, but would be based on sales data
Morgan	Tim Amen	2, operational, 3 in planning	No
Pitkin	Wendy Schultz	1	No
Rio Blanco	Renae Neilson	2	No response
Saguache	Peter Peterson	1	No
San Miguel	Sarah Enders	1	Not enough data
Yuma	Cindy Taylor	1 in planning	No response

Responses: 15
Negative Impact on Adjoining Value = Yes: 0
Negative Impact on Adjoining Value = No: 7
Negative Impact on Adjoining Value = No Response: 8

VI. Summary of Solar Projects In Virginia

I have researched the solar projects in Virginia. I identified the solar farms through the Solar Energy Industries Association (SEIA) Major Projects List and then excluded the roof mounted facilities. I focused on larger solar farms over 10 MW though I have included a couple of smaller solar farms as shown in the chart below.

Below I have an excerpt from that map showing the area around Virginia.



I was able to identify and research 85 additional solar farms in Virginia as shown below. These are primarily over 20 MW in size with adjoining homes as close as 100 feet and the mix of adjoining uses is primarily agricultural and residential.

Solar #	Name	State	County	City	Output (MW)	Total Acres	Used Acres	Avg. Dist to home	Closest Home	Adjoining Use by Acre			
										Res	Agri	Agri/Res	Com
115	Buckingham I	VA	Buckingham	Cumberland	19.8	481.18		N/A	N/A	8%	73%	18%	0%
121	Scott	VA	Powhatan	Powhatan	20	898.4		1,421	730	29%	28%	44%	0%
204	Walker-Correctiona	VA	New Kent	Barhamsville	20	484.65		516	103	13%	68%	20%	0%
205	Sappony	VA	Sussex	Stony Creek	20	322.68				2%	98%	0%	0%
216	Beetle	VA	Southampton	Boykins	40	422.19		1,169	310	0%	10%	90%	0%
222	Grasshopper	VA	Mecklenburg	Chase City	80	946.25				6%	87%	5%	1%
226	Belcher/Desper	VA	Louisa	Louisa	88	1238.1			150	19%	53%	28%	0%
228	Bluestone Farm	VA	Mecklenburg	Chase City	4.99	332.5				0%	100%	0%	0%
257	Nokesville	VA	Prince William	Nokesville		331.01				12%	49%	17%	23%
261	Buckingham II	VA	Buckingham	Buckingham	19.8	460.05				6%	79%	15%	0%
262	Mount Jackson	VA	Shenandoah	Mount Jackson	15.65	652.47				21%	51%	14%	13%
263	Gloucester	VA	Gloucester	Gloucester	20	203.55		508	190	17%	55%	28%	0%
267	Scott II	VA	Powhatan	Powhatan		701				41%	25%	34%	0%
270	TWE Myrtle	VA	Suffolk	Suffolk	15	258.97	120	1,115	150	34%	48%	17%	0%
272	Churchview	VA	Middlesex	Church View	20	567.91				9%	64%	27%	0%
303	Turner	VA	Henrico	Henrico	20	463.12		N/A	N/A	21%	37%	0%	42%
311	Sunnybrook Farm	VA	Halifax	Scottsburg		527.88	340	N/A	N/A	15%	59%	26%	0%
312	Powell Creek	VA	Halifax	Alton		513		N/A	N/A	7%	71%	22%	0%
339	Crystal Hill	VA	Halifax	Crystal Hill		628.67	218	1,570	140	6%	41%	35%	18%
353	Amazon East(ern sh	VA	Accomack	Oak Hall	80	1000		645	135	8%	75%	17%	0%
354	Alton Post	VA	Halifax	Alton		501.96		749	100	2%	58%	40%	0%
357	Water Strider	VA	Halifax	Nathalie		1134	960	821	250	7%	55%	38%	0%
363	Remington	VA	Fauquier	Remington	20	277.2	125	2,755	1,280	10%	41%	31%	18%
364	Greenwood	VA	Culpepper	Stevensburg	100	2266.6	1800	788	200	8%	62%	29%	0%
366	Culpeper Sr	VA	Culpeper	Culpeper		12.53		N/A	N/A	15%	0%	86%	0%
369	Cherrydale	VA	Northampton	Kendall Grove	20	180.17		N/A	N/A	5%	0%	92%	3%
370	Clarke	VA	Clarke	White Post	10	234.84		N/A	N/A	14%	39%	46%	1%
371	Bedford	VA	Bedford	Bedford	3	101	20	N/A	N/A	8%	0%	66%	26%
372	Woodland,VA	VA	Isle of Wight	Smithfield	19.7	211.12		606	190	9%	0%	91%	0%
373	Whitehouse	VA	Louisa	Louisa	20	499.52		1,195	110	24%	55%	18%	4%
406	Foxhound	VA	Halifax	Clover	91	1311.8		885	185	5%	61%	17%	18%
483	Essex Solar Center	VA	Essex	Center Cross	20	106.12		693	360	3%	70%	27%	0%
484	Southampton	VA	Southampton	Newsoms	100	3243.9		-	-	3%	78%	17%	3%
494	Walnut	VA	King and Queen	Shacklefords	110	1700	1173	641	165	14%	72%	13%	1%
496	Piney Creek	VA	Halifax	Clover	80	776.18	422	523	195	15%	62%	24%	0%
500	Rappahannock	VA	Lancaster	White Stone	2	184	25	831	560	30%	0%	70%	0%
510	UVA Puller	VA	Middlesex	Topping	15	120	120	1,095	185	59%	32%	0%	10%
516	Dogwood	VA	Page	Stanley	20	360.7	110	2,207	225	12%	22%	65%	0%
518	Fountain Creek	VA	Greensville	Emporia	80	798.3	595	862	300	6%	23%	71%	0%
557	Winterpock 1	VA	Chesterfield	Chesterfield		518	308	2,106	350	4%	78%	18%	0%
559	Wood Brothers	VA	Middlesex	Hartfield	5	60.61	38.67	878	205	12%	86%	0%	2%
577	Windsor	VA	Isle of Wight	Windsor	85	760.87	760.87	459	160	8%	71%	21%	0%
579	Spotsylvania	VA	Spotsylvania	Paytes	500	6412	3500			9%	52%	11%	27%
586	Sweet Sue	VA	King William	Aylett	77	1262	576	1,617	680	7%	68%	25%	0%
591	Warwick	VA	Prince George	Disputanta	26.5	1090.1	564.53	555	115	12%	67%	21%	0%
621	Loblolly	VA	Surry	Spring Grove	150	2181.9	1000	1,860	110	7%	62%	31%	0%
622	Woodridge	VA	Albemarle	Scottsville	138	2260.9	1000	1,106	215	9%	63%	28%	0%
624	Reams	VA	Dinwiddie	Dinwiddie	5	64.1	37.8	873	270	28%	40%	32%	0%
633	Brunswick	VA	Greensville	Emporia	150.2	2076.4	1387.3	1,091	240	4%	85%	11%	0%
642	Belcher 3	VA	Louisa	Louisa		749.36	658.56	598	180	14%	71%	14%	1%
649	Endless Caverns	VA	Rockingham	New Market	31.5	355	323.6	624	190	15%	27%	51%	7%
664	Watlington	VA	Halifax	South Boston	20	240.09	137	536	215	24%	48%	28%	0%
672	Spout Spring	VA	Appomattox	Appomattox	60	881.12	673.37	836	335	16%	30%	46%	8%

Solar #	Name	State	County	City	Output (MW)	Total Acres	Used Acres	Avg. Dist to home	Closest Home	Adjoining Use by Acre Res	Agri	Agri/Res	Com
703	Lily Pond	VA	Dinwiddie	Carson	80	1107.5	600	628	110	13%	75%	12%	0%
704	Midway	VA	Albemarle	Batesville	8	136	90	858	340	20%	46%	34%	0%
749	Martin	VA	Goochland	Richmond	5	114.2	114.2	1,491	470	7%	54%	39%	0%
750	Palmer	VA	Fluvanna	Zion Crossroads	5	57	41	525	165	31%	55%	0%	14%
755	Danville	VA	Pittsylvania	Danville	6	72.08	72.08	616	135	22%	63%	15%	0%
756	Martin Trail	VA	Halifax	Clover	6	43	37	254	115	6%	13%	81%	0%
757	Route 360	VA	Halifax	Clover	5.65	110	40	1,957	1,275	6%	18%	76%	0%
769	Cavalier	VA	Surry/Isle of Wigh	Elberon	240	5050	3323	1,231	215	2%	78%	20%	0%
772	Riverstone	VA	Buckingham	Arvonia	149.5	1939	1193	814	355	4%	90%	6%	0%
773	Sunfish	VA	Orange	Culpeper	80	1131.5	679.5	1,121	120	4%	13%	38%	44%
776	West Lake	VA	Franklin	Harrisburg	20	592.82	592.82	3,280	1,260	11%	18%	49%	22%
777	Aditya	VA	Louisa	Louisa	11	94.67	60	614	350	15%	85%	0%	0%
781	Waller	VA	Lancaster	Burgess		1400	1400	880	125	28%	72%	0%	0%
795	Harris Staunton	VA	Halifax	South Boston	47	697	697	352	185	3%	89%	8%	0%
803	Hickory	VA	Chesterfield	Chesterfield	4.7	95.21	22	1,286	325	8%	22%	70%	0%
809	Mountain Brook	VA	Franklin	Wirtz	20			427	195	24%	21%	54%	1%
812	Prince Edward	VA	Prince Edward		25	369.2	369.2	1,275	660	0%	55%	45%	0%
813	Redbud	VA	Frederick	Winchester	30	262.99	262.99	529	150	29%	55%	17%	0%
829	OFW	VA	Shenandoah	Mount Jackson	20	126.64	126.64	504	110	6%	57%	31%	6%
831	Knight	VA	Rockingham	Shenandoah	70	461.59	461.59	833	240	0%	100%	0%	0%
833	Dayton Wayland	VA	Rockingham	Dayton	4	50.7	50.7	684	100	45%	53%	2%	0%
834	Firefly	VA	Pittsylvania			3143	3143	-	200	12%	73%	15%	0%
854	Reeve	VA	Prince Edward	Pamplin	5	164.7	164.7	2,232	1,195	7%	71%	22%	0%
858	360 Solar Center	VA	Chesterfield	Skinquarter	100	2000	410	2,036	235	1%	97%	2%	0%
864	Purdy	VA	Greensville	Purdy	65	596	596	825	250	5%	66%	29%	0%
865	Clover Creek	VA	Halifax	Clover	90	1472	1472	1,691	310	10%	89%	1%	0%
870	Pineside	VA	Buckingham	Scottsville	74.9	2242	2242	2,484	500	22%	51%	27%	0%
872	Rosalind	VA	Greensville	Emporia	160	1795	1795	654	500	8%	86%	7%	0%
879	Wheelhouse	VA	Lunenburg	Victoria	912.47	60	60	2,071	900	7%	41%	51%	0%
880	Elam	VA	Prince Edward	Pamplin	138.9	3	3	1,066	425	22%	66%	12%	0%
881	Helios	VA	Pulaski	Pulaski	11.45	141.76	141.76	734	225	48%	28%	24%	0%
882	Enon	VA	Stafford	Stafford	3	36.76	36.76	289	120	37%	63%	0%	0%
900	Land of Promise	VA	Chesapeake	Chesapeake	5	134.66	134.66	1,338	785	44%	48%	8%	0%
901	Pocaty	VA	Chesapeake	Chesapeake	2	27.22	27.22	632	445	21%	79%	0%	0%

	Output (MW)	Total Acres	Used Acres	Avg. Dist to home	Closest Home	Adjoining Use by Acre Res	Agri	Agri/Res	Com
Average	64.6	815.0	624.2	1059	327	14%	54%	28%	4%
Median	20.0	482.9	331.8	836	215	10%	57%	22%	0%
High	912.5	6412.0	3500.0	3280	1280	59%	100%	92%	44%
Low	2.0	3.0	3.0	254	100	0%	0%	0%	0%

On the following pages I have included summary data on constructed solar farms from the list indicated above. Similar information is available for the larger set of solar farms in the adjoining states in my files if requested.

115: Buckingham Solar, E. James Anderson Hwy, Buckingham, VA



This project was proposed in 2017 and located on 460 acres with the closest home proposed to be 150 feet from the closest solar panel.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	5.95%	71.79%
Agricultural	78.81%	20.51%
Agri/Res	15.24%	7.69%
Total	**100.00%**	**100.00%**

121: Scott Solar Project, 1580 Goodes Bridge Rd, Powhatan, VA



This project was built in 2016 and located on 165 acres out of 898 acres for a 17 MW with the closest home proposed to be 730 feet from the closest solar panel.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	28.83%	78.57%
Agri/Res	43.52%	3.57%
Agricultural	27.65%	17.86%
Total	**100.00%**	**100.00%**

204: Walker-Correctional Solar, Barham Road, Barhamsville, VA

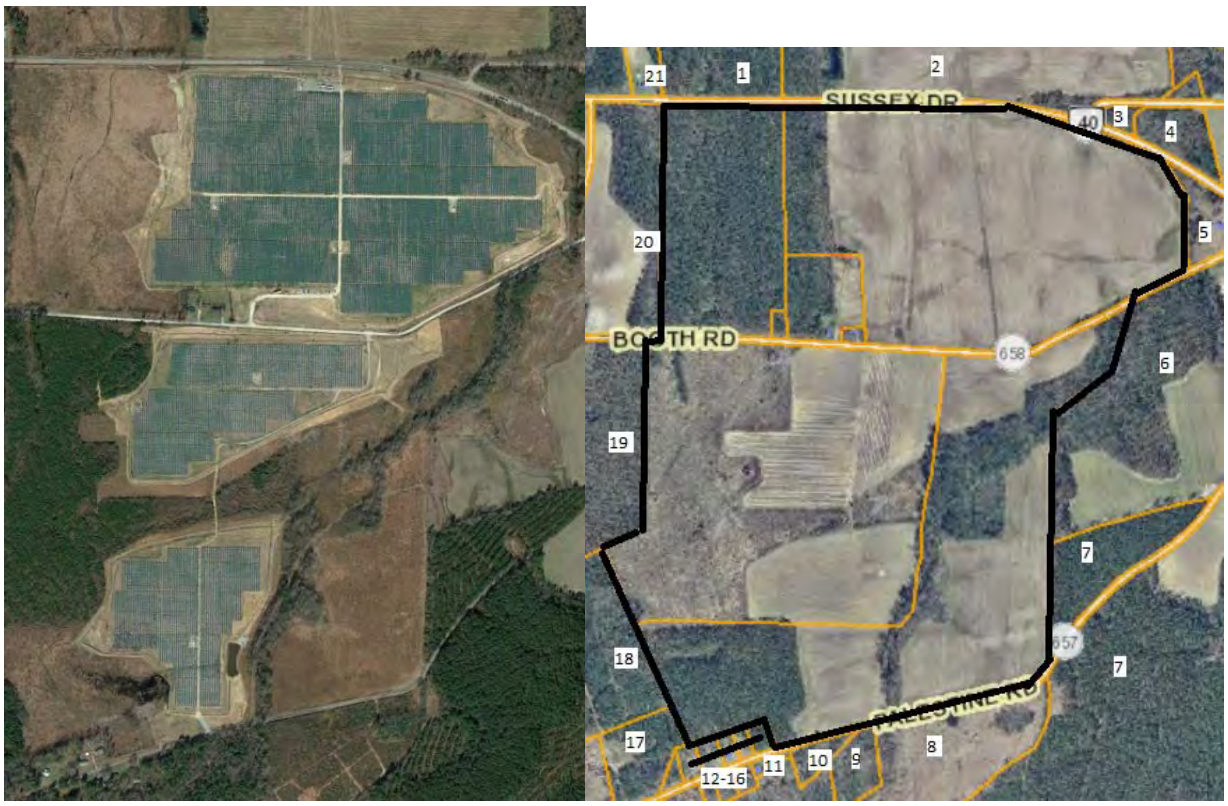


This project was built in 2017 and located on 484.65 acres for a 20 MW with the closest home at 110 feet from the closest solar panel with an average distance of 500 feet.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	12.59%	76.92%
Agricultural	67.71%	15.38%
Agri/Res	19.70%	7.69%
Total	**100.00%**	**100.00%**

205: Sappony Solar, Sussex Drive, Stony Creek, VA



This project was built in 2017 and located on 484.65 acres for a 20 MW with the closest home at 110 feet from the closest solar panel with an average distance of 500 feet.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	12.59%	76.92%
Agricultural	67.71%	15.38%
Agri/Res	19.70%	7.69%
Total	**100.00%**	**100.00%**

354: Amazon Solar project East (Eastern Shore), Accomack, VA



This project was built in 2016 for a solar project on a 1,000-acre assemblage for an 80 MW facility. The closest home is 135 feet from the closest panel.

Adjoining Use Breakdown

	Acreage	**Parcels**
Residential	8.18%	63.74%
Agricultural	75.16%	30.77%
Agri/Res	16.56%	3.30%
Substation	0.08%	1.10%
Church	0.01%	1.10%
Total	**100.00%**	**100.00%**

364: Remington Solar, 12080 Lucky Hill Rd, Remington, VA



This project was built in 2017 for a solar project on a 125-acre tract for a 20 MW facility. There were some recent home sales adjoining this project, but it was difficult to do any matched pairs. One sale was an older home in very poor condition according to the broker and required crossing railroad tracks on a private road to get access to the home and located across from a large industrial building. The other sale is a renovated historic home on a large tract of land just one parcel north of the large industrial building. These sales essentially have too much static around them to isolate any impacts separate from these other factors.

Adjoining Use Breakdown

	Acreage	**Parcels**
Residential	10.24%	65.38%
Agricultural	40.79%	19.23%
Agri/Res	30.87%	7.69%
Warehouse	0.82%	3.85%
Substation	17.28%	3.85%
Total	**100.00%**	**100.00%**

370: Cherrydale Solar, Seaside Road, Kendall Grove, VA

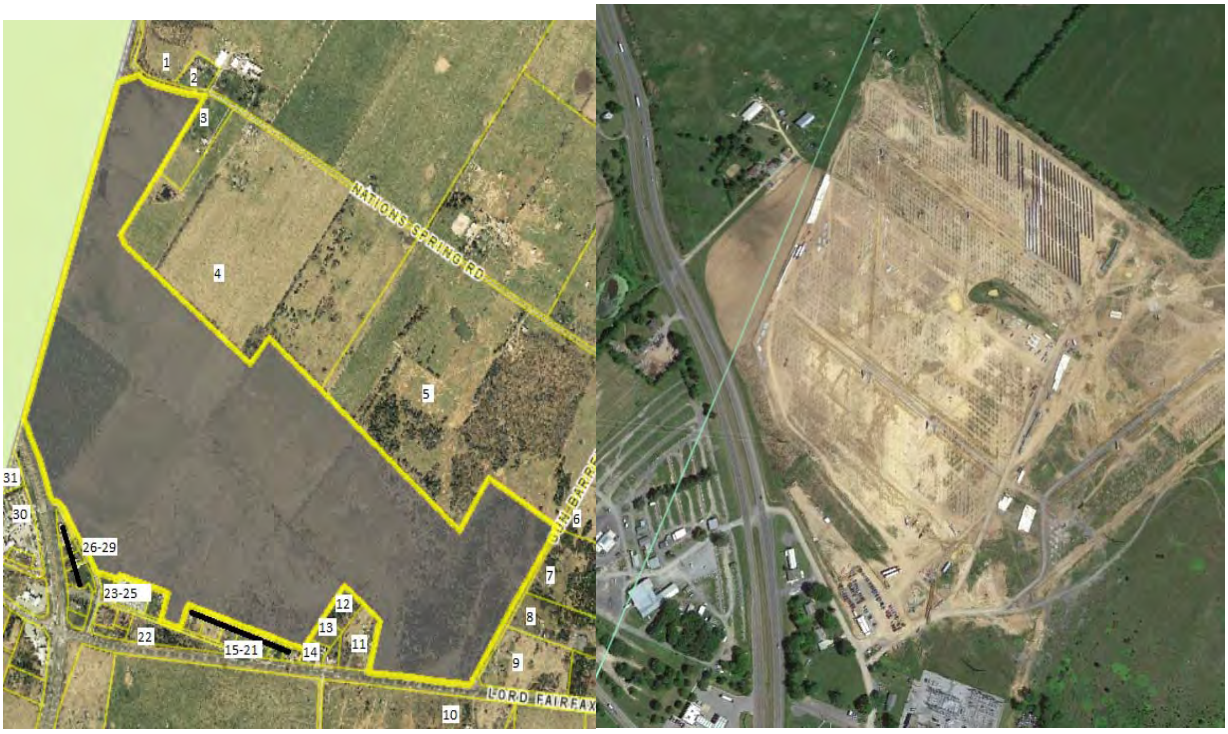


This project was built in 2017 and located on 180.17 acres for a 20 MW facility.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	5.44%	80.77%
Agricultural	92.01%	15.38%
Warehouse	2.55%	3.85%
Total	**100.00%**	**100.00%**

371: Clarke County Solar, Double Tollgate Road, White Post, VA

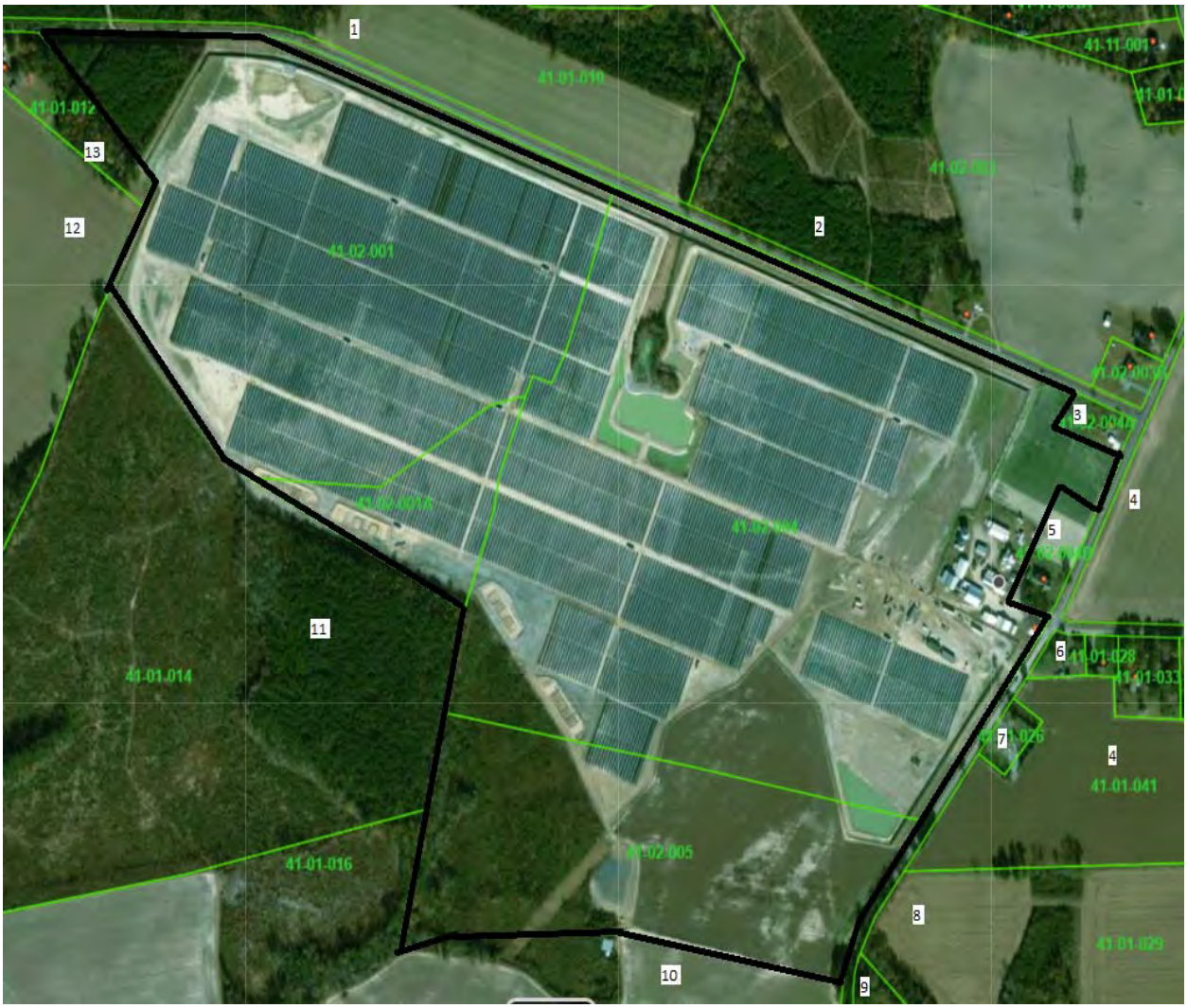


This project was built in 2017 and located on a portion of a 234.84-acre tract for a 20 MW facility.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	13.70%	74.19%
Agricultural	38.89%	6.45%
Agri/Res	46.07%	6.45%
Commercial	0.19%	6.45%
Warehouse	0.85%	3.23%
Substation	0.30%	3.23%
Total	**100.00%**	**100.00%**

373: Woodland Solar, Longview Drive, Smithfield, VA



This project was built in 2016 for a solar project on a 211.12-acre tract for a 19.7 MW facility. The closest single-family home is 190 feet away from the closest solar panel. The average distance is 606 feet.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	8.85%	46.15%
Agricultural	91.08%	46.15%
Cell Tower	0.07%	7.69%
Total	**100.00%**	**100.00%**

374: Whitehouse Solar, Chalklevel Road, Louisa, VA



This project was built in 2016 for a solar project on a 499.52-acre tract for a 20 MW facility. The closest single-family home is 110 feet away from the closest solar panel. The average distance is 1,195 feet.

Adjoining Use Breakdown

	Acreage	**Parcels**
Residential	23.55%	70.27%
Agricultural	54.51%	10.81%
Agri/Res	18.22%	2.70%
Commercial	2.49%	13.51%
Industrial	1.22%	2.70%
Total	**100.00%**	**100.00%**

484: Essex Solar, Tidewater Trail, Center Cross, VA

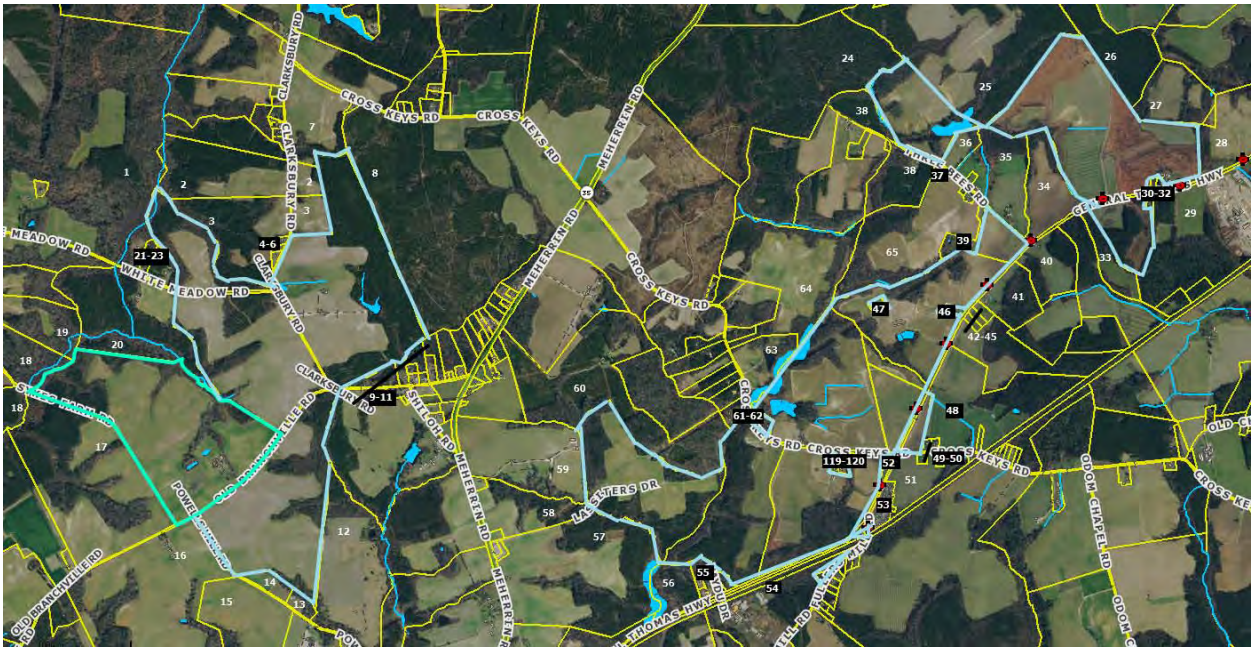


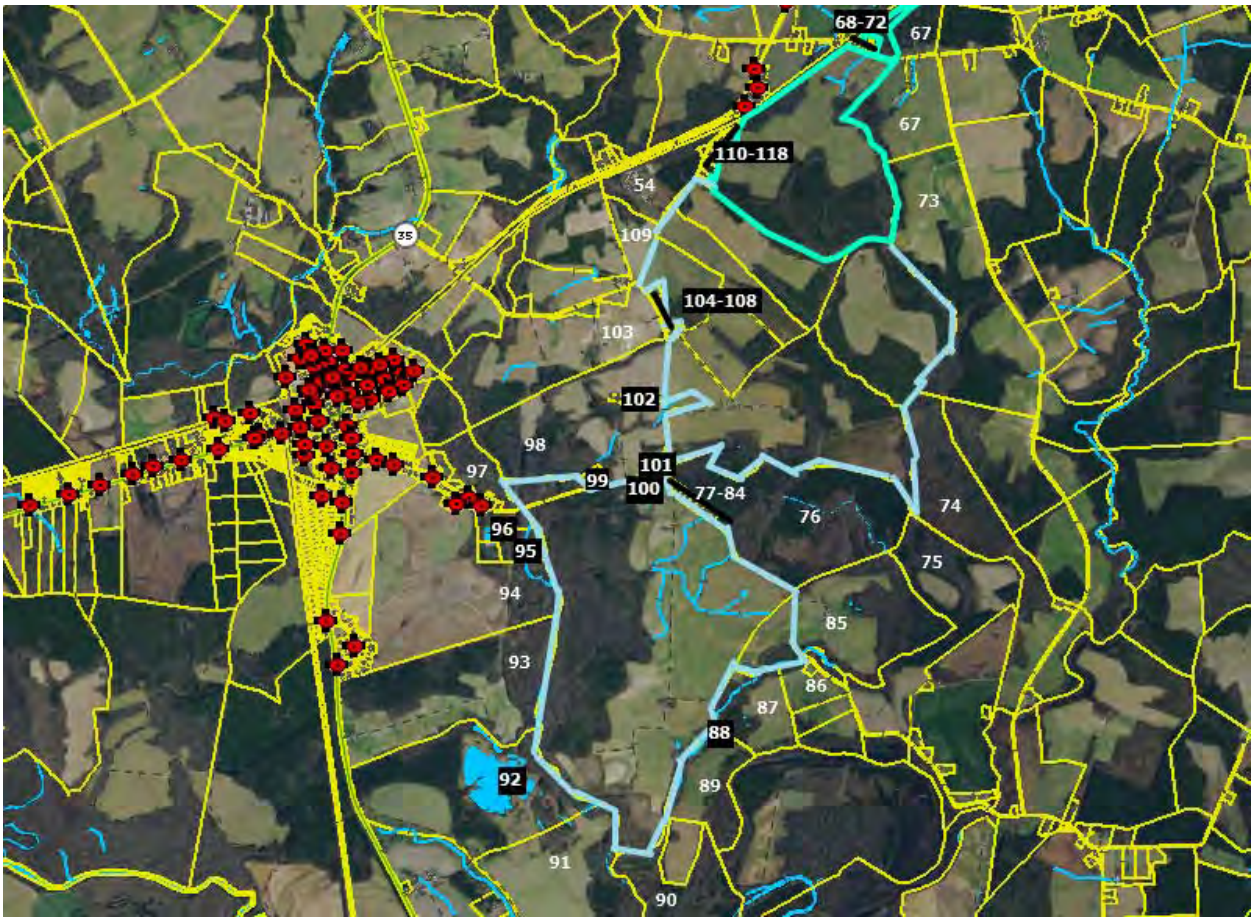
This project was built in 2017 for a solar project on a 106.12-acre tract for a 20 MW facility. The closest single-family home is 360 feet away from the closest solar panel. The average distance is 693 feet.

Adjoining Use Breakdown

	Acreage	**Parcels**
Residential	3.13%	57.89%
Agricultural	69.65%	26.32%
Agri/Res	26.99%	10.53%
Religious	0.23%	5.26%
Total	**100.00%**	**100.00%**

485: Southampton Solar, General Thomas Hwy, Newsoms, VA







This project was built in 2017 for a solar project on an assemblage of 3,244 acres for a 100 MW facility.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	2.56%	53.33%
Agricultural	77.99%	36.67%
Agri/Res	16.56%	8.33%
Industrial	2.89%	1.67%
Total	**100.00%**	**100.00%**

VII. Market Analysis of the Impact on Value from Solar Farms

I have researched hundreds of solar farms in numerous states to determine the impact of these facilities on the value of adjoining property. This research has primarily been in North Carolina, but I have also conducted market impact analyses in Virginia, South Carolina, Tennessee, Texas, Oregon, Mississippi, Maryland, New York, California, Missouri, Florida, Montana, Georgia, Louisiana, and New Jersey.

Wherever I have looked at solar farms, I have derived a breakdown of the adjoining uses to show what adjoining uses are typical for solar farms and what uses would likely be considered consistent with a solar farm use similar to the breakdown that I've shown for the subject property on the previous page. A summary showing the results of compiling that data over hundreds of solar farms is shown later in the Scope of Research section of this report.

I also consider whether the properties adjoining a solar farm in one location have characteristics similar to the properties abutting or adjoining the proposed site so that I can make an assessment of market impact on each proposed site. Notably, in most cases solar farms are placed in areas very similar to the site in question, which is surrounded by low density residential and agricultural uses. In my over 700 studies, I have found a striking repetition of that same typical adjoining use mix in over 90% of the solar farms I have looked at. Matched pair results in multiple states are strikingly similar, and all indicate that solar farms – which generate very little traffic, and do not generate noise, dust or have other harmful effects – do not negatively impact the value of adjoining or abutting properties.

On the following pages I have considered matched pair data specific to Virginia and Kentucky.

In the next section I have considered matched pair data throughout the Southeast of the United States as being the most similar states that would most readily compare to Virginia. This includes data from Florida, Georgia, South Carolina, North Carolina, Tennessee, Virginia and Maryland. I focused on projects of 5 MW and larger though I have significant supplemental data on solar farms just smaller than that in North Carolina that show similar results. This data is available in my files.

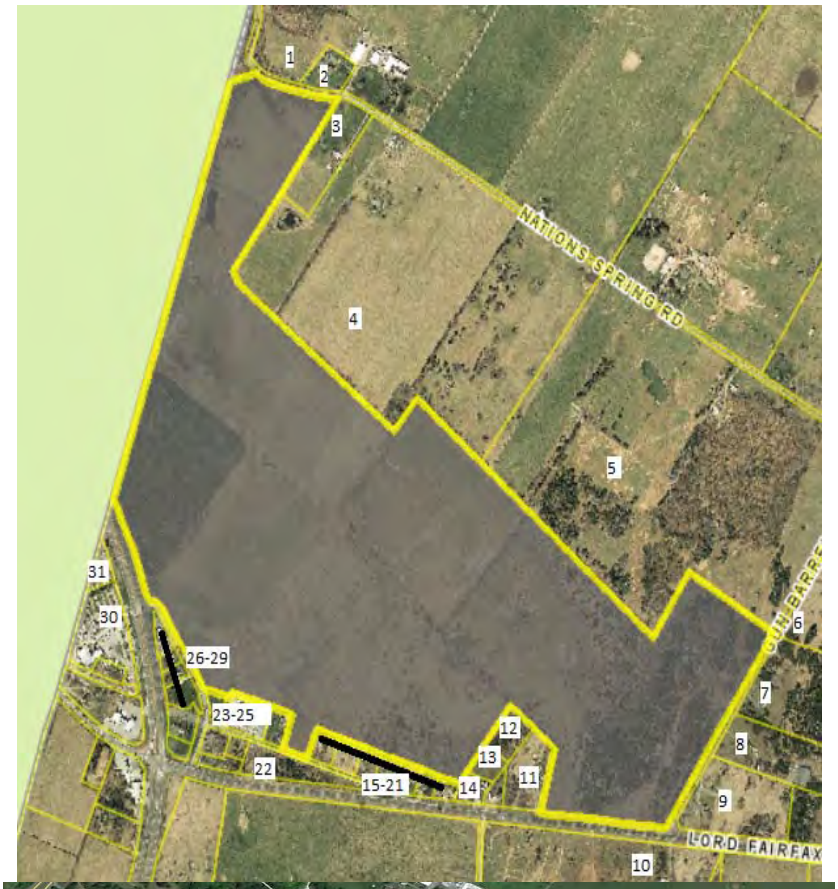
I have additional supporting information from other states in my files that show a consistent pattern across the United States, but again, I have focused on the Southeast in this analysis.

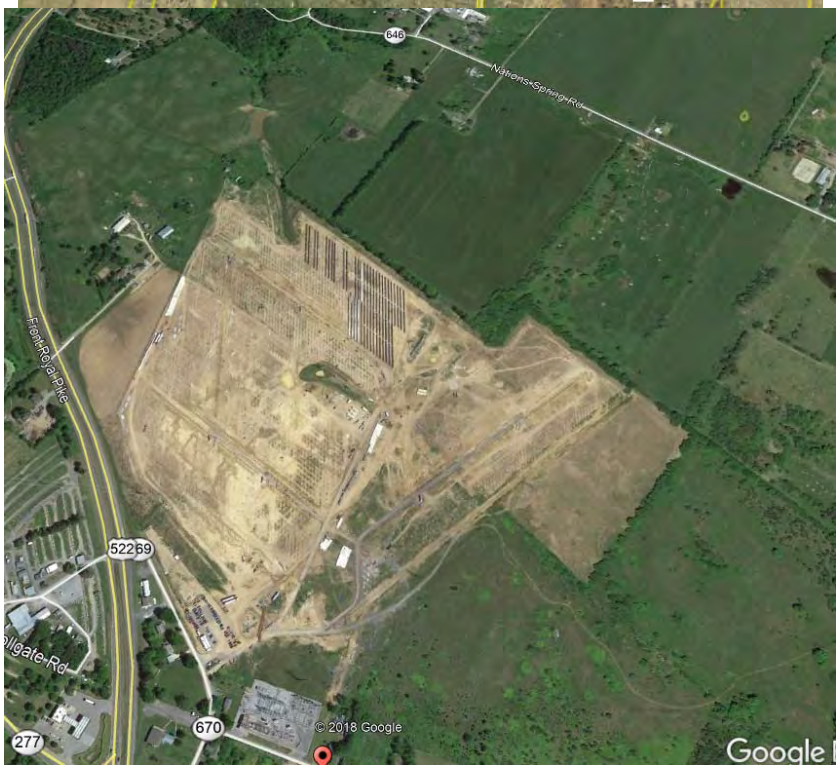
A. Virginia Data

I have identified matched pairs adjoining the solar farms noted above. I have also included data from a solar farm in Kentucky that does a good job of illustrating distant views of solar panels in relation to adjoining housing.

The following pages detail the matched pairs and how they were derived.

1. Matched Pair – Clarke County Solar, Clarke County, VA





This project is a 20 MW facility located on a 234-acre tract that was built in 2017.

I have considered two recent sales of Parcel 3. The home on this parcel is 1,230 feet from the closest panel as measured in the second map from Google Earth, which shows the solar farm under construction. This home sold in January 2017 for $295,000 and again in August 2019 for $385,000. I show each sale below and compare those to similar home sales in each time frame. The significant increase in price between 2017 and 2019 is due to a major kitchen remodel, new roof, and related upgrades as well as improvement in the market in general. The sale and later resale of the home with updates and improvements speaks to pride of ownership and increasing overall value as properties perceived as diminished are less likely to be renovated and sold for profit.

I note that 102 Tilthammer includes a number of barns that I did not attribute any value in the analysis. The market would typically give some value for those barns but even without that adjustment there is an indication of a positive impact on value due to the solar farm. The landscaping buffer from this home is considered light.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
3	Adjoins	833 Nations Spr	5.13	8/18/2019	$385,000	1979	1,392	$276.58	3/2	Det Gar	Ranch	UnBsmt
	Not	167 Leslie	5.00	8/19/2020	$429,000	1980	1,665	$257.66	3/2	Det2Gar	Ranch	
	Not	2393 Old Chapel	2.47	8/10/2020	$330,000	1974	1,500	$220.00	3/1.5	Det Gar	Ranch	
	Not	102 Tilthammer	6.70	5/7/2019	$372,000	1970	1,548	$240.31	3/1.5	Det Gar	Ranch	UnBsmt

Adjoining Sales Adjusted

Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
							$385,000			1230
-$13,268		-$2,145	-$56,272		-$5,000	$50,000	$402,315	-4%		
-$9,956	$25,000	$8,250	-$19,008	$5,000		$50,000	$389,286	-1%		
$3,229		$16,740	-$29,991	$5,000			$366,978	5%		
									0%	

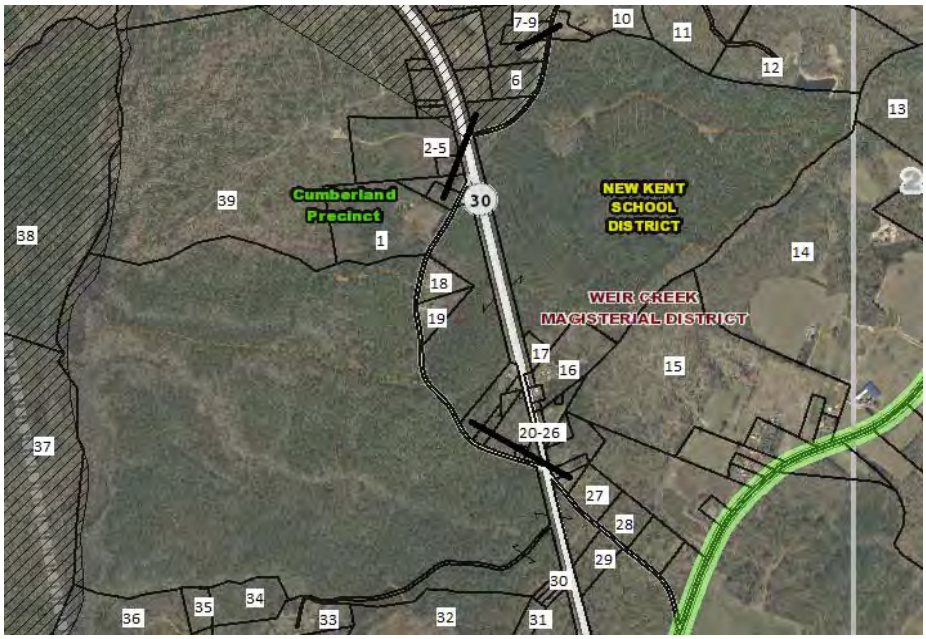
Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
3	Adjoins	833 Nations Spr	5.13	1/9/2017	$295,000	1979	1,392	$211.93	3/2	Det Gar	Ranch	UnBsmt
	Not	6801 Middle	2.00	12/12/2017	$249,999	1981	1,584	$157.83	3/2	Open	Ranch	
	Not	4174 Rockland	5.06	1/2/2017	$300,000	1990	1,688	$177.73	3/2	2 Gar	2-story	
	Not	400 Sugar Hill	1.00	6/7/2018	$180,000	1975	1,008	$178.57	3/1	Open	Ranch	

Adjoining Sales Adjusted

Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
							$295,000			1230
-$7,100	$25,000	-$2,500	-$24,242		$5,000	$50,000	$296,157	0%		
$177		-$16,500	-$42,085		-$10,000	$50,000	$281,592	5%		
-$7,797		$3,600	$54,857	$10,000	$5,000	$50,000	$295,661	0%		
									1%	

2. Matched Pair – Walker-Correctional Solar, Barham Road, Barhamsville, VA





This project was built in 2017 and located on 484.65 acres for a 20 MW with the closest home at 110 feet from the closest solar panel with an average distance of 500 feet.

I considered the recent sale identified on the map above as Parcel 19, which is directly across the street and based on the map shown on the following page is 250 feet from the closest panel. A

limited buffering remains along the road with natural growth being encouraged, but currently the panels are visible from the road. Alex Uminski, SRA with MGMiller Valuations in Richmond VA confirmed this sale with the buying and selling broker. The selling broker indicated that the solar farm was not a negative influence on this sale and in fact the buyer noticed the solar farm and then discovered the listing. The privacy being afforded by the solar farm was considered a benefit by the buyer. I used a matched pair analysis with a similar sale nearby as shown below and found no negative impact on the sales price. Property actually closed for more than the asking price. The landscaping buffer is considered light.

Adjoining Residential Sales After Solar Farm Approved

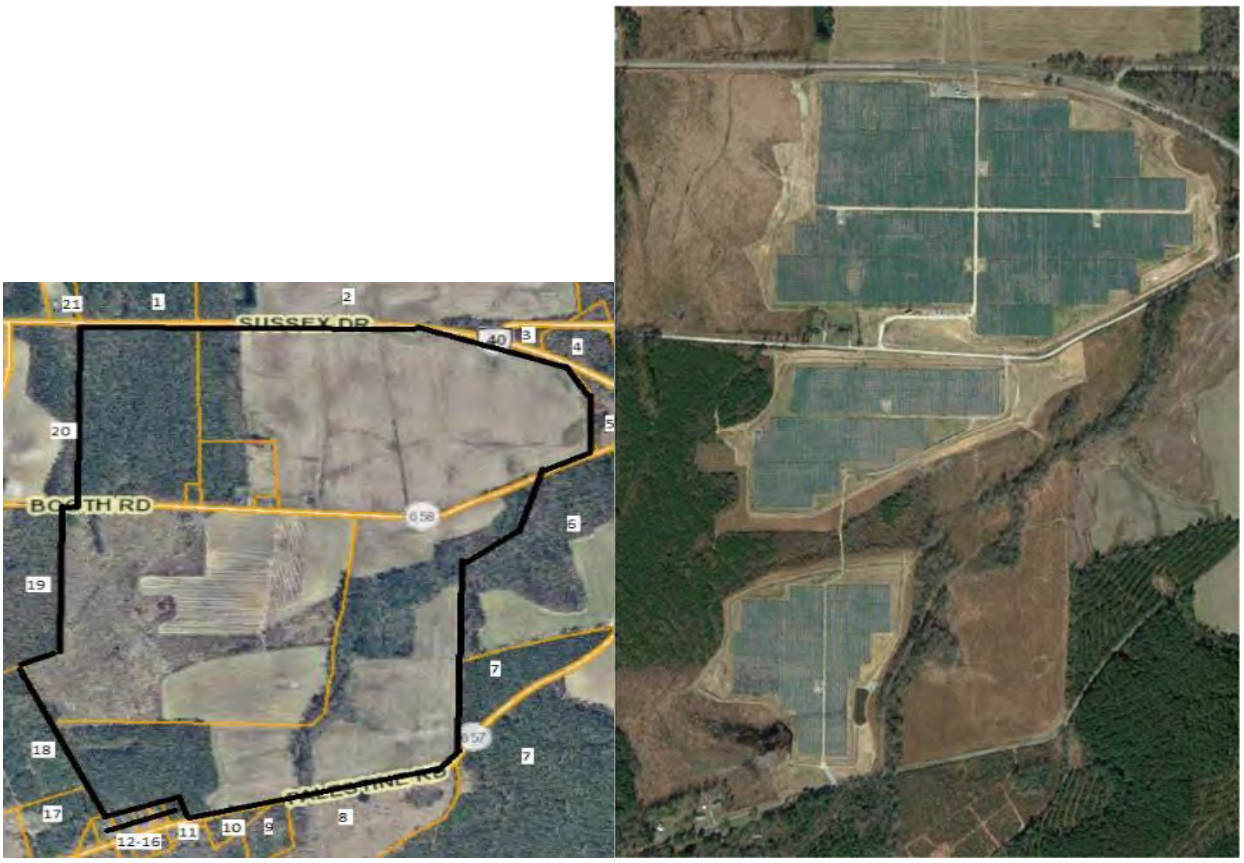
Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	5241 Barham	2.65	10/18/2018	$264,000	2007	1,660	$159.04	3/2	Drive	Ranch	Modular
Not	17950 New Kent	5.00	9/5/2018	$290,000	1987	1,756	$165.15	3/2.5	3 Gar	Ranch	
Not	9252 Ordinary	4.00	6/13/2019	$277,000	2001	1,610	$172.05	3/2	1.5-Gar	Ranch	
Not	2416 W Miller	1.04	9/24/2018	$299,000	1999	1,864	$160.41	3/2.5	Gar	Ranch	

Adjoining Sales Adjusted

Solar	Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
Adjoins	5241 Barham								$264,000		250
Not	17950 New Kent		-$8,000	$29,000	-$4,756	-$5,000	-$20,000	-$15,000	$266,244	-1%	
Not	9252 Ordinary	-$8,310	-$8,000	$8,310	$2,581		-$10,000	-$15,000	$246,581	7%	
Not	2416 W Miller		$8,000	$11,960	-$9,817	-$5,000	-$10,000	-$15,000	$279,143	-6%	
								Average Diff		0%	

I also spoke with Patrick W. McCrerey of Virginia Estates who was marketing a property that sold at 5300 Barham Road adjoining the Walker-Correctional Solar Farm. He indicated that this property was unique with a home built in 1882 and heavily renovated and updated on 16.02 acres. The solar farm was through the woods and couldn't be seen by this property and it had no impact on marketing this property. This home sold on April 26, 2017 for $358,000. I did not set up any matched pairs for this property since it is a unique property that any such comparison would be difficult to rely on. The broker's comments do support the assertion that the adjoining solar farm had no impact on value. The home in this case was 510 feet from the closest panel.

3. Matched Pair – Sappony Solar, Sussex County, VA



This project is a 30 MW facility located on a 322.68-acre tract that was built in the fourth quarter of 2017.

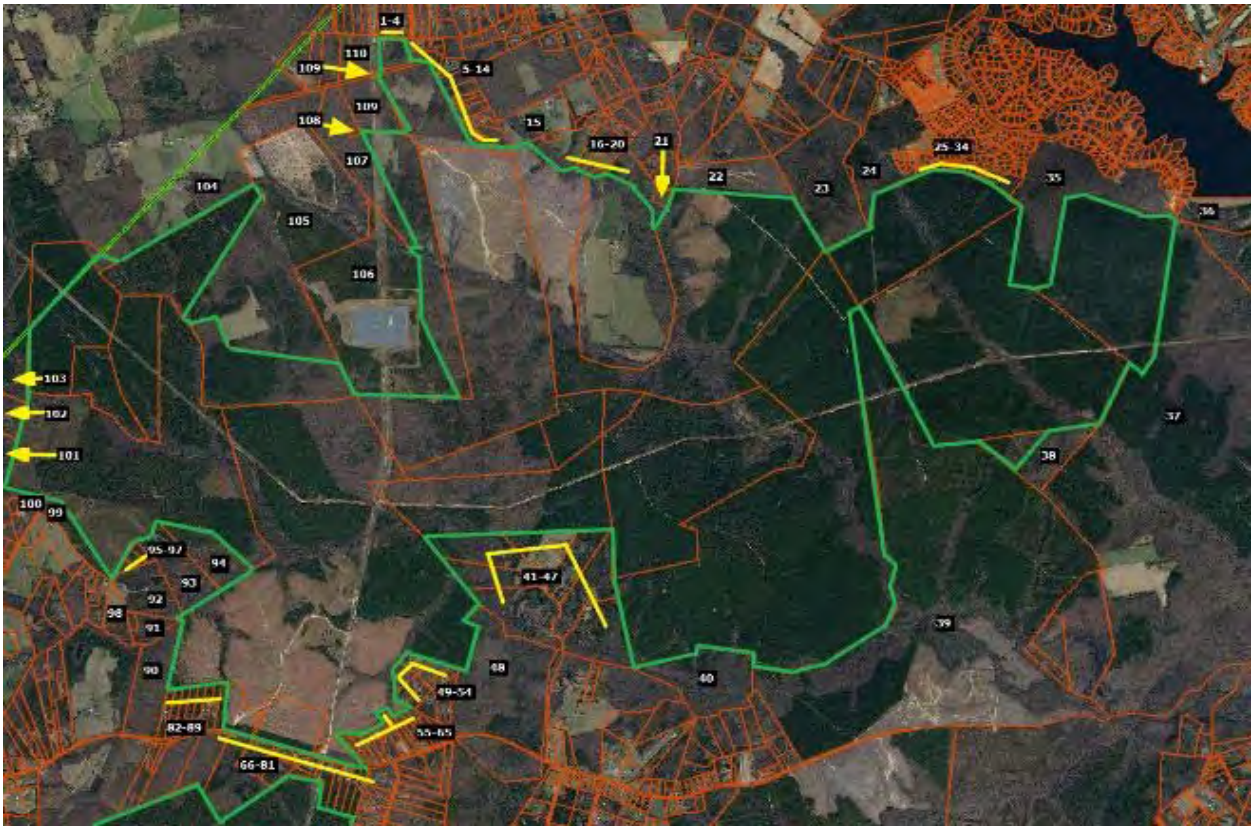
I have considered the 2018 sale of Parcel 17 as shown below. This was a 1,900 s.f. manufactured home on a 6.00-acre lot that sold in 2018. I have compared that to three other nearby manufactured homes as shown below. The range of impacts is within typical market variation with an average of -1%, which supports a conclusion of no impact on property value. The landscaping buffer is considered medium.

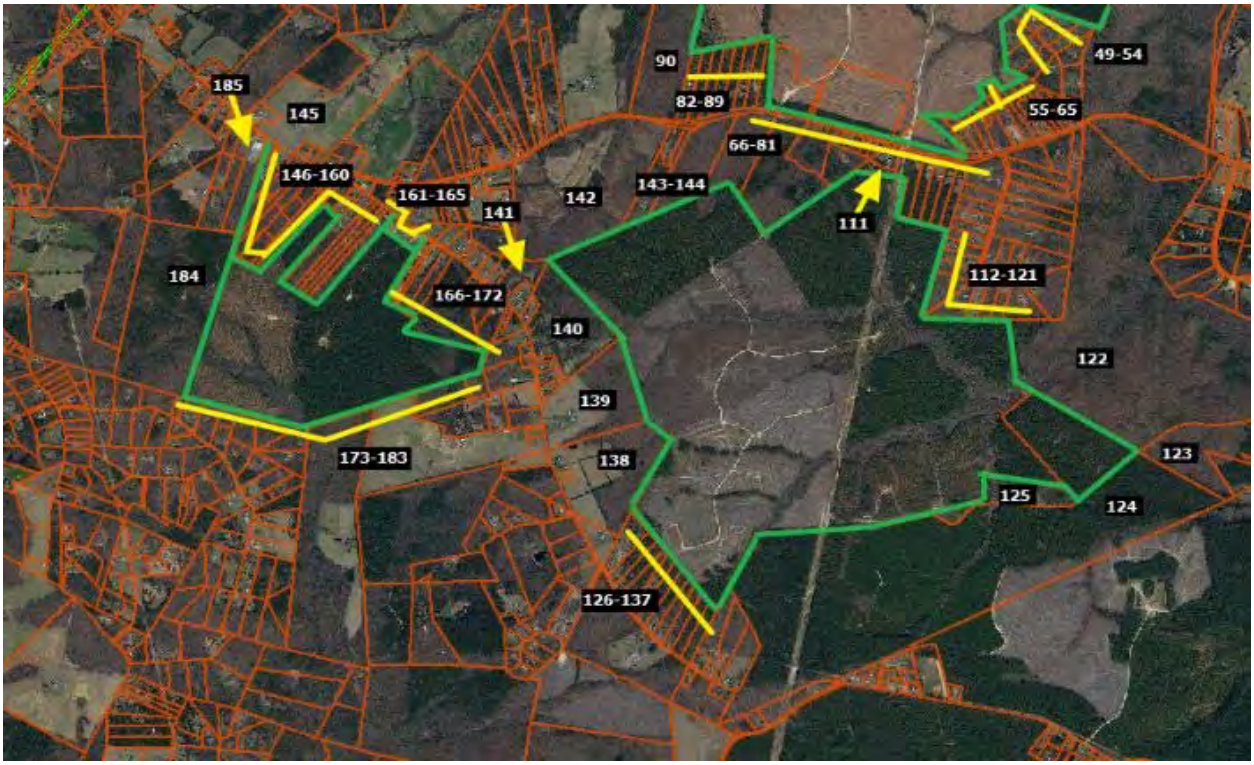
Adjoining Residential Sales After Solar Farm Approved

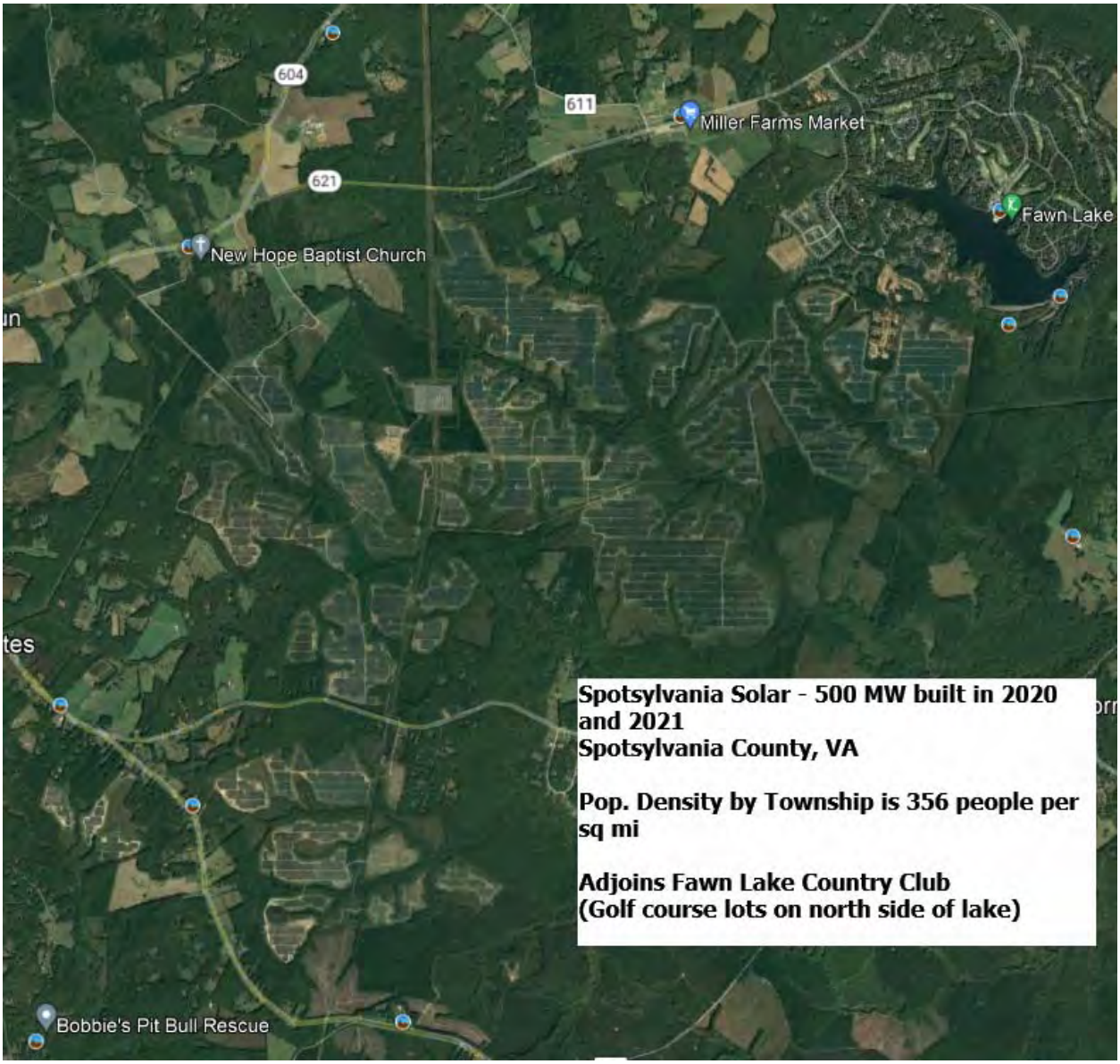
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
	Adjoins	12511 Palestine	6.00	7/31/2018	$128,400	2013	1,900	$67.58	4/2.5	Open	Manuf	
	Not	15698 Concord	3.92	7/31/2018	$150,000	2010	2,310	$64.94	4/2	Open	Manuf	Fence
	Not	23209 Sussex	1.03	7/7/2020	$95,000	2005	1,675	$56.72	3/2	Det Crpt	Manuf	
	Not	6494 Rocky Br	4.07	11/8/2018	$100,000	2004	1,405	$71.17	3/2	Open	Manuf	

Adjoining Sales Adjusted									Avg	
Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	Distance
							$128,400			1425
$0		$2,250	-$21,299	$5,000			$135,951	-6%		
-$5,660	$13,000	$3,800	$10,209	$5,000	$1,500		$122,849	4%		
-$843		$4,500	$28,185				$131,842	-3%		
									-1%	

4. Matched Pair – Spotsylvania Solar, Paytes, VA







This solar farm is being built in four phases with the area known as Site C having completed construction in November 2020 after the entire project was approved in April 2019. Site C, also known as Pleinmont 1 Solar, includes 99.6 MW located in the southeast corner of the project and shown on the maps above with adjoining parcels 111 through 144. The entire Spotsylvania project totals 500 MW on 3500 acres out of a parent tract assemblage of 6,412 acres.

I have identified three adjoining home sales that occurred during construction and development of the site in 2020.

The first is located on the north side of Site A on Orange Plank Road. The second is located on Nottoway Lane just north of Catharpin Road on the south side of Site A and east of Site C. The third is located on Post Oak Road for a home that backs up to Site C that sold in September 2020 near the completion of construction for Site C.

Spotsylvania Solar Farm

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	12901 Orng Plnk	5.20	8/27/2020	$319,900	1984	1,714	$186.64	3/2	Drive	1.5	Un Bsmt
Not	8353 Gold Dale	3.00	1/27/2021	$415,000	2004	2,064	$201.07	3/2	3 Gar	Ranch	
Not	6488 Southfork	7.26	9/9/2020	$375,000	2017	1,680	$223.21	3/2	2 Gar	1.5	Barn/Patio
Not	12717 Flintlock	0.47	12/2/2020	$290,000	1990	1,592	$182.16	3/2.5	Det Gar	Ranch	

Adjoining Sales Adjusted

Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
12901 Orng Plnk								$319,900		1270
8353 Gold Dale	-$5,219	$20,000	-$41,500	-$56,298		-$20,000		$311,983	2%	
6488 Southfork	-$401	-$20,000	-$61,875	$6,071		-$15,000		$283,796	11%	
12717 Flintlock	-$2,312	$40,000	-$8,700	$17,779	-$5,000	-$5,000		$326,767	-2%	
							Average Diff		4%	

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	9641 Nottoway	11.00	5/12/2020	$449,900	2004	3,186	$141.21	4/2.5	Garage	2-Story	Un Bsmt
Not	26123 Lafayette	1.00	8/3/2020	$390,000	2006	3,142	$124.12	3/3.5	Gar/DtG	2-Story	
Not	11626 Forest	5.00	8/10/2020	$489,900	2017	3,350	$146.24	4/3.5	2 Gar	2-Story	
Not	10304 Pny Brnch	6.00	7/27/2020	$485,000	1998	3,076	$157.67	4/4	2Gar/Dt2	Ranch	Fn Bsmt

Adjoining Sales Adjusted

Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
9641 Nottoway								$449,900		1950
26123 Lafayette	-$2,661	$45,000	-$3,900	$4,369	-$10,000	-$5,000		$417,809	7%	
11626 Forest	-$3,624		-$31,844	-$19,187		-$5,000		$430,246	4%	
10304 Pny Brnch	-$3,030		$14,550	$13,875	-$15,000	-$15,000	-$10,000	$470,396	-5%	
							Average Diff		2%	

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	13353 Post Oak	5.20	9/21/2020	$300,000	1992	2,400	$125.00	4/3	Drive	2-Story	Fn Bsmt
Not	9609 Logan Hgt	5.86	7/4/2019	$330,000	2004	2,352	$140.31	3/2	2Gar	2-Story	
Not	12810 Catharpian	6.18	1/30/2020	$280,000	2008	2,240	$125.00	4/2.5	Drive	2-Story	Bsmt/Nd Pnt
Not	10725 Rbrt Lee	5.01	10/26/2020	$295,000	1995	2,166	$136.20	4/3	Gar	2-Story	Fn Bsmt

Adjoining Sales Adjusted

Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
13353 Post Oak								$300,000		1171
9609 Logan Hgt	$12,070		-$19,800	$5,388		-$15,000	$15,000	$327,658	-9%	
12810 Catharpian	$5,408		-$22,400	$16,000	$5,000		$15,000	$299,008	0%	
10725 Rbrt Lee	-$849		-$4,425	$25,496		-$10,000		$305,222	-2%	
							Average Diff		-4%	

All three of these homes are well set back from the solar panels at distances over 1,000 feet and are well screened from the project. All three show no indication of any impact on property value.

There are a couple of recent lot sales located along Southview Court that have sold since the solar farm was approved. The most recent lot sales include 11700 Southview Court that sold on December 29, 2021 for $140,000 for a 0.76-acre lot. This property was on the market for less than 2 months before closing within 6% of the asking price. This lot sold earlier in September 2019 for $55,000 based on a liquidation sale from NTS to an investor.

A similar 0.68-acre lot at 11507 Stonewood Court within the same subdivision located away from the solar farm sold on March 9, 2021 for $109,000. This lot sold for 18% over the asking price within 1 month of listing suggesting that this was priced too low. Adjusting this lot value upward by 12% for very strong growth in the market over 2021, the adjusted indicated value is $122,080 for this lot. This is still showing a 15% premium for the lot backing up to the solar farm.

The lot at 11009 Southview Court sold on August 5, 2019 for $65,000, which is significantly lower than the more recent sales. This lot was sold by NTS the original developer of this subdivision, who was in the process of liquidating lots in this subdivision with multiple lot sales in this time period throughout the subdivision being sold at discounted prices. The home was later improved by the buyer with a home built in 2020 with 2,430 square feet ranch, 3.5 bathrooms, with a full basement, and a current assessed value of $492,300.

I spoke with Chris Kalia, MAI, Mark Doherty, local real estate investor, and Alex Doherty, broker, who are all three familiar with this subdivision and activity in this neighborhood. All three indicated that there was a deep sell off of lots in the neighborhood by NTS at discounted prices under $100,000 each. Those lots since that time are being sold for up to $140,000. The prices paid for the lots below $100,000 were liquidation values and not indicative of market value. Homes are being built in the neighborhood on those lots with home prices ranging from $600,000 to $800,000 with no sign of impact on pricing due to the solar farm according to all three sources.





Fawn Lake Lot Sales

Parcel	Solar?	Address	Acres	Sale Date	Sale Price	Ad. For Time	% Diff
A	Adjoins	11700 Southview Ct	0.76	12/29/2021	$140,000		
1	1 parcel away	11603 Southview Ct	0.44	3/31/2022	$140,000	$141,960	-1.4%
2	Not adjoin	11507 Stonewood Ct	0.68	3/9/2021	$109,000	$118,374	15.4%
3	Not adjoin	11312 Westgate Wy	0.83	10/15/2020	$125,000	$142,000	-1.4%
4	Not adjoin	11409 Darkstone Pl	0.589	9/23/2021	$118,000	$118,000	15.7%

Average	7.1%
Median	7.0%

Least Adjusted	15.7%
2nd Least Adjusted	-1.4%
(Parcel 1 off solar farm)	

Time Adjustments are based on the FHFA Housing Price Index

5. Matched Pair – Crittenden Solar, Crittenden, KY



This solar farm was built in December 2017 on a 181.70-acre tract but utilizing only 34.10 acres. This is a 2.7 MW facility with residential subdivisions to the north and south.

I have identified five home sales to the north of this solar farm on Clairborne Drive and one home sale to the south on Eagle Ridge Drive since the completion of this solar farm. The home sale on Eagle Drive is for a $75,000 home and all of the homes along that street are similar in size and price range. According to local broker Steve Glacken with Cutler Real Estate these are the lowest price range/style home in the market. I have not analyzed that sale as it would unlikely provide significant data to other homes in the area.

Mr. Glacken has been selling lots at the west end of Clairborne for new home construction. He indicated in 2020 that the solar farm near the entrance of the development has been a complete non-factor and none of the home sales are showing any concern over the solar farm. Most of the homes are in the $250,000 to $280,000 price range. The vacant residential lots are being marketed for $28,000 to $29,000. The landscaping buffer is considered light, but the rolling terrain allows for distant views of the panels from the adjoining homes along Clairborne Drive.

The first home considered is a bit of an anomaly for this subdivision in that it is the only manufactured home that was allowed in the community. It sold on January 3, 2019. I compared that sale to three other manufactured home sales in the area making minor adjustments as shown on the next page to account for the differences. After all other factors are considered the adjustments show a -1% to +13% impact due to the adjacency of the solar farm. The best indicator is 1250 Cason, which shows a 3% impact. A 3% impact is within the normal static of real estate transactions and therefore not considered indicative of a positive impact on the property, but it strongly supports an indication of no negative impact.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
	Adjoins	250 Claiborne	0.96	1/3/2019	$120,000	2000	2,016	$59.52	3/2	Drive	Manuf	
	Not	1250 Cason	1.40	4/18/2018	$95,000	1994	1,500	$63.33	3/2	2-Det	Manuf	Carport
	Not	410 Reeves	1.02	11/27/2018	$80,000	2000	1,456	$54.95	3/2	Drive	Manuf	
	Not	315 N Fork	1.09	5/4/2019	$107,000	1992	1,792	$59.71	3/2	Drive	Manuf	

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	250 Claiborne								$120,000			373
Not	1250 Cason	$2,081		$2,850	$26,144		-$5,000	-$5,000	$116,075	3%		
Not	410 Reeves	$249		$0	$24,615				$104,865	13%		
Not	315 N Fork	-$1,091		$4,280	$10,700				$120,889	-1%		
											5%	

I also looked at three other home sales on this street as shown below. These are stick-built homes and show a higher price range.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
	Adjoins	300 Claiborne	1.08	9/20/2018	$212,720	2003	1,568	$135.66	3/3	2-Car	Ranch	Brick
	Not	460 Claiborne	0.31	1/3/2019	$229,000	2007	1,446	$158.37	3/2	2-Car	Ranch	Brick
	Not	2160 Sherman	1.46	6/1/2019	$265,000	2005	1,735	$152.74	3/3	2-Car	Ranch	Brick
	Not	215 Lexington	1.00	7/27/2018	$231,200	2000	1,590	$145.41	5/4	2-Car	Ranch	Brick

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	300 Claiborne								$213,000			488
Not	460 Claiborne	-$2,026		-$4,580	$15,457	$5,000			$242,850	-14%		
Not	2160 Sherman	-$5,672		-$2,650	-$20,406				$236,272	-11%		
Not	215 Lexington	$1,072		$3,468	-$2,559	-$5,000			$228,180	-7%		
											-11%	

This set of matched pairs shows a minor negative impact for this property. I was unable to confirm the sales price or conditions of this sale. The best indication of value is based on 215 Lexington, which required the least adjusting and supports a -7% impact.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
	Adjoins	350 Claiborne	1.00	7/20/2018	$245,000	2002	1,688	$145.14	3/3	2-Car	Ranch	Brick
	Not	460 Claiborne	0.31	1/3/2019	$229,000	2007	1,446	$158.37	3/2	2-Car	Ranch	Brick
	Not	2160 Sherman	1.46	6/1/2019	$265,000	2005	1,735	$152.74	3/3	2-Car	R/FBsmt	Brick
	Not	215 Lexington	1.00	7/27/2018	$231,200	2000	1,590	$145.41	5/4	2-Car	Ranch	Brick

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	350 Claiborne								$245,000			720
Not	460 Claiborne	-$3,223		-$5,725	$30,660	$5,000			$255,712	-4%		
Not	2160 Sherman	-$7,057		-$3,975	-$5,743				$248,225	-1%		
Not	215 Lexington	-$136		$2,312	$11,400	-$5,000			$239,776	2%		
											-1%	

The following photograph shows the light landscaping buffer and the distant view of panels that was included as part of the marketing package for this property. The panels are visible somewhat on the left and somewhat through the trees in the center of the photograph. The first photograph is from the home, with the second photograph showing the view near the rear of the lot.





This set of matched pairs shows a no negative impact for this property. The range of adjusted impacts is -4% to +2%. The best indication is -1%, which as described above is within the typical market static and supports no impact on adjoining property value.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
	Adjoins	370 Claiborne	1.06	8/22/2019	$273,000	2005	1,570	$173.89	4/3	2-Car	2-Story	Brick
	Not	2160 Sherman	1.46	6/1/2019	$265,000	2005	1,735	$152.74	3/3	2-Car	R/FBsmt	Brick
	Not	2290 Dry	1.53	5/2/2019	$239,400	1988	1,400	$171.00	3/2.5	2-Car	R/FBsmt	Brick
	Not	125 Lexington	1.20	4/17/2018	$240,000	2001	1,569	$152.96	3/3	2-Car	Split	Brick

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	370 Claiborne								$273,000			930
Not	2160 Sherman	$1,831		$0	-$20,161				$246,670	10%		
Not	2290 Dry	$2,260		$20,349	$23,256	$2,500			$287,765	-5%		
Not	125 Lexington	$9,951		$4,800					$254,751	7%		
											4%	

This set of matched pairs shows a general positive impact for this property. The range of adjusted impacts is -5% to +10%. The best indication is +7%. I typically consider measurements of +/-5% to be within the typical variation in real estate transactions. This indication is higher than that and suggests a positive relationship.

The photograph from the listing shows panels visible between the home and the trampoline shown in the picture.



Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	330 Claiborne	1.00	12/10/2019	$282,500	2003	1,768	$159.79	3/3	2-Car	Ranch	Brick/pool
Not	895 Osborne	1.70	9/16/2019	$249,900	2002	1,705	$146.57	3/2	2-Car	Ranch	Brick/pool
Not	2160 Sherman	1.46	6/1/2019	$265,000	2005	1,735	$152.74	3/3	2-Car	R/FBsmt	Brick
Not	215 Lexington	1.00	7/27/2018	$231,200	2000	1,590	$145.41	5/4	2-Car	Ranch	Brick

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	330 Claiborne								$282,500			665
Not	895 Osborne	$1,790		$1,250	$7,387	$5,000		$0	$265,327	6%		
Not	2160 Sherman	$4,288		-$2,650	$4,032			$20,000	$290,670	-3%		
Not	215 Lexington	$9,761		$3,468	$20,706	-$5,000		$20,000	$280,135	1%		
											1%	

This set of matched pairs shows a general positive impact for this property. The range of adjusted impacts is -3% to +6%. The best indication is +6%. I typically consider measurements of +/-5% to be within the typical variation in real estate transactions. This indication is higher than that and suggests a positive relationship. The landscaping buffer on these is considered light with a fair visibility of the panels from most of these comparables and only thin landscaping buffers separating the homes from the solar panels.

I also looked at four sales that were during a rapid increase in home values around 2021, which required significant time adjustments based on the FHFA Housing Price Index. Sales in this time frame are less reliable for impact considerations as the peak buyer demand allowed for homes to sell with less worry over typical issues such as repairs.

The home at 250 Claiborne Drive sold with no impact from the solar farm according to the buyer's broker Lisa Ann Lay with Keller Williams Realty Service. As noted earlier, this is the only manufactured home in the community and is a bit of an anomaly. There was an impact on this sale due to an appraisal that came in low likely related to the manufactured nature of the home. Ms. Lay indicated that there was significant back and forth between both brokers and the appraiser to address the low appraisal, but ultimately, the buyers had to pay $20,000 out of pocket to cover the difference in appraised value and the purchase price. The low appraisal was not attributed to the solar farm, but the difficulty in finding comparable sales and likely the manufactured housing.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	250 Claiborne	1.05	1/5/2022	$210,000	2002	1,592	$131.91	4/2	Drive	Ranch	Manuf
Not	255 Spillman	0.64	3/4/2022	$166,000	1991	1,196	$138.80	3/1	Drive	Ranch	Remodel
Not	546 Waterworks	0.28	4/29/2021	$179,500	2007	1,046	$171.61	4/2	Drive	Ranch	3/4 Fin B
Not	240 Shawnee	1.18	6/7/2021	$180,000	1977	1,352	$133.14	3/2	Gar	Ranch	N/A

Solar	Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	250 Claiborne							$210,000			365
Not	255 Spillman	-$379	$9,130	$43,971	$10,000		-$20,000	$208,722	1%		
Not	546 Waterworks	$1,772	-$4,488	$74,958			-$67,313	$184,429	12%		
Not	240 Shawnee	$1,501	$22,500	$25,562		-$10,000		$219,563	-5%		
										3%	

The photograph of the rear view from the listing is shown below.



The home at 260 Claiborne Drive sold with no impact from the solar farm according to the buyer's broker Jim Dalton with Ashcraft Real Estate Services. He noted that there was significant wood rot and a heavy smoker smell about the house, but even that had no impact on the price due to high demand in the market.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	260 Claiborne	1.00	10/13/2021	$175,000	2001	1,456	$120.19	3/2	Drive	Ranch	N/A
Not	355 Oakwood	0.58	10/27/2020	$186,000	2002	1,088	$170.96	3/2	Gar	Ranch	3/4 Fin B
Not	30 Ellen Kay	0.50	1/30/2020	$183,000	1988	1,950	$93.85	3/2	Gar	2-Story	N/A
Not	546 Waterworks	0.28	4/29/2021	$179,500	2007	1,046	$171.61	4/2	Drive	Ranch	3/4 Fin B

Solar	Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	260 Claiborne							$175,000			390
Not	355 Oakwood	$18,339	-$930	$50,329		-$10,000	-$69,750	$173,988	1%		
Not	30 Ellen Kay	$31,974	$11,895	-$37,088		-$10,000		$179,781	-3%		
Not	546 Waterworks	$8,420	-$5,385	$56,287			-$67,313	$171,510	2%		
										0%	

The photograph of the rear view from the listing is shown below.



These next two were brick and with unfinished basements which made them easier to compare and therefore more reliable. For 300 Claiborne I considered the sale of a home across the street that did not back up to the solar farm and it adjusted to well below the range of the other comparables. I have included it, but would not rely on that which means this next comparable strongly supports a range of 0 to +3% and not up to +19%.

djoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	300 Claiborne	0.89	12/18/2021	$290,000	2002	1,568	$184.95	3/3	2-Car	Br Rnch	Bsmt
Not	405 Claiborne	0.41	2/1/2022	$267,750	2004	1,787	$149.83	3/2	2-Car	Br Rnch	Bsmt
Not	39 Pinhook	0.68	3/31/2022	$299,000	1992	1,680	$177.98	3/2	2-Car	Br Rnch	Bsmt
Not	5 Pinhook	0.70	4/7/2022	$309,900	1992	1,680	$184.46	3/2	2-Car	Br Rnch	Bsmt

Solar	Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	300 Claiborne							$290,000			570
Not	405 Claiborne	-$3,384	-$2,678	-$26,251				$235,437	19%		
Not	39 Pinhook	-$8,651	$14,950	-$15,947				$289,352	0%		
Not	5 Pinhook	-$9,576	$15,495	-$16,528				$299,291	-3%		
										5%	

The photograph of the rear view from the listing is shown below.



The home at 410 Claiborne included an inground pool with significant landscaping around it that was a challenge. Furthermore, two of the comparables had finished basements. I made no adjustment for the pool on those two comparables and considered the two factors to cancel out

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	410 Claiborne	0.31	2/10/2021	$275,000	2006	1,595	$172.41	3/2	2-Car	Br Rnch	Bsmt/Pool
Not	114 Austin	1.40	12/23/2020	$248,000	1994	1,650	$150.30	3/2	2-Car	Br Rnch	Bsmt
Not	125 Liza	0.29	6/25/2021	$315,000	2005	1,913	$164.66	4/3	2-Car	Br Rnch	Ktchn Bsmt
Not	130 Hannahs	0.42	2/9/2021	$295,000	2007	1,918	$153.81	3/3	2-Car	Br Rnch	Fin Bsmt

Solar	Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	410 Claiborne							$275,000			1080
Not	114 Austin	$3,413	$14,880	-$6,613			$20,000	$279,680	-2%		
Not	125 Liza	-$11,945	$1,575	-$41,890	-$10,000			$252,740	8%		
Not	130 Hannahs	$83	-$1,475	-$39,743	-$10,000			$243,864	11%		
										6%	

The nine matched pairs considered in this analysis includes five that show no impact on value, one that shows a negative impact on value, and three that show a positive impact. The negative indication supported by one matched pair is -7% and the positive impacts are +6% and +7%. The two neutral indications show impacts of -5% to +5%. The average indicated impact is +2% when all nine of these indicators are blended.

Furthermore, the comments of the local real estate brokers strongly support the data that shows no negative impact on value due to the proximity to the solar farm.

6. Matched Pair – White House Solar, Louisa, VA



This project was built in 2016 for a solar project on a 499.52-acre tract for a 20 MW facility. The closest single-family home is 110 feet away from the closest solar panel. The average distance is 1,195 feet.

I have identified one recent adjoining home sale to the north of this project that sold in 2020. I spoke with the broker, Stacie Chandler, who represented the buyer in that transaction. She indicated that the solar farm had no impact on the price that they negotiated on that home. That is supported by the matched pair shown below.

The adjustments shown below make no adjustment for the difference in acreage for the smaller parcels. One of these is on a smaller lot, but located in a golf course community with rear exposure to the golf course. The other is in Mineral and while the lots are not the same size, they are similarly valued. I also adjusted this property upward by $50,000 for the condition/lack of renovation. This adjustment is based on the fact that this home was renovated following the 2020 purchase and then resold in 2021 for $75,000 more than the 2020 value. Comparing the 2021 renovated price at $144/s.f. to the subject property and adjusting on the same rates would require a downward adjustment to the comparable of $10,400 for time, upward by $8,325 for year built, and downward by $5,000 for the extra half bathroom for an indicated adjusted value of $252,925 which suggests a 5% reduction in value due to the solar farm. Either way this comparable requires significant adjustments and suggests a range of -5% to 0% impact. The Woodger comparable required less

adjustment and suggests an 11% enhancement due to proximity to the solar farm and that is without any consideration of this home having a superior exposure to a golf course.

Whitehouse Solar

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	127 Walnut Wds	4.09	3/27/2020	$240,000	1984	1,824	$131.58	3/2	2 Gar	Br Rnch	Reno
Not	126 Woodger	0.63	4/29/2019	$240,000	1992	1,956	$122.70	3/2+2	2 Gar	Br Rnch	Golf
Not	808 Virginia	0.51	3/16/2020	$185,000	1975	1,806	$102.44	3/2.5	2 Gar	Br Rnch	
Not	273 Carsons	3.94	9/29/2018	$248,500	1985	2,224	$111.74	4/3	Drive	Ranch	Not Brck

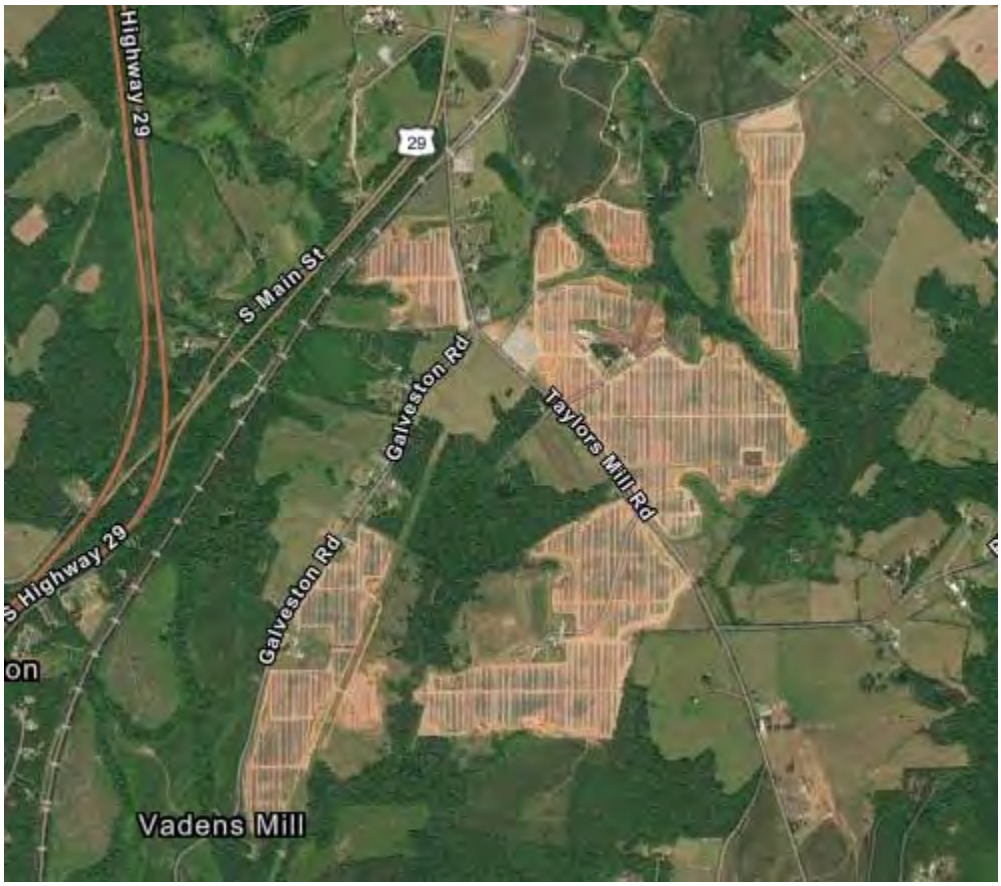
Adjoining Sales Adjusted

Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
127 Walnut Wds								$240,000		1400
126 Woodger	$6,569		-$9,600	-$12,957	-$10,000			$214,012	11%	
808 Virginia	$167		$8,325	$1,475	-$5,000		$50,000	$239,967	0%	
273 Carsons	$11,131		-$1,243	-$35,755	-$10,000	$15,000	$12,425	$240,059	0%	
							Average Diff		4%	

These matched pairs are generally challenging in that one is shown before and after a renovation suggesting impacts of -5% to 0%. The comparable requiring the least adjustment is on a golf course but it also was not recently renovated which makes it less reliable. Finally, the Carsons property was similar, but older and is not brick. While I adjusted for those factors it really does not make for a great matched pair.

The best indication by the matched pairs is -5% to 0%. The broker involved in the transaction indicated that the solar farm had no impact on property value. Given those comments and the range of impacts shown, I conclude that this home sale near the White House solar project indicates no impact on property value.

7. Matched Pair – Whitehorn Solar, Gretna, Pittsylvania, VA



This project was built in 2021 for a solar project with 50 MW. Adjoining uses are residential and agricultural. There was a sale located at 1120 Taylors Mill Road that sold on December 20, 2021, which is about the time the solar farm was completed. This sold for $224,000 for 2.02 acres with a 2,079 s.f. mobile home on it that was built in 2010. The property was listed for $224,000 and sold for that same price within two months (went under contract almost exactly 30 days from listing). This sales price works out to $108 per square foot. This home is 255 feet from the nearest panel.

I have compared this sale to an August 20, 2020 sale at 1000 Long Branch Drive that included 5.10 acres with a 1,980 s.f. mobile home that was built in 1993 and sold for $162,000, or $81.82 per square foot. Adjusting this upward for significant growth between this sale date and December 2021 relied on data provided by the FHFA House Pricing Index, which indicates that for homes in the Roanoke, VA MSA would be expected to appreciate from $162,000 to $191,000 over that period of time. Using $191,000 as the effective value as of the date of comparison, the indicated value of this sale works out to $96.46 per square foot. Adjusting this upward by 17% for the difference in year built, but downward by 5% for the much larger lot size at this comparable, I derive an adjusted indication of value of $213,920, or $108 per square foot.

This indicates no impact on value attributable to the new solar farm located across from the home on Taylors Mill Road.

8. Matched Pair – Altavista Solar, Altavista, Campbell County, VA



This project was mostly built in 2021 with final construction finished in 2022. This is an 80 MW facility on 720 acres just north of Roanoke River and west of Altavista. Adjoining uses are residential and agricultural.

I have done a Sale/Resale analysis of 3211 Leesville Road which is approximately 540 feet from the nearest solar panel. There was an existing row of trees between this home and the panels that was supplemented with additional screening for a narrow landscaped buffer between the home and the solar panels.

This home sold in December 2018 for $72,500 for this 1,451 s.f. home built in 1940 with a number of additional outbuildings on 3.35 acres. This was before any announcement of a solar farm. This home sold again on March 28, 2022 for $124,048 after the solar farm was constructed. This shows a 71% increase in value on this property since 2018. There was significant growth in the market between these dates and to accurately reflect that I have considered the FHFA House Price Index that is specific for the Lynchburg area of Virginia (the closest regional category), which shows an expected increase in home values over that same time period of 33.8%, which would suggest a normal growth in value up to $97,000. The home sold for significantly more than this which certainly does not support a finding of a negative impact and in fact suggests a significant positive impact. However, I was not able to discuss this sale with the broker and it is possible that the home also was renovated between 2018 and 2022, which may account for that additional increase in value. Still give that the home increased in value so significantly over the initial amount there is no sign of any negative impact due to the solar farm adjacency.



Similarly, I looked at 3026 Bishop Creek Road that is approximately 600 feet from the nearest solar panel. This home sold on July 16, 2019 for $120,000, which was before construction of the solar farm. This home sold again on February 23, 2022 for $150,000. This shows a 25% increase in value over that time period. Using the same FHFA House Price Index Calculator, the expected increase in value was 29.2% for an indicated expected value of $155,000. This is within 3% of the actual closed price, which supports a finding of no impact from the solar farm. This home has a dense wooded area between it and the adjoining solar farm.



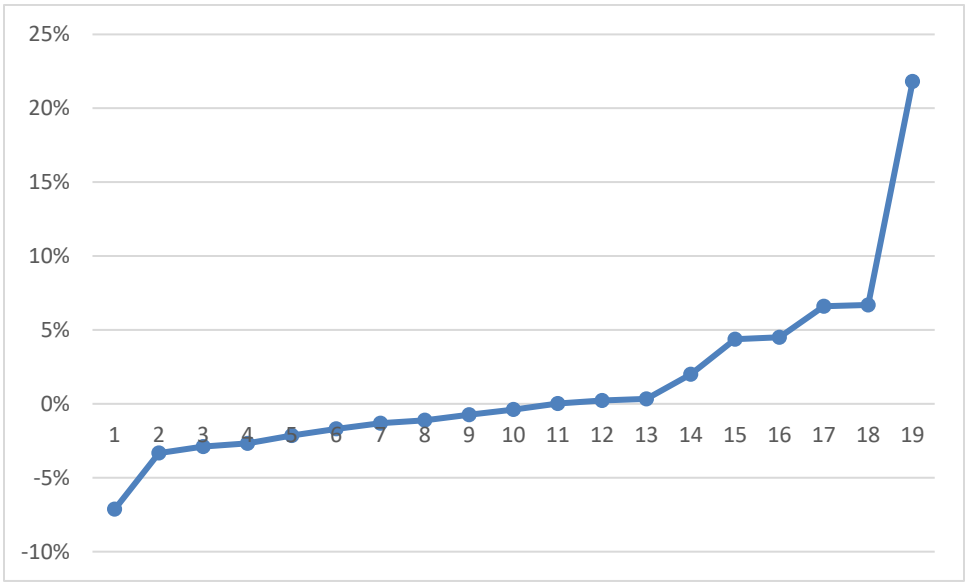
Conclusion

The solar farm matched pairs shown above have similar characteristics to each other in terms of population, but with several outliers showing solar farms in far more urban areas. The median income for the population within 1 mile of a solar farm among this subset of matched pairs is $58,651 with a median housing unit value of $264,681. Most of the comparables are under $500,000 in the home price, with $483,333 being the high end of the set, though I have matched pairs in other states over $1,600,000 in price adjoining large solar farms. The predominate adjoining uses are residential and agricultural. These figures are in line with the larger set of solar farms that I have looked at with the predominant adjoining uses being residential and agricultural and similar to the solar farm breakdown shown for Virginia and adjoining states as well as the proposed subject property.

Based on the similarity of adjoining uses and demographic data between these sites and the subject property, I consider it reasonable to compare these sites to the subject property.

Matched Pair Summary							Adj. Uses By Acreage				1 mile Radius (2010-2022 Data)			
	Name	City	State	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com/Ind	Population	Med. Income	Avg. Housing Unit	Veg. Buffer
1	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453	Light
2	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076	Light
3	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208	Medium
4	Spotyslvania	Paytes	VA	3,500	500.00	160	37%	52%	11%	0%	74	$120,861	$483,333	Med to Hvy
5	Crittenden	Crittenden	KY	34	2.70	40	22%	51%	27%	0%	1,419	$60,198	$178,643	Light
6	White House	Louisa	VA	500	20.00	N/A	24%	55%	18%	3%	409	$57,104	$209,286	Medium
7	Whitehorn	Gretna	VA	N/A	50.00	N/A	N/A	N/A	N/A	N/A	166	$43,179	$168,750	None to Lgt
8	Altavista	Altavista	VA	720	80.00	N/A	N/A	N/A	N/A	N/A	7	$50,000	$341,667	Light
	Average			828	89.09	90	19%	61%	20%	1%	366	$68,068	$278,927	
	Median			485	20.00	70	18%	54%	19%	0%	185	$58,651	$264,681	
	High			3,500	500.00	160	37%	98%	46%	3%	1,419	$120,861	$483,333	
	Low			34	2.70	40	2%	39%	0%	0%	7	$43,179	$155,208	
	Moonlight													
	1 Mile Radius			524	44.00	5	5%	92%	3%	0%	79	$78,887	$350,000	
	3 Mile Radius			524	44.00	5	5%	92%	3%	0%	954	$80,159	$349,425	
	5 Mile Radius			524	44.00	5	5%	92%	3%	0%	3,999	$82,691	$341,621	

On the following page is a summary of the matched pairs for all of the solar farms noted above. They show a pattern of results from -7% to +22% with an average of 1% and a median finding of 0%. As can be seen in the chart of those results below, most of the data points are between -3% and +2%. This variability is common with real estate and consistent with market "static." I therefore conclude that these results strongly support an indication of no impact on property value due to the adjacent solar farm. Only 1 of the 19 data points show a negative impact greater than the typical variability due to market imperfection, while 4 of the 19 data points show a positive impact. This leaves 14 of the 19 indications showing no impact and within the typical market variability/imperfection that would be expected for any property.



I have further broken down these results based on the MWs, Landscaping, and distance from panel to show the following range of findings for these different categories.

This breakdown shows no homes between 100-200 feet. Solar farms up to 75 MW show homes between 201 and 500 feet with no impact on value. Most of the findings are for homes between 201 and 500 feet.

Light landscaping screens are showing no impact on value at any distances, though solar farms over 75.1 MW only show Medium and Heavy landscaping screens in 4 of the examples identified.

Residential Dwelling Matched Pairs Adjoining Solar Farms

Pair	Solar Farm	City	State	Area	MW	Approx Distance	Tax ID/Address	Date	Sale Price	Adj. Sale Price	% Diff	Veg. Buffer
1	Clarke Cnty	White Post	VA	Rural	20	1230	833 Nations Spr	Jan-17	$295,000			Light
							6801 Middle	Dec-17	$249,999	$296,157	0%	
2	Walker	Barhamsville	VA	Rural	20	250	5241 Barham	Oct-18	$264,000			Light
							9252 Ordinary	Jun-19	$277,000	$246,581	7%	
3	Clarke Cnty	White Post	VA	Rural	20	1230	833 Nations Spr	Aug-19	$385,000			Light
							2393 Old Chapel	Aug-20	$330,000	$389,286	-1%	
4	Sappony	Stony Creek	VA	Rural	20	1425	12511 Palestine	Jul-18	$128,400			Medium
							6494 Rocky Branch	Nov-18	$100,000	$131,842	-3%	
5	Spotsylvania	Paytes	VA	Rural	617	1270	12901 Orange Plnk	Aug-20	$319,900			Medium
							12717 Flintlock	Dec-20	$290,000	$326,767	-2%	
6	Spotsylvania	Paytes	VA	Rural	617	1950	9641 Nottoway	May-20	$449,900			Medium
							11626 Forest	Aug-20	$489,900	$430,246	4%	
7	Spotsylvania	Paytes	VA	Rural	617	1171	13353 Post Oak	Sep-20	$300,000			Heavy
							12810 Catharpin	Jan-20	$280,000	$299,008	0%	
8	Crittenden	Crittenden	KY	Suburban	2.7	373	250 Claiborne	Jan-19	$120,000			Light
							315 N Fork	May-19	$107,000	$120,889	-1%	
9	Crittenden	Crittenden	KY	Suburban	2.7	488	300 Claiborne	Sep-18	$213,000			Light
							1795 Bay Valley	Dec-17	$231,200	$228,180	-7%	
10	Crittenden	Crittenden	KY	Suburban	2.7	720	350 Claiborne	Jul-18	$245,000			Light
							2160 Sherman	Jun-19	$265,000	$248,225	-1%	
11	Crittenden	Crittenden	KY	Suburban	2.7	930	370 Claiborne	Aug-19	$273,000			Light
							125 Lexington	Apr-18	$240,000	$254,751	7%	
12	Crittenden	Crittenden	KY	Suburban	2.7	665	330 Claiborne	Dec-19	$282,500			Light
							2160 Sherman	Jun-19	$265,000	$290,680	-3%	
13	Crittenden	Crittenden	KY	Suburban	2.7	390	260 Claiborne	Oct-21	$175,000			Light
							546 Waterworks	Apr-21	$179,500	$171,510	2%	
14	Crittenden	Crittenden	KY	Suburban	2.7	570	300 Claiborne	Dec-21	$290,000			Light
							39 Pinhook	Mar-22	$299,000	$289,352	0%	
15	Crittenden	Crittenden	KY	Suburban	2.7	1080	410 Claiborne	Feb-21	$275,000			Light
							114 Austin	Dec-20	$248,000	$279,680	-2%	
16	White House	Louisa	VA	Rural	20	1400	127 Walnut	Mar-20	$240,000			Light
							126 Woodger	Apr-19	$240,000	$239,967	0%	
17	Whitehorn	Gretna	VA	Rural	50	255	1120 Taylors Mill	Dec-21	$224,000			Light
							1000 Long Branch	Aug-20	$162,000	$213,920	5%	
18	Altavista	Altavista	VA	Rural	80	540	3211 Leesville	Mar-22	$124,048			Light
							3211 Leesville	Dec-18	$72,500	$97,000	22%	
19	Altavista	Altavista	VA	Rural	80	600	3026 Bishop Crk	Feb-22	$150,000			Heavy
							3026 Bishop Crk	Jul-19	$120,000	$155,000	-3%	

	MW	Avg. Distance
Average	114.87	870
Median	20.00	720
High	617.00	1,950
Low	2.70	250

	Indicated Impact
Average	1%
Median	0%
High	22%
Low	-7%

MW Range 4.4 to 10 Landscaping Distance	Light 100-200	Light 201-500	Light 500+	Medium 100-200	Medium 201-500	Medium 500+	Heavy 100-200	Heavy 201-500	Heavy 500+
Average	N/A	-2%	4%	N/A	N/A	N/A	N/A	N/A	N/A
Median	N/A	-1%	-1%	N/A	N/A	N/A	N/A	N/A	N/A
High	N/A	2%	22%	N/A	N/A	N/A	N/A	N/A	N/A
Low	N/A	-7%	-3%	N/A	N/A	N/A	N/A	N/A	N/A

10.1 to 30 Landscaping Distance	Light 100-200	Light 201-500	Light 500+	Medium 100-200	Medium 201-500	Medium 500+	Heavy 100-200	Heavy 201-500	Heavy 500+
Average	N/A	7%	-1%	N/A	N/A	-3%	N/A	N/A	N/A
Median	N/A	7%	-1%	N/A	N/A	-3%	N/A	N/A	N/A
High	N/A	7%	0%	N/A	N/A	-3%	N/A	N/A	N/A
Low	N/A	7%	-1%	N/A	N/A	-3%	N/A	N/A	N/A

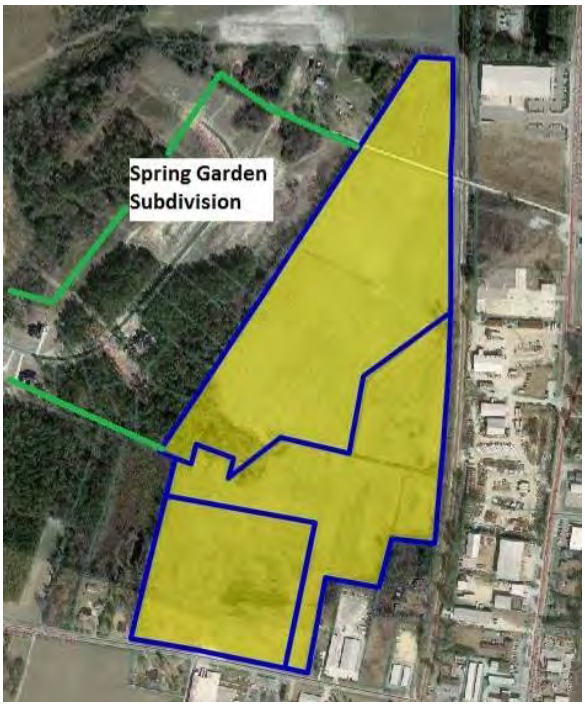
30.1 to 75 Landscaping Distance	Light 100-200	Light 201-500	Light 500+	Medium 100-200	Medium 201-500	Medium 500+	Heavy 100-200	Heavy 201-500	Heavy 500+
Average	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Median	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
High	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Low	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

75.1+ Landscaping Distance	Light 100-200	Light 201-500	Light 500+	Medium 100-200	Medium 201-500	Medium 500+	Heavy 100-200	Heavy 201-500	Heavy 500+
Average	N/A	N/A	22%	N/A	N/A	1%	N/A	N/A	-3%
Median	N/A	N/A	22%	N/A	N/A	1%	N/A	N/A	-3%
High	N/A	N/A	22%	N/A	N/A	4%	N/A	N/A	-3%
Low	N/A	N/A	22%	N/A	N/A	-2%	N/A	N/A	-3%

B. Southeastern USA Data – Over 5 MW

1. Matched Pair – AM Best Solar Farm, Goldsboro, NC

This 5 MW solar farm adjoins Spring Garden Subdivision which had new homes and lots available for new construction during the approval and construction of the solar farm. The recent home sales have ranged from $200,000 to $250,000. This subdivision sold out the last homes in late 2014. The solar farm is clearly visible particularly along the north end of this street where there is only a thin line of trees separating the solar farm from the single-family homes.

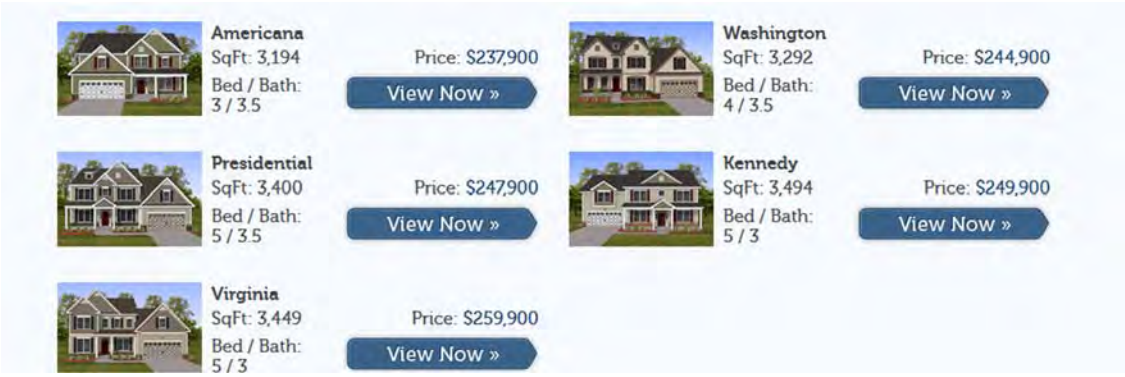


Homes backing up to the solar farm are selling at the same price for the same floor plan as the homes that do not back up to the solar farm in this subdivision. According to the builder, the solar farm has been a complete non-factor. Not only do the sales show no difference in the price paid for the various homes adjoining the solar farm versus not adjoining the solar farm, but there are actually more recent sales along the solar farm than not. There is no impact on the sellout rate, or time to sell for the homes adjoining the solar farm.

I spoke with a number of owners who adjoin the solar farm and none of them expressed any concern over the solar farm impacting their property value.

The data presented on the following page shows multiple homes that have sold in 2013 and 2014 adjoining the solar farm at prices similar to those not along the solar farm. These series of sales indicate that the solar farm has no impact on the adjoining residential use.

The homes that were marketed at Spring Garden are shown below.



The homes adjoining the solar farm are considered to have a light landscaping screen as it is a narrow row of existing pine trees supplemented with evergreen plantings.

Matched Pairs
As of Date: 9/3/2014

Adjoining Sales After Solar Farm Completed

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	Style
3600195570	Helm	0.76	Sep-13	$250,000	2013	3,292	$75.94	2 Story
3600195361	Leak	1.49	Sep-13	$260,000	2013	3,652	$71.19	2 Story
3600199891	McBrayer	2.24	Jul-14	$250,000	2014	3,292	$75.94	2 Story
3600198632	Foresman	1.13	Aug-14	$253,000	2014	3,400	$74.41	2 Story
3600196656	Hinson	0.75	Dec-13	$255,000	2013	3,453	$73.85	2 Story
	Average	1.27		$253,600	2013.4	3,418	$74.27	
	Median	1.13		$253,000	2013	3,400	$74.41	

Adjoining Sales After Solar Farm Announced

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	Style
0	Feddersen	1.56	Feb-13	$247,000	2012	3,427	$72.07	Ranch
0	Gentry	1.42	Apr-13	$245,000	2013	3,400	$72.06	2 Story
	Average	1.49		$246,000	2012.5	3,414	$72.07	
	Median	1.49		$246,000	2012.5	3,414	$72.07	

Adjoining Sales Before Solar Farm Announced

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	Style
3600183905	Carter	1.57	Dec-12	$240,000	2012	3,347	$71.71	1.5 Story
3600193097	Kelly	1.61	Sep-12	$198,000	2012	2,532	$78.20	2 Story
3600194189	Hadwan	1.55	Nov-12	$240,000	2012	3,433	$69.91	1.5 Story
	Average	1.59		$219,000	2012	2,940	$74.95	
	Median	1.59		$219,000	2012	2,940	$74.95	

Nearby Sales After Solar Farm Completed

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	Style
3600193710	Barnes	1.12	Oct-13	$248,000	2013	3,400	$72.94	2 Story
3601105180	Nackley	0.95	Dec-13	$253,000	2013	3,400	$74.41	2 Story
3600192528	Mattheis	1.12	Oct-13	$238,000	2013	3,194	$74.51	2 Story
3600198928	Beckman	0.93	Mar-14	$250,000	2014	3,292	$75.94	2 Story
3600196965	Hough	0.81	Jun-14	$224,000	2014	2,434	$92.03	2 Story
3600193914	Preskitt	0.67	Jun-14	$242,000	2014	2,825	$85.66	2 Story
3600194813	Bordner	0.91	Apr-14	$258,000	2014	3,511	$73.48	2 Story
3601104147	Shaffer	0.73	Apr-14	$255,000	2014	3,453	$73.85	2 Story
	Average	0.91		$246,000	2013.625	3,189	$77.85	
	Median	0.92		$249,000	2014	3,346	$74.46	

Nearby Sales Before Solar Farm Announced

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	Style
3600191437	Thomas	1.12	Sep-12	$225,000	2012	3,276	$68.68	2 Story
3600087968	Lilley	1.15	Jan-13	$238,000	2012	3,421	$69.57	1.5 Story
3600087654	Burke	1.26	Sep-12	$240,000	2012	3,543	$67.74	2 Story
3600088796	Hobbs	0.73	Sep-12	$228,000	2012	3,254	$70.07	2 Story
	Average	1.07		$232,750	2012	3,374	$69.01	
	Median	1.14		$233,000	2012	3,349	$69.13	

Matched Pair Summary

	Adjoins Solar Farm		Nearby Solar Farm	
	Average	**Median**	**Average**	**Median**
Sales Price	$253,600	$253,000	$246,000	$249,000
Year Built	2013	2013	2014	2014
Size	3,418	3,400	3,189	3,346
Price/SF	$74.27	$74.41	$77.85	$74.46

Percentage Differences

Median Price	-2%
Median Size	-2%
Median Price/SF	0%

I note that 2308 Granville Drive sold again in November 2015 for $267,500, or $7,500 more than when it was purchased new from the builder two years earlier (Tax ID 3600195361, Owner: Leak). The neighborhood is clearly showing appreciation for homes adjoining the solar farm.

The Median Price is the best indicator to follow in any analysis as it avoids outlying samples that would otherwise skew the results. The median sizes and median prices are all consistent throughout the sales both before and after the solar farm whether you look at sites adjoining or nearby to the solar farm. The average size for the homes nearby the solar farm shows a smaller building size and a higher price per square foot. This reflects a common occurrence in real estate where the price per square foot goes up as the size goes down. So even comparing averages the indication is for no impact, but I rely on the median rates as the most reliable indication for any such analysis.

I have also considered four more recent resales of homes in this community as shown on the following page. These comparable sales adjoin the solar farm at distances ranging from 315 to 400 feet. The matched pairs show a range from -9% to +6%. The range of the average difference is -2% to +1% with an average of 0% and a median of +0.5%. These comparable sales support a finding of no impact on property value.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
	Adjoins	103 Granville Pl	1.42	7/27/2018	$265,000	2013	3,292	$80.50	4/3.5	2-Car	2-Story		385
	Not	2219 Granville	1.15	1/8/2018	$260,000	2012	3,292	$78.98	4/3.5	2-Car	2-Story		
	Not	634 Friendly	0.96	7/31/2019	$267,000	2018	3,053	$87.45	4/4.5	2-Car	2-Story		
	Not	2403 Granville	0.69	4/23/2019	$265,000	2014	2,816	$94.11	5/3.5	2-Car	2-Story		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	103 Granville Pl								$265,000		-2%
Not	2219 Granville	$4,382		$1,300	$0				$265,682	0%	
Not	634 Friendly	-$8,303		-$6,675	$16,721	-$10,000			$258,744	2%	
Not	2403 Granville	-$6,029		-$1,325	$31,356				$289,001	-9%	

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
	Adjoins	104 Erin	2.24	6/19/2017	$280,000	2014	3,549	$78.90	5/3.5	2-Car	2-Story		315
	Not	2219 Granville	1.15	1/8/2018	$260,000	2012	3,292	$78.98	4/3.5	2-Car	2-Story		
	Not	634 Friendly	0.96	7/31/2019	$267,000	2018	3,053	$87.45	4/4.5	2-Car	2-Story		
	Not	2403 Granville	0.69	4/23/2019	$265,000	2014	2,816	$94.11	5/3.5	2-Car	2-Story		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	104 Erin								$280,000		0%
Not	2219 Granville	-$4,448		$2,600	$16,238				$274,390	2%	
Not	634 Friendly	-$17,370		-$5,340	$34,702	-$10,000			$268,992	4%	
Not	2403 Granville	-$15,029		$0	$48,285				$298,256	-7%	

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
	Adjoins	2312 Granville	0.75	5/1/2018	$284,900	2013	3,453	$82.51	5/3.5	2-Car	2-Story		400
	Not	2219 Granville	1.15	1/8/2018	$260,000	2012	3,292	$78.98	4/3.5	2-Car	2-Story		
	Not	634 Friendly	0.96	7/31/2019	$267,000	2018	3,053	$87.45	4/4.5	2-Car	2-Story		
	Not	2403 Granville	0.69	4/23/2019	$265,000	2014	2,816	$94.11	5/3.5	2-Car	2-Story		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	2312 Granville								$284,900		1%
Not	2219 Granville	$2,476		$1,300	$10,173				$273,948	4%	
Not	634 Friendly	-$10,260		-$6,675	$27,986	-$10,000			$268,051	6%	
Not	2403 Granville	-$7,972		-$1,325	$47,956				$303,659	-7%	

Adjoining Residential Sales After Solar Farm Approved

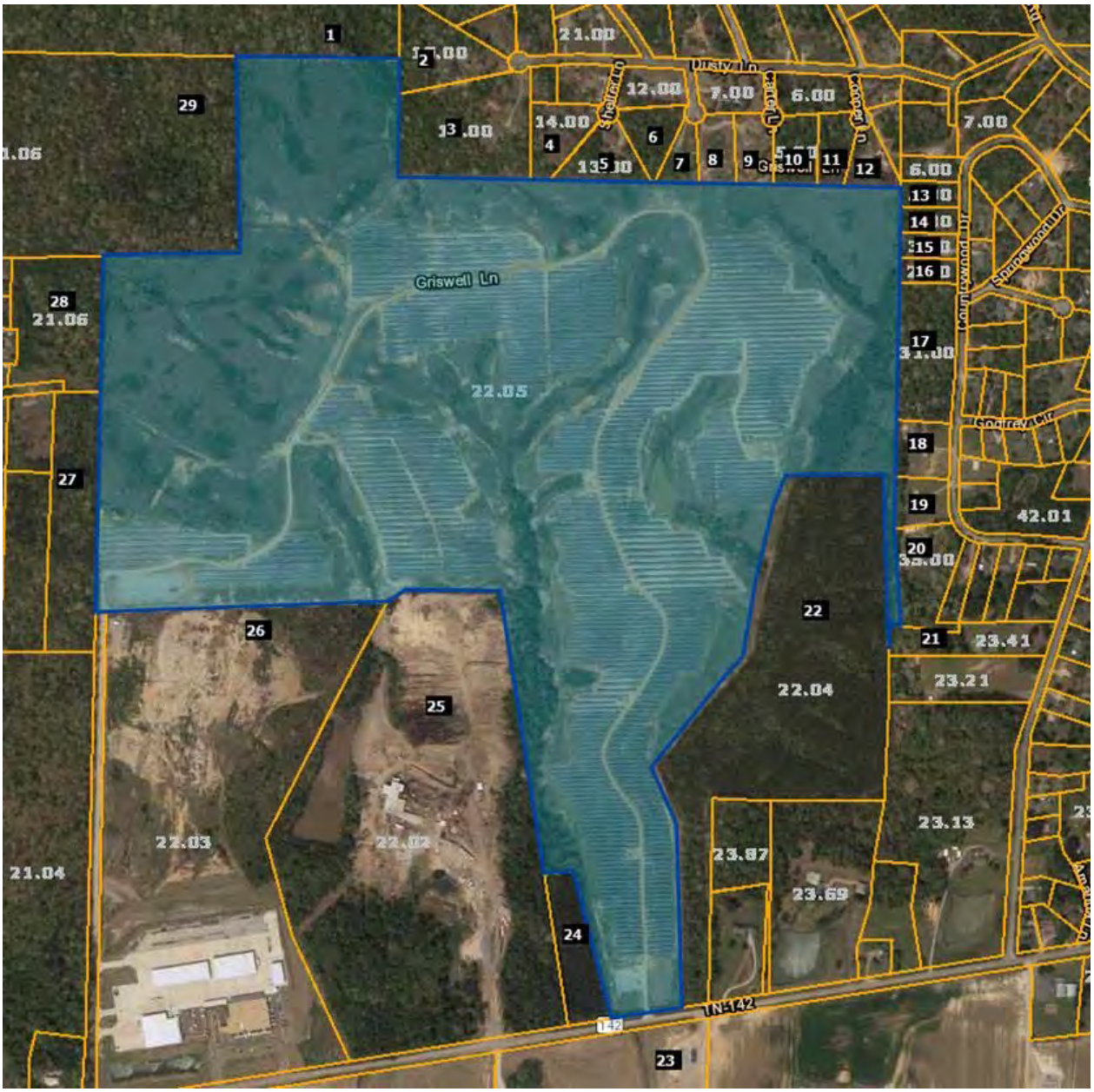
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
	Adjoins	2310 Granville	0.76	5/14/2019	$280,000	2013	3,292	$85.05	5/3.5	2-Car	2-Story		400
	Not	2219 Granville	1.15	1/8/2018	$260,000	2012	3,292	$78.98	4/3.5	2-Car	2-Story		
	Not	634 Friendly	0.96	7/31/2019	$267,000	2018	3,053	$87.45	4/4.5	2-Car	2-Story		
	Not	2403 Granville	0.69	4/23/2019	$265,000	2014	2,816	$94.11	5/3.5	2-Car	2-Story		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	2310 Granville								$280,000		1%
Not	2219 Granville	$10,758		$1,300	$0				$272,058	3%	
Not	634 Friendly	-$1,755		-$6,675	$16,721	-$10,000			$265,291	5%	
Not	2403 Granville	$469		-$1,325	$31,356				$295,500	-6%	

I have also considered the original sales prices in this subdivision relative to the recent resale values as shown in the chart below. This rate of appreciation is right at 2.5% over the last 6 years. Zillow indicates that the average home value within the 27530-zip code as of January 2014 was $101,300 and as of January 2020 that average is $118,100. This indicates an average increase in the market of 2.37%. I conclude that the appreciation of the homes adjoining the solar farm are not impacted by the presence of the solar farm based on this data.

	Address	Initial Sale Date	Price	Second Sale Date	Price	Year Diff	Apprec.	% Apprec.	Apprec. %/Year
1	103 Granville Pl	4/1/2013	$245,000	7/27/2018	$265,000	5.32	$20,000	8.16%	1.53%
2	105 Erin	7/1/2014	$250,000	6/19/2017	$280,000	2.97	$30,000	12.00%	4.04%
3	2312 Granville	12/1/2013	$255,000	5/1/2015	$262,000	1.41	$7,000	2.75%	1.94%
4	2312 Granville	5/1/2015	$262,000	5/1/2018	$284,900	3.00	$22,900	8.74%	2.91%
5	2310 Granville	8/1/2013	$250,000	5/14/2019	$280,000	5.79	$30,000	12.00%	2.07%
6	2308 Granville	9/1/2013	$260,000	11/12/2015	$267,500	2.20	$7,500	2.88%	1.31%
7	2304 Granville	9/1/2012	$198,000	6/1/2017	$225,000	4.75	$27,000	13.64%	2.87%
8	102 Erin	8/1/2014	$253,000	11/1/2016	$270,000	2.25	$17,000	6.72%	2.98%
								Average	2.46%
								Median	2.47%

2. Matched Pair – Mulberry, Selmer, TN



This 16 MW solar farm was built in 2014 on 208.89 acres with the closest home being 480 feet.

This solar farm adjoins two subdivisions with Central Hills having a mix of existing and new construction homes. Lots in this development have been marketed for $15,000 each with discounts offered for multiple lots being used for a single home site. I spoke with the agent with Rhonda Wheeler and Becky Hearnsberger with United County Farm & Home Realty who noted that they have seen no impact on lot or home sales due to the solar farm in this community.

I have included a map below as well as data on recent sales activity on lots that adjoin the solar farm or are near the solar farm in this subdivision both before and after the announced plan for this solar farm facility. I note that using the same method I used to breakdown the adjoining uses at the subject property I show that the predominant adjoining uses are residential and agricultural, which is consistent with the location of most solar farms.

Adjoining Use Breakdown

	Acreage	Parcels
Commercial	3.40%	0.034
Residential	12.84%	79.31%
Agri/Res	10.39%	3.45%
Agricultural	73.37%	13.79%
Total	**100.00%**	**100.00%**

I have run a number of direct matched comparisons on the sales adjoining this solar farm as shown below. These direct matched pairs include some of those shown above as well as additional more recent sales in this community. In each of these I have compared the one sale adjoining the solar farm to multiple similar homes nearby that do not adjoin a solar farm to look for any potential impact from the solar farm.

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
3	Adjoins	491 Dusty	6.86	10/28/2016	$176,000	2009	1,801	$97.72	3/2	2-Gar	Ranch	
	Not	820 Lake Trail	1.00	6/8/2018	$168,000	2013	1,869	$89.89	4/2	2-Gar	Ranch	
	Not	262 Country	1.00	1/17/2018	$145,000	2000	1,860	$77.96	3/2	2-Gar	Ranch	
	Not	35 April	1.15	8/16/2016	$185,000	2016	1,980	$93.43	3/2	2-Gar	Ranch	

Adjoining Sales Adjusted

Parcel	Solar	Address	Time	Site	YB	GLA	Park	Other	Total	% Diff	Distance
3	Adjoins	491 Dusty							$176,000		480
	Not	820 Lake Trail	-$8,324	$12,000	-$3,360	-$4,890			$163,426	7%	
	Not	262 Country	-$5,450	$12,000	$6,525	-$3,680			$154,396	12%	
	Not	35 April	$1,138	$12,000	-$6,475	-$13,380			$178,283	-1%	
									Average	6%	

The best matched pair is 35 April Loop, which required the least adjustment and indicates a -1% increase in value due to the solar farm adjacency.

Adjoining Residential Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
12	Adjoins	57 Cooper	1.20	2/26/2019	$163,000	2011	1,586	$102.77	3/2	2-Gar	1.5 Story	Pool
	Not	191 Amelia	1.00	8/3/2018	$132,000	2005	1,534	$86.05	3/2	Drive	Ranch	
	Not	75 April	0.85	3/17/2017	$134,000	2012	1,588	$84.38	3/2	2-Crprt	Ranch	
	Not	345 Woodland	1.15	12/29/2016	$131,000	2002	1,410	$92.91	3/2	1-Gar	Ranch	

Adjoining Sales Adjusted

Parcel	Solar	Address	Sales Price	Time	Site	YB	GLA	Park	Other	Total	% Diff	Distance
12	Adjoins	57 Cooper	$163,000							$163,000		685
	Not	191 Amelia	$132,000	$2,303		$3,960	$2,685	$10,000	$5,000	$155,947	4%	
	Not	75 April	$134,000	$8,029	$4,000	-$670	-$135	$5,000	$5,000	$155,224	5%	
	Not	345 Woodland	$131,000	$8,710		$5,895	$9,811		$5,000	$160,416	2%	
										Average	4%	

The best matched pair is 191 Amelia, which was most similar in time frame of sale and indicates a +4% increase in value due to the solar farm adjacency.

Adjoining Residential Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
15	Adjoins	297 Country	1.00	9/30/2016	$150,000	2002	1,596	$93.98	3/2	4-Gar	Ranch	
	Not	185 Dusty	1.85	8/17/2015	$126,040	2009	1,463	$86.15	3/2	2-Gar	Ranch	
	Not	53 Glen	1.13	3/9/2017	$126,000	1999	1,475	$85.42	3/2	2-Gar	Ranch	Brick

Adjoining Sales Adjusted

Parcel	Solar	Address	Sales Price	Time	Site	YB	GLA	Park	Other	Total	% Diff	Distance
15	Adjoins	297 Country	$150,000							$150,000		650
	Not	185 Dusty	$126,040	$4,355		-$4,411	$9,167	$10,000		$145,150	3%	
	Not	53 Glen	$126,000	-$1,699		$1,890	$8,269	$10,000		$144,460	4%	
										Average	3%	

The best matched pair is 53 Glen, which was most similar in time frame of sale and required less adjustment. It indicates a +4% increase in value due to the solar farm adjacency.

The average indicated impact from these three sets of matched pairs is +4%, which suggests a mild positive relationship due to adjacency to the solar farm. The landscaping buffer for this project is mostly natural tree growth that was retained as part of the development but much of the trees separating the panels from homes are actually on the lots for the homes themselves. I therefore consider the landscaping buffer to be thin to moderate for these adjoining homes.

I have also looked at several lot sales in this subdivision as shown below.

These are all lots within the same community and the highest prices paid are for lots one parcel off from the existing solar farm. These prices are fairly inconsistent, though they do suggest about a $3,000 loss in the lots adjoining the solar farm. This is an atypical finding and additional details suggest there is more going on in these sales than the data crunching shows. First of all Parcel 4 was purchased by the owner of the adjoining home and therefore an atypical buyer seeking to expand a lot and the site is not being purchased for home development. Moreover, using the SiteToDoBusiness demographic tools, I found that the 1-mile radius around this development is expecting a total population increase over the next 5 years of 3 people. This lack of growing demand for lots is largely explained in that context. Furthermore, the fact that finished home sales as shown above are showing no sign of a negative impact on property value makes this data unreliable and inconsistent with the data shown in sales to an end user. I therefore place little weight on this outlier data.

Parcel	Solar	Address	Acres	Date Sold	Sales Price	4/18/2019 Adj for Time	$/AC	4/18/2019 Adj for Time
4	Adjoins	Shelter	2.05	10/25/2017	$16,000	$16,728	$7,805	$8,160
10	Adjoins	Carter	1.70	8/2/2018	$14,000	$14,306	$8,235	$8,415
11	Adjoins	Cooper	1.28	9/17/2018	$12,000	$12,215	$9,375	$9,543
	Not	75 Dusty	1.67	4/18/2019	$20,000	$20,000	$11,976	$11,976
	Not	Lake Trl	1.47	11/7/2018	$13,000	$13,177	$8,844	$8,964
	Not	Lake Trl	1.67	4/18/2019	$20,000	$20,000	$11,976	$11,976

	Adjoins	Per Acre	Not Adjoins	Per Acre	% DIF/Lot	% DIF/AC
Average	$14,416	$8,706	$17,726	$10,972	19%	21%
Median	$14,306	$8,415	$20,000	$11,976	28%	30%
High	$16,728	$9,543	$20,000	$11,976	16%	20%
Low	$12,215	$8,160	$13,177	$8,964	7%	9%

3. Matched Pair – Leonard Road Solar Farm, Hughesville, MD



This 5 MW solar farm is located on 47 acres and mostly adjoins agricultural and residential uses to the west, south and east as shown above. The property also adjoins retail uses and a church. I looked at a 2016 sale of an adjoining home with a positive impact on value adjoining the solar farm of 2.90%. This is within typical market friction and supports an indication of no impact on property value.

I have shown this data below. The landscaping buffer is considered heavy.

Leonardtown Road Solar Farm, Hughesville, MD

Nearby Residential Sale After Solar Farm Construction

Address	Solar Farm	Acres	Date Sold	Sales Price*	Built	GBA	$/GBA	Style	BR/BA	Bsmt	Park	Upgrades	Other
14595 Box Elder Ct	Adjoins	3.00	2/12/2016	$291,000	1991	2,174	$133.85	Colonial	5/2.5	No	2 Car Att	N/A	Deck
15313 Bassford Rd	Not	3.32	7/20/2016	$329,800	1990	2,520	$130.87	Colonial	3/2.5	Finished	2 Car Att	Custom	Scr Por/Patio

*$9,000 concession deducted from sale price for Box Elder and $10,200 deducted from Bassford

Adjoining Sales Adjusted			Adjustments					
Address	Date Sold	Sales Price	Time	GLA	Bsmt	Upgrades	Other	Total
14595 Box Elder Ct	2/12/2016	$291,000						$291,000
15313 Bassford Rd	7/20/2016	$329,800	-$3,400	-$13,840	-$10,000	-$15,000	-$5,000	$282,560

Difference Attributable to Location $8,440
2.90%

This is within typical market friction and supports an indication of no impact on property value.

4. Matched Pair – Gastonia SC Solar, Gastonia, NC





This 5 MW project is located on the south side of Neal Hawkins Road just outside of Gastonia. The property identified above as Parcel 4 was listed for sale while this solar farm project was going

through the approval process. The property was put under contract during the permitting process with the permit being approved while the due diligence period was still ongoing. After the permit was approved the property closed with no concerns from the buyer. I spoke with Jennifer Bouvier, the broker listing the property and she indicated that the solar farm had no impact at all on the sales price. She considered some nearby sales to set the price and the closing price was very similar to the asking price within the typical range for the market. The buyer was aware that the solar farm was coming and they had no concerns.

This two-story brick dwelling was sold on March 20, 2017 for $270,000 for a 3,437 square foot dwelling built in 1934 in average condition on 1.42 acres. The property has four bedrooms and two bathrooms. The landscaping screen is light for this adjoining home due to it being a new planted landscaping buffer.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
Adjoins	609 Neal Hawkins	1.42	3/20/2017	$270,000	1934	3,427	$78.79	4/2	Open	2-Brick	
Not	1418 N Modena	4.81	4/17/2018	$225,000	1930	2,906	$77.43	3/3	2-Crprt	2-Brick	
Not	363 Dallas Bess	2.90	11/29/2018	$265,500	1968	2,964	$89.57	3/3	Open	FinBsmt	
Not	1612 Dallas Chry	2.74	9/17/2018	$245,000	1951	3,443	$71.16	3/2	Open	2-Brick	Unfin bath

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
609 Neal Hawkins								$270,000			225
1418 N Modena	$7,319		$2,700	$32,271		-$10,000		$257,290	5%		
363 Dallas Bess	$746		-$27,081	$33,179	-$10,000		$53,100	$262,456	3%		
1612 Dallas Chry	$4,110		-$12,495	-$911			$10,000	$235,704	13%		
										7%	

I also considered the newer adjoining home identified as Parcel 5 that sold later in 2017 and it likewise shows no negative impact on property value. This is also considered a light landscaping buffer.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style
Adjoins	611 Neal Hawkins	0.78	7/6/2017	$288,000	1991	2,256	$127.66	5/3	2-Gar	1.5 Brick
Not	1211 Still Frst	0.51	7/30/2018	$280,000	1989	2,249	$124.50	3/3	2-Gar	Br Rnch
Not	2867 Colony Wds	0.52	8/14/2018	$242,000	1990	2,006	$120.64	3/3	2-Gar	Br Rnch
Not	1010 Strawberry	1.00	10/4/2018	$315,000	2002	2,330	$135.19	3/2.5	2-Gar	1.5 Brick

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
611 Neal Hawkins								$288,000			145
1211 Still Frst	$1,341		$2,800	$697				$284,838	1%		
2867 Colony Wds	$7,714		$1,210	$24,128				$275,052	4%		
1010 Strawberry	-$4,555		-$17,325	-$8,003	$5,000			$290,116	-1%		
										2%	

5. Matched Pair – Summit/Ranchlands Solar, Moyock, NC





This project is located at 1374 Caritoke Highway, Moyock, NC. This is an 80 MW facility on a parent tract of 2,034 acres. Parcels Number 48 and 53 as shown in the map above were sold in 2016. The project was under construction during the time period of the first of the matched pair sales and the permit was approved well prior to that in 2015.

I looked at multiple sales of adjoining and nearby homes and compared each to multiple comparables to show a range of impacts from -10% up to +11% with an average of +2% and a median of +3%. These ranges are well within typical real estate variation and supports an indication of no impact on property value.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
48	Adjoins	129 Pinto	4.29	4/15/2016	$170,000	1985	1,559	$109.04	3/2	Drive	MFG		1,060
	Not	102 Timber	1.30	4/1/2016	$175,500	2009	1,352	$129.81	3/2	Drive	MFG		
	Not	120 Ranchland	0.99	10/1/2014	$170,000	2002	1,501	$113.26	3/2	Drive	MFG		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	129 Pinto								$170,000		-3%
Not	102 Timber	$276	$10,000	-$29,484	$18,809				$175,101	-3%	
Not	120 Ranchland	$10,735	$10,000	-$20,230	$4,598				$175,103	-3%	

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
Adjoins	105 Pinto	4.99	12/16/2016	$206,000	1978	1,484	$138.81	3/2	Det G	Ranch	
Not	111 Spur	1.15	2/1/2016	$193,000	1985	2,013	$95.88	4/2	Gar	Ranch	
Not	103 Marshall	1.07	3/29/2017	$196,000	2003	1,620	$120.99	3/2	Drive	Ranch	
Not	127 Ranchland	0.00	6/9/2015	$219,900	1988	1,910	$115.13	3/2	Gar/3Det	Ranch	

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
105 Pinto								$206,000			980
111 Spur	$6,747	$10,000	-$6,755	-$25,359				$177,633	14%		
103 Marshall	-$2,212	$10,000	-$24,500	-$8,227		$5,000		$176,212	14%		
127 Ranchland	$13,399	$10,000	-$10,995	-$24,523		-$10,000		$197,781	4%		
										11%	

Adjoining Residential Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
15	Adjoins	318 Green View	0.44	9/15/2019	$357,000	2005	3,460	$103.18	4/4	2-Car	1.5 Brick		570
	Not	195 St Andrews	0.55	6/17/2018	$314,000	2002	3,561	$88.18	5/3	2-Car	2.0 Brick		
	Not	336 Green View	0.64	1/13/2019	$365,000	2006	3,790	$96.31	6/4	3-Car	2.0 Brick		
	Not	275 Green View	0.36	8/15/2019	$312,000	2003	3,100	$100.65	5/3	2-Car	2.0 Brick		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	318 Green View								$357,000		4%
Not	195 St Andrews	$12,040		$4,710	-$7,125	$10,000			$333,625	7%	
Not	336 Green View	$7,536		-$1,825	-$25,425			-$5,000	$340,286	5%	
Not	275 Green View	$815		$3,120	$28,986	$10,000			$354,921	1%	

Adjoining Residential Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
29	Adjoins	164 Ranchland	1.01	4/30/2019	$169,000	1999	2,052	$82.36	4/2	Gar	MFG		440
	Not	150 Pinto	0.94	3/27/2018	$168,000	2017	1,920	$87.50	4/2	Drive	MFG		
	Not	105 Longhorn	1.90	10/10/2017	$184,500	2002	1,944	$94.91	3/2	Drive	MFG		
	Not	112 Pinto	1.00	7/27/2018	$180,000	2002	1,836	$98.04	3/2	Drive	MFG	Fenced	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	164 Ranchland								$169,000		-10%
Not	150 Pinto	$5,649		-$21,168	$8,085			$5,000	$165,566	2%	
Not	105 Longhorn	$8,816	-$10,000	-$3,875	$7,175			$5,000	$191,616	-13%	
Not	112 Pinto	$4,202		-$3,780	$14,824			$5,000	$200,245	-18%	

Adjoining Residential Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
	Adjoins	358 Oxford	10.03	9/16/2019	$478,000	2008	2,726	$175.35	3/3	2 Gar	Ranch		635
	Not	276 Summit	10.01	12/20/2017	$355,000	2006	1,985	$178.84	3/2	2 Gar	Ranch		
	Not	176 Providence	6.19	5/6/2019	$425,000	1990	2,549	$166.73	3/3	4 Gar	Ranch	Brick	
	Not	1601 B Caratoke	12.20	9/26/2019	$440,000	2016	3,100	$141.94	4/3.5	5 Gar	Ranch	Pool	

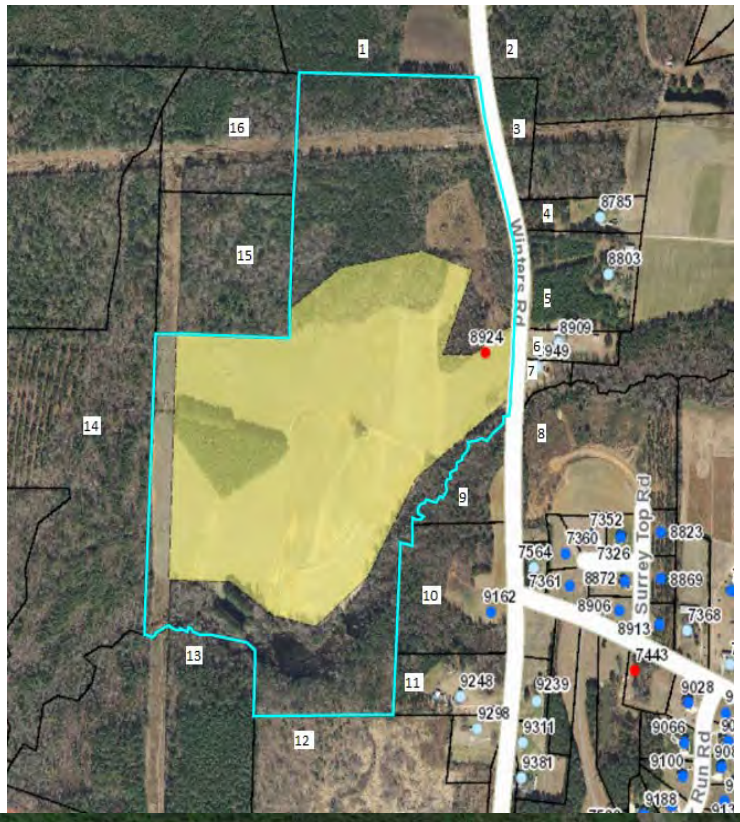
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	358 Oxford								$478,000		5%
Not	276 Summit	$18,996		$3,550	$106,017	$10,000			$493,564	-3%	
Not	176 Providence	$4,763		$38,250	$23,609		-$10,000	-$25,000	$456,623	4%	
Not	1601 B Caratoke	-$371	$50,000	-$17,600	-$42,467	-$5,000	-$10,000		$414,562	13%	

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
	Nearby	343 Oxford	10.01	3/9/2017	$490,000	2016	3,753	$130.56	3/3	2 Gar	1.5 Story	Pool	970
	Not	287 Oxford	10.01	9/4/2017	$600,000	2013	4,341	$138.22	5/4.5	8-Gar	1.5 Story	Pool	
	Not	301 Oxford	10.00	4/23/2018	$434,000	2013	3,393	$127.91	5/3	2 Gar	1.5 Story		
	Not	218 Oxford	10.01	4/4/2017	$525,000	2006	4,215	$124.56	4/3	4 Gar	1.5 Story	VG Barn	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	343 Oxford								$490,000		3%
Not	287 Oxford	-$9,051		$9,000	-$65,017	-$15,000	-$25,000		$494,932	-1%	
Not	301 Oxford	-$14,995	-$10,000	$6,510	$36,838				$452,353	8%	
Not	218 Oxford	-$1,150		$26,250	-$46,036		-$10,000	-$10,000	$484,064	1%	

6. Matched Pair – Tracy Solar, Bailey, NC





This project is located in rural Nash County on Winters Road with a 5 MW facility that was built in 2016 on 50 acres. A local builder acquired parcels 9 and 10 following construction as shown below

at rates comparable to other tracts in the area. They then built a custom home for an owner and sold that at a price similar to other nearby homes as shown in the matched pair data below. The retained woods provide a heavy landscaped buffer for this homesite.

Adjoining Land Sales After Solar Farm Completed

#	Solar Farm	TAX ID	Grantor	Grantee	Address	Acres	Date Sold	Sales Price	$/AC	Other
9 &10	Adjoins	316003 & 316004	Cozart	Kingsmill	9162 Winters	13.22	7/21/2016	$70,000	$5,295	
	Not	6056	Billingsly		427 Young	41	10/21/2016	$164,000	$4,000	
	Not	33211	Fulcher	Weikel	10533 Cone	23.46	7/18/2017	$137,000	$5,840	Doublewide, structures
	Not	106807	Perry	Gardner	Claude Lewis	11.22	8/10/2017	$79,000	$7,041	Gravel drive for sub, cleared
	Not	3437	Vaughan	N/A	11354 Old Lewis Sch	18.73	Listing	$79,900	$4,266	Small cemetery,wooded

Adjoining Sales Adjusted

Time	Acres	Location	Other	Adj $/Ac	% Diff
				$5,295	
$0	$400	$0	$0	$4,400	17%
-$292	$292	$0	-$500	$5,340	-1%
-$352	$0	$0	-$1,000	$5,689	-7%
-$213	$0	$0	$213	$4,266	19%
				Average	7%

Adjoining Residential Sales After Solar Farm Completed

#	Solar Farm	n	Address	Acres	Date Sold	Sales Price	Built	GLA	$/GLA	BR/BA	Style	Other
9 &10	Adjoins	gs	9162 Winters	13.22	1/5/2017	$255,000	2016	1,616	$157.80	3/2	Ranch	1296 sf wrkshp
	Not	w	7352 Red Fox	0.93	6/30/2016	$176,000	2010	1,529	$115.11	3/2	2-story	

Adjoining Sales Adjusted

Time	Acres	YB	GLA	Style	Other	Total	% Diff
						$255,000	
$0	$44,000	$7,392	$5,007	$5,000	$15,000	$252,399	1%

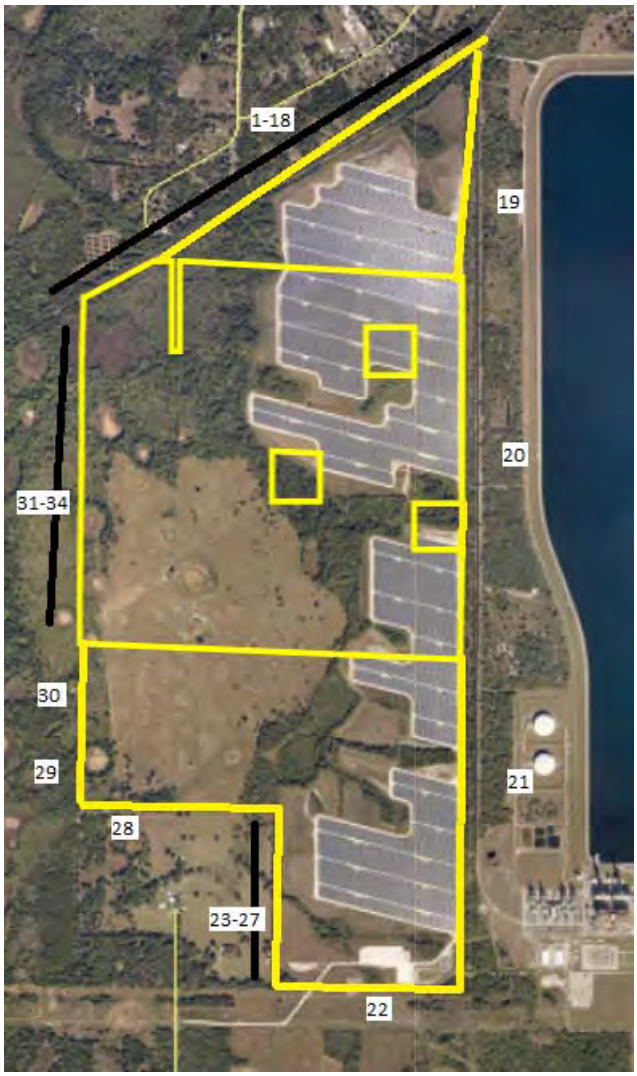
The comparables for the land show either a significant positive relationship or a mild negative relationship to having and adjoining solar farm, but when averaged together they show no negative impact. The wild divergence is due to the difficulty in comping out this tract of land and the wide variety of comparables used. The two comparables that show mild negative influences include a property that was partly developed as a residential subdivision and the other included a doublewide with some value and accessory agricultural structures. The tax assessed value on the improvements were valued at $60,000. So both of those comparables have some limitations for comparison. The two that show significant enhancement due to adjacency includes a property with a cemetery located in the middle and the other is a tract almost twice as large. Still that larger tract after adjustment provides the best matched pair as it required the least adjustment. I therefore conclude that there is no negative impact due to adjacency to the solar farm shown by this matched pair.

The dwelling that was built on the site was a build-to-suit and was compared to a nearby homesale of a property on a smaller parcel of land. I adjusted for that differenced based on a $25,000 value for a 1-acre home site versus the $70,000 purchase price of the larger subject tract. The other adjustments are typical and show no impact due to the adjacency to the solar farm.

The closest solar panel to the home is 780 feet away.

I note that the representative for Kingsmill Homes indicated that the solar farm was never a concern in purchasing the land or selling the home. He also indicated that they had built a number of nearby homes across the street and it had never come up as an issue.

7. Matched Pair – Manatee Solar Farm, Parrish, FL



This solar farm is located near Seminole Trail, Parrish, FL. The solar farm has a 74.50 MW output and is located on a 1,180.38-acre tract and was built in 2016. The tract is owned by Florida Power & Light Company.

I have considered the recent sale of 13670 Highland Road, Wimauma, Florida. This one-story, concrete block home is located just north of the solar farm and separated from the solar farm by a railroad corridor. This home is a 3 BR, 3 BA 1,512 s.f. home with a carport and workshop. The property includes new custom cabinets, granite counter tops, brand-new stainless-steel appliances, updated bathrooms and new carpet in the bedrooms. The home is sitting on 5 acres. The home was built in 1997.

I have compared this sale to several nearby homesales as part of this matched pair analysis as shown below. The landscaping separating the home from the solar farm is considered heavy.

Solar	TAX ID/Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Note
Adjoins	13670 Highland	5.00	8/21/2017	$255,000	1997	1,512	$168.65	3/3	Carport/Wrkshp	Ranch	Renov.
Not	2901 Arrowsmith	1.91	1/31/2018	$225,000	1979	1,636	$137.53	3/2	2 Garage/Wrkshp	Ranch	
Not	602 Butch Cassidy	1.00	5/5/2017	$220,000	2001	1,560	$141.03	3/2	N/A	Ranch	Renov.
Not	2908 Wild West	1.23	7/12/2017	$254,000	2003	1,554	$163.45	3/2	2 Garage/Wrkshp	Ranch	Renov.
Not	13851 Highland	5.00	9/13/2017	$240,000	1978	1,636	$146.70	4/2	3 Garage	Ranch	Renov.

		Adjoining Sales Adjusted								
Solar	**TAX ID/Address**	**Time**	**Acres**	**YB**	**GLA**	**BR/BA**	**Park**	**Note**	**Total**	**% Diff**
Adjoins	13670 Highland								$255,000	
Not	2901 Arrowsmith	$2,250	$10,000	$28,350	-$8,527	$5,000	-$10,000	$10,000	$262,073	-3%
Not	602 Butch Cassidy	-$2,200	$10,000	-$6,160	-$3,385	$5,000	$2,000		$225,255	12%
Not	2908 Wild West	$0	$10,000	-$10,668	-$3,432	$5,000	-$10,000		$244,900	4%
Not	13851 Highland	$0	$0	$31,920	-$9,095	$3,000	-$10,000		$255,825	0%
									Average	3%

The sales prices of the comparables before adjustments range from $220,000 to $254,000. After adjustments they range from $225,255 to $262,073. The comparables range from no impact to a strong positive impact. The comparables showing -3% and +4% impact on value is considered within a typical range of value and therefore not indicative of any impact on property value.

This set of matched pair data falls in line with the data seen in other states. The closest solar panel to the home at 13670 Highland is 1,180 feet. There is a wooded buffer between these two properties.

I have included a map showing the relative location of these properties below.



8. Matched Pair – McBride Place Solar Farm, Midland, NC



This project is located on Mount Pleasant Road, Midland, North Carolina. The property is on 627 acres on an assemblage of 974.59 acres. The solar farm was approved in early 2017 for a 74.9 MW facility.

I have considered the sale of 4380 Joyner Road which adjoins the proposed solar farm near the northwest section. This property was appraised in April of 2017 for a value of $317,000 with no consideration of any impact due to the solar farm in that figure. The property sold in November

2018 for $325,000 with the buyer fully aware of the proposed solar farm. The landscaping buffer relative to Joyner Road, Hayden Way, Chanel Court and Kristi Lane is considered medium, while the landscaping for the home at the north end of Chanel Court is considered very light.

I have considered the following matched pairs to the subject property.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	4380 Joyner	12.00	11/22/2017	$325,000	1979	1,598	$203.38	3/2	2xGar	Ranch	Outbldg
Not	3870 Elkwood	5.50	8/24/2016	$250,000	1986	1,551	$161.19	3/2.5	Det 2xGar	Craft	
Not	8121 Lower Rocky	18.00	2/8/2017	$355,000	1977	1,274	$278.65	2/2	2xCarprt	Ranch	Eq. Fac.
Not	13531 Cabarrus	7.89	5/20/2016	$267,750	1981	2,300	$116.41	3/2	2xGar	Ranch	

Adjoining Sales Adjusted

Time	Acres	YB	Condition	GLA	BR/BA	Park	Other	Total	% Diff
								$325,000	
$7,500	$52,000	-$12,250	$10,000	$2,273	-$2,000	$2,500	$7,500	$317,523	2%
$7,100	-$48,000	$4,970		$23,156	$0	$3,000	-$15,000	$330,226	-2%
$8,033	$33,000	-$3,749	$20,000	-$35,832	$0	$0	$7,500	$296,702	9%
								Average	3%

The home at 4380 Joyner Road is 275 feet from the closest solar panel.

I also considered the recent sale of a lot at 5800 Kristi Lane that is on the east side of the proposed solar farm. This 4.22-acre lot sold in December 2017 for $94,000. A home was built on this lot in 2019 with the closest point from home to panel at 689 feet. The home site is heavily wooded and their remains a wooded buffer between the solar panels and the home. I spoke with the broker, Margaret Dabbs, who indicated that the solar farm was considered a positive by both buyer and seller as it ensures no subdivision will be happening in that area. Buyers in this market are looking for privacy and seclusion.

The breakdown of recent lot sales on Kristi are shown below with the lowest price paid for the lot with no solar farm exposure, though that lot has exposure to Mt Pleasant Road South. Still the older lot sales have exposure to the solar farm and sold for higher prices than the front lot and adjusting for time would only increase that difference.

Adjoining Lot Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	$/AC	$/Lot
	Adjoins	5811 Kristi	3.74	5/1/2018	$100,000	$26,738	$100,000
	Adjoins	5800 Kristi	4.22	12/1/2017	$94,000	$22,275	$94,000
	Not	5822 Kristi	3.43	2/24/2020	$90,000	$26,239	$90,000

The lot at 5811 Kristi Lane sold in May 2018 for $100,000 for a 3.74-acre lot. The home that was built later in 2018 is 505 feet to the closest solar panel. This home then sold to a homeowner for $530,000 in April 2020. I have compared this home sale to other properties in the area as shown below.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	5811 Kristi	3.74	3/31/2020	$530,000	2018	3,858	$137.38	5/3.5	2 Gar	2-story	Cement Ext
Not	3915 Tania	1.68	12/9/2019	$495,000	2007	3,919	$126.31	3/3.5	2 Gar	2-story	3Det Gar
Not	6782 Manatee	1.33	3/8/2020	$460,000	1998	3,776	$121.82	4/2/2h	2 Gar	2-story	Water
Not	314 Old Hickory	1.24	9/20/2019	$492,500	2017	3,903	$126.18	6/4.5	2 Gar	2-story	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	5811 Kristi								$530,000		5%
Not	3915 Tania	$6,285		$27,225	-$3,852		-$20,000		$504,657	5%	
Not	6782 Manatee	$1,189		$46,000	$4,995	$5,000			$517,183	2%	
Not	314 Old Hickory	$10,680		$2,463	-$2,839	-$10,000			$492,803	7%	

After adjusting the comparables, I found that the average adjusted value shows a slight increase in value for the subject property adjoining a solar farm. As in the other cases, this is a mild positive impact on value but within the typical range of real estate transactions.

I also looked at 5833 Kristi Lane that sold on 9/14/2020 for $625,000. This home is 470 feet from the closest panel.

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
Nearby	5833 Kristi	4.05	9/14/2020	$625,000	2008	4,373	$142.92	5/4	3-Car	2-Brick	
Not	4055 Dakeita	4.90	12/30/2020	$629,000	2005	4,427	$142.08	4/4	4-Car	2-Brick	4DetGar/Stable
Not	9615 Bales	2.16	6/30/2020	$620,000	2007	4,139	$149.79	4/5	3-Car	2-Stone	2DetGar
Not	9522 Bales	1.47	6/18/2020	$600,000	2007	4,014	$149.48	4/4.5	3-Car	2-Stone	

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
5833 Kristi								$625,000			470
4055 Dakeita	-$9,220		$5,661	-$6,138		-$25,000		$594,303	5%		
9615 Bales	$6,455		$1,860	$28,042	-$10,000	-$15,000		$631,356	-1%		
9522 Bales	$7,233		$1,800	$42,930	-$5,000			$646,963	-4%		
										0%	

The average difference is 0% impact and the differences are all within a close range with this set of comparables and supports a finding of no impact on property value.

I have also looked at 4504 Chanel Court. This home sold on January 1, 2020 for $393,500 for this 3,010 square foot home built in 2004 with 3 bedrooms, 3.5 bathrooms, and a 3-car garage. This home includes a full partially finished basement that significantly complicates comparing this to other sales. This home previously sold on January 23, 2017 for $399,000. This was during the time that the solar farm was a known factor as the solar farm was approved in early 2017 and public discussions had already commenced. I spoke with Rachelle Killman with Real Estate Realty, LLC the buyer's agent for this transaction and she indicated that the solar farm was not a factor or consideration for the buyer. She noted that you could see the panels sort of through the trees, but it wasn't a concern for the buyer. She was not familiar with the earlier 2017 sale, but indicated that it was likely too high. This again goes back to the partially finished basement issue. The basement has a fireplace, and an installed 3/4 bathroom but otherwise bare studs and concrete floors with different buyers assigning varying value to that partly finished space. I also reached out to Don Gomez with Don Anthony Realty, LLC as he was the listing agent.

I also looked at the recent sale of 4599 Chanel Court. This home is within 310 feet of solar panels but notably does not have a good landscaping screen in place as shown in the photo below. The plantings appear to be less than 3-feet in height and only a narrow, limited screen of existing hardwoods were kept. The photograph is from the listing.

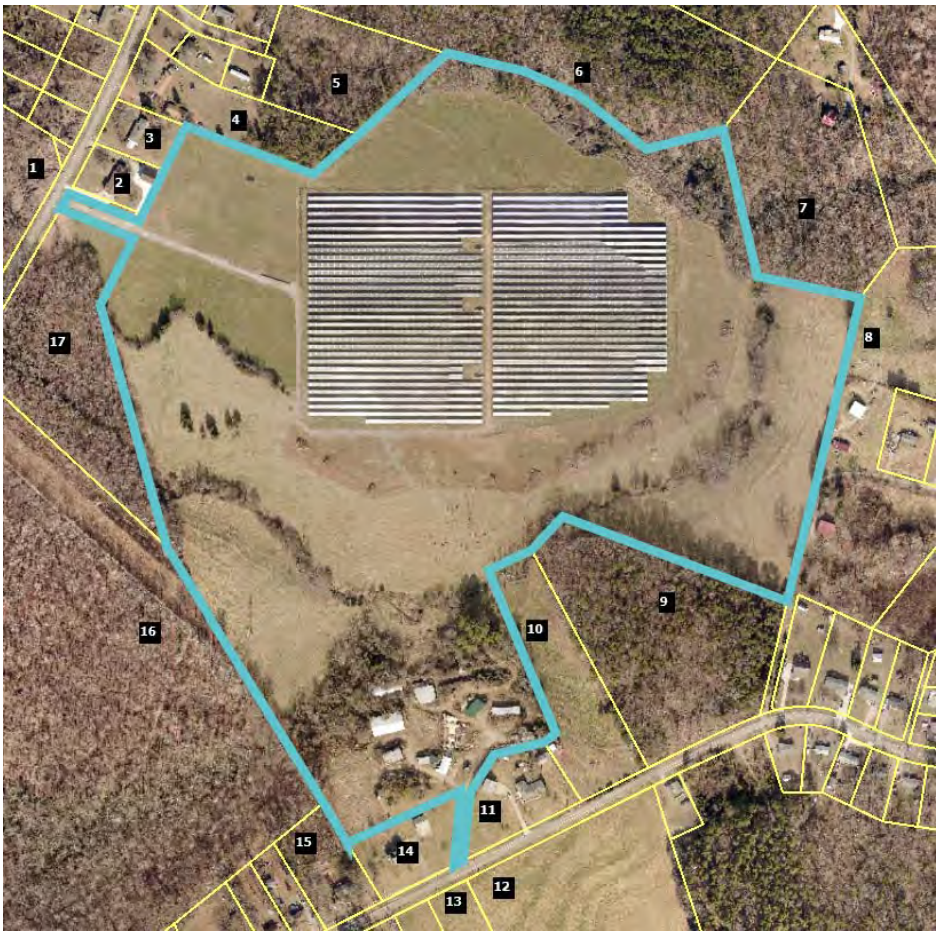
According to Scott David with Better Homes and Gardens Paracle Realty, this property was under contract for $550,000 contingent on the buyer being able to sell their former home. The former home was apparently overpriced and did not sell and the contract stretched out over 2.5 months.

The seller was in a bind as they had a home they were trying to buy contingent on this closing and were about to lose that opportunity. A cash buyer offered them a quick close at $500,000 and the seller accepted that offer in order to not lose the home they were trying to buy. According to Mr. David, the original contracted buyer and the actual cash buyer never considered the solar farm as a negative. In fact Mr. David noted that the actual buyer saw it as a great opportunity to purchase a home where a new subdivision could not be built behind his house. I therefore conclude that this property supports a finding of no impact on adjoining property, even where the landscaping screen still requires time to grow in for a year-round screen.

I also considered a sale/resale analysis on this property. This same home sold on September 15, 2015 for $462,000. Adjusting this upward by 5% per year for the five years between these sales dates suggests a value of $577,500. Comparing that to the $550,000 contract that suggests a 5% downward impact, which is within a typical market variation. Given that the broker noted no negative impact from the solar farm and the analysis above, I conclude this sale supports a finding of no impact on value.



9. Matched Pair – Mariposa Solar, Gaston County, NC



This project is a 5 MW facility located on 35.80 acres out of a parent tract of 87.61 acres at 517 Blacksnake Road, Stanley that was built in 2016.

I have considered a number of recent sales around this facility as shown below.

The first is identified in the map above as Parcel 1, which is 215 Mariposa Road. This is an older dwelling on large acreage with only one bathroom. I've compared it to similar nearby homes as shown below. The landscaping buffer for this home is considered light.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style
Adjoins	215 Mariposa	17.74	12/12/2017	$249,000	1958	1,551	$160.54	3/1	Garage	Br/Rnch
Not	249 Mariposa	0.48	3/1/2019	$153,000	1974	1,792	$85.38	4/2	Garage	Br/Rnch
Not	110 Airport	0.83	5/10/2016	$166,000	1962	2,165	$76.67	3/2	Crprt	Br/Rnch
Not	1249 Blacksnake	5.01	9/20/2018	$242,500	1980	2,156	$112.48	3/2	Drive	1.5
Not	1201 Abernathy	27.00	5/3/2018	$390,000	1970	2,190	$178.08	3/2	Crprt	Br/Rnch

Adjoining Residential Sales After Solar Farm Approved — Adjoining Sales Adjusted

Solar	Address	Acres	Date Sold	Sales Price	Time	YB	Acres	GLA	BR/BA	Park	Other	Total	% Diff
Adjoins	215 Mariposa	17.74	12/12/2017	$249,000								$249,000	
Not	249 Mariposa	0.48	3/1/2019	$153,000	-$5,583	-$17,136	$129,450	-$20,576	-$10,000			$229,154	8%
Not	110 Airport	0.83	5/10/2016	$166,000	$7,927	-$4,648	$126,825	-$47,078	-$10,000			$239,026	4%
Not	1249 Blacksnake	5.01	9/20/2018	$242,500	-$5,621	-$37,345	$95,475	-$68,048	-$10,000	$5,000		$221,961	11%
Not	1201 Abernathy	27.00	5/3/2018	$390,000	-$4,552	-$32,760	-$69,450	-$60,705	-$10,000			$212,533	15%
												Average	9%

The average difference after adjusting for all factors is +9% on average, which suggests an enhancement due to the solar farm across the street. Given the large adjustments for acreage and size, I will focus on the low end of the adjusted range at 4%, which is within the typical deviation and therefore suggests no impact on value.

I have also considered Parcel 4 that sold after the solar farm was approved but before it had been constructed in 2016. The landscaping buffer for this parcel is considered light.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	242 Mariposa	2.91	9/21/2015	$180,000	1962	1,880	$95.74	3/2	Carport	Br/Rnch	Det Wrkshop
Not	249 Mariposa	0.48	3/1/2019	$153,000	1974	1,792	$85.38	4/2	Garage	Br/Rnch	
Not	110 Airport	0.83	5/10/2016	$166,000	1962	2,165	$76.67	3/2	Crprt	Br/Rnch	
Not	1249 Blacksnake	5.01	9/20/2018	$242,500	1980	2,156	$112.48	3/2	Drive	1.5	

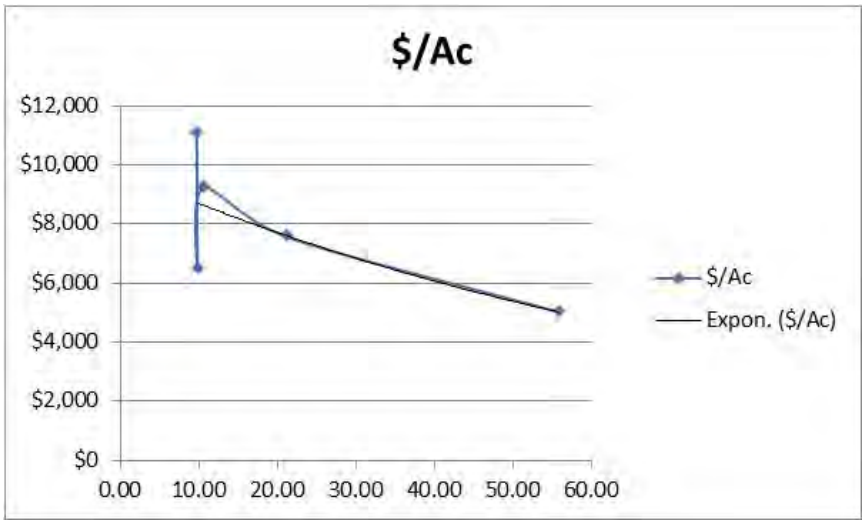
Adjoining Residential Sales After Solar Farm Approved — Adjoining Sales Adjusted

Solar	Address	Acres	Date Sold	Sales Price	Time	YB	Acres	GLA	BR/BA	Park	Other	Total	% Diff
Adjoins	242 Mariposa	2.91	9/21/2015	$180,000								$180,000	
Not	249 Mariposa	0.48	3/1/2019	$153,000	-$15,807	-$12,852	$18,468	$7,513		-$3,000	$25,000	$172,322	4%
Not	110 Airport	0.83	5/10/2016	$166,000	-$3,165	$0	$15,808	-$28,600			$25,000	$175,043	3%
Not	1249 Blacksnake	5.01	9/20/2018	$242,500	-$21,825	-$30,555	-$15,960	-$40,942		$2,000	$25,000	$160,218	11%
												Average	6%

The average difference after adjusting for all factors is +6%, which is again suggests a mild increase in value due to the adjoining solar farm use. The median is a 4% adjustment, which is within a standard deviation and suggests no impact on property value.

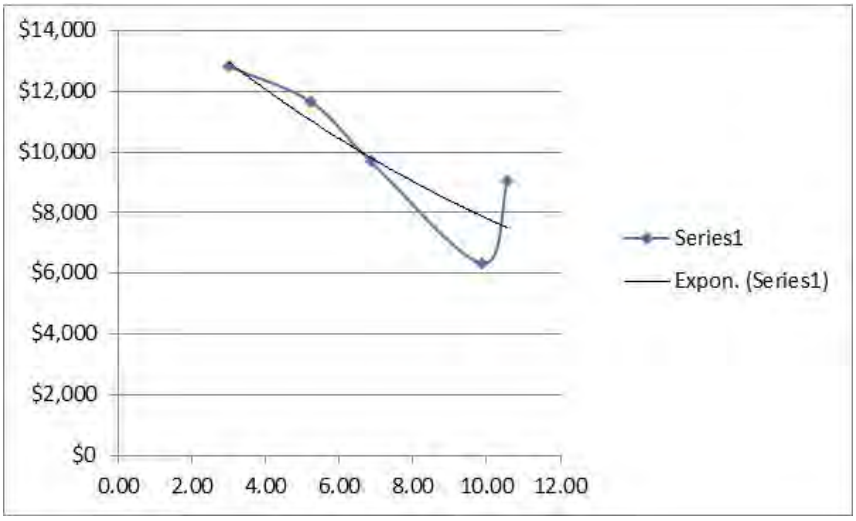
I have also considered the recent sale of Parcel 13 that is located on Blacksnake Road south of the project. I was unable to find good land sales in the same 20-acre range, so I have considered sales of larger and smaller acreage. I adjusted each of those land sales for time. I then applied the price per acre to a trendline to show where the expected price per acre would be for 20 acres. As can be seen in the chart below, this lines up exactly with the purchase of the subject property. I therefore conclude that there is no impact on Parcel 13 due to proximity to the solar farm.

Adjoining Residential Land Sales After Solar Farm Approved						**Adjoining Sales Adjusted**	
Solar	**Tax/Street**	**Acres**	**Date Sold**	**Sales Price**	**$/Ac**	**Time**	**$/Ac**
Adjoins	174339/Blacksnake	21.15	6/29/2018	$160,000	$7,565		$7,565
Not	227852/Abernathy	10.57	5/9/2018	$97,000	$9,177	$38	$9,215
Not	17443/Legion	9.87	9/7/2018	$64,000	$6,484	-$37	$6,447
Not	164243/Alexis	9.75	2/1/2019	$110,000	$11,282	-$201	$11,081
Not	176884/Bowden	55.77	6/13/2018	$280,000	$5,021	$7	$5,027



Finally, I have considered the recent sale of Parcel 17 that sold as vacant land. I was unable to find good land sales in the same 7-acre range, so I have considered sales of larger and smaller acreage. I adjusted each of those land sales for time. I then applied the price per acre to a trendline to show where the expected price per acre would be for 7 acres. As can be seen in the chart below, this lines up with the trendline running right through the purchase price for the subject property. I therefore conclude that there is no impact on Parcel 13 due to proximity to the solar farm. I note that this property was improved with a 3,196 square foot ranch built in 2018 following the land purchase, which shows that development near the solar farm was unimpeded.

Adjoining Residential Land Sales After Solar Farm Approved						**Adjoining Sales Adjusted**		
Solar	**Tax/Street**	**Acres**	**Date Sold**	**Sales Price**	**$/Ac**	**Time**	**Location**	**$/Ac**
Adjoins	227039/Mariposa	6.86	12/6/2017	$66,500	$9,694			$9,694
Not	227852/Abernathy	10.57	5/9/2018	$97,000	$9,177	-$116		$9,061
Not	17443/Legion	9.87	9/7/2018	$64,000	$6,484	-$147		$6,338
Not	177322/Robinson	5.23	5/12/2017	$66,500	$12,715	$217	-$1,272	$11,661
Not	203386/Carousel	2.99	7/13/2018	$43,500	$14,548	-$262	-$1,455	$12,832



10. Matched Pair – Clarke County Solar, Clarke County, VA



This project is a 20 MW facility located on a 234-acre tract that was built in 2017.

I have considered two recent sales of Parcel 3. The home on this parcel is 1,230 feet from the closest panel as measured in the second map from Google Earth, which shows the solar farm under construction. This home sold in January 2017 for $295,000 and again in August 2019 for $385,000. I show each sale below and compare those to similar home sales in each time frame. The significant increase in price between 2017 and 2019 is due to a major kitchen remodel, new roof, and related upgrades as well as improvement in the market in general. The sale and later resale of the home with updates and improvements speaks to pride of ownership and increasing overall value as properties perceived as diminished are less likely to be renovated and sold for profit.

I note that 102 Tilthammer includes a number of barns that I did not attribute any value in the analysis. The market would typically give some value for those barns but even without that adjustment there is an indication of a positive impact on value due to the solar farm. The landscaping buffer from this home is considered light.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
3	Adjoins	833 Nations Spr	5.13	8/18/2019	$385,000	1979	1,392	$276.58	3/2	Det Gar	Ranch	UnBsmt
	Not	167 Leslie	5.00	8/19/2020	$429,000	1980	1,665	$257.66	3/2	Det2Gar	Ranch	
	Not	2393 Old Chapel	2.47	8/10/2020	$330,000	1974	1,500	$220.00	3/1.5	Det Gar	Ranch	
	Not	102 Tilthammer	6.70	5/7/2019	$372,000	1970	1,548	$240.31	3/1.5	Det Gar	Ranch	UnBsmt

Adjoining Sales Adjusted

Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
							$385,000			1230
-$13,268		-$2,145	-$56,272		-$5,000	$50,000	$402,315	-4%		
-$9,956	$25,000	$8,250	-$19,008	$5,000		$50,000	$389,286	-1%		
$3,229		$16,740	-$29,991	$5,000			$366,978	5%		
									0%	

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
3	Adjoins	833 Nations Spr	5.13	1/9/2017	$295,000	1979	1,392	$211.93	3/2	Det Gar	Ranch	UnBsmt
	Not	6801 Middle	2.00	12/12/2017	$249,999	1981	1,584	$157.83	3/2	Open	Ranch	
	Not	4174 Rockland	5.06	1/2/2017	$300,000	1990	1,688	$177.73	3/2	2 Gar	2-story	
	Not	400 Sugar Hill	1.00	6/7/2018	$180,000	1975	1,008	$178.57	3/1	Open	Ranch	

Adjoining Sales Adjusted

Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
							$295,000			1230
-$7,100	$25,000	-$2,500	-$24,242		$5,000	$50,000	$296,157	0%		
$177		-$16,500	-$42,085		-$10,000	$50,000	$281,592	5%		
-$7,797		$3,600	$54,857	$10,000	$5,000	$50,000	$295,661	0%		
									1%	

11. Matched Pair – Simon Solar, Social Circle, GA



This 30 MW solar farm is located off Hawkins Academy Road and Social Circle Fairplay Road. I identified three adjoining sales to this tract after development of the solar farm. However, one of those is shown as Parcel 12 in the map above and includes a powerline easement encumbering over a third of the 5 acres and adjoins a large substation as well. It would be difficult to isolate those impacts from any potential solar farm impact and therefore I have excluded that sale. I also excluded the recent sale of Parcel 17, which is a farm with conservation restrictions on it that similarly would require a detailed examination of those conservation restrictions in order to see if there was any impact related to the solar farm. I therefore focused on the recent sale of Parcel 7 and the adjoining parcel to the south of that. They are technically not adjoining due to the access road for the flag-shaped lot to the east. Furthermore, there is an apparent access easement serving the two rear lots that encumber these two parcels which is a further limitation on these sales. This analysis assumes that the access easement does not negatively impact the subject property, though it may.

The landscaping buffer relative to this parcel is considered medium.

Adjoining Land Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	$/AC	Type	Other
7+	Adjoins	4514 Hawkins	36.86	3/31/2016	$180,000	$4,883	Pasture	Esmts
	Not	HD Atha	69.95	12/20/2016	$357,500	$5,111	Wooded	N/A
	Not	Pannell	66.94	11/8/2016	$322,851	$4,823	Mixed	*
	Not	1402 Roy	123.36	9/29/2016	$479,302	$3,885	Mixed	**

* Adjoining 1 acre purchased by same buyer in same deed. Allocation assigned on the County Tax Record.

** Dwelling built in 1996 with a 2016 tax assessed value of $75,800 deducted from sales price to reflect land value

Adjoining Sales Adjusted						Avg
Time	Size	Type	Other	Total/Ac	% Diff	% Diff
				$4,883		
$89	$256			$5,455	-12%	
-$90	$241			$4,974	-2%	
-$60	$389			$4,214	14%	
						0%

The range of impact identified by these matched pairs are -12% to +14%, with an average of 0% impact due to the solar farm. The best matched pair with the least adjustment supports a -2% impact due to the solar farm. I note again that this analysis considers no impact for the existing access easements that meander through this property and it may be having an impact. Still at -2% impact as the best indication for the solar farm, I consider that to be no impact given that market fluctuations support +/- 5%.

12. Matched Pair – Candace Solar, Princeton, NC





This 5 MW solar farm is located at 4839 US 70 Highway just east of Herring Road. This solar farm was completed on October 25, 2016.

I identified three adjoining sales to this tract after development of the solar farm with frontage on US 70. I did not attempt to analyze those sales as they have exposure to an adjacent highway and railroad track. Those homes are therefore problematic for a matched pair analysis unless I have similar homes fronting on a similar corridor.

I did consider a land sale and a home sale on adjoining parcels without those complications.

The lot at 499 Herring Road sold to Paradise Homes of Johnston County of NC, Inc. for $30,000 in May 2017 and a modular home was placed there and sold to Karen and Jason Toole on September 29, 2017. I considered the lot sale first as shown below and then the home sale that followed. The landscaping buffer relative to this parcel is considered medium.

Adjoining Land Sales After Solar Farm Approved							**Adjoining Sales Adjusted**				
Parcel	**Solar**	**Address**	**Acres**	**Date Sold**	**Sales Price**	**Other**	**Time**	**Site**	**Other**	**Total**	**% Diff**
16	Adjoins	499 Herring	2.03	5/1/2017	$30,000					$30,000	
	Not	37 Becky	0.87	7/23/2019	$24,500	Sub/Pwr	-$1,679	$4,900		$27,721	8%
	Not	5858 Bizzell	0.88	8/17/2016	$18,000		$390	$3,600		$21,990	27%
	Not	488 Herring	2.13	12/20/2016	$35,000		$389			$35,389	-18%
										Average	5%

Following the land purchase, the modular home was placed on the site and sold. I have compared this modular home to the following sales to determine if the solar farm had any impact on the purchase price.

Adjoining Residential Sales After Solar Farm Approved

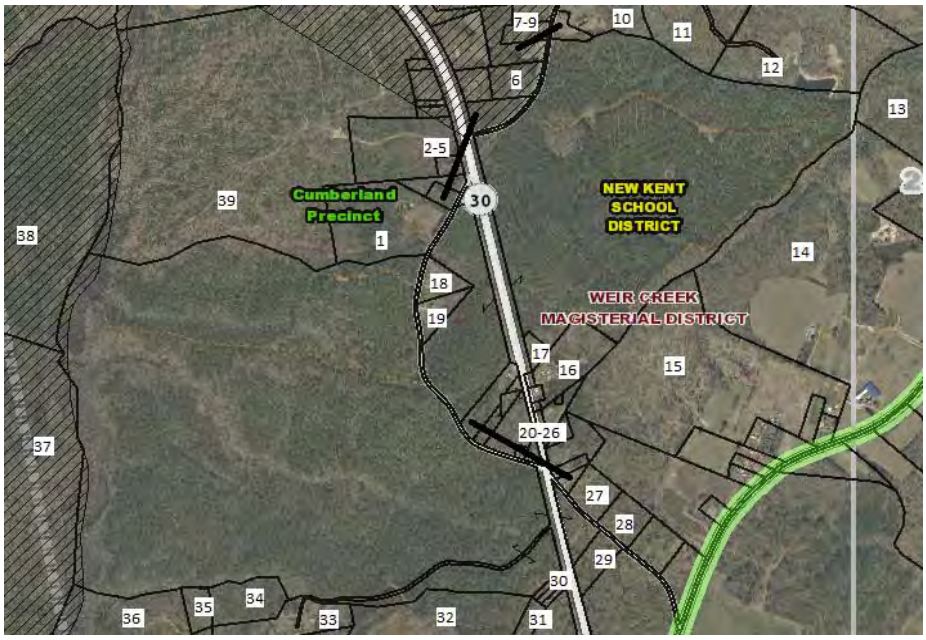
Parcel	**Solar**	**Address**	**Acres**	**Date Sold**	**Sales Price**	**Built**	**GBA**	**$/GBA**	**BR/BA**	**Park**	**Style**	**Other**
16	Adjoins	499 Herring	2.03	9/27/2017	$215,000	2017	2,356	$91.26	4/3	Drive	Modular	
	Not	678 WC	6.32	3/8/2019	$226,000	1995	1,848	$122.29	3/2.5	Det Gar	Mobile	Ag bldgs
	Not	1810 Bay V	8.70	3/26/2018	$170,000	2003	2,356	$72.16	3/2	Drive	Mobile	Ag bldgs
	Not	1795 Bay V	1.78	12/1/2017	$194,000	2017	1,982	$97.88	4/3	Drive	Modular	

Adjoining Residential Sales Af			**Adjoining Sales Adjusted**									**Avg**	
Parcel	**Solar**	**Address**	**Time**	**Site**	**YB**	**GLA**	**BR/BA**	**Park**	**Other**	**Total**	**% Diff**	**% Diff**	**Distance**
16	Adjoins	499 Herring								$215,000			488
	Not	678 WC	-$10,037	-$25,000	$24,860	$37,275	-$5,000	-$7,500	-$20,000	$220,599	-3%		
	Not	1810 Bay V	-$2,579	-$20,000	$11,900	$0				$159,321	26%		
	Not	1795 Bay V	-$1,063		$0	$21,964				$214,902	0%		
												8%	

The best comparable is 1795 Bay Valley as it required the least adjustment and was therefore most similar, which shows a 0% impact. This signifies no impact related to the solar farm.

The range of impact identified by these matched pairs ranges are therefore -3% to +26% with an average of +8% for the home and an average of +4% for the lot, though the best indicator for the lot shows a $5,000 difference in the lot value due to the proximity to the solar farm or a -12% impact.

13. Matched Pair – Walker-Correctional Solar, Barham Road, Barhamsville, VA





This project was built in 2017 and located on 484.65 acres for a 20 MW with the closest home at 110 feet from the closest solar panel with an average distance of 500 feet.

I considered the recent sale identified on the map above as Parcel 19, which is directly across the street and based on the map shown on the following page is 250 feet from the closest panel. A

limited buffering remains along the road with natural growth being encouraged, but currently the panels are visible from the road. Alex Uminski, SRA with MGMiller Valuations in Richmond VA confirmed this sale with the buying and selling broker. The selling broker indicated that the solar farm was not a negative influence on this sale and in fact the buyer noticed the solar farm and then discovered the listing. The privacy being afforded by the solar farm was considered a benefit by the buyer. I used a matched pair analysis with a similar sale nearby as shown below and found no negative impact on the sales price. Property actually closed for more than the asking price. The landscaping buffer is considered light.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	5241 Barham	2.65	10/18/2018	$264,000	2007	1,660	$159.04	3/2	Drive	Ranch	Modular
Not	17950 New Kent	5.00	9/5/2018	$290,000	1987	1,756	$165.15	3/2.5	3 Gar	Ranch	
Not	9252 Ordinary	4.00	6/13/2019	$277,000	2001	1,610	$172.05	3/2	1.5-Gar	Ranch	
Not	2416 W Miller	1.04	9/24/2018	$299,000	1999	1,864	$160.41	3/2.5	Gar	Ranch	

Adjoining Sales Adjusted

Solar	Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
Adjoins	5241 Barham								$264,000		250
Not	17950 New Kent		-$8,000	$29,000	-$4,756	-$5,000	-$20,000	-$15,000	$266,244	-1%	
Not	9252 Ordinary	-$8,310	-$8,000	$8,310	$2,581		-$10,000	-$15,000	$246,581	7%	
Not	2416 W Miller		$8,000	$11,960	-$9,817	-$5,000	-$10,000	-$15,000	$279,143	-6%	
								Average Diff		0%	

I also spoke with Patrick W. McCrerey of Virginia Estates who was marketing a property that sold at 5300 Barham Road adjoining the Walker-Correctional Solar Farm. He indicated that this property was unique with a home built in 1882 and heavily renovated and updated on 16.02 acres. The solar farm was through the woods and couldn't be seen by this property and it had no impact on marketing this property. This home sold on April 26, 2017 for $358,000. I did not set up any matched pairs for this property since it is a unique property that any such comparison would be difficult to rely on. The broker's comments do support the assertion that the adjoining solar farm had no impact on value. The home in this case was 510 feet from the closest panel.

14. Matched Pair – Innovative Solar 46, Roslin Farm Rd, Hope Mills, NC



This project was built in 2016 and located on 532 acres for a 78.5 MW solar farm with the closest home at 125 feet from the closest solar panel with an average distance of 423 feet.

I considered the recent sale of a home on Roslin Farm Road just north of Running Fox Road as shown below. This sale supports an indication of no impact on property value. The landscaping buffer is considered light.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
Adjoins	6849 Roslin Farm	1.00	2/18/2019	$155,000	1967	1,610	$96.27	3/3	Drive	Ranch	Brick	435
Not	6592 Sim Canady	2.43	9/5/2017	$185,000	1974	2,195	$84.28	3/2	Gar	Ranch	Brick	
Not	1614 Joe Hall	1.63	9/3/2019	$145,000	1974	1,674	$86.62	3/2	Det Gar	Ranch	Brick	
Not	109 Bledsoe	0.68	1/17/2019	$150,000	1973	1,663	$90.20	3/2	Gar	Ranch	Brick	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	6849 Roslin Farm								$155,000		5%
Not	6592 Sim Canady	$8,278		-$6,475	-$39,444	$10,000	-$5,000		$152,359	2%	
Not	1614 Joe Hall	-$2,407		-$5,075	-$3,881	$10,000	-$2,500		$141,137	9%	
Not	109 Bledsoe	$404	$10,000	-$4,500	-$3,346		-$5,000		$147,558	5%	

15. Matched Pair – Innovative Solar 42, County Line Rd, Fayetteville, NC





This project was built in 2017 and located on 413.99 acres for a 71 MW with the closest home at 135 feet from the closest solar panel with an average distance of 375 feet.

I considered the recent sales identified on the map above as Parcels 2 and 3, which is directly across the street these homes are 330 and 340 feet away. Parcel 2 includes an older home built in 1976, while Parcel 3 is a new home built in 2019. So the presence of the solar farm had no impact on new construction in the area.

The matched pairs for each of these are shown below. The landscaping buffer relative to these parcels is considered light.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
Adjoins	2923 County Ln	8.98	2/28/2019	$385,000	1976	2,905	$132.53	3/3	2-Car	Ranch	Brick/Pond	340
Not	1928 Shaw Mill	17.00	7/3/2019	$290,000	1977	3,001	$96.63	4/4	2-Car	Ranch	Brick/Pond/Rental	
Not	2109 John McM.	7.78	4/25/2018	$320,000	1978	2,474	$129.35	3/2	Det Gar	Ranch	Vinyl/Pool,Stable	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	2923 County Ln								$385,000		3%
Not	1928 Shaw Mill	-$3,055	$100,000	-$1,450	-$7,422	-$10,000			$368,074	4%	
Not	2109 John McM.	$8,333		-$3,200	$39,023	$10,000		$5,000	$379,156	2%	

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
Adjoins	2935 County Ln	1.19	6/18/2019	$266,000	2019	2,401	$110.79	4/3	Gar	2-Story		330
Not	3005 Hemingway	1.17	5/16/2019	$269,000	2018	2,601	$103.42	4/3	Gar	2-Story		
Not	7031 Glynn Mill	0.60	5/8/2018	$255,000	2017	2,423	$105.24	4/3	Gar	2-Story		
Not	5213 Bree Brdg	0.92	5/7/2019	$260,000	2018	2,400	$108.33	4/3	3-Gar	2-Story		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	2935 County Ln								$266,000		3%
Not	3005 Hemingway	$748		$1,345	-$16,547				$254,546	4%	
Not	7031 Glynn Mill	$8,724		$2,550	-$1,852				$264,422	1%	
Not	5213 Bree Brdg	$920		$1,300	$76			-$10,000	$252,296	5%	

Both of these matched pairs adjust to an average of +3% on impact for the adjoining solar farm, meaning there is a slight positive impact due to proximity to the solar farm. This is within the standard +/- of typical real estate transactions, which strongly suggests no impact on property value. I noted specifically that for 2923 County Line Road, the best comparable is 2109 John McMillan as it does not have the additional rental unit on it. I made no adjustment to the other sale for the value of that rental unit, which would have pushed the impact on that comparable downward – meaning there would have been a more significant positive impact.

16. Matched Pair – Sunfish Farm, Keenebec Rd, Willow Spring, NC



This project was built in 2015 and located on 49.6 acres (with an inset 11.25-acre parcel) for a 6.4 MW project with the closest home at 135 feet with an average distance of 105 feet.

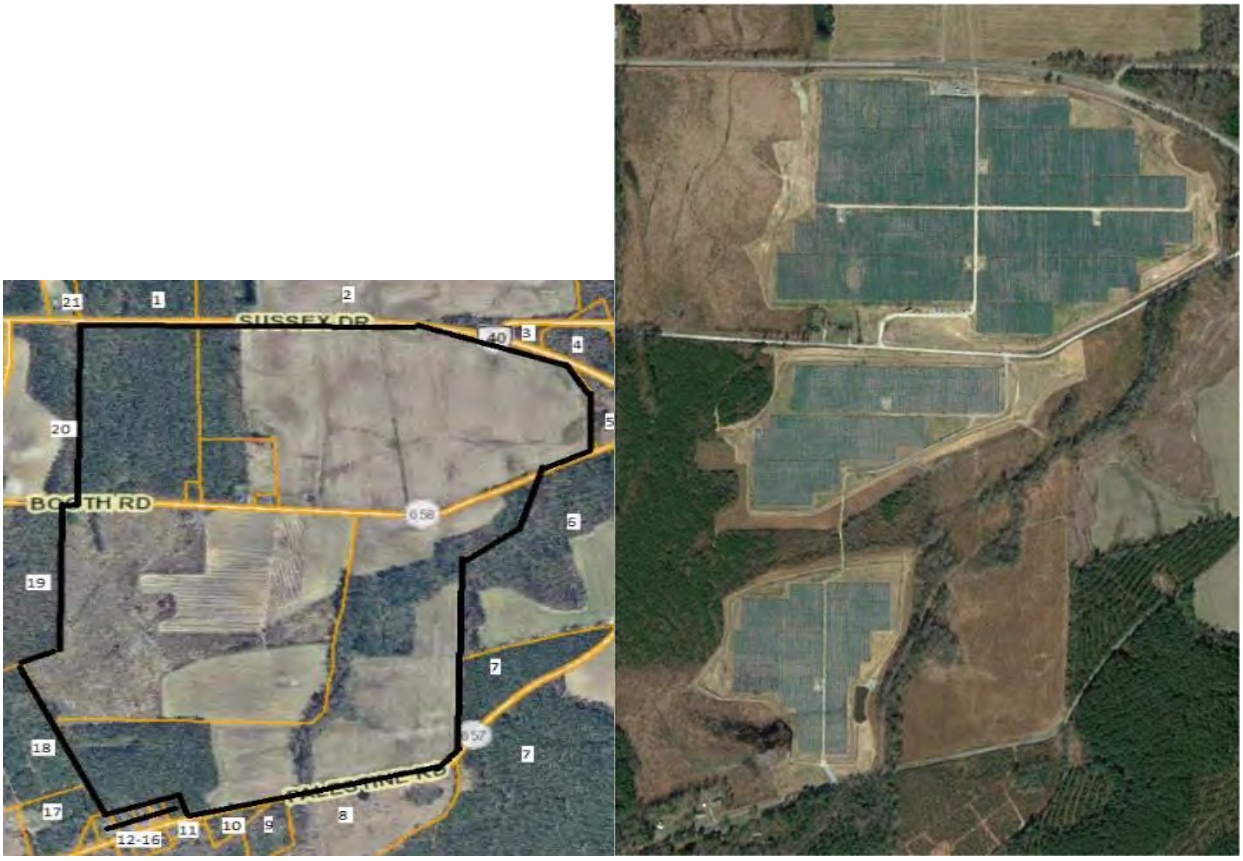
I considered the 2017 sale identified on the map above, which is 205 feet away from the closest panel. The matched pairs for each of these are shown below followed by a more recent map showing the panels at this site. The average difference in the three comparables and the subject property is +3% after adjusting for differences in the sales date, year built, gross living area, and other minor differences. This data is supported by the comments from the broker Brian Schroepfer with Keller Williams that the solar farm had no impact on the purchase price. The landscaping screen is considered light.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style
	Adjoins	7513 Glen Willow	0.79	9/1/2017	$185,000	1989	1,492	$123.99	3/2	Gar	BR/Rnch
	Not	2968 Tram	0.69	7/17/2017	$155,000	1984	1,323	$117.16	3/2	Drive	BR/Rnch
	Not	205 Pine Burr	0.97	12/29/2017	$191,000	1991	1,593	$119.90	3/2.5	Drive	BR/Rnch
	Not	1217 Old Honeycutt	1.00	12/15/2017	$176,000	1978	1,558	$112.97	3/2.5	2Carprt	VY/Rnch

Adjustments											Avg
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff
Adjoins	7513 Glen Willow								$185,000		
Not	2968 Tram	$601		$3,875	$15,840		$10,000		$185,316	0%	
Not	205 Pine Burr	-$1,915		-$1,910	-$9,688	-$5,000			$172,487	7%	
Not	1217 Old Honeycutt	-$1,557		$9,680	-$5,965	-$5,000		$5,280	$178,438	4%	
											3%

17. Matched Pair – Sappony Solar, Sussex County, VA



This project is a 30 MW facility located on a 322.68-acre tract that was built in the fourth quarter of 2017.

I have considered the 2018 sale of Parcel 17 as shown below. This was a 1,900 s.f. manufactured home on a 6.00-acre lot that sold in 2018. I have compared that to three other nearby manufactured homes as shown below. The range of impacts is within typical market variation with an average of -1%, which supports a conclusion of no impact on property value. The landscaping buffer is considered medium.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
	Adjoins	12511 Palestine	6.00	7/31/2018	$128,400	2013	1,900	$67.58	4/2.5	Open	Manuf	
	Not	15698 Concord	3.92	7/31/2018	$150,000	2010	2,310	$64.94	4/2	Open	Manuf	Fence
	Not	23209 Sussex	1.03	7/7/2020	$95,000	2005	1,675	$56.72	3/2	Det Crpt	Manuf	
	Not	6494 Rocky Br	4.07	11/8/2018	$100,000	2004	1,405	$71.17	3/2	Open	Manuf	

Adjoining Sales Adjusted									Avg	
Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	Distance
							$128,400			1425
$0		$2,250	-$21,299	$5,000			$135,951	-6%		
-$5,660	$13,000	$3,800	$10,209	$5,000	$1,500		$122,849	4%		
-$843		$4,500	$28,185				$131,842	-3%		
									-1%	

18. Matched Pair – Camden Dam, Camden, NC



This 5 MW project was built in 2019 and located on a portion of 49.83 acres.

Parcel 1 noted above along with the home on the adjoining parcel to the north of that parcel sold in late 2018 after this solar farm was approved but prior to construction being completed in 2019. I have considered this sale as shown below. The landscaping screen is considered light.

The comparable at 548 Trotman is the most similar and required the least adjustment shows no impact on property value. The other two comparables were adjusted consistently with one showing significant enhancement and another as showing a mild negative. The best indication is the one requiring the least adjustment. The other two sales required significant site adjustments which make them less reliable. The best comparable and the average of these comparables support a finding of no impact on property value.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
Adjoins	122 N Mill Dam	12.19	11/29/2018	$350,000	2005	2,334	$149.96	3/3.5	3-Gar	Ranch	
Not	548 Trotman	12.10	5/31/2018	$309,000	2007	1,960	$157.65	4/2	Det2G	Ranch	Wrkshp
Not	198 Sand Hills	2.00	12/22/2017	$235,000	2007	2,324	$101.12	4/3	Open	Ranch	
Not	140 Sleepy Hlw	2.05	8/12/2019	$330,000	2010	2,643	$124.86	4/3	1-Gar	1.5 Story	

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
122 N Mill Dam								$350,000			342
548 Trotman	$6,163		-$3,090	$35,377	$5,000			$352,450	-1%		
198 Sand Hills	$8,808	$45,000	-$2,350	$607		$30,000		$317,064	9%		
140 Sleepy Hlw	-$9,258	$45,000	-$8,250	-$23,149	$5,000	$30,000		$369,343	-6%		
										1%	

19. Matched Pair – Grandy Solar, Grandy, NC



This 20 MW project was built in 2019 and located on a portion of 121 acres.

Parcels 40 and 50 have sold since construction began on this solar farm. I have considered both in matched pair analysis below. I note that the marketing for Parcel 40 (120 Par Four) identified the lack of homes behind the house as a feature in the listing. The marketing for Parcel 50 (269 Grandy) identified the property as "very private." Landscaping for both of these parcels is considered light.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
Adjoins	120 Par Four	0.92	8/17/2019	$315,000	2006	2,188	$143.97	4/3	2-Gar	1.5 Story	Pool
Not	102 Teague	0.69	1/5/2020	$300,000	2005	2,177	$137.80	3/2	Det 3G	Ranch	
Not	112 Meadow Lk	0.92	2/28/2019	$265,000	1992	2,301	$115.17	3/2	Gar	1.5 Story	
Not	116 Barefoot	0.78	9/29/2020	$290,000	2004	2,192	$132.30	4/3	2-Gar	2 Story	

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
120 Par Four								$315,000			405
102 Teague	-$4,636		$1,500	$910	$10,000		$20,000	$327,774	-4%		
112 Meadow Lk	$4,937		$18,550	-$7,808	$10,000	$10,000	$20,000	$320,679	-2%		
116 Barefoot	-$12,998		$2,900	-$318			$20,000	$299,584	5%		
										0%	

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
Adjoins	269 Grandy	0.78	5/7/2019	$275,000	2019	1,535	$179.15	3/2.5	2-Gar	Ranch	
Not	307 Grandy	1.04	10/8/2018	$240,000	2002	1,634	$146.88	3/2	Gar	1.5 Story	
Not	103 Branch	0.95	4/22/2020	$230,000	2000	1,532	$150.13	4/2	2-Gar	1.5 Story	
Not	103 Spring Lf	1.07	8/14/2018	$270,000	2002	1,635	$165.14	3/2	2-Gar	Ranch	Pool

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
269 Grandy								$275,000			477
307 Grandy	$5,550		$20,400	-$8,725	$5,000	$10,000		$272,225	1%		
103 Branch	-$8,847		$21,850	$270				$243,273	12%		
103 Spring Lf	$7,871		$22,950	-$9,908	$5,000		-$20,000	$275,912	0%		
										4%	

Both of these matched pairs support a finding of no impact on value. This is reinforced by the listings for both properties identifying the privacy due to no housing in the rear of the property as part of the marketing for these homes.

20. Matched Pair – Champion Solar, Lexington County, SC



This project is a 10 MW facility located on a 366.04-acre tract that was built in 2017.

I have considered the 2020 sale of an adjoining home located off 517 Old Charleston Road. Landscaping is considered light.

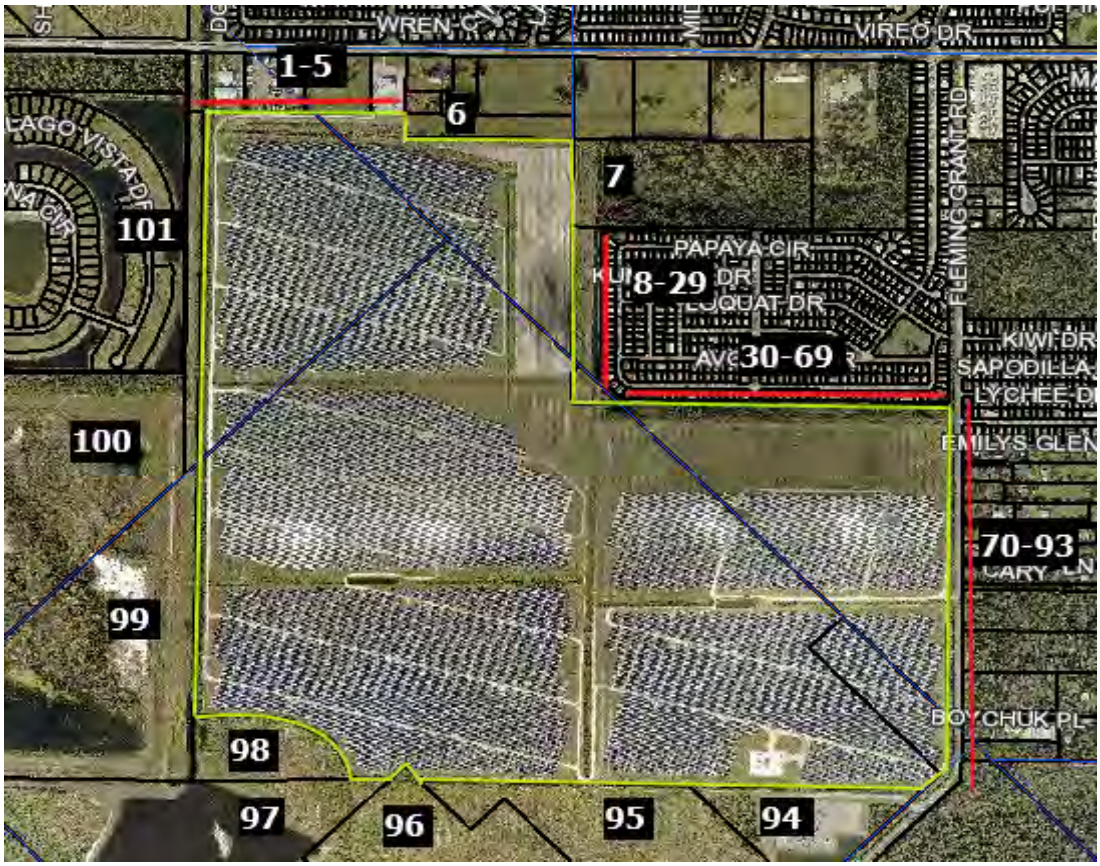
Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	517 Old Charleston	11.05	8/25/2020	$110,000	1962	925	$118.92	3/1	Crport	Br Rnch	
Not	133 Buena Vista	2.65	6/21/2020	$115,000	1979	1,104	$104.17	2/2	Crport	Br Rnch	
Not	214 Crystal Spr	2.13	6/10/2019	$102,500	1970	1,025	$100.00	3/2	Crport	Rnch	
Not	1429 Laurel	2.10	2/21/2019	$126,000	1960	1,250	$100.80	2/1.5	Open	Br Rnch	3 Gar/Brn

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
517 Old Charleston								$110,000			505
133 Buena Vista	$410	$17,000	-$9,775	-$14,917	-$10,000			$97,718	11%		
214 Crystal Spr	$2,482	$18,000	-$4,100	-$8,000	-$10,000		$10,000	$110,882	-1%		
1429 Laurel	$3,804	$18,000	$1,260	-$26,208	-$5,000	$5,000	-$15,000	$107,856	2%		
										4%	

21. Matched Pair – Barefoot Bay Solar Farm, Barefoot Bay, FL



This project is located on 504 acres for a 74.5 MW facility. Most of the adjoining uses are medium density residential with some lower density agricultural uses to the southwest. This project was built in 2018. There is a new subdivision under development to the west.

I have considered a number of recent home sales from the Barefoot Bay Golf Course in the Barefoot Bay Recreation District. There are a number of sales of these mobile/manufactured homes along the eastern boundary and the lower northern boundary. I have compared those home sales to other similar homes in the same community but without the exposure to the solar farm. Staying within the same community keeps location and amenity impacts consistent. I did avoid any comparison with home sales with golf course or lakefront views as that would introduce another variable.

The six manufactured/double wide homes shown below were each compared to three similar homes in the same community and are consistently showing no impact on the adjoining property values. Based on the photos from the listings, there is limited but some visibility of the solar farm to the east, but the canal and landscaping between are providing a good visual buffer and actually are commanding a premium over the non-canal homes.

Landscaping for these adjoining homes is considered light, though photographs from the listings show that those homes on Papaya that adjoin the solar farm from east/west have no visibility of the solar farm and is effectively medium density due to the height differential. The homes that adjoin the solar farm from north/south along Papaya have some filtered view of the solar farm through the trees.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
14	Adjoins	465 Papaya Cr	0.12	7/21/2019	$155,000	1993	1,104	$140.40	2/2	Drive	Manuf	Canal
	Not	1108 Navajo	0.14	2/27/2019	$129,000	1984	1,220	$105.74	2/2	Crprt	Manuf	Canal
	Not	1007 Barefoot	0.11	9/3/2020	$168,000	2005	1,052	$159.70	2/2	Crprt	Manuf	Canal
	Not	1132 Waterway	0.11	7/10/2020	$129,000	1982	1,012	$127.47	2/2	Crprt	Manuf	Canal

Adjoining Sales Adjusted

Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
465 Papaya Cr							$155,000			765
1108 Navajo	$1,565	$5,805	-$9,812				$126,558	18%		
1007 Barefoot	-$5,804	-$10,080	$6,643				$158,759	-2%		
1132 Waterway	-$3,859	$7,095	$9,382				$141,618	9%		
									8%	

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
19	Adjoins	455 Papaya	0.12	9/1/2020	$183,500	2005	1,620	$113.27	3/2	Crprt	Manuf	Canal
	Not	938 Waterway	0.11	2/12/2020	$160,000	1986	1,705	$93.84	2/2	Crprt	Manuf	Canal
	Not	719 Barefoot	0.12	4/14/2020	$150,000	1996	1,635	$91.74	3/2	Crprt	Manuf	Canal
	Not	904 Fir	0.17	9/27/2020	$192,500	2010	1,626	$118.39	3/2	Crprt	Manuf	Canal

Adjoining Sales Adjusted

Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
455 Papaya							$183,500			750
938 Waterway	$2,724	$15,200	-$6,381				$171,542	7%		
719 Barefoot	$1,770	$6,750	-$1,101				$157,419	14%		
904 Fir	-$422	-$4,813	-$568				$186,697	-2%		
									6%	

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
37	Adjoins	419 Papaya	0.09	7/16/2019	$127,500	1986	1,303	$97.85	2/2	Crprt	Manuf	Green
	Not	865 Tamarind	0.12	2/4/2019	$133,900	1995	1,368	$97.88	2/2	Crprt	Manuf	Green
	Not	501 Papaya	0.10	6/15/2018	$109,000	1986	1,234	$88.33	2/2	Crprt	Manuf	
	Not	418 Papaya	0.09	8/28/2019	$110,000	1987	1,248	$88.14	2/2	Crprt	Manuf	

Adjoining Sales Adjusted

Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
419 Papaya							$127,500			690
865 Tamarind	$1,828	-$6,026	-$5,090				$124,613	2%		
501 Papaya	$3,637	$0	$4,876			$5,000	$122,513	4%		
418 Papaya	-$399	-$550	$3,878			$5,000	$117,930	8%		
									5%	

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
39	Adjoins	413 Papaya	0.09	7/16/2020	$130,000	2001	918	$141.61	2/2	Crprt	Manuf	Grn/Upd
	Not	341 Loquat	0.09	2/3/2020	$118,000	1985	989	$119.31	2/2	Crprt	Manuf	Full Upd
	Not	1119 Pocatella	0.19	1/5/2021	$120,000	1993	999	$120.12	2/2	Crprt	Manuf	Green
	Not	1367 Barefoot	0.10	1/12/2021	$130,500	1987	902	$144.68	2/2	Crprt	Manuf	Green/Upd

Adjoining Sales Adjusted

Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
413 Papaya							$130,000			690
341 Loquat	$1,631	$9,440	-$6,777				$122,294	6%		
1119 Pocatella	-$1,749	$4,800	-$7,784			$5,000	$120,267	7%		
1367 Barefoot	-$1,979	$9,135	$1,852				$139,507	-7%		
									2%	

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
48	Adjoins	343 Papaya	0.09	12/17/2019	$145,000	1986	1,508	$96.15	3/2	Crprt	Manuf	Gn/Fc/Upd
	Not	865 Tamarind	0.12	2/4/2019	$133,900	1995	1,368	$97.88	2/2	Crprt	Manuf	Green
	Not	515 Papaya	0.09	3/22/2018	$145,000	2005	1,376	$105.38	3/2	Crprt	Manuf	Green
	Not	849 Tamarind	0.15	6/26/2019	$155,000	1997	1,716	$90.33	3/2	Crprt	Manuf	Grn/Fnce

Adjoining Sales Adjusted

Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
343 Papaya							$145,000			690
865 Tamarind	$3,566	-$6,026	$10,963				$142,403	2%		
515 Papaya	$7,759	-$13,775	$11,128				$150,112	-4%		
849 Tamarind	$2,273	-$8,525	-$15,030			$5,000	$138,717	4%		
									1%	

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
52	Nearby	335 Papaya	0.09	4/17/2018	$110,000	1987	1,180	$93.22	2/2	Crprt	Manuf	Green
	Not	865 Tamarind	0.12	2/4/2019	$133,900	1995	1,368	$97.88	2/2	Crprt	Manuf	Green
	Not	501 Papaya	0.10	6/15/2018	$109,000	1986	1,234	$88.33	2/2	Crprt	Manuf	
	Not	604 Puffin	0.09	10/23/2018	$110,000	1988	1,320	$83.33	2/2	Crprt	Manuf	

Adjoining Sales Adjusted

Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
335 Papaya							$110,000			710
865 Tamarind	-$3,306	-$5,356	-$14,721			$0	$110,517	0%		
501 Papaya	-$542	$545	-$3,816			$5,000	$110,187	0%		
604 Puffin	-$1,752	-$550	-$9,333			$5,000	$103,365	6%		
									2%	

I also identified a new subdivision being developed just to the west of this solar farm called The Lakes at Sebastian Preserve. These are all canal-lot homes that are being built with homes starting at $271,000 based on the website and closed sales showing up to $342,000. According to Monique, the onsite broker with Holiday Builders, the solar farm is difficult to see from the lots that back up to that area and she does not anticipate any difficulty in selling those future homes or lots or any impact on the sales price. The closest home that will be built in this development will be approximately 340 feet from the nearest panel.

Based on the closed home prices in Barefoot Bay as well as the broker comments and activity at The Lakes at Sebastian Preserve, the data around this solar farm strongly indicates no negative impact on property value.

22. Matched Pair – Miami-Dade Solar Farm, Miami, FL



This project is located on 346.80 acres for a 74.5 MW facility. All of the adjoining uses are agricultural and residential. This project was built in 2019.

I considered the recent sale of Parcel 26 to the south that sold for over $1.6 million dollars. This home is located on 4.2 acres with additional value in the palm trees according to the listing. The comparables include similar homes nearby that are all actually on larger lots and several include avocado or palm tree income as well. All of the comparables are in similar proximity to the subject and all have similar proximity to the Miami-Dade Executive airport that is located 2.5 miles to the east.

These sales are showing no impact on the value of the property from the adjoining solar farm. The landscaping is considered light.

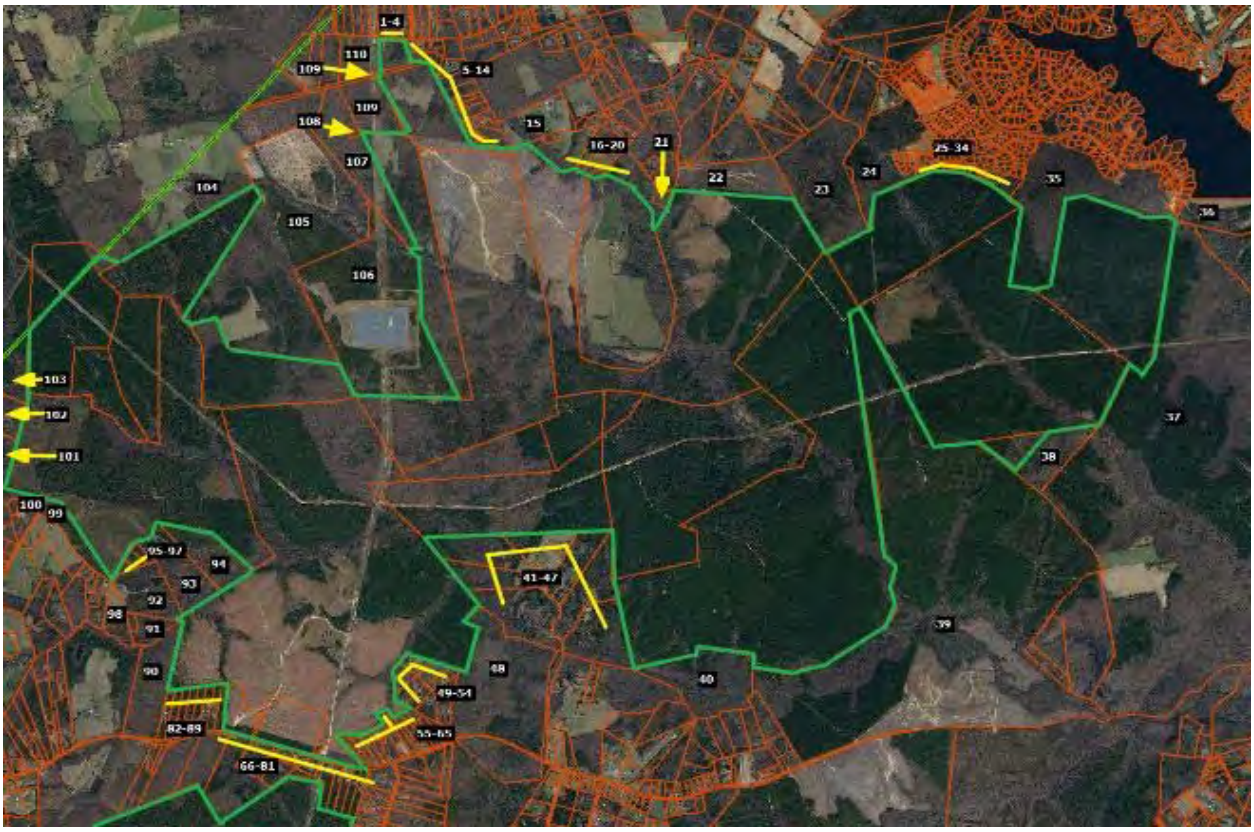
Adjoining Residential Sales After Solar Farm Approved

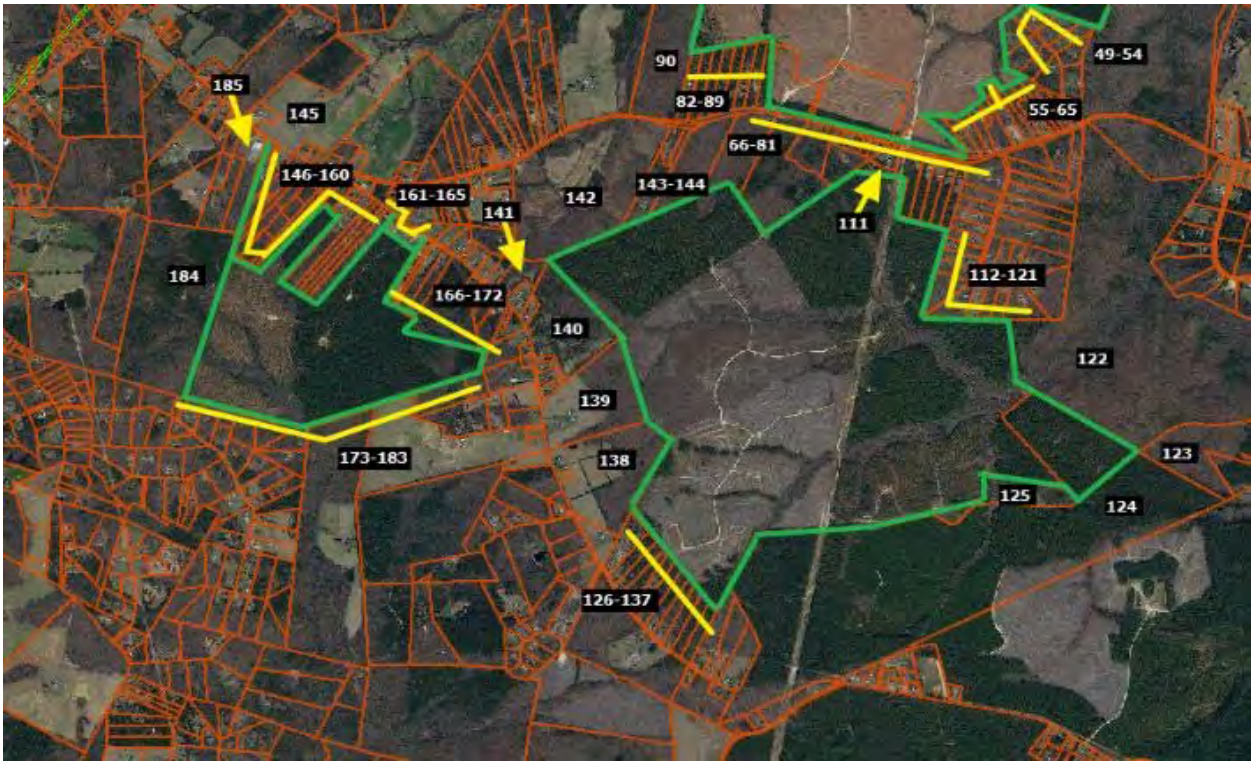
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
26	Adjoins	13600 SW 182nd	4.20	11/5/2020	$1,684,000	2008	6,427	$262.02	5/5.5	3 Gar	CBS Rnch	Pl/Guest
	Not	18090 SW 158th	5.73	10/8/2020	$1,050,000	1997	3,792	$276.90	5/4	3 Gar	CBS Rnch	
	Not	14311 SW 187th	4.70	10/22/2020	$1,100,000	2005	3,821	$287.88	6/5	3 Gar	CBS Rnch	Pool
	Not	17950 SW 158th	6.21	10/22/2020	$1,730,000	2000	6,917	$250.11	6/5.5	2 Gar	CBS Rnch	Pool

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
13600 SW 182nd								$1,684,000			1390
18090 SW 158th	$2,478		$57,750	$583,703	$30,000			$1,723,930	-2%		
14311 SW 187th	$1,298		$16,500	$600,178	$10,000			$1,727,976	-3%		
17950 SW 158th	$2,041		$69,200	-$98,043		$10,000		$1,713,199	-2%		
										-2%	

23. Matched Pair – Spotsylvania Solar, Paytes, VA





This solar farm is being built in four phases with the area known as Site C having completed construction in November 2020 after the entire project was approved in April 2019. Site C, also known as Pleinmont 1 Solar, includes 99.6 MW located in the southeast corner of the project and shown on the maps above with adjoining parcels 111 through 144. The entire Spotsylvania project totals 617 MW on 3500 acres out of a parent tract assemblage of 6,412 acres.

I have identified three adjoining home sales that occurred during construction and development of the site in 2020.

The first is located on the north side of Site A on Orange Plank Road. The second is located on Nottoway Lane just north of Caparthin Road on the south side of Site A and east of Site C. The third is located on Post Oak Road for a home that backs up to Site C that sold in September 2020 near the completion of construction for Site C.

Spotsylvania Solar Farm

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	12901 Orng Plnk	5.20	8/27/2020	$319,900	1984	1,714	$186.64	3/2	Drive	1.5	Un Bsmt
Not	8353 Gold Dale	3.00	1/27/2021	$415,000	2004	2,064	$201.07	3/2	3 Gar	Ranch	
Not	6488 Southfork	7.26	9/9/2020	$375,000	2017	1,680	$223.21	3/2	2 Gar	1.5	Barn/Patio
Not	12717 Flintlock	0.47	12/2/2020	$290,000	1990	1,592	$182.16	3/2.5	Det Gar	Ranch	

Adjoining Sales Adjusted

Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
12901 Orng Plnk								$319,900		1270
8353 Gold Dale	-$5,219	$20,000	-$41,500	-$56,298		-$20,000		$311,983	2%	
6488 Southfork	-$401	-$20,000	-$61,875	$6,071		-$15,000		$283,796	11%	
12717 Flintlock	-$2,312	$40,000	-$8,700	$17,779	-$5,000	-$5,000		$326,767	-2%	
							Average Diff		4%	

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	9641 Nottoway	11.00	5/12/2020	$449,900	2004	3,186	$141.21	4/2.5	Garage	2-Story	Un Bsmt
Not	26123 Lafayette	1.00	8/3/2020	$390,000	2006	3,142	$124.12	3/3.5	Gar/DtG	2-Story	
Not	11626 Forest	5.00	8/10/2020	$489,900	2017	3,350	$146.24	4/3.5	2 Gar	2-Story	
Not	10304 Pny Brnch	6.00	7/27/2020	$485,000	1998	3,076	$157.67	4/4	2Gar/Dt2	Ranch	Fn Bsmt

Adjoining Sales Adjusted

Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
9641 Nottoway								$449,900		1950
26123 Lafayette	-$2,661	$45,000	-$3,900	$4,369	-$10,000	-$5,000		$417,809	7%	
11626 Forest	-$3,624		-$31,844	-$19,187		-$5,000		$430,246	4%	
10304 Pny Brnch	-$3,030		$14,550	$13,875	-$15,000	-$15,000	-$10,000	$470,396	-5%	
							Average Diff		2%	

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	13353 Post Oak	5.20	9/21/2020	$300,000	1992	2,400	$125.00	4/3	Drive	2-Story	Fn Bsmt
Not	9609 Logan Hgt	5.86	7/4/2019	$330,000	2004	2,352	$140.31	3/2	2Gar	2-Story	
Not	12810 Catharpian	6.18	1/30/2020	$280,000	2008	2,240	$125.00	4/2.5	Drive	2-Story	Bsmt/Nd Pnt
Not	10725 Rbrt Lee	5.01	10/26/2020	$295,000	1995	2,166	$136.20	4/3	Gar	2-Story	Fn Bsmt

Adjoining Sales Adjusted

Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
13353 Post Oak								$300,000		1171
9609 Logan Hgt	$12,070		-$19,800	$5,388		-$15,000	$15,000	$327,658	-9%	
12810 Catharpian	$5,408		-$22,400	$16,000	$5,000		$15,000	$299,008	0%	
10725 Rbrt Lee	-$849		-$4,425	$25,496		-$10,000		$305,222	-2%	
							Average Diff		-4%	

All three of these homes are well set back from the solar panels at distances over 1,000 feet and are well screened from the project. All three show no indication of any impact on property value.

There are a couple of recent lot sales located along Southview Court that have sold since the solar farm was approved. The most recent lot sales include 11700 Southview Court that sold on December 29, 2021 for $140,000 for a 0.76-acre lot. This property was on the market for less than 2 months before closing within 6% of the asking price. This lot sold earlier in September 2019 for $55,000 based on a liquidation sale from NTS to an investor.

A similar 0.68-acre lot at 11507 Stonewood Court within the same subdivision located away from the solar farm sold on March 9, 2021 for $109,000. This lot sold for 18% over the asking price within 1 month of listing suggesting that this was priced too low. Adjusting this lot value upward by 12% for very strong growth in the market over 2021, the adjusted indicated value is $122,080 for this lot. This is still showing a 15% premium for the lot backing up to the solar farm.

The lot at 11009 Southview Court sold on August 5, 2019 for $65,000, which is significantly lower than the more recent sales. This lot was sold by NTS the original developer of this subdivision, who was in the process of liquidating lots in this subdivision with multiple lot sales in this time period throughout the subdivision being sold at discounted prices. The home was later improved by the buyer with a home built in 2020 with 2,430 square feet ranch, 3.5 bathrooms, with a full basement, and a current assessed value of $492,300.

I spoke with Chris Kalia, MAI, Mark Doherty, local real estate investor, and Alex Doherty, broker, who are all three familiar with this subdivision and activity in this neighborhood. All three indicated that there was a deep sell off of lots in the neighborhood by NTS at discounted prices under $100,000 each. Those lots since that time are being sold for up to $140,000. The prices paid for the lots below $100,000 were liquidation values and not indicative of market value. Homes are being built in the neighborhood on those lots with home prices ranging from $600,000 to $800,000 with no sign of impact on pricing due to the solar farm according to all three sources.

Conclusion – SouthEast Over 5 MW

Southeast USA Over 5 MW
Matched Pair Summary

							Adj. Uses By Acreage				1 mile Radius (2010-2020 Data)			
	Name	City	State	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com/Ind	Pop.	Med. Income	Avg. Housing Unit	Veg. Buffer
1	AM Best	Goldsboro	NC	38	5.00	2	38%	0%	23%	39%	1,523	$37,358	$148,375	Light
2	Mulberry	Selmer	TN	160	5.00	60	13%	73%	10%	3%	467	$40,936	$171,746	Lt to Med
3	Leonard	Hughesville	MD	47	5.00	20	18%	75%	0%	6%	525	$106,550	$350,000	Light
4	Gastonia SC	Gastonia	NC	35	5.00	48	33%	0%	23%	44%	4,689	$35,057	$126,562	Light
5	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731	Light
6	Tracy	Bailey	NC	50	5.00	10	29%	0%	71%	0%	312	$43,940	$99,219	Heavy
7	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667	Heavy
8	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306	Lt to Med
9	Mariposa	Stanley	NC	36	5.00	96	48%	0%	52%	0%	1,716	$36,439	$137,884	Light
10	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453	Light
11	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	$76,155	$269,922	Medium
12	Candace	Princeton	NC	54	5.00	22	76%	24%	0%	0%	448	$51,002	$107,171	Medium
13	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076	Light
14	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435	Light
15	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347	Light
16	Sunfish	Willow Spring	NC	50	6.40	30	35%	35%	30%	0%	1,515	$63,652	$253,138	Light
17	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208	Light
18	Camden Dam	Camden	NC	50	5.00	0	17%	72%	11%	0%	403	$84,426	$230,288	Light
19	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	$50,355	$231,408	Light
20	Champion	Pelion	SC	100	10.00	N/A	4%	70%	8%	18%	1,336	$46,867	$171,939	Light
21	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320	Lt to Med
22	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571	Light
23	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	$120,861	$483,333	Md to Hvy
	Average			485	57.04	38	24%	48%	22%	6%	923	$63,955	$237,700	
	Median			234	20.00	20	17%	59%	11%	0%	467	$60,037	$231,408	
	High			3,500	617.00	160	76%	98%	94%	44%	4,689	$120,861	$483,333	
	Low			35	5.00	0	1%	0%	0%	0%	48	$35,057	$99,219	

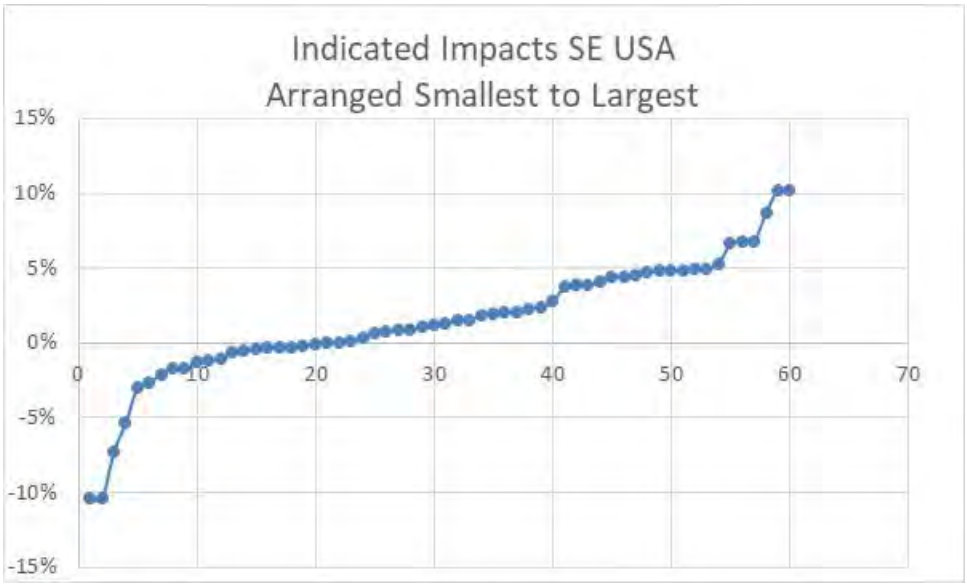
The solar farm matched pairs shown above have similar characteristics to each other in terms of population, but with several outliers showing solar farms in farm more urban areas. The median income for the population within 1 mile of a solar farm is $60,037 with a median housing unit value of $231,408. Most of the comparables are under $300,000 in the home price, with $483,333 being the high end of the set, though I have matched pairs in multiple states over $1,000,000 adjoining solar farms. The adjoining uses show that residential and agricultural uses are the predominant adjoining uses. These figures are in line with the larger set of solar farms that I have looked at with the predominant adjoining uses being residential and agricultural and similar to the solar farm breakdown shown for Virginia and adjoining states as well as the proposed subject property.

Based on the similarity of adjoining uses and demographic data between these sites and the subject property, I consider it reasonable to compare these sites to the subject property.

I have pulled 56 matched pairs from the above referenced solar farms to provide the following summary of home sale matched pairs and land sales next to solar farms. The summary shows that the range of differences is from -10% to +10% with an average of +1% and median of +1%. This means that the average and median impact is for a slight positive impact due to adjacency to a solar farm. However, this +1 to rate is within the typical variability I would expect from real estate. I therefore conclude that this data shows no negative or positive impact due to adjacency to a solar farm.

While the range is seemingly wide, the graph below clearly shows that the vast majority of the data falls between -5% and +5% and most of those are clearly in the 0 to +5% range. This data strongly supports an indication of no impact on adjoining residential uses to a solar farm.

I therefore conclude that these matched pairs support a finding of no impact on value at the subject property for the proposed project, which as proposed will include a landscaped buffer to screen adjoining residential properties.


Indicated Impacts SE USA
Arranged Smallest to Largest
15%
10%
5%
0%
-5%
-10%
-15%
0
10
20
30
40
50
60
70

Residential Dwelling Matched Pairs Adjoining Solar Farms

Pair	Solar Farm	City	State	MW	Approx Distance	Tax ID/Address	Date	Sale Price	Adj. Sale Price	% Diff	Veg. Buffer
1	AM Best	Goldsboro	NC	5	280	3600195570	Sep-13	$250,000			Light
						3600198928	Mar-14	$250,000	$250,000	0%	
2	AM Best	Goldsboro	NC	5	280	3600195361	Sep-13	$260,000			Light
						3600194813	Apr-14	$258,000	$258,000	1%	
3	AM Best	Goldsboro	NC	5	280	3600199891	Jul-14	$250,000			Light
						3600198928	Mar-14	$250,000	$250,000	0%	
4	AM Best	Goldsboro	NC	5	280	3600198632	Aug-14	$253,000			Light
						3600193710	Oct-13	$248,000	$248,000	2%	
5	AM Best	Goldsboro	NC	5	280	3600196656	Dec-13	$255,000			Light
						3601105180	Dec-13	$253,000	$253,000	1%	
6	AM Best	Goldsboro	NC	5	280	3600182511	Feb-13	$247,000			Light
						3600183905	Dec-12	$240,000	$245,000	1%	
7	AM Best	Goldsboro	NC	5	280	3600182784	Apr-13	$245,000			Light
						3600193710	Oct-13	$248,000	$248,000	-1%	
8	AM Best	Goldsboro	NC	5	280	3600195361	Nov-15	$267,500			Light
						3600195361	Sep-13	$260,000	$267,800	0%	
9	Mulberry	Selmer	TN	5	400	0900A011	Jul-14	$130,000			Light
						099CA043	Feb-15	$148,900	$136,988	-5%	
10	Mulberry	Selmer	TN	5	400	099CA002	Jul-15	$130,000			Light
						0990NA040	Mar-15	$120,000	$121,200	7%	
11	Mulberry	Selmer	TN	5	480	491 Dusty	Oct-16	$176,000			Light
						35 April	Aug-16	$185,000	$178,283	-1%	
12	Mulberry	Selmer	TN	5	650	297 Country	Sep-16	$150,000			Medium
						53 Glen	Mar-17	$126,000	$144,460	4%	
13	Mulberry	Selmer	TN	5	685	57 Cooper	Feb-19	$163,000			Medium
						191 Amelia	Aug-18	$132,000	$155,947	4%	
14	Leonard Rd	Hughesville	MD	5.5	230	14595 Box Elder	Feb-16	$291,000			Light
						15313 Bassford Rd	Jul-16	$329,800	$292,760	-1%	
15	Neal Hawkins	Gastonia	NC	5	225	609 Neal Hawkins	Mar-17	$270,000			Light
						1418 N Modena	Apr-18	$225,000	$242,520	10%	
16	Summit	Moyock	NC	80	1,060	129 Pinto	Apr-16	$170,000			Light
						102 Timber	Apr-16	$175,500	$175,101	-3%	
17	Summit	Moyock	NC	80	980	105 Pinto	Dec-16	$206,000			Light
						127 Ranchland	Jun-15	$219,900	$198,120	4%	
18	Tracy	Bailey	NC	5	780	9162 Winters	Jan-17	$255,000			Heavy
						7352 Red Fox	Jun-16	$176,000	$252,399	1%	
19	Manatee	Parrish	FL	75	1180	13670 Highland	Aug-18	$255,000			Heavy
						13851 Highland	Sep-18	$240,000	$255,825	0%	
20	McBride Place	Midland	NC	75	275	4380 Joyner	Nov-17	$325,000			Medium
						3870 Elkwood	Aug-16	$250,000	$317,523	2%	
21	McBride Place	Midland	NC	75	505	5811 Kristi	Mar-20	$530,000			Medium
						3915 Tania	Dec-19	$495,000	$504,657	5%	
22	Mariposa	Stanley	NC	5	1155	215 Mariposa	Dec-17	$249,000			Light
						110 Airport	May-16	$166,000	$239,026	4%	
23	Mariposa	Stanley	NC	5	570	242 Mariposa	Sep-15	$180,000			Light
						110 Airport	Apr-16	$166,000	$175,043	3%	
24	Clarke Cnty	White Post	VA	20	1230	833 Nations Spr	Jan-17	$295,000			Light
						6801 Middle	Dec-17	$249,999	$296,157	0%	
25	Candace	Princeton	NC	5	488	499 Herring	Sep-17	$215,000			Medium
						1795 Bay Valley	Dec-17	$194,000	$214,902	0%	
26	Walker	Barhamsville	VA	20	250	5241 Barham	Oct-18	$264,000			Light
						9252 Ordinary	Jun-19	$277,000	$246,581	7%	
27	AM Best	Goldsboro	NC	5	385	103 Granville Pl	Jul-18	$265,000			Light
						2219 Granville	Jan-18	$260,000	$265,682	0%	
28	AM Best	Goldsboro	NC	5	315	104 Erin	Jun-17	$280,000			Light
						2219 Granville	Jan-18	$265,000	$274,390	2%	
29	AM Best	Goldsboro	NC	5	400	2312 Granville	May-18	$284,900			Light
						2219 Granville	Jan-18	$265,000	$273,948	4%	

Residential Dwelling Matched Pairs Adjoining Solar Farms

Pair	Solar Farm	City	State	MW	Approx Distance	Tax ID/Address	Date	Sale Price	Adj. Sale Price	% Diff	Veg. Buffer
30	AM Best	Goldsboro	NC	5	400	2310 Granville	May-19	$280,000			Light
						634 Friendly	Jul-19	$267,000	$265,291	5%	
31	Summit	Moyock	NC	80	570	318 Green View	Sep-19	$357,000			Light
						336 Green View	Jan-19	$365,000	$340,286	5%	
32	Summit	Moyock	NC	80	440	164 Ranchland	Apr-19	$169,000			Light
						105 Longhorn	Oct-17	$184,500	$186,616	-10%	
33	Summit	Moyock	NC	80	635	358 Oxford	Sep-19	$478,000			Light
						176 Providence	Sep-19	$425,000	$456,623	4%	
34	Summit	Moyock	NC	80	970	343 Oxford	Mar-17	$490,000			Light
						218 Oxford	Apr-17	$525,000	$484,064	1%	
35	Innov 46	Hope Mills	NC	78.5	435	6849 Roslin Farm	Feb-19	$155,000			Light
						109 Bledsoe	Jan-19	$150,000	$147,558	5%	
36	Innov 42	Fayetteville	NC	71	340	2923 County Line	Feb-19	$385,000			Light
						2109 John McMillan	Apr-18	$320,000	$379,156	2%	
37	Innov 42	Fayetteville	NC	71	330	2935 County Line	Jun-19	$266,000			Light
						7031 Glynn Mill	May-18	$255,000	$264,422	1%	
38	Sunfish	Willow Sprng	NC	6.4	205	7513 Glen Willow	Sep-17	$185,000			Light
						205 Pine Burr	Dec-17	$191,000	$172,487	7%	
39	Neal Hawkins	Gastonia	NC	5	145	611 Neal Hawkins	Jun-17	$288,000			Light
						1211 Still Forrest	Jul-18	$280,000	$274,319	5%	
40	Clarke Cnty	White Post	VA	20	1230	833 Nations Spr	Aug-19	$385,000			Light
						2393 Old Chapel	Aug-20	$330,000	$389,286	-1%	
41	Sappony	Stony Creek	VA	20	1425	12511 Palestine	Jul-18	$128,400			Medium
						6494 Rocky Branch	Nov-18	$100,000	$131,842	-3%	
42	Camden Dam	Camden	NC	5	342	122 N Mill Dam	Nov-18	$350,000			Light
						548 Trotman	May-18	$309,000	$352,450	-1%	
43	Grandy	Grandy	NC	20	405	120 Par Four	Aug-19	$315,000			Light
						116 Barefoot	Sep-20	$290,000	$299,584	5%	
44	Grandy	Grandy	NC	20	477	269 Grandy	May-19	$275,000			Light
						103 Spring Leaf	Aug-18	$270,000	$275,912	0%	
45	Champion	Pelion	SC	10	505	517 Old Charleston	Aug-20	$110,000			Light
						1429 Laurel	Feb-19	$126,000	$107,856	2%	
46	Barefoot Bay	Barefoot Bay	FL	74.5	765	465 Papaya	Jul-19	$155,000			Medium
						1132 Waterway	Jul-20	$129,000	$141,618	9%	
47	Barefoot Bay	Barefoot Bay	FL	74.5	750	455 Papaya	Sep-20	$183,500			Medium
						904 Fir	Sep-20	$192,500	$186,697	-2%	
48	Barefoot Bay	Barefoot Bay	FL	74.5	690	419 Papaya	Jul-19	$127,500			Medium
						865 Tamarind	Feb-19	$133,900	$124,613	2%	
49	Barefoot Bay	Barefoot Bay	FL	74.5	690	413 Papaya	Jul-20	$130,000			Medium
						1367 Barefoot	Jan-21	$130,500	$139,507	-7%	
50	Barefoot Bay	Barefoot Bay	FL	74.5	690	343 Papaya	Dec-19	$145,000			Light
						865 Tamarind	Feb-19	$133,900	$142,403	2%	
51	Barefoot Bay	Barefoot Bay	FL	74.5	710	335 Papaya	Apr-18	$110,000			Light
						865 Tamarind	Feb-19	$133,900	$110,517	0%	
52	Miami-Dade	Miami	FL	74.5	1390	13600 SW 182nd	Nov-20	$1,684,000			Light
						17950 SW 158th	Oct-20	$1,730,000	$1,713,199	-2%	
53	Spotsylvania	Paytes	VA	617	1270	12901 Orange Plnk	Aug-20	$319,900			Medium
						12717 Flintlock	Dec-20	$290,000	$326,767	-2%	
54	Spotsylvania	Paytes	VA	617	1950	9641 Nottoway	May-20	$449,900			Medium
						11626 Forest	Aug-20	$489,900	$430,246	4%	
55	Spotsylvania	Paytes	VA	617	1171	13353 Post Oak	Sep-20	$300,000			Heavy
						12810 Catharpin	Jan-20	$280,000	$299,008	0%	
56	McBride Place	Midland	NC	75	470	5833 Kristi	Sep-20	$625,000			Light
						4055 Dakeita	Dec-20	$600,000	$594,303	5%	

MW	Avg. Distance
64.91	612
20.00	479
617.00	1,950
5.00	145

	Indicated Impact
Average	1%
Median	1%
High	10%
Low	-10%

I have further broken down these results based on the MWs, Landscaping, and distance from panel to show the following range of findings for these different categories.

Most of the findings are for homes between 201 and 500 feet. Most of the findings are for Light landscaping screens.

Light landscaping screens are showing no impact on value at any distances, including for solar farms over 75.1 MW.

MW Range 4.4 to 10									
Landscaping	**Light**	**Light**	**Light**	**Medium**	**Medium**	**Medium**	**Heavy**	**Heavy**	**Heavy**
Distance	**100-200**	**201-500**	**500+**	**100-200**	**201-500**	**500+**	**100-200**	**201-500**	**500+**
#	1	19	2	0	1	2	0	0	1
Average	5%	2%	3%	N/A	0%	4%	N/A	N/A	1%
Median	5%	1%	3%	N/A	0%	4%	N/A	N/A	1%
High	5%	10%	4%	N/A	0%	4%	N/A	N/A	1%
Low	5%	-5%	3%	N/A	0%	4%	N/A	N/A	1%

10.1 to 30									
Landscaping	**Light**	**Light**	**Light**	**Medium**	**Medium**	**Medium**	**Heavy**	**Heavy**	**Heavy**
Distance	**100-200**	**201-500**	**500+**	**100-200**	**201-500**	**500+**	**100-200**	**201-500**	**500+**
#	0	3	2	0	0	1	0	0	0
Average	N/A	4%	-1%	N/A	N/A	-3%	N/A	N/A	N/A
Median	N/A	5%	-1%	N/A	N/A	-3%	N/A	N/A	N/A
High	N/A	7%	0%	N/A	N/A	-3%	N/A	N/A	N/A
Low	N/A	0%	-1%	N/A	N/A	-3%	N/A	N/A	N/A

30.1 to 75									
Landscaping	**Light**	**Light**	**Light**	**Medium**	**Medium**	**Medium**	**Heavy**	**Heavy**	**Heavy**
Distance	**100-200**	**201-500**	**500+**	**100-200**	**201-500**	**500+**	**100-200**	**201-500**	**500+**
#	0	2	3	0	0	4	0	0	0
Average	N/A	1%	0%	N/A	N/A	0%	N/A	N/A	N/A
Median	N/A	1%	0%	N/A	N/A	0%	N/A	N/A	N/A
High	N/A	2%	2%	N/A	N/A	9%	N/A	N/A	N/A
Low	N/A	1%	-2%	N/A	N/A	-7%	N/A	N/A	N/A

75.1+									
Landscaping	**Light**	**Light**	**Light**	**Medium**	**Medium**	**Medium**	**Heavy**	**Heavy**	**Heavy**
Distance	**100-200**	**201-500**	**500+**	**100-200**	**201-500**	**500+**	**100-200**	**201-500**	**500+**
#	0	2	5	0	0	2	0	0	1
Average	N/A	-3%	2%	N/A	N/A	1%	N/A	N/A	0%
Median	N/A	-3%	4%	N/A	N/A	1%	N/A	N/A	0%
High	N/A	5%	5%	N/A	N/A	4%	N/A	N/A	0%
Low	N/A	-10%	-3%	N/A	N/A	-2%	N/A	N/A	0%

C. Summary of National Data on Solar Farms

I have worked in 19 states related to solar farms and I have been tracking matched pairs in most of those states. On the following pages I provide a brief summary of those findings showing 37 solar farms over 5 MW studied with each one providing matched pair data supporting the findings of this report.

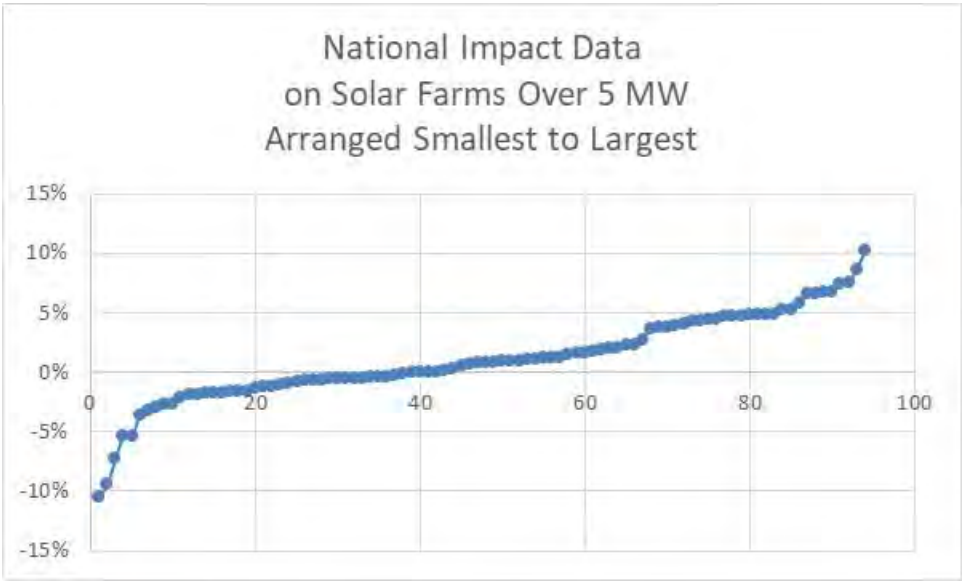
The solar farms summary is shown below with a summary of the matched pair data shown on the following page.

Matched Pair Summary							**Adj. Uses By Acreage**				**1 mile Radius (2010-2020 Data)**			
	Name	**City**	**State**	**Acres**	**MW**	**Topo Shift**	**Res**	**Ag**	**Ag/Res**	**Com/Ind**	**Popl.**	**Med. Income**	**Avg. Housing Unit**	**Veg. Buffer**
1	AM Best	Goldsboro	NC	38	5.00	2	38%	0%	23%	39%	1,523	$37,358	$148,375	Light
2	Mulberry	Selmer	TN	160	5.00	60	13%	73%	10%	3%	467	$40,936	$171,746	Lt to Med
3	Leonard	Hughesville	MD	47	5.00	20	18%	75%	0%	6%	525	$106,550	$350,000	Light
4	Gastonia SC	Gastonia	NC	35	5.00	48	33%	0%	23%	44%	4,689	$35,057	$126,562	Light
5	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731	Light
7	Tracy	Bailey	NC	50	5.00	10	29%	0%	71%	0%	312	$43,940	$99,219	Heavy
8	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667	Heavy
9	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306	Lt to Med
10	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	$70,158	$187,037	Light
11	Dominion	Indianapolis	IN	134	8.60	20	3%	97%	0%	0%	3,774	$61,115	$167,515	Light
12	Mariposa	Stanley	NC	36	5.00	96	48%	0%	52%	0%	1,716	$36,439	$137,884	Light
13	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453	Light
14	Flemington	Flemington	NJ	120	9.36	N/A	13%	50%	28%	8%	3,477	$105,714	$444,696	Lt to Med
15	Frenchtown	Frenchtown	NJ	139	7.90	N/A	37%	35%	29%	0%	457	$111,562	$515,399	Light
16	McGraw	East Windsor	NJ	95	14.00	N/A	27%	44%	0%	29%	7,684	$78,417	$362,428	Light
17	Tinton Falls	Tinton Falls	NJ	100	16.00	N/A	98%	0%	0%	2%	4,667	$92,346	$343,492	Light
18	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	$76,155	$269,922	Medium
19	Candace	Princeton	NC	54	5.00	22	76%	24%	0%	0%	448	$51,002	$107,171	Medium
20	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076	Light
21	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435	Light
22	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347	Light
23	Demille	Lapeer	MI	160	28.40	10	10%	68%	0%	22%	2,010	$47,208	$187,214	Light
24	Turrill	Lapeer	MI	230	19.60	10	75%	59%	0%	25%	2,390	$46,839	$110,361	Light
25	Sunfish	Willow Spring	NC	50	6.40	30	35%	35%	30%	0%	1,515	$63,652	$253,138	Light
26	Picture Rocks	Tucson	AZ	182	20.00	N/A	6%	88%	6%	0%	102	$81,081	$280,172	None
27	Avra Valley	Tucson	AZ	246	25.00	N/A	3%	94%	3%	0%	85	$80,997	$292,308	None
28	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208	Medium
29	Camden Dam	Camden	NC	50	5.00	0	17%	72%	11%	0%	403	$84,426	$230,288	Light
30	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	$50,355	$231,408	Light
31	Champion	Pelion	SC	100	10.00	N/A	4%	70%	8%	18%	1,336	$46,867	$171,939	Light
32	Eddy II	Eddy	TX	93	10.00	N/A	15%	25%	58%	2%	551	$59,627	$139,088	Light
33	Somerset	Somerset	TX	128	10.60	N/A	5%	95%	0%	0%	1,293	$41,574	$135,490	Light
34	DG Amp Piqua	Piqua	OH	86	12.60	2	26%	16%	58%	0%	6,735	$38,919	$96,555	Light
45	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320	Lt to Med
36	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571	Light
37	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	$120,861	$483,333	Med to Hvy
	Average			362	42.05	32	24%	52%	19%	6%	1,515	$66,292	$242,468	
	Median			150	17.80	10	16%	59%	7%	0%	560	$62,384	$230,848	
	High			3,500	617.00	160	98%	98%	94%	44%	7,684	$120,861	$515,399	
	Low			35	5.00	0	1%	0%	0%	0%	48	$35,057	$96,555	

From these 37 solar farms, I have derived 94 matched pairs. The matched pairs show no negative impact at distances as close as 105 feet between a solar panel and the nearest point on a home. The range of impacts is -10% to +10% with an average and median of +1%.

	MW	Avg. Distance		Indicated Impact
Average	44.80	569	**Average**	1%
Median	14.00	400	**Median**	1%
High	617.00	1,950	**High**	10%
Low	5.00	145	**Low**	-10%

While the range is broad, the two charts below show the data points in range from lowest to highest. There is only 3 data points out of 94 that show a negative impact. The rest support either a finding of no impact or 9 of the data points suggest a positive impact due to adjacency to a solar farm. As discussed earlier in this report, I consider this data to strongly support a finding of no impact on value as most of the findings are within typical market variation and even within that, most are mildly positive findings.



D. Larger Solar Farms

I have also considered larger solar farms to address impacts related to larger projects. Projects have been increasing in size and most of the projects between 100 and 1000 MW are newer with little time for adjoining sales. I have included a breakdown of solar farms with 20 MW to 80 MW facilities with one 617 MW facility.

Matched Pair Summary - @20 MW And Larger							Adj. Uses By Acreage				1 mile Radius (2010-2019 Data)			
	Name	City	State	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com/Ind	Popl.	Med. Income	Avg. Housing Unit	Veg. Buffer
1	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731	Light
2	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667	Heavy
3	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306	Lt to Med
4	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	$70,158	$187,037	Light
5	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453	Light
6	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	$76,155	$269,922	Medium
7	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076	Light
8	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435	Light
9	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347	Light
10	Demille	Lapeer	MI	160	28.40	10	10%	68%	0%	22%	2,010	$47,208	$187,214	Light
11	Turrill	Lapeer	MI	230	19.60	10	75%	59%	0%	25%	2,390	$46,839	$110,361	Light
12	Picure Rocks	Tucson	AZ	182	20.00	N/A	6%	88%	6%	0%	102	$81,081	$280,172	Light
13	Avra Valley	Tucson	AZ	246	25.00	N/A	3%	94%	3%	0%	85	$80,997	$292,308	None
14	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208	None
15	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	$50,355	$231,408	Medium
16	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320	Lt to Med
17	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571	Light
18	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	$120,861	$483,333	Med to Hvy
	Average			640	76.03		19%	64%	17%	4%	721	$69,501	$262,659	
	Median			335	29.20		12%	68%	2%	0%	293	$72,579	$273,135	
	High			3,500	617.00		75%	98%	94%	25%	2,446	$120,861	$483,333	
	Low			121	19.60		1%	0%	0%	0%	48	$36,737	$110,361	

The breakdown of adjoining uses, population density, median income and housing prices for these projects are very similar to those of the larger set. The matched pairs for each of these were considered earlier and support a finding of no negative impact on the adjoining home values.

I have included a breakdown of solar farms with 50 MW to 617 MW facilities adjoining.

Matched Pair Summary - @50 MW And Larger							Adj. Uses By Acreage				1 mile Radius (2010-2019 Data)			
	Name	City	State	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com/Ind	Popl.	Med. Income	Avg. Housing Unit	Veg. Buffer
1	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731	Light
2	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667	Heavy
3	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306	Lt to Med
4	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435	Light
5	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347	Light
6	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320	Lt to Med
7	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571	Light
8	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	$120,861	$483,333	Med to Hvy
	Average			1,142	143.19		19%	58%	23%	1%	786	$73,128	$289,964	
	Median			580	75.00		15%	67%	0%	0%	390	$69,339	$279,039	
	High			3,500	617.00		41%	97%	94%	3%	2,446	$120,861	$483,333	
	Low			347	71.00		2%	0%	0%	0%	48	$36,737	$143,320	

The breakdown of adjoining uses, population density, median income and housing prices for these projects are very similar to those of the larger set. The matched pairs for each of these were considered earlier and support a finding of no negative impact on the adjoining home values.

The data for these larger solar farms is shown in the SE USA and the National data breakdowns with similar landscaping, setbacks and range of impacts that fall mostly in the +/-5% range as can be seen earlier in this report.

On the following page I show 81 projects ranging in size from 50 MW up to 1,000 MW with an average size of 111.80 MW and a median of 80 MW. The average closest distance for an adjoining home is 263 feet, while the median distance is 188 feet. The closest distance is 57 feet. The mix of adjoining uses is similar with most of the adjoining uses remaining residential or agricultural in nature. This is the list of solar farms that I have researched for possible matched pairs and not a complete list of larger solar farms in those states.

Parcel #	State	City	Name	Output (MW)	Total Acres	Used Acres	Avg. Dist to home	Closest Home	Adjoining Use by Acre			
									Res	Agri	Ag/R	Com
78	NC	Moyock	Summit/Ranchland	80	2034		674	360	4%	94%	0%	2%
133	MS	Hattiesburg	Hattiesburg	50	1129	479.6	650	315	35%	65%	0%	0%
179	SC	Ridgeland	Jasper	140	1600	1000	461	108	2%	85%	13%	0%
211	NC	Enfield	Chestnut	75	1428.1		1,429	210	4%	96%	0%	0%
222	VA	Chase City	Grasshopper	80	946.25				6%	87%	5%	1%
226	VA	Louisa	Belcher	88	1238.1			150	19%	53%	28%	0%
305	FL	Dade City	Mountain View	55	347.12		510	175	32%	39%	21%	8%
319	FL	Jasper	Hamilton	74.9	1268.9	537	3,596	240	5%	67%	28%	0%
336	FL	Parrish	Manatee	74.5	1180.4		1,079	625	2%	50%	1%	47%
337	FL	Arcadia	Citrus	74.5	640				0%	0%	100%	0%
338	FL	Port Charlotte	Babcock	74.5	422.61				0%	0%	100%	0%
353	VA	Oak Hall	Amazon East(ern sh	80	1000		645	135	8%	75%	17%	0%
364	VA	Stevensburg	Greenwood	100	2266.6	1800	788	200	8%	62%	29%	0%
368	NC	Warsaw	Warsaw	87.5	585.97	499	526	130	11%	66%	21%	3%
390	NC	Ellerbe	Innovative Solar 34	50	385.24	226	N/A	N/A	1%	99%	0%	0%
399	NC	Midland	McBride	74.9	974.59	627	1,425	140	12%	78%	9%	0%
400	FL	Mulberry	Alafia	51	420.35		490	105	7%	90%	3%	0%
406	VA	Clover	Foxhound	91	1311.8		885	185	5%	61%	17%	18%
410	FL	Trenton	Trenton	74.5	480		2,193	775	0%	26%	55%	19%
411	NC	Battleboro	Fern	100	1235.4	960.71	1,494	220	5%	76%	19%	0%
412	MD	Goldsboro	Cherrywood	202	1722.9	1073.7	429	200	10%	76%	13%	0%
434	NC	Conetoe	Conetoe	80	1389.9	910.6	1,152	120	5%	78%	17%	0%
440	FL	Debary	Debary	74.5	844.63		654	190	3%	27%	0%	70%
441	FL	Hawthorne	Horizon	74.5	684				3%	81%	16%	0%
484	VA	Newsoms	Southampton	100	3243.9		-	-	3%	78%	17%	3%
486	VA	Stuarts Draft	Augusta	125	3197.4	1147	588	165	16%	61%	16%	7%
491	NC	Misenheimer	Misenheimer 2018	80	740.2	687.2	504	130	11%	40%	22%	27%
494	VA	Shacklefords	Walnut	110	1700	1173	641	165	14%	72%	13%	1%
496	VA	Clover	Piney Creek	80	776.18	422	523	195	15%	62%	24%	0%
511	NC	Scotland Neck	American Beech	160	3255.2	1807.8	1,262	205	2%	58%	38%	3%
514	NC	Reidsville	Williamsburg	80	802.6	507	734	200	25%	12%	63%	0%
517	VA	Luray	Cape	100	566.53	461	519	110	42%	12%	46%	0%
518	VA	Emporia	Fountain Creek	80	798.3	595	862	300	6%	23%	71%	0%
525	NC	Plymouth	Macadamia	484	5578.7	4813.5	1,513	275	1%	90%	9%	0%
526	NC	Mooresboro	Broad River	50	759.8	365	419	70	29%	55%	16%	0%
555	FL	Mulberry	Durrance	74.5	463.57	324.65	438	140	3%	97%	0%	0%
560	NC	Yadkinville	Sugar	60	477	357	382	65	19%	39%	20%	22%
561	NC	Enfield	Halifax 80mw 2019	80	1007.6	1007.6	672	190	8%	73%	19%	0%
577	VA	Windsor	Windsor	85	564.1	564.1	572	160	9%	67%	24%	0%
579	VA	Paytes	Spotsylvania	500	6412	3500			9%	52%	11%	27%
582	NC	Salisbury	China Grove	65	428.66	324.26	438	85	58%	4%	38%	0%
583	NC	Walnut Cove	Lick Creek	50	1424	185.11	410	65	20%	64%	11%	5%
584	NC	Enfield	Sweetleaf	94	1956.3	1250	968	160	5%	63%	32%	0%
586	VA	Aylett	Sweet Sue	77	1262	576	1,617	680	7%	68%	25%	0%
593	NC	Windsor	Sumac	120	3360.6	1257.9	876	160	4%	90%	6%	0%
599	TN	Somerville	Yum Yum	147	4000	1500	1,862	330	3%	32%	64%	1%
602	GA	Waynesboro	White Oak	76.5	516.7	516.7	2,995	1,790	1%	34%	65%	0%
603	GA	Butler	Butler GA	103	2395.1	2395.1	1,534	255	2%	73%	23%	2%
604	GA	Butler	White Pine	101.2	505.94	505.94	1,044	100	1%	51%	48%	1%
605	GA	Metter	Live Oak	51	417.84	417.84	910	235	4%	72%	23%	0%
606	GA	Hazelhurst	Hazelhurst II	52.5	947.15	490.42	2,114	105	9%	64%	27%	0%
607	GA	Bainbridge	Decatur Parkway	80	781.5	781.5	1,123	450	2%	27%	22%	49%
608	GA	Leslie-DeSoto	Americus	1000	9661.2	4437	5,210	510	1%	63%	36%	0%
616	FL	Fort White	Fort White	74.5	570.5	457.2	828	220	12%	71%	17%	0%
621	VA	Spring Grove	Loblolly	150	2181.9	1000	1,860	110	7%	62%	31%	0%
622	VA	Scottsville	Woodridge	138	2260.9	1000	1,094	170	9%	63%	28%	0%
625	NC	Middlesex	Phobos	80	754.52	734	356	57	14%	75%	10%	0%
628	MI	Deerfield	Carroll Road	200	1694.8	1694.8	343	190	12%	86%	0%	2%
633	VA	Emporia	Brunswick	150.2	2076.4	1387.3	1,091	240	4%	85%	11%	0%
634	NC	Elkin	Partin	50	429.4	257.64	945	155	30%	25%	15%	30%

Parcel #	State	City	Name	Output (MW)	Total Acres	Used Acres	Avg. Dist to home	Closest Home	Adjoining Use by Acre Res	Agri	Ag/R	Com
638	GA	Dry Branch	Twiggs	200	2132.7	2132.7	-	-	10%	55%	35%	0%
639	NC	Hope Mills	Innovative Solar 46	78.5	531.87	531.87	423	125	17%	83%	0%	0%
640	NC	Hope Mills	Innovative Solar 42	71	413.99	413.99	375	135	41%	59%	0%	0%
645	NC	Stanley	Hornet	75	1499.5	858.4	663	110	30%	40%	23%	6%
650	NC	Grifton	Grifton 2	56	681.59	297.6	363	235	1%	99%	0%	0%
651	NC	Grifton	Buckleberry	52.1	367.67	361.67	913	180	5%	54%	41%	0%
657	KY	Greensburg	Horseshoe Bend	60	585.65	395	1,394	63	3%	36%	61%	0%
658	KY	Campbellsville	Flat Run	55	429.76	429.76	408	115	13%	52%	35%	0%
666	FL	Archer	Archer	74.9	636.94	636.94	638	200	43%	57%	0%	0%
667	FL	New Smyrna Bea	Pioneer Trail	74.5	1202.8	900	1,162	225	14%	61%	21%	4%
668	FL	Lake City	Sunshine Gateway	74.5	904.29	472	1,233	890	11%	80%	8%	0%
669	FL	Florahome	Coral Farms	74.5	666.54	580	1,614	765	19%	75%	7%	0%
672	VA	Appomattox	Spout Spring	60	881.12	673.37	836	335	16%	30%	46%	8%
676	TX	Stamford	Alamo 7	106.4	1663.1	1050	-	-	6%	83%	0%	11%
677	TX	Fort Stockton	RE Roserock	160	1738.2	1500	-	-	0%	100%	0%	0%
678	TX	Lamesa	Lamesa	102	914.5	655	921	170	4%	41%	11%	44%
679	TX	Lamesa	Ivory	50	706	570	716	460	0%	87%	2%	12%
680	TX	Uvalde	Alamo 5	95	830.35	800	925	740	1%	93%	6%	0%
684	NC	Waco	Brookcliff	50	671.03	671.03	560	150	7%	21%	15%	57%
689	AZ	Arlington	Mesquite	320.8	3774.5	2617	1,670	525	8%	92%	0%	0%
692	AZ	Tucson	Avalon	51	479.21	352	-	-	0%	100%	0%	0%
				81								
			Average	111.80	1422.4	968.4	1031	263	10%	62%	22%	6%
			Median	80.00	914.5	646.0	836	188	7%	64%	17%	0%
			High	1000.00	9661.2	4813.5	5210	1790	58%	100%	100%	70%
			Low	50.00	347.1	185.1	343	57	0%	0%	0%	0%

VIII. Distance Between Homes and Panels

I have measured distances at matched pairs as close as 105 feet between panel and home to show no impact on value. This measurement goes from the closest point on the home to the closest solar panel. This is a strong indication that at this distance there is no impact on adjoining homes.

However, in tracking other approved solar farms across Virginia, North Carolina and other states, I have found that it is common for there to be homes within 100 to 150 feet of solar panels. Given the visual barriers in the form of privacy fencing or landscaping, there is no sign of negative impact.

I have also tracked a number of locations where solar panels are between 50 and 100 feet of single-family homes. In these cases the landscaping is typically a double row of more mature evergreens at time of planting. There are many examples of solar farms with one or two homes closer than 100-feet, but most of the adjoining homes are further than that distance.

IX. Topography

As shown on the summary charts for the solar farms, I have been identifying the topographic shifts across the solar farms considered. Differences in topography can impact visibility of the panels, though typically this results in distant views of panels as opposed to up close views. The topography noted for solar farms showing no impact on adjoining home values range from as much as 160-foot shifts across the project. Given that appearance is the only factor of concern and that distance plus landscape buffering typically addresses up close views, this leaves a number of potentially distant views of panels. I specifically note that in Crittenden in KY there are distant views of panels from the adjoining homes that showed no impact on value.

General rolling terrain with some distant solar panel views are showing no impact on adjoining property value.

X. Potential Impacts During Construction

Any development of a site will have a certain amount of construction, whether it is for a commercial agricultural use such as large-scale poultry operations or a new residential subdivision. Construction will be temporary and consistent with other development uses of the land and in fact dust from the construction will likely be less than most other construction projects given the minimal grading. I would not anticipate any impacts on property value due to construction on the site.

I note that in the matched pairs that I have included there have been a number of home sales that happened after a solar farm was approved but before the solar farm was built showing no impact on property value. Therefore the anticipated construction had no impact as shown by that data.

XI. Scope of Research

I have researched over 750 solar farms and sites on which solar farms are existing and proposed in Virginia, Illinois, Tennessee, North Carolina, Kentucky as well as other states to determine what uses are typically found in proximity with a solar farm. The data I have collected and provide in this report strongly supports the assertion that solar farms are having no negative consequences on adjoining agricultural and residential values.

Beyond these references, I have quantified the adjoining uses for a number of solar farm comparables to derive a breakdown of the adjoining uses for each solar farm. The chart below shows the breakdown of adjoining or abutting uses by total acreage.

Percentage By Adjoining Acreage

	Res	Ag	Res/AG	Comm	Ind	Avg Home	Closest Home	All Res Uses	All Comm Uses
Average	19%	53%	20%	2%	6%	887	344	91%	8%
Median	11%	56%	11%	0%	0%	708	218	100%	0%
High	100%	100%	100%	93%	98%	5,210	4,670	100%	98%
Low	0%	0%	0%	0%	0%	90	25	0%	0%

Res = Residential, Ag = Agriculture, Com = Commercial

Total Solar Farms Considered: 705

I have also included a breakdown of each solar farm by number of adjoining parcels to the solar farm rather than based on adjoining acreage. Using both factors provide a more complete picture of the neighboring properties.

Percentage By Number of Parcels Adjoining

	Res	Ag	Res/AG	Comm	Ind	Avg Home	Closest Home	All Res Uses	All Comm Uses
Average	61%	24%	9%	2%	4%	887	344	93%	6%
Median	65%	19%	5%	0%	0%	708	218	100%	0%
High	100%	100%	100%	60%	78%	5,210	4,670	105%	78%
Low	0%	0%	0%	0%	0%	90	25	0%	0%

Res = Residential, Ag = Agriculture, Com = Commercial

Total Solar Farms Considered: 705

Both of the above charts show a marked residential and agricultural adjoining use for most solar farms. Every single solar farm considered included an adjoining residential or residential/agricultural use.

XII. Specific Factors Related To Impacts on Value

I have completed a number of Impact Studies related to a variety of uses and I have found that the most common areas for impact on adjoining values typically follow a hierarchy with descending levels of potential impact. I will discuss each of these categories and how they relate to a solar farm.

1. Hazardous material
2. Odor
3. Noise
4. Traffic
5. Stigma
6. Appearance

1. Hazardous material

A solar farm presents no potential hazardous waste byproduct as part of normal operation. Any fertilizer, weed control, vehicular traffic, or construction will be significantly less than typically applied in a residential development and even most agricultural uses.

The various solar farms that I have inspected and identified in the addenda have no known environmental impacts associated with the development and operation.

2. Odor

The various solar farms that I have inspected produced no odor.

3. Noise

Whether discussing passive fixed solar panels, or single-axis trackers, there is no negative impact associated with noise from a solar farm. The transformer reportedly has a hum similar to an HVAC that can only be heard in close proximity to this transformer and the buffers on the property are sufficient to make emitted sounds inaudible from the adjoining properties. No sound is emitted from the facility at night.

The various solar farms that I have inspected were inaudible from the roadways.

4. Traffic

The solar farm will have no onsite employee's or staff. The site requires only minimal maintenance. Relative to other potential uses of the site (such as a residential subdivision), the additional traffic generated by a solar farm use on this site is insignificant.

5. Stigma

There is no stigma associated with solar farms and solar farms and people generally respond favorably towards such a use. While an individual may express concerns about proximity to a solar farm, there is no specific stigma associated with a solar farm. Stigma generally refers to things such as adult establishments, prisons, rehabilitation facilities, and so forth.

Solar panels have no associated stigma and in smaller collections are found in yards and roofs in many residential communities. Solar farms are adjoining elementary, middle and high schools as well as churches and subdivisions. I note that one of the solar farms in this report not only adjoins a church, but is actually located on land owned by the church. Solar panels on a roof are often cited as an enhancement to the property in marketing brochures.

I see no basis for an impact from stigma due to a solar farm.

6. Appearance

I note that larger solar farms using fixed or tracking panels are a passive use of the land that is in keeping with a rural/residential area. As shown below, solar farms are comparable to larger greenhouses. This is not surprising given that a greenhouse is essentially another method for collecting passive solar energy. The greenhouse use is well received in residential/rural areas and has a similar visual impact as a solar farm.






The solar panels are all less than 15 feet high, which means that the visual impact of the solar panels will be similar in height to a typical greenhouse and lower than a single-story residential dwelling. Were the subject property developed with single family housing, that development would have a much greater visual impact on the surrounding area given that a two-story home with attic could be three to four times as high as these proposed panels.

Whenever you consider the impact of a proposed project on viewshed or what the adjoining owners may see from their property it is important to distinguish whether or not they have a protected viewshed or not. Enhancements for scenic vistas are often measured when considering properties that adjoin preserved open space and parks. However, adjoining land with a preferred view today conveys no guarantee that the property will continue in the current use. Any consideration of the impact of the appearance requires a consideration of the wide variety of other uses a property already has the right to be put to, which for solar farms often includes subdivision development, agricultural business buildings such as poultry, or large greenhouses and the like.

Dr. Randall Bell, MAI, PhD, and author of the book **Real Estate Damages**, Third Edition, on Page 146 "Views of bodies of water, city lights, natural settings, parks, golf courses, and other amenities are considered desirable features, particularly for residential properties." Dr. Bell continues on Page 147 that "View amenities may or may not be protected by law or regulation. It is sometimes argued that views have value only if they are protected by a view easement, a zoning ordinance, or covenants, conditions, and restrictions (CC&Rs), although such protections are relatively

uncommon as a practical matter. The market often assigns significant value to desirable views irrespective of whether or not such views are protected by law."

Dr. Bell concludes that a view enhances adjacent property, even if the adjacent property has no legal right to that view. He then discusses a "borrowed" view where a home may enjoy a good view of vacant land or property beyond with a reasonable expectation that the view might be partly or completely obstructed upon development of the adjoining land. He follows that with "This same concept applies to potentially undesirable views of a new development when the development conforms to applicable zoning and other regulations. Arguing value diminution in such cases is difficult, since the possible development of the offending property should have been known." In other words, if there is an allowable development on the site then arguing value diminution with such a development would be difficult. This further extends to developing the site with alternative uses that are less impactful on the view than currently allowed uses.

This gets back to the point that if a property has development rights and could currently be developed in such a way that removes the viewshed such as a residential subdivision, then a less intrusive use such as a solar farm that is easily screened by landscaping would not have a greater impact on the viewshed of any perceived value adjoining properties claim for viewshed. Essentially, if there are more impactful uses currently allowed, then how can you claim damages for a less impactful use.

7. Conclusion

On the basis of the factors described above, it is my professional opinion that the proposed solar farm will not negatively impact adjoining property values. The only category of impact of note is appearance, which is addressed through setbacks and landscaping buffers. The matched pair data supports that conclusion.

XIII. Conclusion

The matched pair analysis shows no negative impact in home values due to abutting or adjoining a solar farm as well as no impact to abutting or adjacent vacant residential or agricultural land. The criteria that typically correlates with downward adjustments on property values such as noise, odor, and traffic all support a finding of no impact on property value.

Very similar solar farms in very similar areas have been found by hundreds of towns and counties not to have a substantial injury to abutting or adjoining properties, and many of those findings of no impact have been upheld by appellate courts. Similar solar farms have been approved adjoining agricultural uses, schools, churches, and residential developments.

I have found no difference in the mix of adjoining uses or proximity to adjoining homes based on the size of a solar farm and I have found no significant difference in the matched pair data adjoining larger solar farms versus smaller solar farms. The data in the Southeast is consistent with the larger set of data that I have nationally, as is the more specific data located in and around Virginia.

Based on the data and analysis in this report, it is my professional opinion that the solar farm proposed at the subject property will have no negative impact on the value of adjoining or abutting property. I note that some of the positive implications of a solar farm that have been expressed by people living next to solar farms include protection from future development of residential developments or other more intrusive uses, reduced dust, odor and chemicals from former farming operations, protection from light pollution at night, it's quiet, and there is no traffic.

XIV. Certification

I certify that, to the best of my knowledge and belief:

1. The statements of fact contained in this report are true and correct;

2. The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, unbiased professional analyses, opinions, and conclusions;

3. I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved;

4. I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment;

5. My engagement in this assignment was not contingent upon developing or reporting predetermined results;

6. My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of the appraisal;

7. The reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute;

8. My analyses, opinions and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice.

9. The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives;

10. I have not made a personal inspection of the property that is the subject of this report, and;

11. No one provided significant real property appraisal assistance to the person signing this certification.

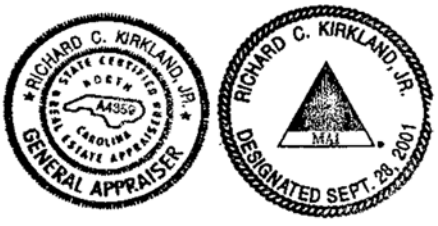
12. As of the date of this report I have completed the continuing education program for Designated Members of the Appraisal Institute;

13. I provided an earlier analysis on this project with a slightly different layout on November 11, 2019. I have not completed any other appraisal related assignments regarding this project within the three years prior to engagement in this current assignment.

Disclosure of the contents of this appraisal report is governed by the bylaws and regulations of the Appraisal Institute and the National Association of Realtors.

Neither all nor any part of the contents of this appraisal report shall be disseminated to the public through advertising media, public relations media, news media, or any other public means of communications without the prior written consent and approval of the undersigned.





Richard C. Kirkland, Jr., MAI
State Certified General Appraiser

Kirkland Appraisals, LLC

Richard C. Kirkland, Jr., MAI
9408 Northfield Court
Raleigh, North Carolina 27603
Mobile (919) 414-8142
rkirkland2@gmail.com
www.kirklandappraisals.com

Professional Experience

Kirkland Appraisals, LLC, Raleigh, N.C. — 2003 – Present
Commercial appraiser

Hester & Company, Raleigh, N.C.
Commercial appraiser — 1996 – 2003

Professional Affiliations

MAI (Member, Appraisal Institute) designation #11796 — 2001
NC State Certified General Appraiser # A4359 — 1999
VA State Certified General Appraiser # 4001017291
SC State Certified General Appraiser # 6209
FL State Certified General Appraiser # RZ3950
GA State Certified General Appraiser # 321885
MI State Certified General Appraiser # 1201076620
PA State Certified General Appraiser # GA004598
OH State Certified General Appraiser # 2021008689
IN State Certified General Appraiser # CG42100052

Education

Bachelor of Arts in English, University of North Carolina, Chapel Hill — 1993

Continuing Education

Uniform Standards of Professional Appraisal Practice Update	2022
Sexual Harassment Prevention Training	2021
Appraisal of Land Subject to Ground Leases	2021
Florida Appraisal Laws and Regulations	2020
Michigan Appraisal Law	2020
Uniform Standards of Professional Appraisal Practice Update	2020
Uniform Appraisal Standards for Federal Land Acquisitions (Yellow Book)	2019
The Cost Approach	2019
Income Approach Case Studies for Commercial Appraisers	2018
Introduction to Expert Witness Testimony for Appraisers	2018
Appraising Small Apartment Properties	2018
Florida Appraisal Laws and Regulations	2018
Uniform Standards of Professional Appraisal Practice Update	2018
Appraisal of REO and Foreclosure Properties	2017
Appraisal of Self Storage Facilities	2017
Land and Site Valuation	2017
NCDOT Appraisal Principles and Procedures	2017
Uniform Standards of Professional Appraisal Practice Update	2016
Forecasting Revenue	2015
Wind Turbine Effect on Value	2015

Supervisor/Trainee Class	2015
Business Practices and Ethics	2014
Subdivision Valuation	2014
Uniform Standards of Professional Appraisal Practice Update	2014
Introduction to Vineyard and Winery Valuation	2013
Appraising Rural Residential Properties	2012
Uniform Standards of Professional Appraisal Practice Update	2012
Supervisors/Trainees	2011
Rates and Ratios: Making sense of GIMs, OARs, and DCFs	2011
Advanced Internet Search Strategies	2011
Analyzing Distressed Real Estate	2011
Uniform Standards of Professional Appraisal Practice Update	2011
Business Practices and Ethics	2011
Appraisal Curriculum Overview (2 Days – General)	2009
Appraisal Review - General	2009
Uniform Standards of Professional Appraisal Practice Update	2008
Subdivision Valuation: A Comprehensive Guide	2008
Office Building Valuation: A Contemporary Perspective	2008
Valuation of Detrimental Conditions in Real Estate	2007
The Appraisal of Small Subdivisions	2007
Uniform Standards of Professional Appraisal Practice Update	2006
Evaluating Commercial Construction	2005
Conservation Easements	2005
Uniform Standards of Professional Appraisal Practice Update	2004
Condemnation Appraising	2004
Land Valuation Adjustment Procedures	2004
Supporting Capitalization Rates	2004
Uniform Standards of Professional Appraisal Practice, C	2002
Wells and Septic Systems and Wastewater Irrigation Systems	2002
Appraisals 2002	2002
Analyzing Commercial Lease Clauses	2002
Conservation Easements	2000
Preparation for Litigation	2000
Appraisal of Nonconforming Uses	2000
Advanced Applications	2000
Highest and Best Use and Market Analysis	1999
Advanced Sales Comparison and Cost Approaches	1999
Advanced Income Capitalization	1998
Valuation of Detrimental Conditions in Real Estate	1999
Report Writing and Valuation Analysis	1999
Property Tax Values and Appeals	1997
Uniform Standards of Professional Appraisal Practice, A & B	1997
Basic Income Capitalization	1996

Prepared By:

TIMMONS GROUP
ENGINEERING | DESIGN | TECHNOLOGY

Moonlight Solar

Decommissioning Plan

Isle of Wight County, VA

Date: 4/21/2023

This cost estimate was not based on detailed construction drawings, but is typical for a project of this size and type. The listed equipment quantities are subject to change based on the actual installed facilities.

Prepared For:

PALLADIUM ENERGY

Moonlight
Solar
Decommissioning Plan

CLIENT NAME	Moonlight Solar
PROJECT NAME	Moonlight Solar
LOCATION	11069 Burwells Bay Road Smithfield, Isle of Wight County, Virginia 23430
PROJECT	Solar PV Electric Generating Facility

Rev.	Date	Description	Prepared	Checked	Approved
0	4/21/2023	Released for Client Use	NBF	KJ	AC

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1 Introduction

Moonlight Solar (the" Project") is a solar electric generation facility ("Facility") up to 44 MWac proposed by Moonlight Solar (the "Project Owner"). The Project will be located at or near 11069 Burwells Bay Road, Smithfield, Isle of Wight County, Virginia. The project area will span approximately 250.1 acres and will connect to a 230 kV transmission line owned by Dominion Energy.

This Decommissioning and Restoration Plan ("Plan") has been prepared to address the requirements of the Isle of Wight County Solar Ordinance. The Project will also comply with any applicable municipal, state, and federal regulations. The Plan assumes decommissioning and restoration will occur at the end of the Project's expected useful life of forty (40) years. An overview of all activities related to the removal of the Project's equipment and panels, appurtenant structures, and for restoration of the site to its previous condition (as much as reasonably practicable) can be found in the Plan.

Within 12 months of initiating the decommissioning, the Project Owner will safely have the relevant components removed from the land and will then restore the site as described below.

This Plan lays out the procedures for restoring the site to its original use, based on the recent historical land use of the property or other economical land uses as desired by the relevant landowner, at the end of the Facility's operational life. The Plan describes procedures for the removal of Facility components. The components of the Facility are described in detail in the Exhibit to the CUP application ("Conceptual Site Plan").

2 Project Components

The Conceptual Site Plan provides detailed information regarding the anticipated location and description of the Facility components. The Facility generally consists of the equipment and infrastructure listed below:

- Steel Piers and Racking;
- PV Panels;
- Inverters;
- Electrical Collection Lines;
- Access Roads;
- Fencing, Gating, and Safety Features;
- Operations and Maintenance (O&M) Building (TBD);
- Weather Stations; and
- Project Collection Substation

3 Regulatory Compliance

Prior to the commencement of decommissioning, the Project Owner will perform the appropriate due diligence requirements and obtain the necessary Isle of Wight County, state, and federal approvals to complete decommissioning activities. To mitigate any environmental impact from decommissioning, the Project Owner will assess the necessary permits and approvals in the future regulatory environment to maintain regulatory compliance. Anticipated types of evaluations may include the following:

- Review of on-site jurisdictional status and potential impacts to wetlands and waterbodies to comply with the Clean Water Act;
- Consultation with the United States Fish and Wildlife Service to evaluate compliance with the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and any other relevant regulations at the time of decommissioning;
- Consultation with the Virginia Department of Environmental Quality for compliance with any pertinent state regulatory requirements;
- Completion of a Phase I Environmental Site Assessment in support of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) protection;
- Development and implementation of a Stormwater Pollution Prevention Plan (SWPPP);
- Isle of Wight County building, road, discharge, or erosion control permits (as necessary); and
- Special state or local hauling permits (as necessary).

4 Decommissioning

The Project will be decommissioned at the end of its useful life. When the Project Owner determines the Project is at the end of its useful life. At least 60 days prior to the commencement of decommissioning activities, the Project Owner will notify the Isle of Wight County officials. The following general decommissioning activities will occur:

Decommissioning Sequence

1. Obtain required site permits from Authority Having Jurisdiction (AHJ)
2. Disconnect all utility grid power
3. Move all disconnects to the off position
4. Disconnect all above ground wirings, cables, and electrical connections
5. Remove all PV Modules
6. Remove inverters, mounting equipment, and posts
7. Remove all electrical switchgear, transformers, and their foundations
8. Remove Data Acquisition System (DAS) equipment, feeders, and conduit

9. Remove all above ground mounting equipment components and posts
10. Excavate and remove Underground feeders and conduit
11. Remove all MV feeders and utility poles
12. Removal of Collector Substation
13. Removal of weather station
14. Remove access road
15. Remove all fencing
16. Fill/Grade/Seed as needed

Some components may be left in place under certain circumstances. Electrical lines that will not impact future use of the Project Area (at least 3 feet in depth) may be left in place per renewable industry practices. Steel piles, where full removal is unattainable, may be cut and left in place at a depth of 3 feet or greater below the ground surface. Additionally, landowners may desire that certain improvements such as fencing, or access roads remain in place for their use. The Project Owner will obtain a written request from the landowner for any improvement to remain in place.

5 Materials, Recycling, and Disposal

Many components of the Facility, such as racking, wiring, piles, and panels, retain value over time. Panels, while slightly less efficient than when installed, may be reused elsewhere, or their components may be broken down and recycled. Recycling of solar panels and equipment is rapidly evolving and can be handled through a combination of sources such as certain manufacturers, e.g., PV Cycle (an international waste program founded by and for the PV industry), or waste management companies. More than 90 percent of the semiconductor material and glass can be reused in new modules and products. Other waste materials that hold no value will be recycled or disposed of via a licensed solid waste disposal facility.

6 Site Restoration

Following the completion of decommissioning activities, it is anticipated that the site will primarily be converted back to the pre-construction land uses. The land will be graded as necessary, though minimal grading is expected to be required, and decompacted to allow for productive agricultural use. Following completion of the decommissioning activities, the site will be reseeded as necessary with native grasses. Decommissioning of the Facility, including the removal of materials followed by site restoration, should be completed in approximately 12 months.

7 Decommissioning Cost Estimate

7.1 OPINION OF PROBABLE DECOMMISSIONING COST

Detailed Project Description: The Project is single an axis tracking solar electric generating facility, consisting of 27 modules per string, that will be at 11069 Burwells Bay Road Smithfield, VA, Isle of Wight County, 37.0293537, -76.7265584

Table 7-1: Estimated Decommissioning Cost:

PV Module Removal	QUANTITY	UNITS	Unit Cost	Total	Comment
# Solar Panels W540	104,020	EA	$5	$520,100	Disassembly, Haul off-site
SUBTOTAL				$520,100	
Foundations Structural Removal	**QUANTITY**	**UNITS**	**Unit Cost**	**Total**	**Comment**
# Panel Support Steel Piles	17,549	EA	$15	$263,236	Disassembly, Haul off-site
# Panel Racks	3,853	EA	$75	$288,944	Disassembly, Haul off-site
SUBTOTAL				$552,181	
Electrical Equipment Removal	**QUANTITY**	**UNITS**	**Unit Cost**	**Total**	**Comment**
Inverter, 3.6 MW	13	EA	$1,500	$19,500	Disassembly, Haul off-site
MV Transformers, 4,000 kVA	13	EA	$5,000	$65,000	Disassembly, Haul off-site
Tracker Motor	120	EA	$20	$2,400	Disassembly, Haul off-site
SUBTOTAL				$86,900	
Electrical Wires Removal	**QUANTITY**	**UNITS**	**Unit Cost**	**Total**	**Comment**
MV Conductor (10% removal)	14,081	FT	$30	$42,243	Removal, Excavation
DC/LC Conductor	8,984	FT	$2	$377,969	Removal, Non-Excavation
SUBTOTAL				$420,212	
Collector Substation Removal	**QUANTITY**	**UNITS**	**Unit Cost**	**Total**	**Comment**
Circuit Breakers 34.5 kV	2	EA	$9,500	$19,000	Disassembly, Haul off-site
HV Circuit Breakers 230 kV	1	EA	$11,250	$10,000	Disassembly, Haul off-site
Substation Steel	1	LOT	$200,000	$200,000	Disassembly, Haul off-site
Foundation/Fence	1	LOT	$95,000	$95,000	Disassembly, Haul off-site
Main Power Transformers 230 - 34.5 kV 30/40/50 MVA	1	EA	$50,000	$50,000	Disassembly, Haul off-site
Substation Control House	1	EA	$20,000	$20,000	Disassembly, Haul off-site
Capacitor Bank (Size TBD)	0	EA	$50,000	$0	Disassembly, Haul off-site
SUBTOTAL				$394,000	
Fence/land, Removal/Restoration	**QUANTITY**	**UNITS**	**Unit Cost**	**Total**	**Comment**

Fence Perimeter	44,269	FT	$1	$55,336	Disassembly, Haul off-site
Civil Site Remediation (disturbed area)	234.6	Acre	$5,000	$1,173,000	Restoration and seeding
Storm Water Management Ponds	26	EA	$4,000	$104,000	Restoration
Mobilization, Engineering & Permitting				$175,000	Budgeted
SUBTOTAL				$1,507,336	

Summary of Cost Estimates	
PV Module Removal	$520,100
Foundations Structural Removal	$552,181
Electrical Equipment Removal	$86,900
Electrical Wires Removal	$420,212
Collector Substation Removal	$394,000
Fence/land, Removal/Restoration	$1,507,336
ESTIMATED GRAND TOTAL	$3,480,729

The estimate of probable decommissioning costs ($3,480,729) shall serve as the basis for calculating the appropriate escrow, surety, or security for the cost of the decommissioning and reclamation of the project. Any salvage value shall not be used to determine the estimated decommissioning cost of the project.

Data Sources:

1. Material List and Quantities: Based on schematic design.
2. Unit Price Values: Based on R.S. Means and typical quantities for various components.

7.2 OPINION OF PROBABLE SALVAGE VALUE COST

There should be opportunity to reclaim metal scrap value from electrical equipment. Yard equipment such as bus work, circuit breakers, and power transformers contain a significant amount of conductive material such as copper and aluminum. Dead-end and other steel structures contain a significant amount of steel. Rubble from the foundation demolition and all other materials would be sent to landfill at cost. The scrap value of the substation is presented in Table 7-2.

Timmons Group considers that there is a resale market for substation transformers. Therefore, the transformer could be sold as operational second-hand equipment instead of being scrapped. This scenario has been considered.

Table 7-2 Estimated Salvage Value:

PV Module (At: $.3/W before Removal and Hauling)	QUANTITY	UNITS	Estimated New Cost/Unit	Estimated New Total Cost	Estimated Salvage Value 10% of New Cost
# Solar Panels 540W @ $.33/W =$178 less Hauling 20% = $142 net	104,020	EA	$142.00	$14,770,840	$1,477,084
SUBTOTAL					$1,477,084
Foundations Structural (at:$ .20/LB after Removal and Hauling)	**QUANTITY**	**UNITS**	**Estimated Weight LB.**	**Estimated Salvage Value**	**Estimated Salvage Value**
# Panel Support Steel Piles	17,549	EA	100	$0.20	$350,981.99
# Panel Racks	3,853	EA	1,000	$0.20	$770,518.52
SUBTOTAL					$1,121,500.51
Electrical Equipment	**QUANTITY**	**UNITS**	**Estimated New Cost/Unit**	**Estimated New Total Cost**	**Estimated Salvage Value 20% of New Cost**
MV Transformers: 4,000 kVA	13	EA	$105,000	$1,365,000	$273,000
					$273,000
Electrical Collector Substation	**QUANTITY**	**UNITS**	**Estimated New Cost/Unit**	**Estimated New Total Cost**	**Estimated Salvage Value 20% of New Cost**
Circuit Breakers 34.5 kV	2	EA	$50,000	$100,000	$20,000
HV Circuit Breakers 230 kV	1	EA	$160,000	$160,000	$32,000
Substation Steel	1	LOT	$1,200,000	$1,200,000	$240,000
Foundation/Trench/Conduit/Cable*	1	LOT	$200,000	$200,000	$40,000
Main Power Transformers 230 - 34.5 kV 30/40/50 MVA	1	EA	$1,400,000	$1,400,000	$280,000
Substation Control House	1	EA	$400,000	$400,000	$80,000
Capacitor Bank (Size TBD)	0	EA	$250,000	$0	$0
SUBTOTAL				$3,460,000	$692,000
Electrical Wires/cables	**QUANTITY**	**UNITS**	**Estimated New Cost/Unit**	**Estimated New Total Cost**	**Estimated Salvage Value 10% of New Cost**
MV Conductor (only 10% of total)	14,081	FT	$35	$492,837	$49,284
DC/LC Conductor	188,984	FT	$5	$944,922	$94,492
SUBTOTAL					$143,776
Fence	**QUANTITY**	**UNITS**	**Estimated Weight LB.**	**Estimated Salvage Value**	**Estimated Salvage Value/Including Removal**
Fence Perimeter (1.3 lb. per square ft, 6ft height)	44,269	FT	345,298	$0.50	$86,324.55
Fence Post every 10 ft (9 ft length, 2.3 lb./Ft)	4,427	FT	142,644	$0.50	$35,661.00
SUBTOTAL					$121,985.55

Summary of Salvage Values Estimate	
PV Module	$1,477,084
Foundations Structural	$1,121,501
Electrical Equipment	$273,000
Electrical Wires	$692,000
Electrical Collector Substation	$143,776
Fence	$121,986
ESTIMATED GRAND TOTAL	$3,829,346

7.3 NET DECOMMISSIONING COST

Per Isle of Wight County's Ordinance, the Estimated Salvage Value will not be used in calculating the appropriate escrow, surety, or security for the cost of the decommissioning and reclamation of the project.

7.4 DECOMMISSIONING ASSUMPTIONS

1. To develop a cost estimate for the decommissioning of the Project, Timmons Group made the following assumptions, with and costs were estimates based on current pricing, technology, and regulatory requirements. The assumptions are listed in order from top to bottom of the estimate spreadsheet. We developed time and materials-based estimates considering composition of work crews. When materials have a salvage value at the end of the project life, the construction activity costs, and the hauling/freight cost are separated from the disposal costs or salvage value to make future revisions to salvage values more transparent.
2. Decommissioning year is based on a 10-year initial period for the financial security. The projected life of the project is 40 years.
3. This Cost Estimate is based on the Timmons Group data request forwarded April 2023.
4. Common labor will be used for the majority of the tasks except for heavy equipment operation. Pricing is based on local Southeast US labor rates.
5. Permit applications required include the preparation of a Stormwater Pollution Protection Plan (SWPPP) and a Spill Prevention Control and Countermeasure (SPCC) Plan.
6. Road gravel removal was estimated on a time and material basis using a 16 foot width and an 8 inch thickness for the access roads. Substation aggregate is included in the substation quantities. Since the material will not remain on site, a hauling cost is added to the removal cost. Road aggregate can often be disposed of by giving to landowners for use on driveways and parking areas. Many landfills will accept clean aggregate for use as "daily cover" and do not charge for the disposal.

7. Grade Road Corridor reflects the cost of mobilizing and operating light equipment to spread and smooth the topsoil stockpiled on site to replace the aggregate removed from the road.
8. Erosion and sediment control along road reflects the cost of silt fence on the downhill side of the road and surrounding all on-site wetlands.
9. Topsoil is required to be stockpiled on site during construction, therefore this topsoil is available on site to replace the road aggregate, once removed. Subsoiling cost to decompact roadway areas is estimated as $1,500 per acre (based on previous bid prices), and revegetation on removed road area, which includes seed, fertilizer, lime, and care until vegetation is established is $3,500 per acre. The majority of the project area is "over-seeded" since the decommissioning activities are not expected to eliminate the existing grasses and vegetation under the arrays or heavily compact the soils. Over-seeding does not include fertilizer and lime and is estimated at $5,000 per acre.
10. Fence removal includes loading, hauling, and recycling or disposal. Fences and posts weigh approximately 2.3 pounds per foot.
11. Array support posts are generally lightweight "I" beam sections installed with a piece of specialized tracked equipment. Crew productivity is approximately 240 posts per day, and the same crew and equipment should have a similar productivity removing the posts, resulting in a per post cost of approximately $15. We assume a cost of $12.00 per post to include hauling fees and contingencies.
12. A metal recycling facility (FEA Salvage and Recycling) is located in Orange, Virginia and is relatively close to the project site. Steel scrap pricing was acquired from www.scrapmonster.com.
13. The solar panels rated 540 watts can easily be disconnected, removed, and packed by a three-person crew at a rate we estimate at 12 panels per hour.
14. No topsoil shall be removed from the site during decommissioning and most of the site will not have been compacted by heavy truck or equipment traffic so the site turf establishment cost is based on RS Means unit prices for applying lime, fertilizer, and seed at the price of per acre plus an allowance for some areas to be decompacted.
15. There is an active market for reselling and recycling electrical transformers and inverters with several national companies specializing in recycling. We have assumed a 20% recovery of these units based on field experience with used transformers as opposed to trying to break them down into raw material components.
16. The underground collection lines are assumed to be aluminum conductor.
17. Care to prevent damage and breakage of equipment, PV modules, inverters, capacitors, and SCADA must be exercised, but removal assumes unskilled common labor under supervision.

The estimated salvage values are derived from years of experience decommissioning and uprating electric substations, overhead transmission and distribution hardware and underground distribution hardware that would include but not be limited to substation and pad mounted transformers, overhead and underground conductors, poles, fencing, ground grid conductors, control housings, circuit breakers (high and medium voltage), protective relaying, and other hardware items. These individual items have high salvage value either as stand-alone components to be reused or recycled and sold as used items. These items also have a relatively high salvage value as pure scrap for steel, copper and other commodities.

For all medium voltage transformers, breakers and other items, Southeastern Transformer Company in Dunn, NC provides complete repair, upgrading and recycling and resale for all items mentioned above. Their website is: https://www.setransformer.com. They have a national presence.

For any and all recycling and upgrading, Solomon Corporation offers the same set of services for transformer repair and recycling and complete substation decommissioning services. With seven different locations, Solomon is one of several vendors that can decommission and recycle the components as noted above. Their website is: https://www.solomoncorp.com/. Solomon Corporation is only one of many transmission and distribution recycle and decommissioning shops that do this mainly to harvest the components.

For recycling conductor, General Cable and Southwire both utilize extensive scrap procurement programs to reuse copper and aluminum conductor harvested from projects such as this one to supplement and reduce their raw material costs.

Here is the link to the General Cable program which only increases the salvage values found in this Plan: General Cable Recycling https://es.generalcable.com/na/us-can/socialresponsibility/sustainability/recycling

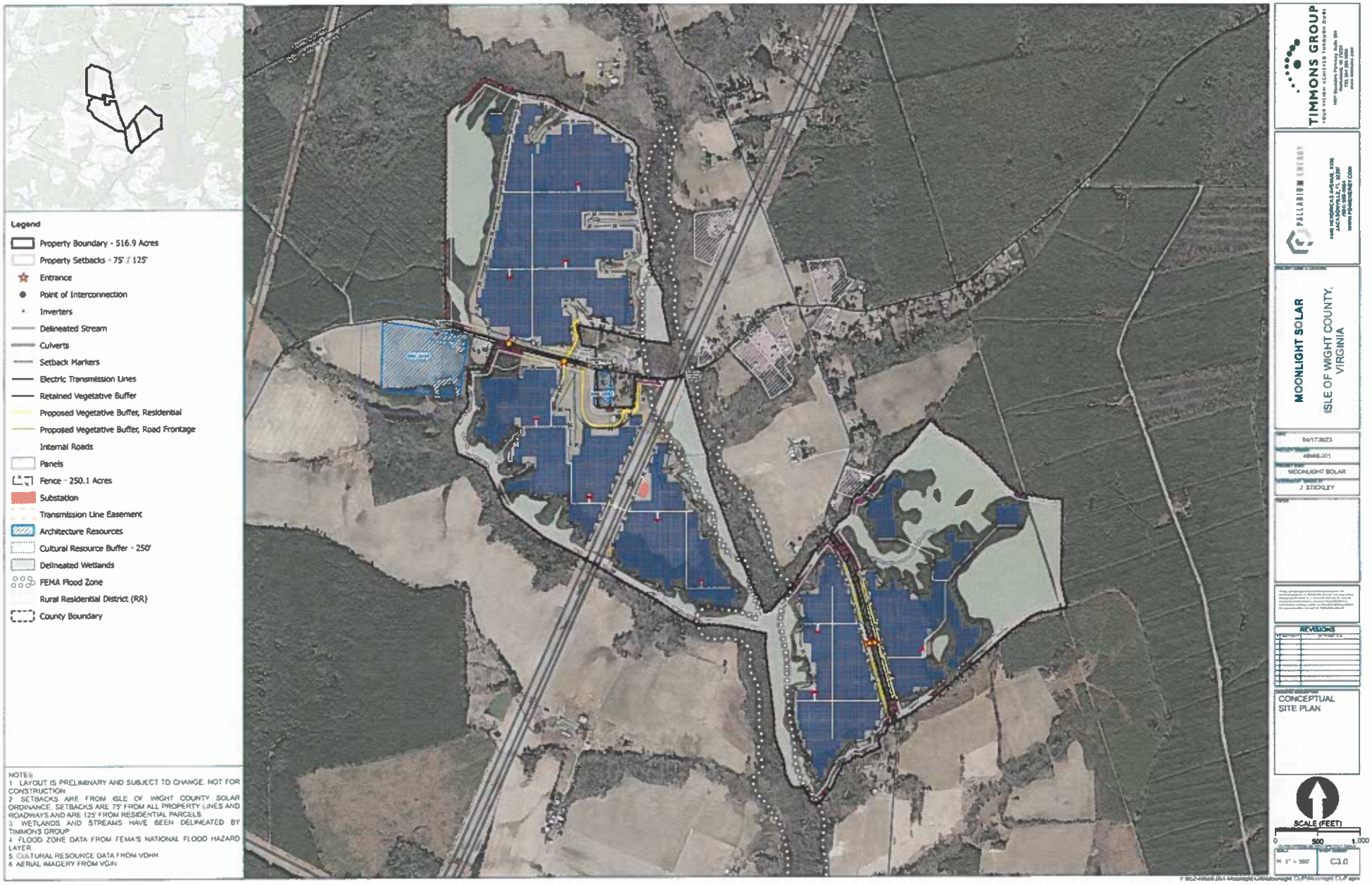
As for solar panels, they are in demand as salvageable items either in whole or for their raw material. According to the International Renewable Energy Agency (IRENA), more than 90% of all the materials are high grade silicon, aluminum and glass and are typically harvested to produce new panels. This is far less expensive than buying unprocessed raw materials for production.

The base industry assumption is that since solar panels are expected to retain about 75% of their production capability after 35 years of use, a salvage value of 10% of original cost is a low estimate of their expected value and as we note in assumption. This considers possible technology improvements and undervalues the anticipated salvage value of the panel's raw materials. The Solar Energy Industries Association (SEIA) has an approved set of PV recycling vendors that specialize in doing this today and they can be found at: https://www.seia.org/initiatives/seia-national-pv-recycling-program.

First Solar, which has been active in the solar industry since its inception, takes solar modules and recycles 90% of the semiconductor material which is then reused in new modules. 90% of the glass product can be reused as new glass products, including panels and fiber optic cable. We can conclude that realistically the estimated 10% salvage value is low and reflects a conservative figure. Information about First Solar's recycling program is at: http://www.firstsolar.com/en/Modules/Recycling.

8 Financial Assurance

The Project Owner will post a financial surety as required by the Isle of Wight County zoning ordinance. Based on industry trends, the projected and actual costs of decommissioning are expected to go down over time based on improvements both to best practices in calculating these costs and the decommissioning process itself. The Project Owner will reevaluate decommissioning costs with a qualified engineering consultant every five years during the life of the Project.


Legend
Property Boundary - 516.9 Acres
Property Setbacks - 75' / 125'
Entrance
Point of Interconnection
Inverters
Delineated Stream
Culverts
Setback Markers
Electric Transmission Lines
Retained Vegetative Buffer
Proposed Vegetative Buffer, Residential
Proposed Vegetative Buffer, Road Frontage
Internal Roads
Panels
Fence - 250.1 Acres
Substation
Transmission Line Easement
Architecture Resources
Cultural Resource Buffer - 250'
Delineated Wetlands
FEMA Flood Zone
Rural Residential District (RR)
County Boundary
NOTES:
1 LAYOUT IS PRELIMINARY AND SUBJECT TO CHANGE. NOT FOR CONSTRUCTION
2 SETBACKS ARE FROM ISLE OF WIGHT COUNTY SOLAR ORDINANCE. SETBACKS ARE 75' FROM ALL PROPERTY LINES AND ROADWAYS AND ARE 125' FROM RESIDENTIAL PARCELS
3 WETLANDS AND STREAMS HAVE BEEN DELINEATED BY TIMMONS GROUP
4 FLOOD ZONE DATA FROM FEMA'S NATIONAL FLOOD HAZARD LAYER
5 CULTURAL RESOURCE DATA FROM VDHR
6 AERIAL IMAGERY FROM VGIN
TIMMONS GROUP
PALLADIUM ENERGY
MOONLIGHT SOLAR
ISLE OF WIGHT COUNTY, VIRGINIA
04/17/2023
MOONLIGHT SOLAR
J. STICKLEY
REVISIONS
CONCEPTUAL SITE PLAN
SCALE (FEET)
0
500
1,000
C3.0



Start of Proposed Transportation Route: Intersection at Burwells Bay Rd and Route 10


Transportation Route: Bend near intersection of Moonlight Rd and Burwells Bay Rd



Moonlight Rd facing North toward 11-01-023A



Moonlight Rd facing South toward 11-01-023A



Moonlight Rd facing South toward 11-01-023



Moonlight Rd facing West toward barn on 11-01-023



Moonlight Rd facing North toward 11-01-023



Transportation Route: Shoulder along Burwells Bay Rd



Transportation Route: Shoulder along Burwells Bay Rd



Transportation Route: Shoulder along Burwells Bay Rd.



Transportation Route: Burwells Bay Rd approaching 11-01-017 on left and 11-01-018 on right



Burwells Bay Rd facing Southeast toward 11-01-017



Burwells Bay Rd facing Southeast toward Carroll Plantation House on adjacent parcel



Burwells Bay Rd facing Northwest toward 11-01-018



Burwells Bay Rd facing Northwest corner of 11-01-018

CUP-10-23 Conditional Use Permit Request - Location Map



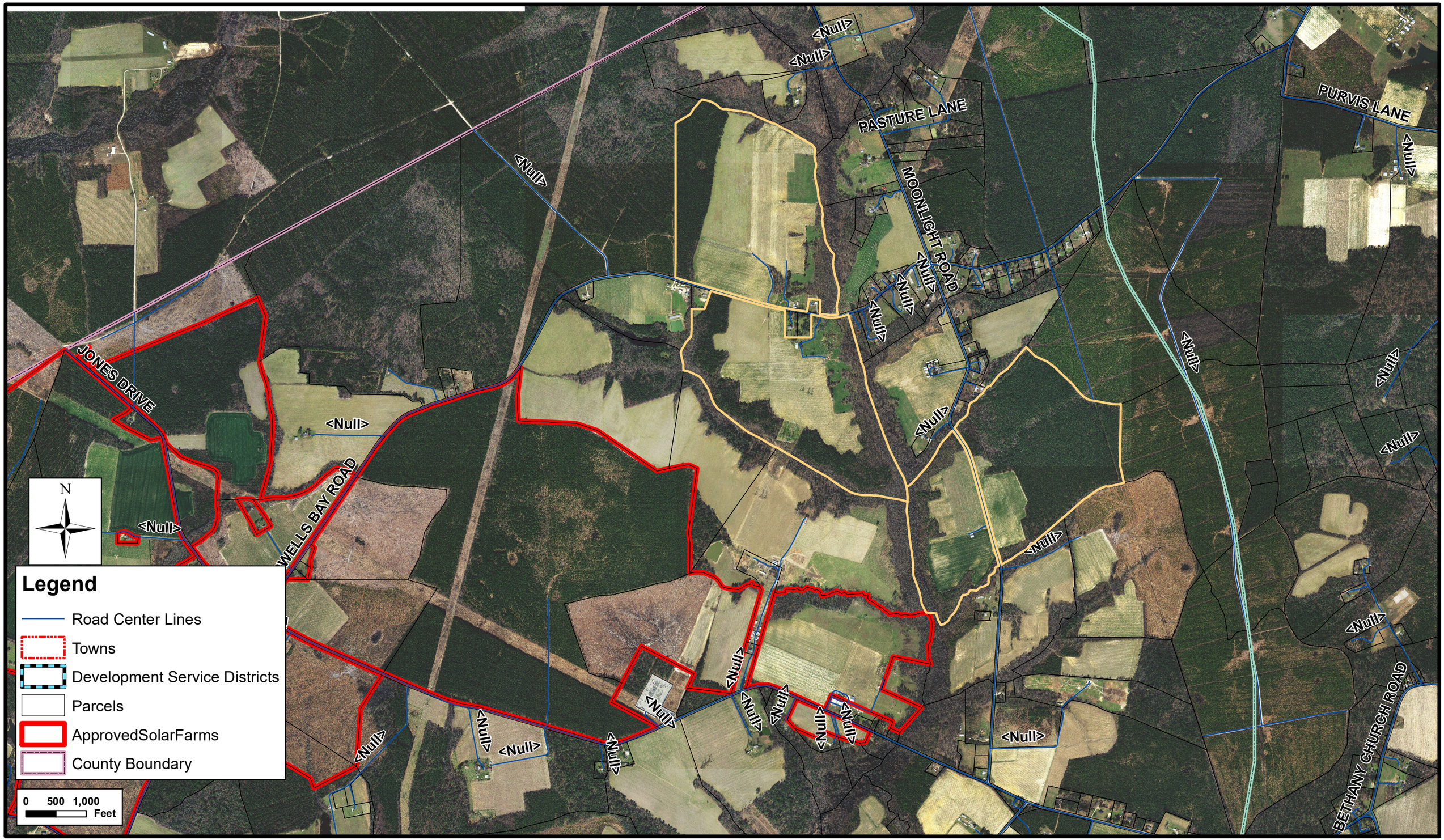
CUP-10-23 Conditional Use Permit Request - Closeup Map #1



CUP-10-23 Conditional Use Permit Request - Closeup Map #2



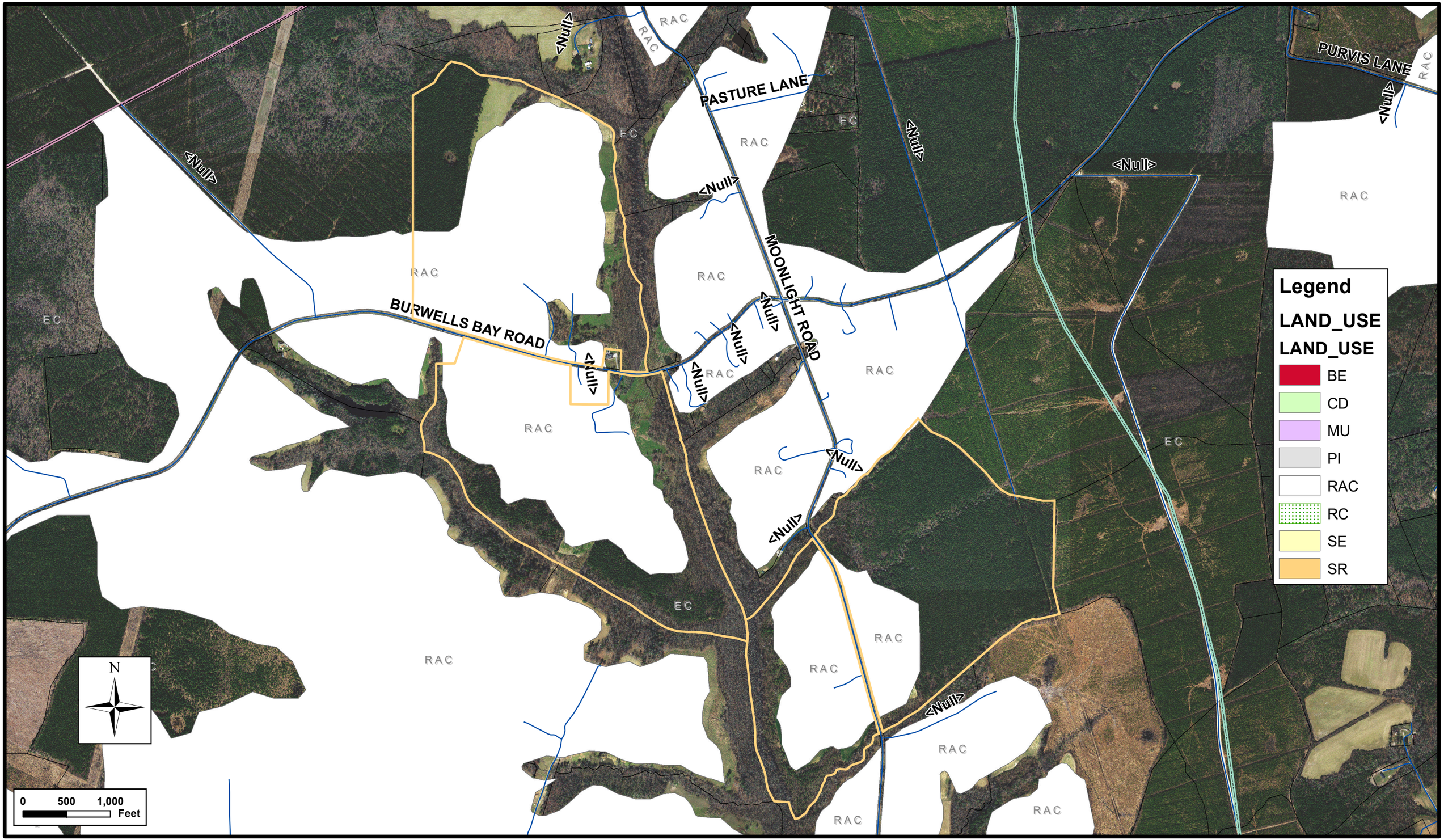
CUP-10-23 Cavalier Solar and Moonlight Solar - Proximity Map



CUP-10-23 Zoning Map



CUP-10-23 Land Use Map



Solar Energy Generation Facilities as of 11/16/2023

PROJECT	DEVELOPED AREA (PER CUP)	PRIME FARMLAND /SOILS OF STATEWIDE IMPORTANCE*	% OF TOTAL PRIME SOILS (rounded)	LOCATION	% OF TOTAL FARMLAND**	TOTAL MW	APPROVAL DATE
Woodland	180	124	0.10%	Longview	0.22%	20	2015
Solidago	170	170	0.14%	Redhouse	0.21%	20	2018
Ho-Fel	330	315	0.26%	Lees Mill	0.41%	55	2019; Amended 2023
Windsor PV1	630	630	0.52%	Windsor	0.78%	85	2019; Amended in 2021
Cavalier	500	500	0.41%	Hardy	0.62%	240	2021
Nuby Run	20	20	0.02%	Orbit	0.02%	2	2022
Carver	637	297	0.24%	Windsor	0.79%	71	Approved 7/23/2023
Prairie Solar	152	152	0.12%	Longview	0.19%	20	Approved 8/17/23
Courthouse Solar	18	18	0.01%	Route 258	0.02%	3	Approved 11/16/23
Moonlight (Proposed)	492	274	0.22%	Burwells Bay/Moonlight	0.61%	44	Planning Commission Review 11/28/2023
TOTAL	**3,129**	**2,500**	**2.04%**		**3.88%**	**560**	

Prime soils include Prime Farmland, Prime, If Drained, and Soils of Statewide Importance – 122,296 total acres in County

****Total active agricultural lands as of 2017 Census of Agriculture – 80,672 acres***

COUNTY OF ISLE OF WIGHT

OFFICE OF THE COMMISSIONER OF THE REVENUE
Post Office Box 107
Isle of Wight, Virginia 23397
(757) 365-6222

Gerald H. Gwaltney
Commissioner of the Revenue

MEMORANDUM

TO: Caleb J. Kitchen, Planner I
Planning & Zoning Division

FROM: Gerald H. Gwaltney,
Commissioner of the Revenue

DATE: October 11, 2023

RE: Moonlight Solar – 8266 Moonlight Road Conditional Use Permit Application (CUP-10-23), 1st Submittal for 44MW ground-mounted solar photovoltaic (PV) energy system (major utility – solar energy facility) Tax Map Nos. 11-01-017, 11-01-018, 11-01-023, and 11-01-023A

I have reviewed the Conditional Use Application for the above-referenced project. The July 1, 2023 General Reassessment of Real Estate established new criteria for assessment of land associated with conditional use permits.

The new methodology for solar farms establishes an assessment of $15,000 per acre for the entire area approved for the conditional use permit. Moonlight Solar designates a 250-acre fenced-in site as solar use property. The use permit application applies for 492.28 acres. The $15,000 per acre assessment will apply to the 492.38 acres. This will result in an increased amount of taxes, higher than the project's financial analysis projects.

Please let me know if you have any questions as the application moves through the process.

ISLE of WIGHT COUNTY MUSEUM

MEMORANDUM

TO: Caleb J. Kitchen, Planner I

FROM: Jennifer England
Director, Isle of Wight County Museum
Historic Resources Manager, Isle of Wight County

RE: Moonlight Solar – 8266 Moonlight Road
Conditional Use Permit Application (CUP-10-23), 2nd Submittal for 44MW ground-mounted solar photovoltaic (PV) energy system (major utility – solar energy facility)

DATE: October 4, 2023

After reviewing the 2nd submittal documents for the proposed Moonlight Solar Facility to include a Phase IB Archaeological Survey and a Phase I Historic Architecture Survey and Effects Assessment as prepared by Apogee Environmental & Archaeological Inc., the Isle of Wight County Museum/Isle of Wight County Department of Historic Resources finds that no additional archaeological work is recommended within the project area and that the architectural resources located both within the project area and within the ½-mile buffer will not be adversely affected by the project.

Should the project proceed, the potential within the project area for archaeological artifacts is highly likely. If the landowner is willing, the Isle of Wight County Museum should be considered a repository for discovered artifacts and future finds on this site as they could further the interpretation or discovery of Isle of Wight County history.

103 Main Street
Smithfield, VA 23430
(757) 356-1014
(757) 357-0114 FAX

ISLE OF WIGHT COUNTY SHERIFF'S OFFICE

P.O. Box 75 · 17110 Monument Circle · Isle of Wight, VA 23397
Phone (757) 357-2151 · Fax (757) 357-0706

James R. Clarke Jr.
Sheriff

Date June 7, 2023

To Caleb J. Kitchen Planner 1

From Major Joseph M. Willard Isle of Wight Sheriff's Office

Subject: Moonlight Solar 8266 Moonlight Rd.

Conditional Use Permit Application (CUP-10-23) 1st Submittal

Caleb after review of the submitted plan the only needs and concerns of the Sheriff's Office will be the increase in patrol during the construction phase and the traffic situation on the selected routes although they have done a complete study as far as the amount of traffic and past traffic accidents in the area. These are primarily secondary roads with no to minimal shoulders and are also shared with farm vehicles. During the construction phase they will be bringing in heavy equipment and large vehicles which will require escorts or even road closer. Also, there being multiple sites the concern of the operation of heavy equipment on the roads from one site to the other.

ISLE OF WIGHT COUNTY SHERIFF'S OFFICE

P.O. Box 75 · 17110 Monument Circle · Isle of Wight, VA 23397
Phone (757) 357-2151 · Fax (757) 357-0706

James R. Clarke Jr.
Sheriff

Date: April 11, 2024

To: Caleb j. Kitchen

From: Major Joseph M. Willard Isle of Wight Sheriff's Office

Moonlight Solar 8266Moonlight Rd.

Conditional Use permit Application (CUP-10-23) Revised Condition.

Caleb after review of the new proposed Conditions and our earlier conversation. I believe the applicant has made an honest effort to address most of the issues. However I still have major concerns over the roadway conditions with no shoulders as well as limited areas to pull vehicle over or turn vehicles around even with the use of escort vehicles what happens when they meet with a large vehicles farm equipment , emergency vehicles , School buses ETC.I just believe it would be impractical for these vehicle to maneuver around one another in a safe manner If this applicant is approved to move forward I would suggest that no movement of large vehicles for this project be allowed on the roadway during the time of the School bus operations to insure the safety of the children being bused to and from school.

Joseph M. Willard
Major Joseph M. Willard

PLANNING REPORT

APPLICATION:

The application of Moonlight Solar, LLC (CUP-10-23), applicant, and George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards, LeAnne Ricks Edwards Wait, and Dana Louise Edwards, property owners, for a conditional use permit to establish a major utility service, specifically a 44 MW utility-scale solar energy generation facility and substation, on approximately 523 acres located on Moonlight Road (Rte. 627) and Burwells Bay Road (Rte. 621) on tax parcels 11-01-017, 11-01-018, 11-01-023 and 11-01-023A in the Rural Agricultural Conservation zoning district. The application includes a request to withdraw approximately 523 acres from the Moonlight Agricultural/Forestal District.

ELECTION DISTRICT:

D5

LOCATION:

The proposed project is located on four properties approximately ¼ mile from the County of Surry jurisdictional boundary at its closest point. The project will have frontage on Moonlight Road and Burwells Bay Road. It is adjacent to agricultural and forestal lands and single-family residences. The project lies approximately 1/2 mile east of the existing Cavalier Solar Project. Property location and proximity maps are attached to this staff report.

BACKGROUND:

The properties on which the proposed project is located are currently in agricultural uses. The properties are zoned Rural Agricultural Conservation (RAC). The project sites are secured by lease agreements with the landowners. On October 4, 2023, the Agricultural and Forestal District Advisory Committee held a public meeting to consider an application by the property owners to withdraw the entirety of the subject parcels from the Moonlight Agricultural/Forestal District. The Committee recommended approval of the request.

This application was submitted on May 16, 2023 and reviewed under the zoning ordinance language prior to the Board of Supervisors adopting amendments to the supplementary use regulations for major utility services at their May 18, 2023 meeting.

DESCRIPTION:

The applicant has proposed a 44 MW solar energy generation facility on a total of 522.96 acres that spans across four different parcels. The project will consist of solar panels along with their racking systems and metal posts, inverters, collection lines, a substation, fencing, underground conduits lines, and access roads that will connect different sections of the project. The substation area will include a transformer, utility interconnection lines, and switching station which will allow the electrical system to interconnect to the 230kV Surry to Chuckatuck Dominion Energy powerline running directly through the interior of the project site. A project narrative provided by the applicant is attached to this staff report.

The applicant has largely designed the application to be in compliance with the recently amended zoning ordinance language as it relates to major utility services.

Public Facility Impacts:

The impacts of the proposed facility on public roads will occur primarily during construction and will be minimal once the use is established. In establishing the use, the enjoyment of neighboring properties may also be temporarily impacted by construction traffic and noise generation. The applicant has provided a proposed construction transportation route which has been reviewed and approved by the Virginia Department of Transportation. The plan is attached to the staff report. The applicant states that deliveries will be coming from the east along Old State Highway (Rte. 10) and westward down Burwells Bay Road (Rte. 621). Hours of construction

are proposed to be limited from 7:00 a.m. to 6:00 p.m. In order to ensure safety and neighborhood welfare, staff recommends that no construction should occur on Sundays by any party involved with the project, to include the solar developer, its contractors, and Dominion Energy contractors.

Environmental Assessment:

The project lies within the Blackwater River watershed area and has several wetland areas within. A Jurisdictional Waters Determination Request form has been submitted to the U.S. Army Corp. of Engineers for review and necessary permits will be required prior to site plan approval. The project is designed to avoid impacts to wetlands and streams. There are two instances of underground collection lines crossing wetlands, of which one of these two instances includes the underground collection line crossing a Zone A floodplain.

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) confirms that the proposed activity will not affect any documented state-listed plants or insects that are threatened or endangered.

The proposed project will impact ecological cores classified in importance as high, moderate, and general (C3, C4, C5) as identified in the Virginia Natural Landscape Assessment. Ecological core areas are classified into five categories of ecological integrity: C1 – Outstanding; C2 – Very High; C3 – High; C4 – Moderate; and C5 – General. Scores are enhanced if the core or habitat fragment is part of a larger complex of natural lands. Scores also increase for those cores and habitat fragments that contribute to water quality enhancement. In general, larger, more biologically diverse areas are given higher scores. DCR recommends avoidance of impacts to cores. However, when avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact. The proposed project will impact 36 acres of "high" importance ecological core, 4.4 acres of "moderate" core, and 12.7 acres of core with "general" importance. A map of the impact acreage to each type of ecological core impact is included in the staff report.

When considering soil classifications inside the fence of the project, there are 212.3 acres of prime farmland, 60.1 acres of prime farmland, if drained, 1.2 acres of farmland of statewide importance, and the remaining 31.4 acres are neither prime farmland or farmland of statewide importance. As soil assessment map showing the different soils is included in the staff report.

Additional environmental reports provided by the applicant and state agency responses are attached to the staff report.

Historical Resources Assessment:

A phase 1B archeological survey was conducted for the project area and are included in the attachments to this report. The phase 1B survey resulted in the identification of five archeological sites within the project area. None of these sites are considered eligible for listing in the National Register of Historic Places (NRHP), and no additional work is recommended for the project area. The applicant has stated that Moonlight Solar will work with the landowners to give the Isle of Wight County Museum the opportunity to be a repository for any new finds.

A phase 1 architecture survey and effects assessment was conducted for the project area and are included in the attachments to this report. The phase 1 study resulted in the identification of 21 historic architecture resources. Eleven previously recorded resources were identified within the ½ mile buffer around the project. Of those eleven resources, nine had been surveyed within the past five years. None of the surveyed resources were eligible for listing in the National Register of Historic Places (NRHP).

The analysis identified previously recorded historic structures within the vicinity of the project site. The Carroll Plantation (VDHR #046-0064) has been listed as eligible for the National Register of Historic Places (NRHP) and is located on a parcel adjacent to the project site. This resource has previously been determined potentially eligible as a good example of an early to mid-nineteenth century plantation home.

The phase 1B archeological survey and phase 1 architectural survey are included as attachments to the staff report.

Economic Impact Assessment:

According to the applicant's economic impact analysis, the project encompasses approximately 523 acres, of which the actively-used portion of the project and required buffers would be approximately 492.38 acres. The economic impact assessment states the project will generate two permanent full-time jobs. The County's current assessment value of affected acreage is approximately $505,600. Based on the assessed value, the properties generate about $1,577.50 in real estate tax revenue for agricultural use per year, or $63,100 over forty years. The July 1, 2023, General Reassessment of Real Estate established new criteria for assessment of land associated with conditional use permits. The new methodology for solar farms establishes an assessment of $15,000 per acre for the entire area approved for the conditional use permit, which in this case would be 492.38 acres per the application. This will result in an increased amount of taxes, higher than the project's financial analysis projects. Under the County's previous assessment criteria which only included fenced-in acreage, the solar facility use would have generated approximately $26,600 annually, or $1,065,000 annually in addition to a one-time amount of $31,000 in rollback taxes. This does not include any sort of siting agreement. The County would also derive machinery and tax revenue from capital investments on site which would generate approximately $3,241,400 over forty years.

In addition to the base tax revenue, Moonlight Solar, LLC, is proposing a siting agreement of an upfront payment of $25,000 per megawatt which would commence at the beginning of commercial operation which would result in approximately $1.1 million in the first year of operation.

The economic impact assessment uses the IMPLAN model to generate economic impact projections based on assumptions of direct annual economic impacts along with indirect impacts, or "ripple effects." The project's total estimated input to the County would include 1) 2 full-time, permanent jobs, 2) $84,600 in wages and benefits, and 3) $297,800 in economic output.

According to the 2017 Census of Agriculture (USDA-NASS), Isle of Wight County has 237 farms totaling 80,672 aces of land. The average farm size is 340 acres. The average annual market value of agricultural products sold per farm is $270,985. Using the same data to derive market values for crops cultivated on 184.2 acres within the fence of this project, the farmland generates an estimated $146,832 in market value.

Currently, agriculture and silviculture are two of the County's top industries. The Moonlight Solar Facility would be the tenth solar energy generation facility in the County and represents a subtraction of approximately 0.61% of the County's cultivated land (USDA-NASS, 2017). While this project represents approximately 15.7% of the collective 3,129 acres of cultivated land encompassed by all ten solar projects, longer-term cumulative land conversions could create adverse effects on the local agricultural industry. A table showing the previously approved and proposed solar energy facilities is attached to the staff report.

Viewshed Analysis:

The applicant provided several viewshed renderings comparing how the existing site looks currently to what it would look immediately after the landscaping buffers are planted and again at the time of maturity. The analysis includes perspectives from Moonlight Road and Burwells Bay Road. The analysis is included as an attachment to the staff report.

COMPREHENSIVE LAND USE PLAN:

The future recommended land use designation for these properties is Rural Agricultural Conservation (RAC) and Environmental Conservation (EC) under the adopted Comprehensive Plan. Appropriate uses for the RAC land use designation include agriculture, horticulture, forest lands, and scattered low-density residential uses. Other uses such as resource extraction and utility-scale solar facilities are also permitted when appropriately sited. Appropriate uses for the EC land use designation include wetlands, farms, forest uses, open space, and limited park facilities.

Solar Energy facilities are considered compatible with the RAC land use when properly sited and with the application of appropriate development criteria. The area designated as EC should be preserved due to environmental constraints unless site-specific analysis demonstrates there are no environmental concerns in a specific area.

ORDINANCE REVIEW:

The zoning district classification for the subject properties is Rural Agricultural Conservation (RAC). The RAC zoning district is intended to preserve an protect areas of the County that are predominantly in agricultural and forestall use and to maintain the existing land base to support those activities.

The applicant proposes to establish a 44MW solar energy facility, which is classified as a major utility serve use type in the Zoning Ordinance. These facilities are permitted as conditional uses in the RAC, RR, and GC zoning districts and may be considered compatible with appropriate conditions to mitigate any potential negative impacts on the surrounding community.

Section 1-1017 of the Zoning Ordinance provides standards for review of a conditional use application that the Planning Commission and Board of Supervisors shall consider before granting a conditional use permit. They are as follows:

1. That the establishment, maintenance, and operation of the conditional use will not be detrimental to or endanger the public health, safety, and general welfare;
2. That the conditional use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted, nor substantially impair the use of other property within the immediate proximity;
3. That adequate utilities, water, sewer or septic system, access roads, storm drainage and/or other necessary public facilities and improvements have been or will be provided;
4. That adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion on the public streets;
5. That the proposed conditional use is not contrary to the goals and objectives of the Isle of Wight County Comprehensive Plan;
6. That the conditional use shall, in all other respects, conform to the applicable regulations of the zoning district classification in which it is located and to the special requirements established for the specific use; and
7. That the use(s) at the location proposed will not result in a multiplicity or saturation of similar uses in the same general neighborhood of the proposed use

In addition to the standards and other guidelines described in the Zoning Ordinance, the Board may impose conditions or limitations on any approval, including the posting of performance guarantees. Such conditions may include, but are not necessarily limited to:

1. The number of persons living or working in the immediate area and the proposed hours of operation, as may applicable;
2. Traffic conditions, including facilities for pedestrians, such as sidewalks and parking facilities; the access of vehicles to roads; peak periods of traffic; and proposed roads, but only if construction of such roads will commence within the reasonably foreseeable future;
3. The orderly growth of the neighborhood and community and the fiscal impact on the County;
4. The effect of odors, dust, gas, smoke, fumes, vibration, glare, and noise upon the use of surrounding properties;
5. Facilities for police, fire protection, sewerage, water, trash and garbage collection and disposal, and the ability of the County or persons to supply such services;
6. The degree to which the development is consistent with generally accepted engineering and planning principles and practices;
7. The structures in the vicinity such as schools, houses of worship, theaters, hospitals, and similar places of public use;

8. The purposes set forth in this ordinance, the County's Comprehensive Plan, and related studies for land use, roads, parks, schools, sewers, water, population, recreation, and the like;
9. The environmental impact, the effect on sensitive natural features, and opportunities for recreation and open space; and
10. The preservation of cultural and historic resources of landmarks.

Should the CUP be approved, the applicant will be required to submit a site plan for review and approval in accordance with Zoning Ordinance requirements and conditions of approval.

AGENCY REVIEW:

The application was forwarded to the following departments for their review:

- Economic Development: No concerns
- Emergency Services: All concerns have been addressed in the application.
- Environmental Planner: All concerns have been addressed in the application.
- Commissioner of the Revenue: The July 1, 2023, General Reassessment of Real Estate established new criteria for assessment of land associated with conditional use permits. The new methodology for solar farms establishes an assessment of $15,000 per acre for the entire area approved for the conditional use permit. Moonlight Solar designates a 250-acre fenced-in site as solar use property. The use permit application applies for 492.28 acres. The $15,000 per acre assessment will apply to the 492.38 acres. This will result in an increased amount of taxes, higher than the project's financial analysis projects.
- Sheriff's Department: Increase in patrol during the construction phase and the traffic impacts on proposed transportation routes. These are primarily secondary roads with no to minimal shoulders and are also shared with farm vehicles. During the construction phase they will be bringing in heavy equipment and large vehicles which will require escorts or even road closures. Also, there being multiple sites there is a concern of the operation of heavy equipment on the roads from one parcel to another.
- County Attorney: Only include conditions that go above what is now required under the zoning ordinance.
- VDOT: All concerns have been addressed in the application.
- Isle of Wight County Museum: After review of archeological and architectural surveys, no additional archeological work is recommended within the project area. Should the project proceed, the potential within the project area for archeological artifacts is highly likely. If the landowner is willing, the Isle of Wight County Museum should be considered a repository for discovered artifacts and future finds on this site as they could further the interpretation or discovery of Isle of Wight County history.

Please note that, should this CUP be approved, it will be subject to review and approval from all associated agencies during site plan review.

STAFF CONCLUSIONS:

Strengths:

1. The application is generally consistent with the Comprehensive Plan and can meet all ordinance requirements.
2. The proposed use will have minimal impact on community facilities and resources.

Weaknesses:

1. The proposed use would remove agricultural land from production.
2. Temporary impact to residential development in the area from construction traffic and noise is expected during the construction phase.
3. The project will create visual impacts to historical properties which can be substantially mitigated upon landscaping maturity.
4. The project will impact identified ecological core areas, including 36 acres of cores with high importance, 4.4 acres of cores with moderate importance, and 12.7 acres of cores with a general importance.

5. Approval of the project would result in a multiplicity and saturation of similar uses within a 1/2 mile distance to another solar energy generation facility.
6. With no to minimal shoulders and deep ditches at several points along the proposed transportation route there may be safety issues that arise as construction vehicles meet along the route.

STAFF RECOMMENDATION:

Based on the identified weaknesses, staff recommends denial of the Conditional Use Permit and the Moonlight ADF withdrawal request. However, should the CUP and withdrawal be approved staff recommends the following conditions: 1) Topsoil shall be stockpiled on the site and shall be stored out of view from adjacent properties and public roads. 2) The applicant shall submit an invasive species management plan as recommended by DCR with the submission of the final site plan. 3) The applicant shall submit a habitat assessment relative to the Barking treefrog as recommended by DCR. 4) The applicant shall submit a seed mix for site groundcover that includes native pollinators blooming in spring/summer as recommended by DCR. 5) The applicant will work directly with the Isle of Wight County Chamber of Commerce, Paul D. Camp Community College, and the Economic Development Department to ensure inclusion of local contractors in the bidding process. 6) A laminated Emergency Response Poster will be mounted near the front gate. The poster will include a general site plan, evacuation routes and muster points, emergency response chain of command, directions to the closest hospital, coordinates to the closest life flight landing area, and other pertinent information associated with the facility during an emergency response. 7) The facility perimeter fencing will be equipped with push bar pedestrian gates to permit emergency exits from the facility. 8) Adherence to the proposed transportation plan shall be required for all facility traffic. Truck traffic shall be limited to only the routes shown in the transportation plan. No other local routes in Isle of Wight County may be used. 9) Excluding the bufferyards, the ground between the panels and in areas not otherwise covered by gravel or infrastructure shall be planted and maintained with a vegetative cover. This vegetative cover will be managed with mowing and/or grazing. 10) Hours of operation for construction and post-construction operation shall be limited to Monday through Friday, 7:00 a.m. to 6:00 p.m. Saturdays from 7:00 a.m. to 5:00 p.m. No construction is to occur on Sundays by any party involved with the project. 11) As part of the site plan review, the applicant shall provide documentation that the selected panels and all power-generating equipment on-site are “Tier 1” modules, as established by the most recent “PV Module Tier 1 List” issued by Bloomberg NEF or a similar third party analysis widely accepted in the solar industry. Additionally, the make and model of the selected panels and all power-generating equipment initially installed and replaced on the site must qualify, for disposal purposes only, as non-hazardous waste under applicable U.S. Environmental Protection Agency tests (e.g. TCLP). 12) The applicant shall implement a program for the collection of baseline data establishing pre-construction soil conditions for the production of row crops for the agricultural areas within the project area. The program shall establish the relevant characteristics of the topsoil. The baseline data shall be derived from field and laboratory testing of soil conditions, including depth, density, and quality from representative locations. Laboratory testing shall be conducted by an accredited laboratory. Parameters for assessing soil quality may include the following: infiltration rate, bulk density, water holding capacity, pH, percent organic matter, cation exchange capacity, Phosphorous/Phosphate (P), Nitrogen (N), and Potassium/Potash (K). After 30 years of operation and again after 35 years of operation, soil conditions shall be determined for the same sampling locations using the same parameters and the results used to plan soil restoration activities. After equipment is removed as part of decommissioning, soil conditions shall be determined for the same sampling locations using the same parameters. Soil restoration activities shall be performed as necessary during operations or decommissioning to return soil conditions to at least baseline conditions. The County will be provided with data of soil conditions within 30 days after the receipt of results. 13) Any recommendations provided by VDHR during site plan review will be adhered to, in addition to requirements in the zoning ordinance.

ATTACHMENTS:

Description	Type	Upload Date
Application	Backup Material	11/1/2023
Agricultural/Forestal District Withdraw Request	Backup Material	11/1/2023
Narrative and Response Comments	Backup Material	11/1/2023
Concept Plan and Maps	Backup Material	11/1/2023
Visual Impact Analysis	Backup Material	11/1/2023
Transportation Plan	Backup Material	11/1/2023

Economic Impact Analysis	Backup Material	11/1/2023
Environmental Resources Impact Analysis and DCR Response	Backup Material	11/1/2023
Historical and Cultural Resources Impact Analysis and DHR Response	Backup Material	11/1/2023
Transmission Capacity Report	Backup Material	11/1/2023
Appraisal Report	Backup Material	11/1/2023
Decommissioning Plan	Backup Material	11/1/2023
Site Images	Backup Material	11/2/2023
Location Map	Backup Material	11/2/2023
Closeup Map 1	Backup Material	11/2/2023
Closeup Map 2	Backup Material	11/2/2023
Cavalier Solar and Moonlight Solar Proximity Map	Backup Material	11/16/2023
Zoning Map	Backup Material	11/2/2023
Land Use Map	Backup Material	11/2/2023
Solar Farms Acreage Table	Backup Material	11/16/2023
PC Resolution	Resolution	11/14/2023
Commissioner of the Revnue Comments	Backup Material	11/16/2023
Isle of Wight County Museum Comments	Backup Material	11/16/2023
Sheriff Department Comments	Backup Material	11/16/2023

EXHIBIT A

RESOLUTION NUMBER PC-23-8

**ISLE OF WIGHT COUNTY PLANNING COMMISSION
A RESOLUTION TO PRESENT A REPORT AND RECOMMENDATION
TO THE BOARD OF SUPERVISORS FOR CONDITIONAL USE PERMIT REQUEST CUP-10-23 TO ALLOW A MAJOR UTILITY SERVICE, SPECIFICALLY A FORTY-FOUR MW UTILITY SCALE SOLAR ENERGY GENERATION FACILITY ON APPROXIMATELY FOUR HUNDRED AND NINETY-TWO ACRES WITH TAX MAP NUMBERS 11-01-017, 11-01-018, 11-01-023, AND 11-01-023A AND TO WITHDRAW APPROXIMATELY FIVE HUNDRED AND TWENTY-THREE ACRES FROM THE MOONLIGHT AGRICULTURAL AND FORESTAL DISTRICT**

WHEREAS, Moonlight Solar, LLC, applicant, on behalf of George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards, LeAnne Ricks Edwards Wait, and Dana Louise Edwards, property owners, has requested issuance of a conditional use permit for approximately four hundred and ninety-three acres of certain tracts of land with tax parcel numbers 11-01-017, 11-01-018, 11-01-023, and 11-01-023A situated in Isle of Wight County and to withdraw approximately five hundred and twenty-three acres of land from the Moonlight Agricultural and Forestal District; and

WHEREAS, the specific request is to permit a major utility service, specifically a forty-four MW utility scale solar energy generation facility as defined in the Zoning Ordinance, in accordance with sections 1-1017 and 4-2003 of the Zoning Ordinance; and

WHEREAS the procedural requirements for the consideration of this request by the Planning Commission have been met; and

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of Isle of Wight County, that:

Section 1. Findings.

____ A. The Isle of Wight County Planning Commission finds that the proposed conditional use permit is reasonable and has considered the following factors and finds that the proposed use does not conflict with:

1. the existing use and character of property within the County;
2. the Comprehensive Plan;
3. the suitability of the property for various uses;
4. the trends of growth or change;
5. the current or future requirements of the community as to land for various purposes as determined by population and economic studies and other studies;
6. the transportation requirements of the community;
7. the requirements for airports, housing, schools, parks, playgrounds, recreation

areas, and other public services;

8. the conservation of natural resources;

9. the preservation of floodplains;

10. the preservation of agricultural and forestal land;

11. the conservation of properties and their values; and

12. the encouragement of the most appropriate use of land throughout the County.

✓ B. The Isle of Wight County Planning Commission does not find that the conditional use is reasonable based on the consideration of the factors listed herein.

Section 2. Recommendation to Board of Supervisors.

The Planning Commission recommends to the Board of Supervisors that the request, CUP-10-23, be:

___ a. Granted as submitted, and that the Board of Supervisors adopt the proposed Ordinance without modification.

✓ b. Denied, and that the Board of Supervisors not adopt the proposed Ordinance.

___ c. Granted with the modifications set forth on the attached listing of specific recommendations, and that the Board of Supervisors adopt the proposed Ordinance with such modifications.

DATE: NOV 28 2023

READ AND PASSED: _____
Chairman, Isle of Wight County Planning Commission

TESTE: _____
Secretary, Isle of Wight County Planning Commission

Approved as to Form:

_____
Robert W. Jones, Jr., County Attorney

ORDINANCE NUMBER ___ _____

AN ORDINANCE TO ISSUE A CONDITIONAL USE PERMIT, CUP-10-23, TO ESTABLISH A MAJOR UTILITY SERVICE, SPECIFICALLY A FORTY-FOUR MW UTILITY-SCALE SOLAR ENERGY FACILITY ON APPROXIMATELY FOUR HUNDRED AND NINETY-TWO ACRES LOCATED ON MOONLIGHT ROAD AND BURWELLS BAY ROAD WITH TAX PARCEL NUMBERS 11-01-017, 11-01-018, 11-01-023, AND 11-01-023A ZONED RURAL AGRICULTURAL CONSERVATION, AND TO WITHDRAW APPROXIMATELY 523 ACRES OF TAX MAP PARCELS 11-01-017, 11-01-018, 11-01-023, AND 11-01-023A FROM THE MOONLIGHT AGRICULTURAL AND FORESTAL DISTRICT.

WHEREAS, Moonlight Solar, LLC, applicant, and George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards, LeAnne Ricks Edwards Wait, and Dana Louise Edwards, property owners, has requested the issuance of a conditional use permit for a certain portion or all of the property with tax parcel number 11-01-017, 11-01-018, 11-01-023, and 11-01-023A, which land is depicted on Exhibit "B"; and,

WHEREAS, George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards, LeAnne Ricks Edwards Wait, and Dana Louise Edwards, property owners, has also requested the withdrawal of 522.96 acres on tax map parcels 11-01-017, 11-01-018, 11-01-023, and 11-01-023A from the Moonlight Agricultural and Forestal District, which land is also depicted on Exhibit "B"; and,

WHEREAS, the procedural requirements of Appendix B, Zoning Ordinance, of the Code of Isle of Wight County, Virginia, 2005 (as amended), have been followed; and,

WHEREAS, in acting upon this request, the Planning Commission and Board of Supervisors have considered the matters enunciated in Section 15.2-2284 of the Code of Virginia (1950), as amended, and Section 1-1017 of the Isle of Wight County Zoning Ordinance with respect to the purposes stated in Code of Virginia (1950), as amended, Section 15.2-2200 and 15.2 2283; and,

WHEREAS, the Planning Commission has made a recommendation as stated in Exhibit "A;"

NOW, THEREFORE, BE IT ORDAINED by the Isle of Wight County Board of Supervisors of Isle of Wight County, Virginia, that:

Section 1. Exhibits.

Exhibit "A", "Planning Commission Recommendation", Exhibit "B", "Property Map", and Exhibit "C" Conditions which are attached hereto, are hereby incorporated as part of this ordinance.

Section 2. Findings.

The Board of Supervisors finds that the proposal for a conditional use permit (CUP-10-23) and the withdrawal of enrolled land in the Moonlight Agricultural and Forestal District, as submitted or modified with conditions herein, the expressed purpose of which is to permit a major utility service, specifically a 44 MW utility-scale solar energy facility, is in conformity with the standards of the Isle of Wight County Zoning Ordinance, and that it will have no more adverse effects on the health, safety or comfort of persons living or working in or driving through the neighborhood, and will be no more injurious to property or improvements in the neighborhood than would any other use generally permitted in the same district, taking into consideration the location, type and height of buildings or structures, the type and extent of landscaping and screening on site and whether the use is consistent with any theme, action, policy or map of the Comprehensive Plan with the conditions set forth below.

These findings are based upon the consideration for the existing use and character of the property, the Comprehensive Plan, the suitability of the property for various uses, the trends of growth or change, the current and future requirements of the community as to land for various purposes as determined by

population and economic studies and other studies, the transportation requirements of the community, the requirements of airports, housing, schools, parks, playgrounds, recreation areas and other public services, the conservation of natural resources, the preservation floodplains, the preservation of agricultural and forestal land, the conservation of properties and their values, and the encouragement of the most appropriate use of land throughout the County.

These findings are based upon a determination that the most reasonable and limited way of avoiding the adverse impacts of a major utility service is by the imposition of the conditions provided herein.

Section 3. Permit Granted.

The conditional use permit for the property be, and is hereby approved for the property, subject to the attached conditions in Exhibit "C" and the general conditions set forth in Section 4 hereof. The conditional use permit specifically allows for a 44 MW major utility service solar energy generation facility in compliance with the County Zoning Ordinance.

Section 4. Severability.

It is the intention of the Board of Supervisors that the provisions, sections, paragraphs, sentences, clauses, and phrases of this ordinance are severable; and if any phrase, clause, sentence, paragraph, section, and provision of this ordinance hereby adopted shall be declared unconstitutional or otherwise invalid by the valid judgement or decree of a court of competent jurisdiction, such unconstitutionality or invalidity shall not affect any of the remaining phrase, clauses, sentences, paragraphs, sections, and provisions of this ordinance, to the extent that they can be enforced notwithstanding such determination.

Section 5. Effective Date

This ordinance shall be effective upon passage and shall not be published or codified. The conditional use authorized by this permit shall be implemented within two (2) years from that date of approval by the Board of Supervisors and shall terminate if not initiated within that time period.

This ordinance shall be effective upon passage and shall not be published or codified.

DATE: _____

READ AND PASSED: _____
Chairman, Board of Supervisors

TESTE: _____
Clerk, Board of Supervisors

Approved as to Form:

_____
Robert W. Jones Jr, County Attorney

EXHIBIT A

RESOLUTION NUMBER PC-23-8

**ISLE OF WIGHT COUNTY PLANNING COMMISSION
A RESOLUTION TO PRESENT A REPORT AND RECOMMENDATION
TO THE BOARD OF SUPERVISORS FOR CONDITIONAL USE PERMIT REQUEST CUP-10-23 TO ALLOW A MAJOR UTILITY SERVICE, SPECIFICALLY A FORTY-FOUR MW UTILITY SCALE SOLAR ENERGY GENERATION FACILITY ON APPROXIMATELY FOUR HUNDRED AND NINETY-TWO ACRES WITH TAX MAP NUMBERS 11-01-017, 11-01-018, 11-01-023, AND 11-01-023A AND TO WITHDRAW APPROXIMATELY FIVE HUNDRED AND TWENTY-THREE ACRES FROM THE MOONLIGHT AGRICULTURAL AND FORESTAL DISTRICT**

WHEREAS, Moonlight Solar, LLC, applicant, on behalf of George Benjamin Edwards, Jeanette J. Edwards, George W. Edwards, LeAnne Ricks Edwards Wait, and Dana Louise Edwards, property owners, has requested issuance of a conditional use permit for approximately four hundred and ninety-three acres of certain tracts of land with tax parcel numbers 11-01-017, 11-01-018, 11-01-023, and 11-01-023A situated in Isle of Wight County and to withdraw approximately five hundred and twenty-three acres of land from the Moonlight Agricultural and Forestal District; and

WHEREAS, the specific request is to permit a major utility service, specifically a forty-four MW utility scale solar energy generation facility as defined in the Zoning Ordinance, in accordance with sections 1-1017 and 4-2003 of the Zoning Ordinance; and

WHEREAS the procedural requirements for the consideration of this request by the Planning Commission have been met; and

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of Isle of Wight County, that:

Section 1. Findings.

____ A. The Isle of Wight County Planning Commission finds that the proposed conditional use permit is reasonable and has considered the following factors and finds that the proposed use does not conflict with:

1. the existing use and character of property within the County;
2. the Comprehensive Plan;
3. the suitability of the property for various uses;
4. the trends of growth or change;
5. the current or future requirements of the community as to land for various purposes as determined by population and economic studies and other studies;
6. the transportation requirements of the community;
7. the requirements for airports, housing, schools, parks, playgrounds, recreation

areas, and other public services;

8. the conservation of natural resources;

9. the preservation of floodplains;

10. the preservation of agricultural and forestal land;

11. the conservation of properties and their values; and

12. the encouragement of the most appropriate use of land throughout the County.

✓ B. The Isle of Wight County Planning Commission does not find that the conditional use is reasonable based on the consideration of the factors listed herein.

Section 2. Recommendation to Board of Supervisors.

The Planning Commission recommends to the Board of Supervisors that the request, CUP-10-23, be:

___ a. Granted as submitted, and that the Board of Supervisors adopt the proposed Ordinance without modification.

✓ b. Denied, and that the Board of Supervisors not adopt the proposed Ordinance.

___ c. Granted with the modifications set forth on the attached listing of specific recommendations, and that the Board of Supervisors adopt the proposed Ordinance with such modifications.

DATE: NOV 28 2023

READ AND PASSED: _____
Chairman, Isle of Wight County Planning Commission

TESTE: _____
Secretary, Isle of Wight County Planning Commission

Approved as to Form:

_____
Robert W. Jones, Jr., County Attorney

CUP-10-23 Exhibit B



EXHIBIT C – RECOMMENDED CONDITIONS

CUP-10-23

Staff Recommendations:

1. Topsoil shall be stockpiled on the site and shall be stored out of view from adjacent properties and public roads.
2. The applicant shall submit an invasive species management plan as recommended by DCR with the submission of the final site plan.
3. The applicant shall submit a habitat assessment relative to the Barking treefrog as recommended by DCR.
4. The applicant shall submit a seed mix for site groundcover that includes native pollinators blooming in spring/summer as recommended by DCR.
5. The applicant will work directly with the Isle of Wight County Chamber of Commerce, Paul D. Camp Community College, and the Economic Development Department to ensure inclusion of local contractors in the bidding process.
6. A laminated Emergency Response Poster will be mounted near the front gate. The poster will include a general site plan, evacuation routes and muster points, emergency response chain of command, directions to the closest hospital, coordinates to the closest life flight landing area, and other pertinent information associated with the facility during an emergency response.
7. The facility perimeter fencing will be equipped with push bar pedestrian gates to permit emergency exits from the facility.
8. Adherence to the proposed transportation plan shall be required for all facility traffic. Truck traffic shal be limited to only the routes shown on the transportation plan. No other local routes in Isle of Wight County may be used.
9. Excluding the bufferyards, the ground between the panels and in areas not otherwise covered by gravel or infrastructure shall be planted and maintained with a vegetative cover. This vegetative cover will be managed with mowing and/or grazing.

10. Hours of operation for construction and post-construction operation shall be limited to Monday through Friday, 7:00 a.m. to 6:00 p.m. Saturdays from 7:00 a.m. to 5:00 p.m. No construction is to occur on Sundays by any party involved with the project.
11. As part of the site plan review, the applicant shall provide documentation that the selected panels and all power-generating equipment on-site are "Tier 1" modules, as established by the most recent "PV Module Tier 1 List" issued by Bloomberg NEF or a similar third party analysis widely accepted in the solar industry. Additionally, the site must qualify, for disposal purposes only, as non-hazardous waste under applicable U.S. Environmental Protection Agency tests (e.g. TCLP).
12. The applicant shall implement a program for the collection of baseline data establishing pre-construction soil conditions for the production of row crops for the agricultural areas within the project area. The program shall establish the relevant characteristics of the topsoil. The baseline data shall be derived from field and laboratory testing of soil conditions, including depth, density, and quality from representative locations. Laboratory testing shall be conducted by an accredited laboratory. Parameters for assessing soil quality may include the following: infiltration rate, bulk density, water holding capacity, pH, percent organic matter, cation exchange capacity, Phosphorous/Phosphate (P), Nitrogen (N), and Potassium/Potash (K). After 30 years of operation and again after 35 years of operation, soil conditions shall be determined for the same sampling locations using the same parameters and the results used to plan soil restoration activities. After equipment is removed as part of decommissioning, soil conditions shall be determined for the same sampling locations using the same parameters. Soil restoration activities shall be performed as necessary during operations or decommissioning to return soil conditions to at least baseline conditions. The County will be provided with data of soil conditions within 30 days after the receipt of results.
13. Any recommendations provided by VDHR during site plan review will be adhered to, in addition to requirements in the zoning ordinance.

PLANNING REPORT

APPLICATION:

Application (CUP-8-23) of Sycamore Cross Solar, LLC, applicant, for a Conditional Use Permit for a major utility service, specifically a 214 MW utility-scale solar energy generation facility and a medium voltage line known as Sycamore Cross A, on approximately 1,795 acres located on Mill Swamp (Rte. 621) on tax map numbers 09-01-001, 16-01-002, 16-01-002A, 16-01-003, 16-01-005. 16-01-008, 16-01-009, 17-01-003, 17-01-003C, 17-01-001, 17-01-002, 17-01-011, 27-01-003, and 27-01-004 in the Rural Agricultural Conservation zoning district as well as an associated application to withdraw approximately 860 acres that are part of tax map numbers 09-01-001, 16-01-003, 16-01-008, 16-01-009, 17-01-003C, 27-01-003 and 17-01-011 from the Moonlight Agricultural and Forestal District.

ELECTION DISTRICT:

D5

LOCATION:

There are fourteen different parcels that are part of the proposed Sycamore Cross A utility scale solar energy generation facility project area which is adjacent to both Surry County on the north and Southampton County on the west. The project area is generally bounded by Surry County to the north, the Blackwater River and Southampton County to the west, White Hill Trail, Ramsey Road, and Mill Swamp Road on the east, and Rattlesnake Trail on the south. The project will have frontage on Mill Swamp Road (Rte. 621), Sycamore Cross Drive (Rte. 622), Ramsey Road (Rte. 622), Proctors Bridge Road (Rte. 621), White Hill Trail (Rte. 623), and Rattlesnake Trail (Rte. 646). The project area is adjacent to agricultural and forestal lands and single-family residences. The project lies approximately 2.5 miles west of the existing Cavalier Solar Project and the associated proposed Sycamore Cross B solar facility project area. Property location and proximity maps are attached to this staff report.

BACKGROUND:

According to County records, the fourteen properties associated with the project have historically been used for agricultural and forestal district. The general vicinity of the project is rural in nature with a few single family homes located on

larger agricultural parcels. According the applicant, 891 acres of the project site area is currently used for crop production. While none of the properties are being used for livestock, the easement only parcel belongs to Carrolls Food of Virginia, LLC which is engaged in livestock production.

Several of the properties are within the Moonlight Agricultural and Forestal District. The Agricultural and Forestal Advisory Committee met on April 3, 2024, to consider the requests by the property owners of tax map numbers 09-01-001, 16-01-003, 16-01-008, 16-01-009, 17-01-003C, 27-01-003 and 17-01-011 to withdraw 860 acres from the Moonlight Agricultural and Forestal District. The Committee voted to recommend denial of the request by a vote of four members in favor of the motion and zero voting against (4-0).

DESCRIPTION:

The proposed Sycamore Cross A solar project will consist of a 214 MW solar energy generation facility on 1,795 acres across thirteen parcels with one medium voltage easement-only parcel. The project will consist of solar photovoltaic modules on a single axis tracker system and associated electrical equipment. The Project will utilize an existing substation location shared with the Cavalier Solar facility.

New 34.5kV feeder lines will interconnect the various solar generation equipment comprising Sycamore Cross A to the project's collector substation. The Sycamore Cross project is using the same utility corridor as Cavalier Solar. The project will use an existing 500 kV gen-tie line that was constructed for the Cavalier Solar facility and that will interconnect the project's substation with the VEPCO Septa 500 kV Substation. The applicant states that no improvements will be required to the VEPCO substation or the 500 kV gen-tie. These improvements are being completed as part of the Cavalier facility. As part of the site construction activities, one house is proposed for demolition at 14195 Rattlesnake Trail which was built in 1950. The applicant states that other structures may be considered for demolition to accommodate the final design of the solar facility, although none have been specifically identified in this application.

The project will serve the PJM (Pennsylvania-Jersey-Maryland) wholesale market. The final interconnection service agreement identifying the transmission capacity was executed on April 3, 2023. The maximum facility output for both projects is 240 MW, which is also referred to as the "installed capacity", and the total project has rights to inject the full 240 MW into the grid. A redacted version of the interconnection service agreement is attached to the staff report.

The application anticipates construction of the project to begin in Spring 2025 and completed by the end of 2026. Construction activity is proposed between the hours of 7 a.m. and 7 p.m., Monday through Saturday.

This application accompanies the Sycamore Cross B solar energy generation facility CUP application, therefore the supporting studies cover both applications. Staff assessed the application for its consistency with the County's plans and ordinances as well as potential impacts to natural and cultural resources, public facilities and services. Unless otherwise noted, the following summary of the projected benefits, potential impacts and any mitigation measures proposed by the applicant cover both applications.

Public Facility Impacts:

The impacts of the proposed facility on public roads will occur primarily during construction and will be minimal once the use is established. In establishing the use, the enjoyment of neighboring properties may also be temporarily impacted by construction traffic and noise generation.

The applicant has provided a proposed construction transportation route which has been reviewed by the Virginia Department of Transportation (VDOT), and they stated they had no concerns. The construction traffic route alternative plan is attached to the staff report.

The applicant has submitted three options for proposed construction traffic routes, each of which includes escorted heavy haul routes, a delivery route, and anticipated employee commuter routes. Sycamore Cross has suggested a preferred delivery route using Proctor's Bridge (Rte. 616) from Route 460 in Southampton County to Proctor's Bridge (Rte. 621) in Isle of Wight to a main staging area within the project site. From the staging area, deliveries will be escorted to various project areas on the local road network and back to the staging area. Factors used to determine Sycamore Cross Solar's preferred routing includes traffic counts, road characterizations as defined by VDOT, bridge capacities, road widths, current road conditions, challenges based on superelevation, and proximity to residences. The applicant states that construction activities and associated construction traffic for the Cavalier Solar project are expected to be completed and end before construction starts for the Sycamore Cross Project.

Staff expressed concerns to the applicant in regard to the narrowness of all three proposed routes as well as bridge capacity, lack of shoulders or passing areas, and

proximity to residences. The roads surrounding the project site are not well suited to construction traffic. In addition, staff recommends that no construction should occur on Sundays by any party involved with the project, to include the solar developer, its contractors, and Dominion Energy contractors and that deliveries and hauling activities should occur outside of school bus traffic times.

Environmental Assessment:

The project lies within the Blackwater River watershed area and contains several types of sensitive environmental features, including wetlands, streams, and floodplains. According to the information the Department of Conservation and Recreation (DCR), the Pouches Creek Stream Conservation Unit is located within the project site. Stream Conservation Units (SCUs) identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. The Pouches Creek SCU has been given a biodiversity ranking of 83, which represents a site of high significance.

A wetland delineation performed by the applicant shows 2,281 linear feet of streams, 36 acres of wetlands, and 0.39 acres of open water features located within the fenced area of the project. The applicant states they will continue to avoid and minimize impacts to these features through the site plan design phase of the project.

Review comments from DCR reveal there is a potential for rare and threatened species such as the Barking treefrog and the Eastern Big Eared Bat to occur in the project area. The proposed project will impact one or more ecological cores with very high (C2) to outstanding (Cl) ecological integrity.

Ecological core areas are classified into five categories of ecological integrity: C1 – Outstanding; C2 – Very High; C3 – High; C4 – Moderate; and C5 – General. Scores are enhanced if the core or habitat fragment is part of a larger complex of natural lands. Scores also increase for those cores and habitat fragments that contribute to water quality enhancement. In general, larger, more biologically diverse areas are given higher scores. DCR recommends avoidance of impacts to cores. However, when avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact.

According to the applicant, approximately 77 acres of very high value ecological cores, 32 acres of high value ecological cores, 3.3 acres of moderate value ecological cores, and 423.7 acres of general value ecological cores may be impacted by the Project. The Project does not intersect any outstanding value ecological cores. The applicant states that they have made a concerted effort to minimize impacts wherever possible.

Further investigation of these impacts is recommended and DCR-ONH can conduct a formal impact analysis upon request. This analysis would estimate impacts to cores and habitat fragments, providing an estimate of the total acreage of direct and indirect impacts of the project. A copy of DCR's review comments are attached to this letter.

The applicant's environmental assessment also identified the project's potential impacts to important forestland in the area. The Forest Conservation Value (FCV) model was designed by the Virginia Department of Forestry to identify forestland with the highest priority for conservation within Virginia with the intent to maximize the conservation efforts to the highest quality, most productive, and most vulnerable forestland within Virginia (DCR 2021). The classifications of the values range from average to outstanding, indicating the value of forestlands for conservation (DCR 2021). The DCR FCV model indicated that approximately 1,254 acres of the Project study area were mapped as forest with approximately 213 acres categorized as outstanding priority for conservation, 293 acres as very high, and 384 acres categorized as high priority forestland for conservation.

Based on the current design of the project, approximately 32 acres of outstanding priority forestland will be impacted, approximately 63 acres of very high priority, and approximately 139 acres of high priority forestland may be impacted. The applicant states they will consult with DCR in connection with the potential impact of outstanding, very high, and high value forestland.

When considering soil classifications inside the fence of the project, the project's environmental assessment states the USDA NRCS Web Soils Survey was queried to identify soils classified as prime approximately 895 acres of prime farmland soils were identified, an additional 433 acres are classified as prime farmland if drained, and approximately 109 acres of farmland of statewide importance were identified within the Project study area.

Based on the current design of the project, approximately 614 acres of prime farmland (26% of the Project study area), 236 acres (10%) of prime farmland if drained, and 35 acres (1.5%) of farmland of statewide importance may be

impacted.

Staff has concerns with regard to the potential impacts to highly important environmental resources such as the Pouches Swamp stream conservation unit area and ecological core areas. Staff would recommend that no impacts be permitted to the stream conservation unit area, the C1-C3 ecological core areas, or the priority forest areas. In addition, staff would recommend that the applicant be required to conduct a formal impact analysis within the project area with DCR as recommended. A copy of the environmental impact assessment is attached to this report.

Historical Resources Assessment:

The applicant conducted a Phase IA archeological assessment of the project area, and it is attached to this report. Review comments from both the County's historic resources staff at the Isle of Wight County Museum as well as the Virginia Department of Historic Resources (VDHR) are also attached. Both agencies recommend that additional investigation is needed for the project site due to the high probability of archeological resources in the vicinity and known archeological and architectural resources in the area.

As of the date of this staff report, the applicant confirmed that their cultural team has wrapped up field work and are working on a Phase IB report. The Phase IB survey is used to determine the presence or absence of cultural resources in the probable impact areas. The areas to be subjected to testing are selected on the basis of the data gathered in the Phase IA evaluation and the probable locations of ground disturbing activities. They have stated that they will share it with County staff, County Museum staff, and SCC staff along with submitting the report to VDHR for concurrence on findings and mitigating measures. They likely won't have that final report for another few weeks, so it is not possible to determine impacts to historical resources at this time.

Economic Impact Assessment:

According to the applicant's economic impact analysis, both Sycamore Cross A and Sycamore Cross B together encompass approximately 1,030 acres of active project area. The economic impact assessment states the projects will generate seven direct and indirect jobs in both Isle of Wight and Surry Counties, however, the report does not state whether they are permanent or full time jobs.

The report states that the project would involve an investment of $402.5 million in

capital equipment and improvements to the existing property within Isle of Wight County. Both Sycamore Cross Solar projects would generate approximately $15.2 million (from taxation on capital investments) or $20.1 million with the siting agreement in cumulative county revenue over the facility's anticipated 35-year operational life, as compared to approximately $520,000 in cumulative county revenue in the property's current use, representing a 29- to 39-fold increase over current use revenues. This is assuming the actively used, fenced-in acreage in Isle of Wight County would be removed from the land use program and reassessed at $15,000 per acre.

The applicant states that the 891 acres, or 35.8% of the project site, is currently used for crop production. This includes 221 acres of corn, 40 acres of cotton, 433 acres for soybeans, and 197 acres for peanuts.

According to the 2022 Census of Agriculture (USDA-NASS), Isle of Wight County has 212 farms totaling 80,316 aces of land. The average farm size is 379 acres. The average annual market value of agricultural products sold per farm is $346,011. Using the same data to derive market values for crops cultivated on 891 acres within the fenced area of this project, the farmland generates an estimated $813,483 in market value.

Currently, agriculture and silviculture are two of the County's top industries. Both Sycamore Solar facilities together would be the tenth solar energy generation facility in the County and represents a subtraction of approximately 1.28% of the County's cultivated land (USDA-NASS, 2017). A table showing the previously approved and proposed solar energy facilities is attached to the staff report.

Viewshed Analysis:

The applicant provided several viewshed renderings comparing how the existing site looks currently to what it would look immediately after the landscaping buffers are planted and again at the time of maturity. The analysis includes perspectives from each of the project's road frontages. Current ordinance requirements include three rows of staggered landscaping along all street frontages and adjacent to residential properties and properties with historical and cultural significance. The viewshed perspective renderings are included as an attachment to the staff report.

COMPREHENSIVE LAND USE PLAN:

The future recommended land use designation for these properties is Rural

Agricultural Conservation (RAC) and Environmental Conservation (EC) under the adopted Comprehensive Plan. Appropriate uses for the RAC land use designation include agriculture, horticulture, forest lands, and scattered low-density residential uses. Other uses such as resource extraction and utility-scale solar facilities are also permitted when appropriately sited. Appropriate uses for the EC land use designation include wetlands, farms, forest uses, open space, and limited park facilities.

Solar Energy facilities are considered compatible with the RAC land use when properly sited and with the application of appropriate development criteria. The area designated as EC should be preserved due to environmental constraints unless site-specific analysis demonstrates there are no environmental concerns in a specific area.

Staff has concerns about the appropriate siting of this facility due to the lack of suitable roads for construction traffic as well as impacts to agricultural land and sensitive environmental features.

ORDINANCE REVIEW:

The zoning district classification for the subject properties is Rural Agricultural Conservation (RAC). The RAC zoning district is intended to preserve an protect areas of the County that are predominantly in agricultural and forestall use and to maintain the existing land base to support those activities.

The applicant proposes to establish a 240 MW solar energy facility with both projects, which is classified as a major utility serve use type in the Zoning Ordinance. These facilities are permitted as conditional uses in the RAC, RR, and GC zoning districts and may be considered compatible with appropriate conditions to mitigate any potential negative impacts on the surrounding community.

Section 1-1017 of the Zoning Ordinance provides standards for review of a conditional use application that the Planning Commission and Board of Supervisors shall consider before granting a conditional use permit. They are as follows:

1. That the establishment, maintenance, and operation of the conditional use will not be detrimental to or endanger the public health, safety, and general welfare;
2. That the conditional use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted, nor substantially impair the use of other property within the immediate

proximity;
3. That adequate utilities, water, sewer or septic system, access roads, storm drainage and/or other necessary public facilities and improvements have been or will be provided;
4. That adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion on the public streets;
5. That the proposed conditional use is not contrary to the goals and objectives of the Isle of Wight County Comprehensive Plan;
6. That the conditional use shall, in all other respects, conform to the applicable regulations of the zoning district classification in which it is located and to the special requirements established for the specific use; and
7. That the use(s) at the location proposed will not result in a multiplicity or saturation of similar uses in the same general neighborhood of the proposed use

In addition to the standards and other guidelines described in the Zoning Ordinance, the Board may impose conditions or limitations on any approval, including the posting of performance guarantees. Such conditions may include, but are not necessarily limited to:

1. The number of persons living or working in the immediate area and the proposed hours of operation, as may applicable;
2. Traffic conditions, including facilities for pedestrians, such as sidewalks and parking facilities; the access of vehicles to roads; peak periods of traffic; and proposed roads, but only if construction of such roads will commence within the reasonably foreseeable future;
3. The orderly growth of the neighborhood and community and the fiscal impact on the County;
4. The effect of odors, dust, gas, smoke, fumes, vibration, glare, and noise upon the use of surrounding properties;
5. Facilities for police, fire protection, sewerage, water, trash and garbage collection and disposal, and the ability of the County or persons to supply such services;
6. The degree to which the development is consistent with generally accepted engineering and planning principles and practices;
7. The structures in the vicinity such as schools, houses of worship, theaters, hospitals, and similar places of public use;
8. The purposes set forth in this ordinance, the County's Comprehensive Plan, and related studies for land use, roads, parks, schools, sewers, water, population, recreation, and the like;
9. The environmental impact, the effect on sensitive natural features, and

opportunities for recreation and open space; and
10. The preservation of cultural and historic resources of landmarks.

Should the CUP be approved, the applicant will be required to submit a site plan for review and approval in accordance with Zoning Ordinance requirements and conditions of approval.

AGENCY REVIEW:

The application was forwarded to the following departments for their review:

- Fire Rescue: All concerns have been addressed in the application.
- Commissioner of the Revenue: Comments are attached separately.
- Sheriff's Department: Similar to the Moonlight project, there will be an increase in patrol during the construction phase and the traffic impacts on proposed transportation routes. These are primarily secondary roads with no to minimal shoulders and are also shared with farm vehicles. During the construction phase they will be bringing in heavy equipment and large vehicles which will require escorts or even road closures. Also, there being multiple sites there is a concern of the operation of heavy equipment on the roads from one parcel to another.
- County Attorney: Only include conditions that go above what is now required under the zoning ordinance.
- VDOT: All concerns have been addressed in the application.
- Isle of Wight County Museum: Comments are attached separately.

Please note that, should this CUP be approved, it will be subject to review and approval from all associated agencies during site plan review. The project will be required to comply with all Zoning Ordinance requirements in effect at the time of site plan submittal.

STAFF CONCLUSIONS:

Strengths:

1. The proposed use will generate additional nonresidential tax revenue for needed public services and facilities.

Weaknesses:

1. The proposed use would remove agricultural land from production.
2. Temporary impact to residential development in the area from construction traffic and noise is expected during the construction phase.
3. The project may create impacts to archeological and architectural resources pending final study.
4. The project will impact identified ecological core areas, priority forest land, and prime farm soils.
5. Approval of the project would result in a multiplicity and saturation of similar uses other solar energy generation facilities nearby.
6. With no to minimal shoulders and deep ditches at several points along the proposed transportation route there may be safety issues that arise as construction vehicles meet along the route.
7. Due to poor transportation route alternatives and impacts to environmentally sensitive areas, the project's proposed location is not well suited and therefore is not consistent with the recommendations of the Comprehensive Plan.

STAFF RECOMMENDATION:

Based on the identified weaknesses, staff recommends denial of the Conditional Use Permit and the Moonlight AFD withdrawal request. However, should the CUP and withdrawal be approved staff recommends the following conditions: 1) Topsoil shall be stockpiled on the site and shall be stored out of view from adjacent properties and public roads. 2) The applicant shall submit an invasive species management plan as recommended by DCR with the submission of the final site plan. 3) No impacts shall be permitted to the Pouches Swamp stream conservation unit area, the C1-C3 ecological core areas, or the priority forestland areas. The applicant shall submit a formal ecological core impact assessment with DCR as recommended. 4) The applicant shall submit a seed mix for site groundcover that includes native pollinators blooming in spring/summer as recommended by DCR. 5) The applicant will work directly with the Isle of Wight County Chamber of Commerce, Paul D. Camp Community College, and the Economic Development Department to ensure inclusion of local contractors in the bidding process. 6) A laminated Emergency Response Poster will be mounted near the front gate. The poster will include a general site plan, evacuation routes and muster points, emergency response chain of command, directions to the closest hospital, coordinates to the closest life flight landing area, and other pertinent information associated with the facility during an emergency response. 7) The facility perimeter fencing will be equipped with push bar pedestrian gates to permit emergency exits from the facility. 8) Adherence to the proposed transportation plan shall be required for all facility traffic. Truck traffic shall be limited to only to the preferred route as described in in the transportation plan. No other local routes

in Isle of Wight County may be used. The applicant shall coordinate deliveries outside of school bus pickup and drop-off times. 9) Excluding the bufferyards, the ground between the panels and in areas not otherwise covered by gravel or infrastructure shall be planted and maintained with a vegetative cover. This vegetative cover will be managed with mowing and/or grazing. 10) Hours of operation for construction and post-construction operation shall be limited to Monday through Friday, 7:00 a.m. to 6:00 p.m. Saturdays from 7:00 a.m. to 5:00 p.m. No construction is to occur on Sundays by any party involved with the project. 11) As part of the site plan review, the applicant shall provide documentation that the selected panels and all power-generating equipment on-site are "Tier 1" modules, as established by the most recent "PV Module Tier 1 List" issued by Bloomberg NEF or a similar third party analysis widely accepted in the solar industry. Additionally, the make and model of the selected panels and all power-generating equipment initially installed and replaced on the site must qualify, for disposal purposes only, as non-hazardous waste under applicable U.S. Environmental Protection Agency tests (e.g. TCLP). 12) The applicant shall implement a program for the collection of baseline data establishing pre-construction soil conditions for the production of row crops for the agricultural areas within the project area. The program shall establish the relevant characteristics of the topsoil. The baseline data shall be derived from field and laboratory testing of soil conditions, including depth, density, and quality from representative locations. Laboratory testing shall be conducted by an accredited laboratory. Parameters for assessing soil quality may include the following: infiltration rate, bulk density, water holding capacity, pH, percent organic matter, cation exchange capacity, Phosphorous/Phosphate (P), Nitrogen (N), and Potassium/Potash (K). After 30 years of operation and again after 35 years of operation, soil conditions shall be determined for the same sampling locations using the same parameters and the results used to plan soil restoration activities. After equipment is removed as part of decommissioning, soil conditions shall be determined for the same sampling locations using the same parameters. Soil restoration activities shall be performed as necessary during operations or decommissioning to return soil conditions to at least baseline conditions. The County will be provided with data of soil conditions within 30 days after the receipt of results. 13) Any recommendations provided by VDHR during site plan review will be adhered to, in addition to requirements in the zoning ordinance.

ATTACHMENTS:

Description	Type	Upload Date
Sycamore Cross A Application	Backup Material	5/17/2024
Project Narrative	Backup Material	5/17/2024

Sycamore Cross A Concept Plan	Backup Material	5/17/2024
Proximity Map to Cavalier	Backup Material	5/17/2024
Interconnect Agreement	Backup Material	5/17/2024
Construction traffic route alternative map	Backup Material	5/17/2024
DCR Review Letter	Cover Memo	5/19/2024
Environmental Assessment	Backup Material	5/20/2024
Phase IA Historical Resources Survey	Backup Material	5/20/2024
VDHR Comments	Backup Material	5/20/2024
Isle of Wight Museum Comments	Backup Material	5/20/2024
Economic Analysis	Backup Material	5/20/2024
Commissioner of Revenue Comments	Cover Memo	5/20/2024
Sycamore Cross A&B Farmland Table	Backup Material	5/20/2024
Viewshed Impact Analysis	Backup Material	5/20/2024

Local Roots, Global Reach
ISLE OF WIGHT
COUNTY, VIRGINIA
DEPARTMENT OF PLANNING AND ZONING

APPLICATION FOR CONDITIONAL / SPECIAL USE PERMIT

This application should be used to petition for a permit for certain uses which, because of their unique characteristics or potential impacts on adjacent land uses, are not generally permitted in certain zoning districts as a matter of right, but which may, under the right set of circumstances and conditions be acceptable in certain specific locations. The following application requirements are consistent with the procedures set forth in Section 1-1017*, Conditional Uses,* and Section 1-1018, *Special Use Permits for Uses Not Provided For,* of the Isle of Wight County Zoning Ordinance*,* as amended*.*

A. APPLICATION FOR (CHECK ALL THAT APPLY):

[X] Conditional Use Permit (Are applicant proposed conditions attached?): X Yes _____ No

The proposed use or activity is listed as a conditional use in the RAC zoning district as per Section 4-2003 in Article IV of the Isle of Wight County Zoning Ordinance.

[ ] Special Use Permit (Are applicant proposed conditions attached?):_____Yes _____ No

Proposed Use or Activity: Civic Use (Utility/Major) Solar Farm

B. PROJECT DESCRIPTION:

Project Name: Sycamore Cross A

Property Address (if any): See Exhibit F

Election District: D5 (formerly Carrsville)

Comprehensive Plan Designation: Environmental Conservation and RAC

The use permit will apply to 1795 acres out of 2036 total acres

Tax Parcel Identification #See Attached Number of acres to be effected: _____

Tax Parcel Identification #_____ Number of acres to be effected: _____

Tax Parcel Identification #_____ Number of acres to be effected: _____

Proposed Utilities (check all that apply): Public Water_____ Private Well _____

Public Sewer_____ Private Septic _____

C. **APPLICATION INFORMATION:**

Applicant(s) Name(s): Sycamore Cross Solar, LLC

Address: 2180 South 1300 East, Suite 600

City, State, Zip Code: Salt Lake City, Utah 84106

Phone No.: 804-334-9882 Email: gregory.creswell@aes.com Fax No.: _____

Property Owner(s) Name(s): See Exhibit E

Address: _____

City, State, Zip Code: _____

Phone No.: _____ Email: _____ Fax No.: _____

_____ 4/29/24

Applicant Signature **Date**

See Exhibit G

Owner Signature *if different* **Date**

NOTICE: THE ATTACHED CHECKLIST MUST BE COMPLETED, CERTIFIED, AND SUBMITTED OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE.

Remit Application to: Isle of Wight County Central Permitting, 17140 Monument Circle, Suite 100
P. O. Box 80, Isle of Wight, Virginia 23397

FOR OFFICE USE ONLY:

Complete Application Received On: 5/2/2024 Fees Paid: *Revised

Tax Query: [ ] Current [ ] Delinquent Distribution Date: 5/2/2024

Posted/Date to Post: 5/15/2024

AGENCIES REFERRALS:

_____ Department of Conservation & Recreation
_____ Economic Development
_____ Emergency Services
_____ General Services
_____ Environmental Planner
_____ Health Department
_____ Transportation Manager
_____ Commission of Revenue
_____ Other _____

_____ Inspections
_____ Sheriff's Office
_____ Town of Smithfield
_____ Town of Windsor
_____ VDOT
_____ Schools
_____ Budget & Finance
_____ County Attorney

Verified By: _____ Date: 5/2/2024

Sycamore Cross Part A, Parcels Within Project Boundaries

Tax Parcel Identification Number	Calculated Parcel Acres	Property Owner Name	Property Owner Address
09-01-001	82	WELLS CHRISTINE LORENZO	10106 WHITE HILL TRAILIVOR VA 23866
16-01-002	56	EVERETS PROPERTIES	6001 EVERETS ROAD, SUFFOLK, VA 23434
16-01-002A	83	SEWARD JEFFREY A & MELANIE D	435 BELLEVUE ROADELBERON VA 23846
16-01-003	382	BLUE SKY ENDEAVORS LLC	11356 SYCAMORE CROSS DR, IVOR
16-01-008	106	BLUE SKY ENDEAVORS LLC	2180 SOUTH 1300 EAST STE 500SALT LAKE CITY UT 84106
16-01-009	88	BLUE SKY ENDEAVORS LLC	2180 SOUTH 1300 EAST STE 500SALT LAKE CITY UT 84106
17-01-001	223	GORDON KATHLEEN H	1949 PINE LOG RDSKIPPERS VA 23879
17-01-002	3	GORDON KATHLEEN H	1949 PINE LOG RDSKIPPERS VA 23879
17-01-003	250	BLUE SKY ENDEAVORS LLC	2180 SOUTH 1300 EAST STE 500SALT LAKE CITY UT 84106
17-01-003C	226	BLUE SKY ENDEAVORS LLC	2180 SOUTH 1300 EAST STE 500SALT LAKE CITY UT 84106
17-01-011	72	HOLLEMAN WILLIAM JOSEPH	118 BARCROFT DR SMITHFIELD VA 23430
27-01-003	98	BLUE SKY ENDEAVORS LLC	2180 SOUTH 1300 EAST STE 500 SALT LAKE CITY UT 84106
27-01-004	126	GORDON KATHLEEN H	1949 PINE LOG RDSKIPPERS VA 23879

Anticipated Medium Voltage Easement Only Parcels, Isle of Wight Only

Tax Parcel Identification Number	Calculated Parcel Acres	Property Owner Name	Property Owner Address
16-01-005	176	CARROLLS FOODS OF VIRGINIA LLC ATT JORDAN HEATH	PO BOX 856 WARSAW NC 28398

SUBMITTAL CHECKLIST FOR CONDITIONAL / SPECIAL USE PERMIT APPLICATIONS

In conjunction with Section 1-1017, *Conditional Uses*, and Section 1-1018, *Special Uses Permits for Uses Not Provided For*, of the Isle of Wight County Zoning Ordinance, as amended, the following information shall be submitted for a Conditional / Special Use Permit Application. Please note that it is the applicant's responsibility to ensure that the application is in compliance with all Federal, State and County regulations.

No application for a Conditional / Special Use shall be certified as complete unless the following information is provided. **The required number of copies may be reduced with permission of the Zoning Administrator.**

- ☑ Application: Ten (10) copies of the original, executed application, one (1) digital copy of all application documents, and one (1) original executed application. Both the applicant(s) and the property owner(s) must have their signature(s) notarized on page 3 of the application.
- ☑ The appropriate fees have been submitted with the application. Checks should be made payable to: Treasurer, Isle of Wight County.
- ☑ Ten (10) copies of a statement of the reasons for seeking such permit and if applicable, a statement of conditions.
- ☑ Ten (10) copies of a narrative description of the property which shall include the Tax Parcel Identification
- ☑ Ten (10) copies of a concept plan of the property showing all existing and proposed physical improvements and such other information as is necessary to clearly indicate to the Planning Commission and Board of Supervisors that adequate provisions shall be made for compliance with all standards for that particular use and the extent of the property to be so used on a given parcel or parcels. Such document shall be drawn to scale and shall include the following information:
    - A vicinity map at a scale of no less than one (1) inch equals two thousand (2,000) feet
    - Title of drawing
    - Date of drawing
    - Existing wood line
    - North arrow
    - Scale bar
    - Current zoning of parcel(s) to be rezoned, including tax map number(s) and owner(s)
    - Current zoning of adjacent parcel(s), including tax map number(s) and owner(s)
    - Street names including route number and width(s) of the right-of-way(s)
    - Ten (10) full size copies, with one (1) reduced 11-inch X 17-inch copy and a digital copy shall be submitted

- Please note that additional information on the site layout may be requested by the Zoning Administrator during the review process to **review the application and prepare the staff reports for the Planning Commission and Board of Supervisors more effectively**.

✓ Ten (10) copies of such supplemental material as may be necessitated by the proposal itself or the district in which located or proposed to be located, and in accordance with Section 5-5000, *Supplementary Use Regulations,* of the Isle of Wight County Zoning Ordinance.

N/A A WQIA (Water Quality Impact Assessment) if located in the Chesapeake Bay Preservation Area.

✓ All real estate taxes must be paid and current at the time of submittal; otherwise, the submittal will be refused at the counter. Proof of the most recent tax payment to the County must accompany the application.

I, the undersigned, certify that this application is complete, accurate and contains all required and requested information, documents and other submittals, and that all statements made herein are, to the best of my knowledge, true and correct. I further certify that I have exercised due diligence to obtain the most recent, complete and correct information available. I understand that any section not completed in its entirety may delay processing of this application and the date of the Planning Commission public hearing and that the submittal of a complete application does not guarantee the application will be placed on the next available Planning Commission agenda.

Ben Saunders

Printed or Typed Name

Signature

4/29/24

Date

April 30, 2024

Central Permitting Office
c/o Amy Ring, AICP
Director, Planning and Zoning
Department of Community Development, Isle of Wight County
17140 Monument Circle, Suite 101
Isle of Wight, VA 23397

Re: Conditional Use Permit Application for the Sycamore Cross Solar Project, Fourth Submittal for Sycamore Cross A, Creation of and First Submittal for Sycamore Cross B

Dear Ms. Ring,

At your request, the Sycamore Cross Solar Project has been split into separate project areas, each requiring its own Conditional Use Permit (CUP). These two areas are referenced as Sycamore Cross A and Sycamore Cross B, and together are the entirety of Sycamore Cross Solar, the "Project."

Please find enclosed Sycamore Cross Solar, LLC's fourth submittal for a CUP application which has been amended to represent Sycamore Cross A and the first submittal for a CUP application for Sycamore Cross B, which together comprise a photovoltaic solar generation facility of up to 240 megawatts located in Isle of Wight and Surry Counties. All documentation for Sycamore Cross A and Sycamore Cross B can be found in previous Sycamore Cross A application submittals with the exception of the documentation in this submittal.

The following list of documents have been updated and supplied with this submittal to support previously submitted CUP application components and to create the required CUP application for Sycamore Cross B:

- Project Narrative (updated to reflect 2 project areas and 2 CUPs)
- Attachment A: Conditional Use Permit Application Packages
  - Amended CUP Application Package For Sycamore Cross A: Fourth Submittal
  - CUP Application Package For Sycamore Cross B: First Submittal
- Attachment C: Revised Proposed Conditions (to reflect two project areas and to add a condition to address Unanticipated Discoveries)
- Attachment D: Updated Conceptual Plan of Development (to delineate Sycamore Cross A from Sycamore Cross B)
- Attachment J: Visual Impact Assessment: Visual Simulations

Thank you for your guidance and assistance in bringing the project to this point. We look forward to working with you and your staff further to answer questions and offer any needed clarity as you complete your review. The AES team is available to meet or talk at your convenience. I can be reached using the contact information provided in the signature below.

Sincerely,

Gregory S. Creswell

Greg Creswell
Senior Project Development Manager
804-334-9882
Gregory.Creswell@aes.com

Project Narrative

PROJECT OVERVIEW

Sycamore Cross Solar, LLC, a subsidiary of AES Clean Energy (AES), is proposing to build a photovoltaic solar generation facility of up to 240 megawatts to be located in Isle of Wight and Surry Counties, Virginia (the "Project").

The total Project study area is approximately 2,488 acres across all or portions of 18 parcels in Isle of Wight and Surry Counties. The Project study area is shown on the orthoimagery and U.S. Geological Survey Project Location Maps (Figures 1 and 2). Within Isle of Wight County, the Project study area comprises portions of 15 project parcels totaling approximately 2,036 acres of predominantly undeveloped and agricultural land zoned RAC: Rural Agricultural Conservation. The RAC zoning district allows utility-scale solar facilities with approval of a Conditional Use Permit. The adjacent and adjoining properties represent similar land use to the Project study area, including agriculture, forested, historically managed area for silviculture use and residential use. The proposed Project satisfies the goals and objectives of the Isle of Wight County Comprehensive Plan. This is further discussed in Section 3 of this application.

At the request of Isle of Wight County, the project portions located in Isle of Wight have been split into two separate applications: Sycamore Cross A and Sycamore Cross B. Sycamore Cross A consists of 13 project parcels parcel totaling 1,795 acres, includes one medium voltage easement only parcel and will account for approximately 214 MWac. Sycamore Cross B consists of two project parcels totaling 240 acres, includes six medium voltage easement only parcels and will account for approximately 6 MWac. Tables showing which parcels are included with Sycamore Cross A and Sycamore Cross B are included with each application package (Attachment A). These two applications comprise the Isle of Wight portions of the Project.

The Conditional Use Permit application packages (Attachment A) and associated fees (Attachment B) are being submitted to Isle of Wight County in accordance with Section 1-1017, Conditional Uses and Section 5-5003, Supplementary use regulations for civic use types. Additionally, a list of proposed Conditional Use Permit conditions for the Project are included in Attachment C and further detailed throughout this document.

PROJECT APPLICANT

Sycamore Cross Solar, LLC is wholly owned by AES Clean Energy (AES). Since 1981, AES has been headquartered in the Commonwealth of Virginia. Our commitment is to provide clean and reliable energy in a way that benefits every Virginian. Currently, we operate 660 megawatts (MW) of renewable energy in Virginia, with an additional 240 MW of renewable energy permitted and in a phase of construction. These projects bring extensive economic benefits to their respective communities through the creation of hundreds of construction jobs at each site, stimulus of the local economy when we provide employment and buy from area businesses, and substantial tax

revenue generation that helps fund county services such as emergency response, public education, and the deployment of broadband.

Within Virginia, renewable energy development is critical to fulfill the promise of the Virginia Clean Economy Act of 2020 to transition the Commonwealth's electric grid to 100% clean energy by 2050. AES remains committed to working with our stakeholders to co-create and deliver the smarter, greener energy solutions that meet their needs, benefiting the local community and economy.

DESIGN

The Project will consist of solar photovoltaic modules on a single axis tracker system and associated electrical equipment and materials necessary to collect the energy produced. The system will be comprised of UL-listed components and installed according to the National Electric Code. The maximum panel height will be less than 15 feet above grade at maximum tilt in accordance with Article V Sec. 5-5003 of the Isle of Wight zoning ordinance. The facility will be secured by a 6-foot-tall chain link fence with 1-foot of barbed wire. Sound from the solar panels will not exceed 60 dBA in normal circumstances in accordance with Sec. 5-5003. Setback lines will comply with Sec. 5-5003. Due to setbacks, sound at property lines will likely be much lower than 60 dBA. Areas under the panels will be planted with local grasses and forbs, non-panel areas will be planted with wildlife- and pollinator-friendly vegetation to the extent practicable, and wildlife corridors will be maintained as shown in the Conceptual Plan of Development (Attachment D).

The Project will utilize an existing substation location shared with the Cavalier Solar project, which location is identified on Attachment D. The existing substation location pad has been built as part of the Cavalier Solar project. Additional civil work is not expected to complete the project substation for the Sycamore Cross project. Further, the interconnect with the Dominion Septa substation has been approved and will also be built as part of the Cavalier Solar project.

As of this submittal of the CUP applications, no operations or maintenance buildings are contemplated in the design. If included prior to a final design, all operations and maintenance buildings and related structures will incorporate materials, colors, textures, screening, and landscaping that will blend the facilities to the natural setting and surrounding structures. No signage of any type will be placed on the facility other than notices, warnings, and identification information required by law or as approved by the Zoning Administrator. Construction parking and staging signs will be clearly placed at ingress and egress points to direct traffic to the proper location. Appropriate warning signage will be placed on all towers, electrical equipment, and Project site ingress and egress points. Signs will be clearly marked at the Project site for emergency vehicle ingress and egress.

Consideration is being made for the potential demolition of structures to accommodate the design of Sycamore Cross Solar and to use the land most efficiently within the project area. As of this submittal of the CUP applications, the only improvement anticipated to be demolished is at the address 14195 Rattlesnake Trail on parcel 27-01-003. A photo of the structure can be found in Figure 6-46 of the Cultural Resource Assessment dated August 2023. In the event additional

structures are considered for demolition, a thorough review will be completed, and the required information submitted to Isle of Wight updating this list of properties for consideration. Additionally, prior to any demolition, Sycamore Cross Solar, LLC will elicit concurrence from VDHR on our architectural survey findings. Should any buildings be found to be of significance, avoidance and mitigation measures will be taken.

INTERCONNECTION

The Project will serve the PJM wholesale market. The final interconnection service agreement identifying the transmission capacity was executed on April 3, 2023. Our maximum facility output is 240 MW, which is also referred to as the "installed capacity", and the Project has rights to inject the full 240 MW into the grid. A redacted version of the interconnection service agreement is included in Attachment E.

New 34.5kV feeder lines will interconnect the various solar generation equipment comprising the Project to the Project's collector substation. Siting of the Sycamore Cross project is using the same utility corridor as Cavalier Solar to limit any additional impact to view sheds. The project will use an existing 500 kV gen-tie line that was constructed for the Cavalier Solar Project and that will interconnect the Project's substation with the VEPCO Septa 500 kV Substation. It should be noted that no improvements will be required to the VEPCO substation or the 500 kV gen-tie. Said improvements are being completed and certificated as part of the Cavalier project.

LAND USE AND ZONING

The Project is located off Mill Swamp Road (State Rte. 621) on approximately 2,488 acres of 18 parcels in Isle of Wight and Surry Counties. Within Isle of Wight County, the Project study area comprises portions of 15 parcels totaling approximately 2,036 acres of predominantly undeveloped and agricultural land zoned RAC: Rural Agricultural Conservation. The fenced Project area will consist of 1,030 acres of the total Project study area acreage. The adjacent and adjoining properties are also zoned as RAC: Rural Agricultural Conservation and represent similar land use to the Project study area, including agriculture, forested, and land historically managed for silvicultural use (Attachment D).

The RAC zoning district allows utility-scale solar facilities with approval of a Conditional Use Permit. Furthermore, the proposed use fulfills the intent of the RAC district by preserving land which may be used in the future for additional agricultural and silvicultural activities. While in use by the proposed solar facility, the land cannot be sold for development of residential or commercial use, and the quality of the soil will likely be improved over the projected 35-year life of the Project as the land lays fallow.

Landowners for each participating parcel, as described in Attachment F, within the Project Site have provided Owner's Authority Letters (Attachment G). The Applicant has fulfilled the requirements of Section 1-1017 and 4-2003 of the Isle of Wight Zoning Ordinance by providing a copy of the property deeds for participating parcels (Attachment H) and a copy of the county tax records for the participating parcels (Attachment I).

VISUAL IMPACT

A Visual Impact Analysis was performed by Tetra Tech and is provided in Attachment J. This analysis determined that based on the proposed mitigating measures including landscaping and screening, the Project will have little to no impact on the existing viewshed. To ensure minimal viewshed impacts, the Project has implemented setbacks from adjoining parcels and residences in accordance with the County Ordinance; furthermore, the Conceptual Plan of Development (Attachment D) includes proposed landscaping and screening to be established and maintained within these buffers, as shown in the visual simulations included in Attachment I. This screening will be maintained and supplemented as necessary throughout the life of the Project.

TRAFFIC IMPACT

The Project anticipates construction of the Project to begin in Q2 2025 and is forecasted to be completed by Q4 2026. Construction will take place between the hours of 7 a.m. and 7 p.m., Monday through Saturday. Construction and decommissioning of the Project may cause temporary impacts to traffic flow in the direct vicinity of the Project site but will not adversely impact traffic during the normal operation phase of the Project.

Sycamore Cross Solar has been working in conjunction with Isle of Wight Planning and Zoning, Isle of Wight Transportation, and the VDOT Franklin Residency to develop a Construction Traffic Management Plan. Sycamore Cross has submitted three options for proposed construction traffic routes, each of which includes escorted heavy haul routes, a delivery route, and anticipated employee commuter routes. Mapping is included in Attachment K. Sycamore Cross has suggested a preferred delivery route using Route 616 to Route 621 from Ivor to a main staging area within the project site. From the staging area, deliveries will be escorted to various project areas and back to the staging area. Factors used to determine Sycamore Cross Solar's preferred routing includes traffic counts, road characterizations as defined by VDOT, bridge capacities, road widths, current road conditions, challenges based on superelevation, and proximity to residences.

Sycamore Cross Solar will refine and finalize the details of the Construction Traffic Management Plan in coordination with both the Virginia Department of Transportation (VDOT) Franklin residency and the County Transportation Department prior to Site Plan Approval. Construction activities and associated construction traffic for the Cavalier Solar project are expected to be completed and end before construction starts for the Sycamore Cross Project.

ECONOMIC IMPACT

The current zoning of the Project is RAC and the use is generally agricultural or timber. According to information obtained from participating landowners, 891 acres or 35.8% of the project site is currently used for crop production. This includes 221 acres (8.9%) that are being used for corn production, 40 acres (1.6%) used for cotton production, 433 acres (17.4%) used for soy

production, and 197 acres (7.9%) used for peanut production. No parcels are currently being used for livestock.

The Project will generate tax revenue for the County without increasing demand for public utilities or services, allowing increased investment in services and infrastructure. An Economic Impact Assessment was completed in September 2023 by Mangum Economics using the IMPLAN model. This assessment provides fiscal impacts based on taxation of capital investment and on the potential use of a Revenue Share Ordinance. Depending on the tax revenue stream the County chooses to pursue, the Project may provide between approximately $15.2 million and $20.1 million in tax revenue for Isle of Wight County. This is a 29 to 39 fold increase to County revenue versus current use revenue. Additionally, construction of the Project will create approximately 197 direct, indirect, and induced jobs during construction and 7 direct, indirect, and induced jobs during the operational phase. The Economic Impact Analysis assumes a commercial operation date of Q4 2026. A full Economic Impact Analysis is included in Attachment L.

ENVIRONMENTAL RESOURCES

The Project will avoid and mitigate any potential impacts to natural and cultural resources to the greatest extent possible. A summary of potential Project interactions with environmental resources is provided below. A full Environmental Resource Impact Analysis with further details is included in Attachment M.

Water Resources

Tetra Tech performed a wetland delineation of the Project site through several field surveys in October 2022 through June 2023. The project will minimize impacts to wetlands and floodplain to the extent reasonably possible. A 50-foot buffer area around water resources will be implemented, to the extent practicable, as shown for the majority of resources in the current Conceptual Plan of Development, Attachment B. In the event development is to occur within any wetland or floodplain, these areas will be designed and permitted to be compliant with all local, state, and federal requirements. AES acknowledges several project areas shown in the conceptual plan of development are within the FEMA 100-year floodplain. This design is conceptual and will be refined as additional studies are completed and regulatory coordination is finalized. All resources will be delineated and clearly flagged for avoidance during construction in areas where avoidance is possible.

Construction of the Project may cause temporary water quality impacts in the form of increased sediment runoff during land disturbing activities; however, best management practices will be implemented to avoid and minimize impacts to surface water features. Ultimately, the Project will likely lead to improved water quality in the area because runoff of pesticides and other inputs to or byproducts of farming will be reduced or eliminated. Soil testing will be performed prior to construction, after completion of construction, and every five years thereafter; results will be provided to the County Planning Department per Article V, Sec. 5-5003.M.4.f.

Threatened and Endangered Species

An initial desktop assessment performed by Tetra Tech identified several protected species as having the potential to occur within the Project study area. Field surveys of the Project study area were conducted in October 2022 through April 2023. These surveys identified potential presence of six protected species – the bald eagle *(Haliaeetus leucocephalus),* red-cockaded woodpecker *(Picoides borealis),* northern long-eared bat *(Myotis septentrionalis),* Rafinesque's eastern big-eared bat *(Corynorhinus rafinesquii macrotis)*, tri-color bat *(Perimyotis subflavus)*, and the yellow lance *(Elliptio lanceolata)*. Both the bald eagle and red-cockaded woodpecker were determined to be unlikely to be adversely affected by the Project. Suitable habitat was found on site for the other four species, and agency consultation was recommended. Additional presence/absence surveys have been conducted and coordination with federal and state agencies is ongoing to determine best avoidance, minimization, and mitigation measures.

Ecological Cores

Based on the current design, approximately 77 acres of very high value ecological cores, 32 acres of high value ecological cores, 3.3 acres of moderate value ecological cores, and 423.7 acres of general value ecological cores may be impacted by the Project. The Project does not intersect any outstanding value ecological cores. Ecological core data with the classification of high, very high, and outstanding have the greatest value of ecological biodiversity. Per the recommendations of the Department of Conservation and Recreation, potential impacts to ecological cores have been avoided and minimized to the extent practicable. Where unavoidable, potential impacts were limited to the edges of identified ecological cores.

HISTORICAL AND CULTURAL RESOURCES

A Phase 1A Cultural Resource Assessment and early coordination was completed by Dutton + Associates, LLC in August 2023. This analysis indicated that no National Register of Historic Places (NRHP) listed resources are present within the fenced Project area. There are three desktop mapped potential resources that are located within the fenced Project area. The Historical and Cultural Resources Report is included in Attachment N.

This report was submitted to Virginia Department of Historic Resources (VDHR) for concurrence on the predictive modeling and the proposed Phase 1b survey methodology on August 2, 2023. The VDHR provided comments regarding the proposed survey methodology August 14, 2023; to which the report was revised, finalized, and resubmitted on August 24, 2023, and the VDHR concurrence letter dated August 28, 2023 is included in Attachment Q.

The Phase 1B fieldwork, in accordance with the guidance provided by VDHR and outlined methodology in the Phase 1A assessment, was initiated in December 2023 and is ongoing at the time of this submittal of the CUP applications. The final Phase 1B will be provided to VDHR for concurrence on findings and recommendations.

AES will create an Unanticipated Discovery Plan which will be used during construction of the project to address any unexpected cultural discoveries on site. This plan will include emergency protections protocols, curation processing of cultural materials, disposition of cultural materials,

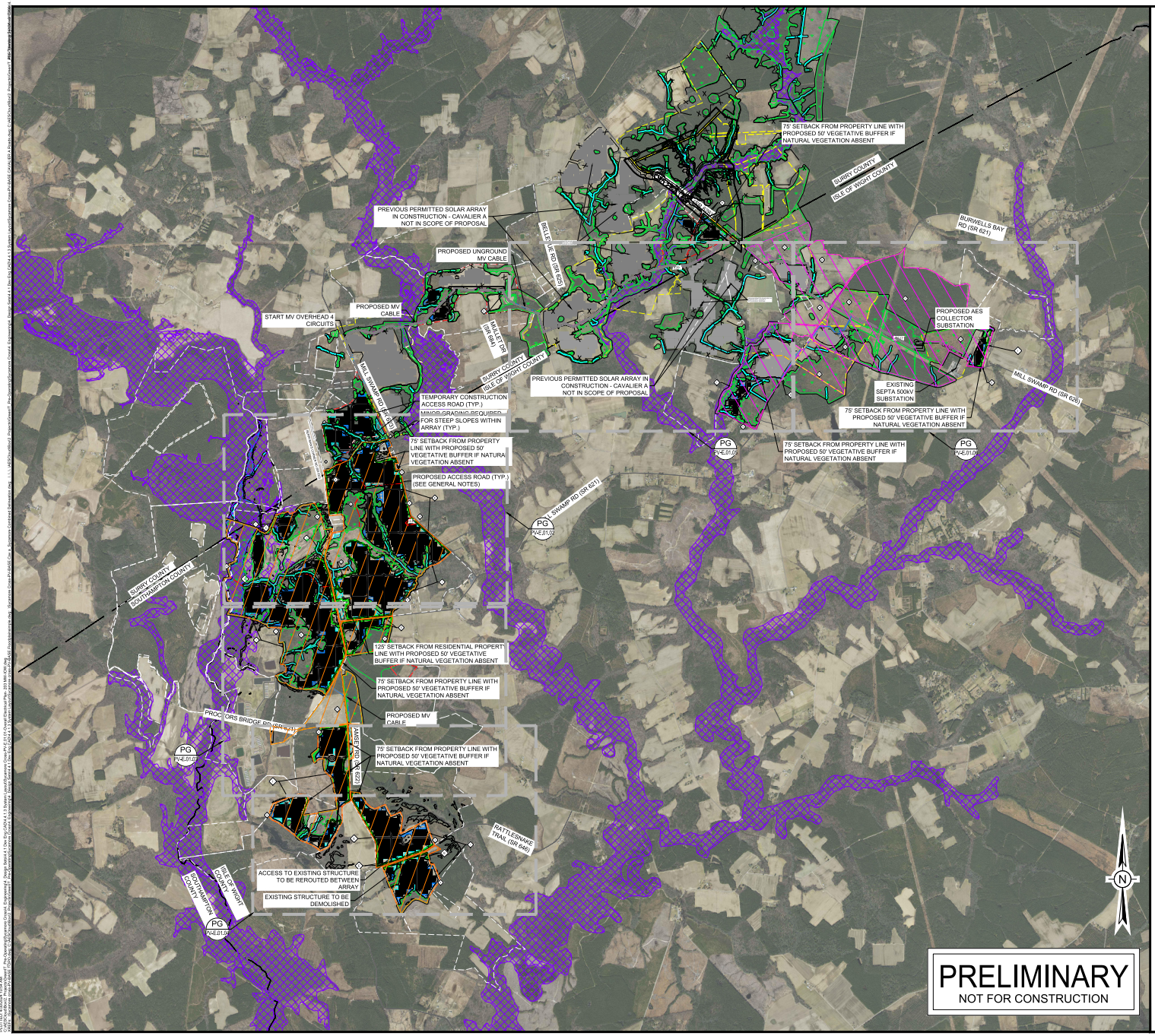
and a contact list including an on-call archaeologist, project contacts, and state/regional contacts.

LANDSCAPE STANDARDS

According to Isle of Wight County Code of Ordinances Appendix B Zoning Article VIII. Landscape and Screening Standards Section 8-1005-Landscaping Zones, there is a certain minimum number of required landscape points that vary based on the landscape zone assigned to an area, which include the: frontage zone, buffer zone, parking zone, foundation zone, and screening zone. The zone use type for the areas surveyed for this Project are likely categorized as a buffer zone, which requires the installation of a minimum of 45 points of landscaping per 500 square feet of buffer zone for civic use types. A tree canopy assessment was conducted to identify mature tree stands that would meet the requirements for tree preservation point credits. The project will provide approximately 2.8 million landscape points. The full Tree Canopy Survey Assessment is included in Attachment O.

DECOMMISSIONING

The operating period of the Project is anticipated to be approximately 35 years. At the end of the useful life of the Project, Sycamore Cross Solar, LLC, will be responsible for decommissioning the Project. Prior to final site plan approval, Sycamore Cross Solar, LLC will finalize and submit to the County a decommissioning plan and associated written agreement to decommission the Project equipment, facilities, and devices. The decommissioning security amount will be determined and posted based on an estimate provided in operational year 1 by a qualified third-party engineering firm. The decommissioning plan and associated security will not include a deduction for salvage value.



GENERAL NOTES

1. THIS DRAWING IS PRELIMINARY AND FOR ESTIMATING PURPOSES ONLY. IT IS NOT FOR CONSTRUCTION.
2. LOCATION OF ALL EXISTING ITEMS IS APPROXIMATE AND MUST BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION.
3. ALL SPECIFIED EQUIPMENT IS PRELIMINARY. FINAL EQUIPMENT SELECTION SHALL BE APPROVED BY OWNER.
4. 75' EQUIPMENT SETBACK FROM ALL PROPERTY LINES
5. 125' EQUIPMENT SETBACK FROM ALL RESIDENTIAL PARCELS
6. EXISTING WOOD LINE, EASEMENTS, ROW'S TO BE PROVIDED ONCE ALTA SURVEY COMPLETED.
7. ALL SITE ENTRANCES SHALL BE 20' WIDE AND TAPER TO 16' INTERNAL ACCESS ROADS

SHEET NOTES

- E — SITE ENTRANCE
- I — ISLE OF WIGHT COUNTY PARCELS
- C — WILDLIFE CORRIDOR
- # — PARCEL ID

LEGEND

EXISTING

- PROJECT PROPERTY LINE
- ADJACENT PROPERTY LINE
- EASEMENT PROPERTY LINE
- MAJOR PUBLIC ROAD
- ROAD RIGHT-OF-WAY
- APPROXIMATE WETLAND
- WASH / DRAINAGE
- 100 YEAR FLOOD PLAIN
- SLOPE KEEPOUT AREAS
- CAVALIER SITE FENCE
- CAVALIER SITE PV PANELS

PROPOSED

- MERGED SETBACK
- FENCE
- PROVISIONS FOR 2' DEEP WATER QUALITY MANAGEMENT
- OH-500 / OH-500 — EXISTING 500kV GEN-TIE
- OH-MV / OH-MV — 34.5kV OVERHEAD MV COLLECTION LINE
- LAYDOWN/ PARKING AREA
- PROPOSED VEGETATIVE BUFFER
- SYCAMORE CROSS SOLAR A
- SYCAMORE CROSS SOLAR B
- MV / MV / MV — MV UNDERGROUND LINE
- 60' MV LINE EASEMENT
- SYCAMORE CROSS PV PANELS

PARCELS WITHIN PROJECT BOUNDARIES

SHEET NOTE NUMBER	PARCEL TYPE	APPLICATION AREA	PARCEL ID	OWNER NAME
SYCAMORE CROSS SOLAR - A				
1	PROJECT	A	16-01-003	BLUE SKY ENDEAVORS LLC
2	PROJECT	A	27-01-003	BLUE SKY ENDEAVORS LLC
3	PROJECT	A	27-01-004	GORDON KATHLEEN H
4	PROJECT	A	16-01-009	BLUE SKY ENDEAVORS LLC
5	PROJECT	A	16-01-008	BLUE SKY ENDEAVORS LLC
6	PROJECT	A	16-01-002	EVERETS PROPERTIES INC
7	PROJECT	A	17-01-001	GORDON KATHLEEN H
8	PROJECT	A	17-01-011	HOLLEMAN WILLIAM JOSEPH
9	PROJECT	A	16-01-002A	SEWARD JEFFREY A & MELANIE D
10	PROJECT	A	09-01-001	WELLS CHRISTINE LORENZO
11	PROJECT	A	17-01-003	BLUE SKY ENDEAVORS LLC
12	PROJECT	A	17-01-003C	BLUE SKY ENDEAVORS LLC
13	EASEMENT ONLY	A	16-01-005	CARROLLS FOOD OF VIRGINIA LLC
14	PROJECT	A	17-01-002	GORDON KATHLEEN H
SYCAMORE CROSS SOLAR - B				
15	PROJECT	B	10-01-017	MILL SWAMP ROAD HOLDINGS LLC
16	PROJECT	B	11-01-015	BATTEN MITCHELL DELK
17	EASEMENT ONLY	B	11-01-005	476 LLC
18	EASEMENT ONLY	B	10-01-025	BARCROFT JEAN E SOLE TRUSTEE JEAN E BARCROFT LIVING TRUST
19	EASEMENT ONLY	B	10-01-030	MILL SWAMP ROAD HOLDINGS LLC
20	EASEMENT ONLY	B	10-01-028A	THACKER SHELTON L & ANN
21	EASEMENT ONLY	B	10-01-027	SEWARD MICHAEL A
22	EASEMENT ONLY	B	10-01-023	SEWARD MICHAEL A & EMILY B

aes
2180 South 1300 East, Suite 600
Salt Lake City, UT 84106-2749
(801) 679 - 3500

PE STAMP:

KEY PLAN:

REVISIONS:

NO.	DATE	DESCRIPTION
0	12/28/2022	INITIAL 5% LAYOUT
8	07/24/2023	REVISED 5% LAYOUT
9	12/12/2023	REVISED 5% LAYOUT
10	4/6/2023	REVISED 5% LAYOUT
4	4/17/2023	REVISED 5% LAYOUT
5	4/28/2023	REVISED 5% LAYOUT
6	5/25/2023	REVISED DC:AC RATIO
7	6/23/2023	ADDITIONAL PARCEL INVESTIGATION

PROJECT TITLE:

SYCAMORE CROSS

PROJECT LOCATION:

MILL SWAMP ROAD,
SMITHFIELD, VA 23430
37.0180,-76.7358

SHEET TITLE & DESCRIPTION:

OVERALL ELECTRICAL PLAN

UP TO 240 MWAC

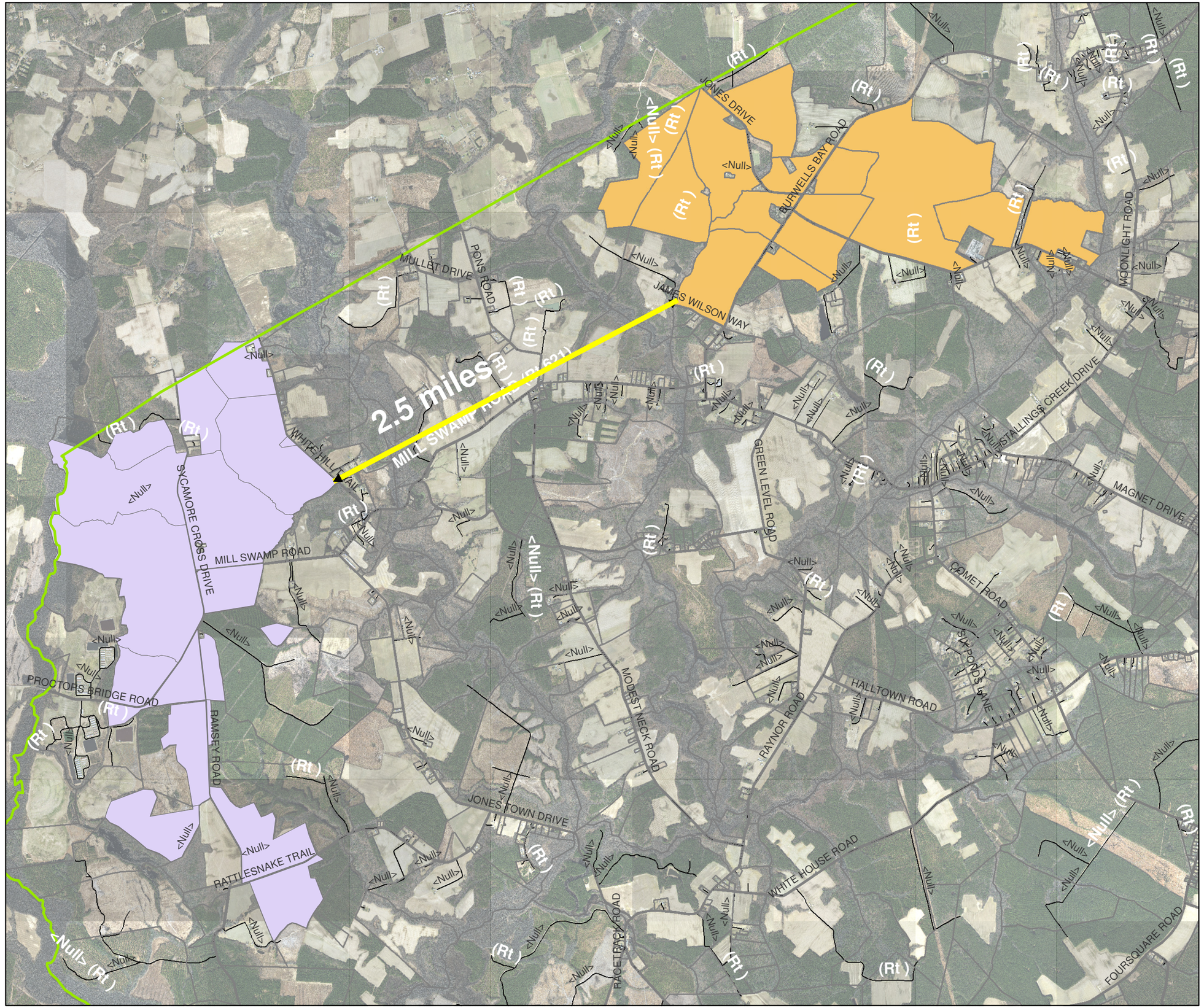
PROJ NUM:	
DES:	A. PEÑAS
DWN:	F. MIRANDA
CHK:	C. SANCHEZ
APV:	
DATE:	12/28/2022

SCALE AT 24" x 36":
0 1.000' 2.000' 3.000' 4.000'
1" = 2,000'

SHEET NO: PV-E.01.01
REV: 10

Legend

- Sycamore Cross A
- Parcels
- Cavalier



N

Service Agreement No. [ ]

(PJM Queue #AC2-141)

INTERCONNECTION SERVICE AGREEMENT
Among
PJM INTERCONNECTION, L.L.C.
And
ACE DEVELOPMENT COMPANY II, L.L.C.
And
VIRGINIA ELECTRIC AND POWER COMPANY

Pages 1 - 8 have been redacted

IN WITNESS WHEREOF, Transmission Provider, Interconnection Customer and Interconnected Transmission Owner have caused this ISA to be executed by their respective authorized officials.

(PJM Queue Position #AC2-141)

Transmission Provider: PJM Interconnection, L.L.C.

By: Jason Shoemaker | Manager, Interconnection Projects | 4/3/2023
Name | Title | Date

Printed name of signer: Jason Shoemaker

Interconnection Customer: ACE Development Company II, L.L.C.

By: Sean McBride | Authorized Person | 3/10/2023
Name | Title | Date

Printed name of signer: Sean McBride

Interconnected Transmission Owner: Virginia Electric and Power Company

By: Kevin Fields | Authorized Representative | 3/30/2023
Name | Title | Date

Printed name of signer: Kevin Fields

SPECIFICATIONS FOR
INTERCONNECTION SERVICE AGREEMENT
By and Among
PJM INTERCONNECTION, L.L.C.
And
ACE DEVELOPMENT COMPANY II, L.L.C.
And
VIRGINIA LECTRIC AND POWER COMPANY
(PJM Queue Position # AC2-141)

1.0 Description of generating unit(s)(the Customer Facility) to be interconnected with the Transmission System in the PJM Region:

a. Name of Customer Facility:

Sycamore Cross Solar

b. Location of Customer Facility:

Isle of Wight and Surry Counties, VA
37.0177790, -76.7441940

c. Size in megawatts of Customer Facility:

For Generation Interconnection Customer:

Maximum Facility Output of 240 MW

d. Description of the equipment configuration:

A ground-mounted, inverter-based, solar photovoltaic generating facility consisting of solar arrays, a collector system, and a 500/34.5/13.8 kV wye ground/wye ground/delta main power transformer with a rating of 213/240/267 MVA.

2.0 Rights

2.1 Capacity Interconnection Rights:

Pursuant to and subject to the applicable terms of the Tariff, the Interconnection Customer shall have Capacity Interconnection Rights at the Point(s) of Interconnection specified in this Interconnection Service Agreement in the amount of 168.2 MW.

2.1a To the extent that any portion of the Customer Facility described in section 1.0 is not a Capacity Resource with Capacity Interconnection Rights, such portion of the Customer Facility shall be an Energy Resource. PJM reserves the right to limit

total injections to the Maximum Facility Output in the event reliability would be affected by output greater than such quantity.

2.3 Incremental Deliverability Rights:

Pursuant to Section 235 of the Tariff, Interconnection Customer shall have Incremental Deliverability Rights at each indicated Point of Interconnection in the following quantity(ies): None

2.4 Incremental Available Transfer Capability Revenue Rights:

Pursuant to Section 233 of the Tariff, Interconnection Customer shall have Incremental Available Transfer Capability Revenue Rights at each indicated Point of Interconnection in the following quantities: None

2.5 Incremental Auction Revenue Rights:

Pursuant to Section 231 of the Tariff, Interconnection Customer shall have Incremental Auction Revenue Rights in the following quantities: None

2.6 Incremental Capacity Transfer Rights:

Pursuant to Section 234 of the Tariff, Interconnection Customer shall have Incremental Capacity Transfer Rights between the following associated source(s) and sink(s) in the indicated quantities: None

3.0 Construction Responsibility and Ownership of Interconnection Facilities

a. Interconnection Customer.

(1) Interconnection Customer shall construct and, unless otherwise indicated, shall own the following Interconnection Facilities:

Upon achieving Milestone 6.7, a pro rata share of:

(a) One (1) 500 kV circuit breaker;
(b) 500 kV line extending from the high side of the main power transformer to the point of change of ownership with VEPCO; and
(c) Communication equipment to the Interconnected Transmission Owner bidirectional metering equipment.

(2) In the event that, in accordance with the Interconnection Construction Service Agreement, Interconnection Customer has exercised the Option to Build, it is hereby permitted to build in accordance with and subject to the conditions and limitations set forth in that Section, the following portions of the Transmission

Owner Interconnection Facilities which constitute or are part of the Customer Facility:

None

Ownership of the facilities built by Interconnection Customer pursuant to the Option to Build shall be as provided in the Interconnection Construction Service Agreement.

b. Interconnected Transmission Owner

Interconnected Transmission Owner shall construct and, unless otherwise indicated, shall own, the following:

Attachment Facilities pursuant to PJM Service Agreement No. 5757 (ISA for Queue Position No. AC1-161) and PJM Service Agreement No. 5810 (Construction Service Agreement for Queue Position No. AC1-161).

c. Additional Contingent Facilities which must be completed prior to Commercial Operation of the Generating Facility

PJM Network Upgrade N5483: Replace wave traps at both Ladysmith and Elmont Substations for the Ladysmith – Elmont 500kV line #574 to increase ratings to 2913 MVA (normal), 2913 MVA (emergency), and 3351 MVA (load dump).

PJM Network Upgrade N6647: Expand Septa 500 kV Substation by adding a 500 kV circuit breaker in the ring bus to create a new line position.

4.0 Subject to modification pursuant to the Negotiated Contract Option and/or the Option to Build under the Interconnection Construction Service Agreement, Interconnection Customer shall be subject to the estimated charges detailed below, which shall be billed and paid in accordance with Appendix 2, Section 11 of this ISA and the applicable Interconnection Construction Service Agreement.

4.1 Attachment Facilities Charge: $0

4.2 Network Upgrades Charge: $0

4.3 Local Upgrades Charge: $0

4.4 Other Charges: $0

4.5 Cost breakdown:

$0	Direct Labor
$0	Direct Material

$0 Indirect Labor
$0 Indirect Material

$ 0 Total

4.6 Security Amount Breakdown:

$0 Estimated Cost of Non-Direct Connection Local Upgrades and/or Non-Direct Connection Network Upgrades

plus $0 Estimated cost of the work (for the first three months after construction commences in earnest) on the required Attachment Facilities, Direct Connection Local Upgrades, and Direct Connection Network Upgrades

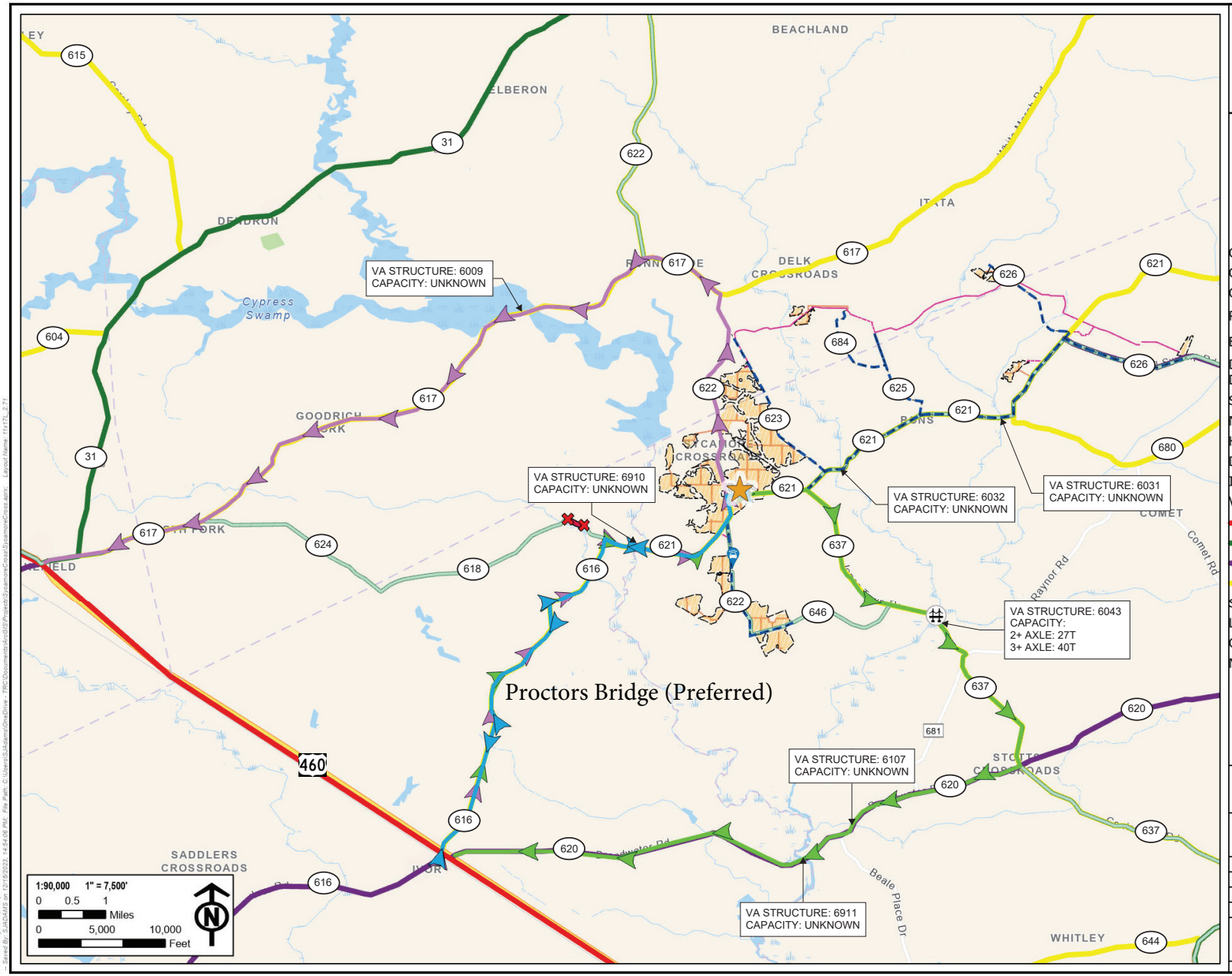
plus $0 Option to Build Security for Transmission Owner Attachment Facilities and Direct Connection Network Upgrades (including Cancellation Costs)

$0 Total Security required with ISA

less $0 Costs already paid by Interconnection Customer

$0 Total Security required with ISA

Pages 8 - 94 have been redacted



Legend

- Option One - Staging Delivery Route
- Option Two - Staging Delivery Route
- Option Three - Staging Delivery Route
- Primary Staging & Office Area
- Bridge on Route 637
- Daily Employee Parking & Shuttle Pick Up/ Drop Off
- Steep Superelevation
- No Delivery Truck Traffic
- Heavy Haul - Escorted Routes
- Daily Employee Traffic & Shuttle Routes
- Interior Array Roads
- VDOT Functional Classification
  - Other Principal Arterial
  - Minor Arterial
  - Major Collector
  - Minor Collector
- Solar Panel Arrays
- LOD
- Overhead Medium Voltage Lines
- Medium Voltage Lines (Underground)

PROJECT: AES CLEAN ENERGY
SYCAMORE CROSS SOLAR
TRAFFIC MANAGEMENT PLAN
ISLE OF WIGHT COUNTY, VA.

TITLE: **SITE OVERVIEW**

DRAWN BY:	S. ADAMS	PROJ. NO.:	576420.0000.0000
CHECKED BY:	D. PEETS		**FIGURE # 1**
APPROVED BY:	J. HENEGAR		
DATE:	DECEMBER 2023		

TRC
2200 S. MAIN ST.
SUITE A
BLACKSBURG, VA 24060

FILE: SycamoreCross.aprx

Coordinate System: Map Rotation:
Saved By: SJADAMS on 12/15/2023 14:54:06 PM File Path: C:\Users\SJAdams\OneDrive - TRC\Documents\ArcGIS\Projects\SycamoreCross\SycamoreCross.aprx Layout Name: 11x17L_2.71

Travis A. Voyles
Secretary of Natural and Historic Resources

Matthew S. Wells
Director

Andrew W. Smith
Chief Deputy Director

Frank N. Stovall
Deputy Director for Operations

Darryl Glover
Deputy Director for Dam Safety, Floodplain Management and Soil and Water Conservation

Laura Ellis
Deputy Director for Administration and Finance

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

July 20, 2023

Justin Ahn
Tetra Tech, Inc.
4101 Cox Road
Glen Allen, VA 23060

Re: Sycamore Cross Solar Project

Dear Mr. Ahn:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Pouches Creek Stream Conservation Unit is located within the project site. Stream Conservation Units (SCUs) identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. The Pouches Creek SCU has been given a biodiversity ranking of B3, which represents a site of high significance. The natural heritage resource associated with this site is:

Aquatic Natural Community (SC-Blackwater Second Order Stream) G2?/S2?/NL/NL

The documented Aquatic Natural Community is based on Virginia Commonwealth University's **INSTAR** (*Interactive Stream Assessment Resource*) database which includes over 2,000 aquatic (stream and river) collections statewide for fish and macroinvertebrate. These data represent fish and macroinvertebrate assemblages, instream habitat, and stream health assessments. The associated Aquatic Natural Community is significant on multiple levels. First, this stream is a grade B, as per the VCU-Center for Environmental Sciences (CES), indicating its relative regional significance, considering its aquatic community composition and the present-day conditions of other streams in the region. This stream reach also holds as a "Healthy" stream designation as per the INSTAR Virtual Stream Assessment (VSS) score. This score assesses the similarity of this stream to ideal stream conditions of biology and habitat for this region. Lastly, this stream contributes to high Biological Integrity at the watershed level (6th order) based on number of native/non-native, pollution-tolerant/intolerant and rare, threatened or endangered fish and macroinvertebrate species present.

Threats to the significant Aquatic Natural Community and the surrounding watershed include water quality degradation related to point and non-point pollution, water withdrawal and introduction of non-native species. To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the

implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations, establishment/enhancement of riparian buffers with native plant species and maintaining natural stream flow.

In addition, according to a DCR biologist and predicted suitable habitat modeling, there is a potential for Barking treefrog (*Hyla gratiosa*, G5/S2S3/NL/NL) to occur in the project area if suitable habitat exists on site. The Barking treefrog ranges through the coastal plain from North Carolina to Florida and west to Mississippi and eastern Louisiana (NatureServe, 2009). There are disjunct populations in Delaware, Maryland, Kentucky and Tennessee, and southeastern Virginia (NatureServe, 2009). Across its range, it inhabits areas near shallow ponds in pine savannas and in low wet woods and swamps (Martof et al., 1980). In Virginia, this species breeds in fish-free vernal ponds (Pague & Young, 1991). When inactive during cold or dry seasons, they burrow under tree roots, vegetation, or in the soil; otherwise, this species is mostly arboreal and thus dependent on trees near the water (Pague & Young, 1991). Adult frogs feed on insects and other invertebrates; tadpoles consume primarily algae (VDGIF, 1993). Major threats to the Barking treefrog include continued logging of native pine, destruction of breeding ponds, and over collecting (Pague & Young, 1991).

Due to the potential for this site to support populations of Barking treefrog, DCR recommends an inventory for the resource in the study area. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

DCR-Division of Natural Heritage biologists are qualified to conduct inventories for rare, threatened, and endangered species. Please contact Anne Chazal, Natural Heritage Chief Biologist, at anne.chazal@dcr.virginia.gov or 804-786-9014 to discuss availability and rates for field work.

Furthermore, according to predicted suitable habitat modeling, there is potential for Eastern big-eared bat (*Corynorhinus rafinesquii macrotis*, G3G4T3/S2/NL/LE) to occur in the project area if suitable habitat exists on site. The Eastern big-eared bat is named for its enormous ears twice the length of its head, is extremely rare in Virginia and is currently known only from the southeastern portion of the state. Although widespread throughout the southeast, they are never found in large numbers. These bats roost singly or in small groups in hollow trees or abandoned buildings. They forage only after dark primarily in mature forests of both upland and lowland areas along permanent bodies of water (NatureServe, 2009). The details of this bat's feeding behavior and much of its natural history remain a mystery. Lack of information regarding the ecology of the Eastern big-eared bat, and their sensitivity to disturbance, make them particularly vulnerable to destruction of roost sites and feeding areas where their presence goes undetected (Handley and Schwab 1991, Harvey 1992).

Threats to this species include forest destruction, particularly hollow tree removal, decreasing availability of abandoned buildings, and possibly, insecticides. Please note that this species is currently classified as endangered by the Virginia Department of Wildlife Resources (VDWR).

DCR recommends avoiding tree removal in bottomland habitats and assessing any large potential roost trees and/or abandoned structures on the property for bat presence/absence. DCR also recommends coordination with DWR if removal of potential roost habitat for the Eastern big-eared bat becomes necessary to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

DCR recommends the development of an invasive species management plan for the project and the planting of Virginia native pollinator plant species that bloom throughout the spring and summer, to maximize benefits to native pollinators. DCR recommends planting these species in at least the buffer areas of the planned facility, and optimally including other areas within the project site. For screening zones outside the perimeter fencing, DCR

recommends native species appropriate for the region be used. Guidance on plant species can be found here: http://www.dcr.virginia.gov/natural-heritage/solar-site-native-plants-finder. In addition, Virginia native species alternatives to the non-native species listed in the Virginia Erosion and Sediment Control Handbook (Third Edition 1992), can be found in the 2017 addendum titled "Native versus Invasive Plant Species", here: https://www.deq.virginia.gov/home/showpublisheddocument?id=2466. Page 3 of the addendum provides a list of native alternatives for non-natives commonly used for site stabilization including native cover crop species (i.e. Virginia wildrye).

In addition, the proposed project will impact Ecological Cores **(C2, C3, C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Ecological Cores are areas of at least 100 acres of continuous interior, natural cover that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Interior core areas begin 100 meters inside core edges and continue to the deepest parts of cores. Cores also provide the natural, economic, and quality of life benefits of open space, recreation, thermal moderation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including sequestration of carbon, absorption of gaseous pollutants, and production of oxygen). Cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of natural heritage resources they contain.

Impacts to cores occur when their natural cover is partially or completely converted permanently to developed land uses. Habitat conversion to development causes reductions in ecosystem processes, native biodiversity, and habitat quality due to habitat loss; less viable plant and animal populations; increased predation; and increased introduction and establishment of invasive species.

DCR recommends avoidance of impacts to cores. When avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact.

The proposed project will impact one or more cores with very high (C2) to outstanding (C1) ecological integrity. Further investigation of these impacts is recommended and DCR-DNH can conduct a formal impact analysis upon request. This analysis would estimate impacts to cores and habitat fragments, providing an estimate of the total acreage of direct and indirect impacts of the project. For more information about the analysis and service charges, please contact Joe Weber, DCR Chief of Biodiversity Information and Conservation Tools at Joseph.Weber@dcr.virginia.gov.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months (January 20, 2023) has passed before it is utilized.

A fee of $625.00 has been assessed for the service of providing this information. Please find attached an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, DCR Finance, 600 East Main Street, 24th Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The Virginia Department of Wildlife Resources (VDWR) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Amy Martin at (804-367-2211) or amy.martin@dwr.virginia.gov.

Should you have any questions or concerns, please contact me at 804-225-2429. Thank you for the opportunity to comment on this project.

Sincerely,

Tyler Meader

Tyler Meader
Natural Heritage Locality Liaison

Cc: Amy Martin, VDWR
Susan Tripp, DEQ
Randy R. Keaton, Isle of Wight County Administrator
Melissa Rollins, Surry County Administrator

Environmental Resource Impact Analysis

Sycamore Cross Solar Project
Isle of Wight and Surry Counties, Virginia

April 2023



Prepared for

AES Clean Energy Development, LLC
4200 Innslake Drive, Suite 302
Glen Allen, Virginia 23060

Prepared by

TETRA TECH
4101 Cox Road, Suite 120
Glen Allen, Virginia 23060

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Acronyms and Abbreviations

AMSL	Above Mean Sea Level
AES	AES Clean Energy Development, LLC
AJD	Approved Jurisdictional Determination
AMSL	Above Mean Sea Level
BECA	Bald Eagle Concentration Area
BGEPA	Bald and Golden Eagle Protection Act
CBPA	Chesapeake Bay Protection Area
CCB	Center for Conservation Biology
FEMA	Federal Emergency Management Act
FCV	Forest Conservation Value
FIRM	Flood Insurance Rate Map
IPaC	Information for Planning and Consultation
NHD	National Hydrography Dataset
NHDE	Natural Heritage Data Explorer
NLEB	northern long-eared bat
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PJD	Preliminary Jurisdictional Determination
Project	Sycamore Cross Solar Project
RPA	Resource Protection Area
T&E	threatened and endangered
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
SSURGO	Soil Survey Geographic Database
Tetra Tech	Tetra Tech, Inc
VaFWIS	Virginia Fish and Wildlife Information Services
VDCR	Virginia Department of Conservation and Recreation

VDEQ	Virginia Department of Environmental Quality
VDWR	Virginia Department of Wildlife Resources
VMRC	Virginia Marine Resource Commission

1.0 PROJECT DESCRIPTION

Sycamore Cross Solar, LLC, a subsidiary of AES Clean Energy (AES), is conducting due diligence for a proposed commercial solar energy project, the Sycamore Cross Solar Project (Project), on approximately 2,226 acres of agricultural and undeveloped forested land (Project study area). Sycamore Cross Solar, LLC is proposing to utilize approximately 1,195 acres of the Project study area in connection with the Project (Fenceline Area) to generate up to 240 megawatts (MWac) of solar energy. The Project is located in Isle of Wight and Surry Counties, Virginia, as shown on the orthoimagery and topographic Project location maps (Figures 1 and 2, respectively). The Project is in the Blackwater Watershed (Hydrologic Unit Code 03010202; USGS 2022).

Sycamore Cross Solar, LLC, is pursuing a Conditional Use Permit (CUP) from Isle of Wight and Surry Counties in accordance with Section 5-5003.M.4 of the Isle of Wight County, Virginia, and Section 10-122 of the Surry County, VA, Code of Ordinances. A desktop Environmental Resource Impact Analysis was conducted to identify potential impacts to environmental and wildlife resources within the Project Area and applicable buffers from the Project study area to comply with Section 5-5003.M.4.vi of the Isle of Wight County Zoning Ordinance and to help support the Surry County CUP application.

Resources considered include watershed preservation areas, forest conservation, ecological cores, floodplains, wetlands, surface water, and federal and state listed threatened and endangered species. This impact assessment was based on preliminary site plans and avoidance and minimization measures that are anticipated to be implemented.

2.0 ENVIRONMENTAL RESOURCES

2.1 Terrestrial and Aquatic Resources

2.1.1 Federal and State Protected Lands

Based on a desktop review of data provided by Virginia Department of Conservation and Recreation (VDCR), no federal or state protected lands, including national or state forests or parks, wildlife management areas or recreational areas, are located within the Fenceline Area of the Project study area. Two conservation easements are mapped within a one-mile radius of the Project study area, including one Virginia Department of Forestry/VDCR managed easement located approximately 350 feet southwest of the southwestern portion of the Project study area and one National Resources Conservation Service (NRCS) managed easement located approximately 0.20 miles north of the eastern portion of the Project study area (VDCR 2023a). Additionally two designated conservation areas were identified approximately 0.65 miles southwest of the southwestern portion of the Project study area, including one conservation area managed by The Nature Conservancy, named Blackwater River and one conservation area managed by VDCR, named Blackwater Sandhills (VDCR 2023a). No additional conservation easements or areas were identified within a one-mile radius of the Project study area.

2.1.2 Chesapeake Bay Preservation Area

Existing Conditions

The Project is located within Isle of Wight and Surry Counties, which are both considered one of Virginia's 29 coastal counties and independent cities deemed "Tidewater Virginia" as outlined in 9VAC25-830-80; however, based on Appendix B-1, Article 3 of the Isle of Wight County Code of Ordinances, the Isle of Wight County Chesapeake Bay Preservation Area (CPBA) Mapper, Section 3-1400 of the Surry County Code of Ordinances, preliminary correspondence with the Surry County Planning and Community Development Department and preliminary correspondence with the Isle of Wight Planning and Zoning department, the Project study area is located within the Albemarle-Chowan watershed. Therefore, the Project is not subject to CBPA Resource Protection Areas.

Potential Impacts

The Project is not located within the Chesapeake Bay watershed and therefore, not subject to CBPA regulations.

2.1.3 Forest Conservation Value

Existing Conditions

The Forest Conservation Value (FCV) model was designed by the Virginia Department of Forestry to identify forestland with the highest priority for conservation within Virginia with the intent to maximize the conservation efforts to the highest quality, most productive, and most vulnerable forestland within Virginia (VDCR 2021). The classifications of the values range from average to outstanding, indicating the value of forestlands for conservation (VDCR 2021). The VDCR FCV model indicated that approximately 1,254 acres of the Project study area were mapped as forest with approximately 213 acres categorized as outstanding priority for conservation, 293 acres as very high, and 384 acres categorized as high priority forestland for conservation. VDCR FCV located within the Project study area are depicted as Figure 4

Potential Impacts

Based on the current design of the Project and the Fenceline Area, approximately 32 acres of outstanding priority forestland will be impacted, approximately 63 acres of very high priority, and approximately 139 acres of high priority forestland may be impacted. A map depicting the FCV model within the Project study area is represented as Figure 4. Consultation with VDCR will be undertaken in connection with the potential impact of outstanding, very high, and high value forestland.

2.1.4 Ecological Cores

Existing Conditions

The VDCR developed ecological cores that classify lands based on environmental and species diversity, patch characteristics and context, and water quality benefits (VDCR 2018). The classifications of ecological cores range from general to outstanding based on a determination of ecological importance and characteristics (VCDR 2018). Ecological core data with the classification of high, very high, and outstanding have the greatest value of ecological biodiversity (VDCR 2018). VCDR ecological cores data indicates that approximately 357 acres of the Project study area are classified as very high, and approximately 162 acres are classified as high. No portion of the Project study area is classified as outstanding. The remaining portions of the Project study area are classified as either

general or is unclassified. Ecological cores located within the Project study area are depicted as Figure 5

Potential Impacts

Based on the current design of the Project and the Fenceline Area, approximately 94 acres of ecological cores classified as very high value will be impacted, and approximately 32 acres of high value ecological cores may be impacted. Wildlife corridors will be implemented in Project site design in order to reduce adverse impacts to these ecological cores. A map depicting the ecological core classifications within the Project study area is represented as Figure 5. Consultation with VDCR will be undertaken in connection with the potential impact of very high and high value ecological cores.

2.1.5 Floodplains

Existing Conditions

The floodplain data for the Project were obtained from Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Number 51093C00653, effective December 2, 2015; 51093C0125E, effective December 2, 2015; 51093C0050E, effective December 2, 2015 and 51181C0225E, effective April 6, 2022 (FEMA 2015a, b, c, 2022). According to the FEMA FIRMs, Blackwater River, located on the western portion of the Project study area, is mapped as Zone A, with a one-percent annual chance flood hazard. The Project is in the Blackwater River – Terrapin Swamp (12-digit Hydrologic Unit Code [HUC] 030102020301), and Rattlesnake Swamp (HUC 030102020303) watershed. FEMA floodplain data is depicted on Figure 6.

Potential Impacts

There are no anticipated impacts to floodplains based on the current design of the Project. These areas will be included in Project design considerations as design evolves and will continue to be avoided to the greatest extent practicable. Additionally, any potential impacts will be permitted through the appropriate authorities having jurisdiction.

2.1.6 Topography and Soils

Existing Conditions

The topography within the Project study area is relatively flat, ranging from 50 feet above mean sea level (amsl) to 95 feet amsl (Figure 2). Very minimal steep slopes were identified, with slopes exceeding 25 percent mapped in small areas throughout the Project study area (Figure 7).

A review of the U.S. Department of Agriculture (USDA) NRCS Web Soil Survey was conducted to determine the erosivity of soils within the Project study area. The K factor is an index which quantifies the relative susceptibility of the soil to sheet and rill erosion. Values range from 0.02 for the least erodible soils to 0.64 for the most erodible, with any K factor value equal to or greater than 0.32 being considered moderately erodible. The USDA NRCS soil survey data indicates that approximately 23.7 percent of the Project study area is composed of moderate to highly erodible soils (Appendix A). A figure depicting the USDA NRCS soil series classification within the Project study area is attached as Figure 10.

The USDA NRCS Web Soils Survey was also queried to identify soils classified as prime farmland within the Project study area. Approximately 895 acres of prime farmland soils were identified, an additional 433 acres are classified as prime farmland if drained, and approximately 109 acres of farmland of statewide importance were identified within the Project study area. The remaining portions of the Project study area were not classified as prime farmland or farmland of statewide importance (Figure 9).

Potential Impacts

Construction of the Project may result in impacts on soil resources within the facility footprint. Ground-disturbing activities would include vegetation clearing and grubbing; excavating for foundations and footings; pile driving; stockpiling excavated material for backfilling; drilling rock to set foundations and footings; drilling and installing groundwater supply wells; grading for roads and staging and laydown areas; and installing stormwater best management practices (BMPs). The construction of other facilities, such as electrical substations and storage of equipment and parts, also would have the potential to result in adverse impacts on soil resources, because they involve some degree of ground disturbance. Soil contamination could also result from the release of contaminants related to the use of trucks and mechanical equipment, from improper storage and handling, and from the application of chemical stabilizers to control fugitive dust emissions. The extent of impact would depend on the size and design of the project and on site-specific factors, such as soil properties, slope (e.g., along gullies and on alluvial fan surfaces), vegetation, weather, and distance to surface water. The implementation of erosion and sediment control BMPs would minimize soil erosion and impacts to on-site and off-site resources.

Based on the current design of the Project and the Fenceline Area, approximately 614 acres of prime farmland (26% of the Project study area), 236 acres (10%) of prime farmland if drained, and 35 acres (1.5%) of farmland of statewide importance may be impacted.

Impacts to prime farmland soils are expected from the Project, as the areas of Prime Farmland soil on the site are centrally located where development activities will be concentrated. However, these impacts will be temporary in nature and beneficial to the quality of the soil. Over the life of the Project these soils will lay fallow, allowing reaccumulation of vital nutrients and organic matter; after the Project is decommissioned, the land may be converted into cropland that would benefit from this soil resting period. However, since the Project is not being completed by a Federal agency or with assistance from a Federal agency and will not irreversibly convert farmland to a nonagricultural use, the Project will not be subject to the Farmland Protection Policy Act (FPPA). Therefore, no form AD-1006 Farmland Conversion Impact Rating will be required.

2.1.7 Wetlands, Surface Waters, and Open Waters

Existing Conditions

A field wetland delineation was performed for the Project study area in January and April 2020, October 27, 2022, November 2-4, 2022, December 2, 9, 14-15, 20-21, 27-29, 2022, January 9-13, March 22-24 and 28-30, 2023 for wetland, stream, and open water features. 30,281 linear feet of streams features, 415 acres of wetlands, and 1.08 acres of open water features, including ponds, were identified within the Project study area. A portion of the delineated features in the northwestern

portion of the Project study area were confirmed for jurisdiction in the form of a USACE Preliminary Jurisdictional Determination (PJD) and an Approved Jurisdictional Determination (AJD) (NAO-2019-01204) in 2022 The remaining delineated water features identified within the Project study area were not confirmed for jurisdiction with the U. S. Army Corps of Engineers (USACE) and the Virginia department of the Environmental Quality (VDEQ), and/or Virginia Marine Resources Commission (VMRC) at the time of submittal of this analysis report. The Project plans to confirm all delineated features within the Project study area in the form of a USACE PJD and/or AJD. A figure depicting the delineated features within the Project study area is attached as Figure 8.

Potential Impacts

A utility-scale solar project can affect surface water and groundwater in several ways, including the use of water resources, modification of the natural surface water and groundwater flow systems, alteration of the interactions between groundwater and surface waters, contamination of aquifers, wastewater treatment either on- or off-site, and water quality degradation by runoff or excessive withdrawals, as well as from leaks and spills of chemicals used for the project. While some impacts on water resources (e.g., water use) are dependent upon the solar technologies themselves, impacts on water resources associated with land disturbance and construction activities would be expected to occur regardless of the type of solar technology used.

There are 2,281 linear feet of streams, 36 acres of wetlands, and 0.39 acres of open water features located within the Fenceline Area. Through continued engineering and site design, the Project will avoid and minimize impacts to wetlands, surface waters, and open waters to the greatest extent practicable. Any impacts to wetlands, surface waters, and open waters will be permitted through the appropriate authorities having jurisdiction.

The Project has been designed to avoid and minimize impacts to wetlands and streams as they are currently mapped within the Fenceline Area and Project study area to the greatest extent practicable. A portion of the Project study area's delineated water resources delineation results have been confirmed by the USACE and VDEQ in the northeastern portion of the Project study area in the form of a Preliminary Jurisdictional Determination and an Approved Jurisdictional Determination (NAO-2019-01204) in 2022. The remaining water resources delineated within the Project study area have not yet been confirmed by the USACE, VDEQ, and/or the VMRC and are subject to change. Federal and state confirmation of the remaining unconfirmed water resources within the Project will be planned in the form of a USACE jurisdictional determination. Pending any changes to mapped features, impacts to jurisdictional features will be permitted through the USACE, VDEQ, and/or VMRC, and any requisite mitigation measures will be incorporated into the project.

Through the use of stormwater BMPs and erosion and sedimentation controls during construction, as well as routine stormwater inspections, no impacts to adjacent water resources are expected from the Project.

2.2 Wildlife Resources

Field visits at the Project study area were conducted on October 27, 2022; November 2–4, 2022; December 2, 9, 14–15, 20-21, 27–29, 2022; January 9–13, 2023; March 22–24, 28–30, 2023; and April 3, 2023. The results of this evaluation identified the potential presence of the following:

- One species protected by BGEPA and a listed bird species: bald eagle (*Haliaeetus leucocephalus*) and red-cockaded woodpecker (*Picoides borealis)*;
- Three species of bats: NLEB, Rafinesque's eastern big-eared bat *(Corynorhinus rafinesquii macrotis),* and tri-colored bat *(Perimyotis subflavus)*; and
- One mollusk species: yellow lance *(Elliptio lanceolata)*.

Potential impacts to these species as a result of implementation of the Project are discussed below.

2.2.1 Bald Eagle

Existing Conditions

The bald eagle is protected under the Bald and Golden Eagle Protection Act (BGEPA). Bald eagles prefer to nest in mature or old growth trees, snags, or cliffs near rivers, coastlines, lakes, and streams large enough to serve as a substantial food supply (USFWS 2007).

Several large bodies of water were identified on the USGS topographic map, specifically in the USFWS NWI and USGS NHD layers in the surrounding areas of the Project study area, and were noted during the site visit within the surrounding areas of the Project study area. Areas noted included Blackwater River, Mill Swamp, and an unnamed pond located in the western, eastern, and center portions of the Project study area, respectively (Figures 2 and 3).

Based on a review of the CCB Bald Eagle Nest Locator, the closest known bald eagle nest is approximately 7.1 miles south of the Project study area A, and 3.03 miles away from Project study area B. The USFWS BECA map did not indicate a bald eagle concentration area within the Project study area. During the January 2023 field survey, two adult bald eagles and one juvenile were observed feeding on carrion adjacent to the pond located in the northwestern portion of the Project study area.

Potential Impacts

Based on the observation of bald eagles, a "may effect-not likely to adversely affect" status was determined for the bald eagle in connection with the Project study area. Consultation with USFWS and VDEQ will be initiated; a subsequent bald eagle nest survey will be conducted if construction is anticipated to be conducted during the breeding season (October 1 through May 15). The appropriate buffers will be provided per the USFWS 2007 National Bald Eagle Management Guidelines (USFWS 2007).

2.2.2 Red-Cockaded Woodpecker

Existing Conditions

IPaC indicates that the red-cockaded woodpecker, which is a federally endangered and state endangered species, has the potential to occur within the Project study area (USFWS 2023a). The red-

cockaded woodpecker commonly inhabits mature pine trees that are generally 80 years old or older and are devoid of underbrush (USFWS 2023d).

Upon a review of aerial orthoimagery presented in Figure 1 and field verification of habitat, forested communities within the Project study area consist of mostly silviculture with pine plantations that are younger than 80 years old, as well as deciduous hardwood forests in riparian areas. During the January and March field surveys, pine trees were observed within the Project study area, however, the trees were observed to be less than 80 years of age.

Potential Impacts

Given the lack of suitable habitat, red-cockaded woodpecker constitutes a "no effect" status in connection with the Project study area.

2.2.3 Northern Long Eared Bat

Existing Conditions

The IPaC database (USFWS 2023a) indicated that the NLEB, a federally endangered and state-threatened species, has the potential to occur within the Project study area. The NLEB spend winters hibernating in caves and mines; during the summer, they roost singly or in colonies underneath bark, in cavities, or in crevices of trees both live and dead (USFWS 2023e). Foraging occurs on forested hillsides and ridges, occasionally over forest clearings, over water, and along tree-lined corridors. Mature forests may be an important habitat type for foraging. The VDWR NLEB mapping application shows that there are no known NLEB winter hibernacula or roost trees in the vicinity of the Project study area (VDWR 2023a). The nearest winter hibernacula and roosting habitat is located approximately 43.7 miles southeast of the Project study area and 40.1 miles southeast of Project study area B (VDWR 2023a). However, forested areas within the Project study area, especially along riparian corridors, provide potential suitable roosting and foraging habitat for the NLEB. Suitable trees were identified within forested areas in the Project study area during the field survey.

Potential Impacts

Given the suitable habitat on site, consultation with USFWS and VDWR will be initiated, and additional bat presence/absence surveys will be conducted (i.e., acoustic or mist netting) prior to tree clearing for construction activities if deemed necessary by agencies.

2.2.4 Rafinesque's Eastern Big-eared Bat

Existing Conditions

The VDWR VaFWIS indicated that there are confirmed occurrences of the Rafinesque's eastern big-eared bat, which is a state endangered species, within the Project study area and a ±2-mile radius from the Project study area boundary (VDWR 2023c). The Rafinesque's eastern big-eared bat is known to roost in hollow trees and old buildings in the southeastern United States along the coast and in caves and mines within the Appalachian Mountains (VDWR 2022a) Additionally, the VDCR NHDE identified this species as possibly occurring within the following Project study area watersheds:

Blackwater River – Terrapin Swamp (12-digit Hydrologic Unit Code [HUC] 030102020301), and Rattlesnake Swamp (HUC 030102020303) (VDCR 2023b).

Potential Impacts

Given the suitable habitat on site, consultation with VDWR and VDCR will be initiated, and additional bat presence/absence surveys will be conducted (i.e., acoustic or mist netting) prior to tree clearing for construction activities if deemed necessary by agencies.

2.2.5 Tri-colored Bat

Existing Conditions

The VDWR VaFWIS indicated that there are confirmed occurrences of the state endangered tri-colored bat within the Project study area and a ±2-mile radius from the Project study area boundary (VDWR 2023b). It should be noted that the tri-colored bat was proposed on September 14, 2022 by the USFWS to be federally reclassified as endangered however, the rule has yet to be finalized at the completion of this report (87 FR 56381)(USFWS 2023f). The tri-colored bat is known to inhabit caves but is also known to inhabit hollow trees during the summer (VDWR 2022b). VDWR mapping shows that the nearest winter hibernacula and roosting habitat are located approximately 133.1 miles northwest of the western Project study area and 136.4 miles northwest of eastern Project study area. The wooded areas located within the Project study area, however, could provide suitable foraging and roosting habitat for the tri-colored bat between summer and fall.

Potential Impacts

Given the suitable habitat on site, consultation with VDWR and VDCR will be initiated, and additional bat presence/absence surveys will be conducted (i.e., acoustic or mist netting) prior to tree clearing for construction activities if deemed necessary by agencies.

2.2.6 Yellow Lance

Existing Conditions

The VDWR VaFWIS indicated confirmed occurrences of the yellow lance, which is a state threatened species, within the Project study area and a ±2-mile radius from the Project study area boundary (VDWR 2023c). The yellow lance is known to inhabit clean, coarse to medium-sized sandy substrate but can occasionally be located within gravel substrate; can be found in waters from main channels down to small streams (North Carolina Wildlife Resources Commission 2022). Based on a review of NHD and NWI data, depicted in Figure 3, Terrapin Swamp, Blackwater River, Mill Swamp, Stallings Creek, Pouches Swamp, and several unnamed tributaries were identified within the Project study area, which could be potential habitat for yellow lance.

Potential Impacts

Given the suitable habitat on site, consultation with VDWR and VDCR will be initiated, and additional species presence/absence surveys will be conducted prior to construction activities if deemed necessary by agencies.

2.2.7 Candidate Listed Species

Existing Conditions

The IPaC system identified the monarch butterfly (*Danaus plexippus*), a candidate species at the federal level, as having the potential to occur within the Project study area. Monarch butterflies migrate to temperate climates in eastern and western North America during the fall and breed at overwintering sites in February to March. Additionally, VaFWIS identified the Spotted Turtle (*Clemmys guttata*), a federal candidate species, as having the potential to occur within the Project study area. Spotted Turtles are found in shallow aquatic areas with vegetation (USFWS 2023d). Suitable habitat was observed on site, and a spotted turtle was observed in the Project study area- photos of which are included in the photolog (Attachment C).

Potential Impacts

At time of this analysis, both species above are listed as candidate species. As candidate species are not subject to review under the Endangered Species Act, presence of these species is not anticipated to be a constraint to the Project. Impacts to potential habitat, such as streams and riparian corridors, will be avoided to the greatest practicable extent. Should the two species be listed as state or federally threatened or endangered in the future, further measures to avoid or mitigate potential impacts to the two species will be enacted.

No federally listed critical habitat was documented on the USFWS Critical Habitat for Threatened and Endangered Species Mapper as occurring within the proposed Project study area or the vicinity. The western Project study area is approximately 44.5 miles southeast of the closest mapped critical habitat. The eastern Project study area is approximately 50.4 miles southeast of the closest mapped critical habitat.

2.3 Cultural and Aesthetic Resources

2.3.1 Cultural and Historic Resources

Existing Conditions

Dutton + Associates, LLC (Dutton) prepared a Phase IA Cultural Resource Assessment report dated March 2023 and a Phase I Cultural Resources Survey dated September 2019 for and area which includes the Project study area and Fenceline Area in which Dutton utilized desktop resources and limited field reconnaissance to identify potential resources and areas of historic and cultural potential within the Project study area and the adjacent properties. One previously identified archaeological site is present on a southwestern parcel within the Project study area, and seven dilapidated buildings and complexes remain extant in the Project study area but have not been assessed for eligibility for listing on the National Register of Historic Places (NRHP) or on the Virginia Landmark Register. Based on the information from the desktop assessment and field reconnaissance conducted by Dutton, areas of historic resource potential were identified within the Project study area. Approximately 123 acres were determined to be areas with high potential for historic resources; an additional 272 acres were identified as areas with moderate potential.

Additional information on cultural resources is included in the Desktop Cultural Resources Report.

Potential Impacts

Based on the preliminary review of cultural resources, coordination with VDHR will be conducted prior to Project construction activities (e.g. ground clearing or leveling) to determine the significance of dilapidated buildings and sensitive archaeological areas within the Project study area. Implementation of the Project would not have an adverse impact on any archaeological or architectural resources that are eligible or potentially eligible for listing on the NRHP; and no further work is expected to be necessary within the Project area. Many of the extant buildings and building complexes are excluded from the Project area with carve-out parcels, and the previously identified archaeological site will be avoided in Project design and construction. Consultation with the VDHR will be conducted to confirm that no additional archaeological or historic investigation are required for the Project.

2.3.2 Aesthetic Resources

Existing Conditions

The landscape surrounding the Project site is characterized by broad plains of terraces, sandy ridges, and broad but shallow valleys. The elevation within the Project site averages around 80 feet, and local relief is less than 30 feet. Mixed forest vegetation covers most undeveloped or non-agricultural areas, often limiting views to the immediate foreground (i.e., within half a mile of the viewer). Land use is primarily small agricultural fields and rural residences interspersed with large, forested areas. Views surrounding the Project area are dominated by cultivated open agricultural fields, dense woodlands, and scattered residences and agricultural buildings.

Additional detail is provided in the Conditional Use Permit application as Attachment J.

Potential Impacts

The Project would introduce low vertical, geometric elements that are gray in color (e.g., solar panels, fencing) into a rolling terrain landscape dominated by green vegetation and large patches of dense trees. Visual impacts would vary depending on several factors, such as the distance of the viewer from the Project and whether views toward the Project are unobstructed or screened by vegetation, terrain, or development. The views can be vastly different from one location to another, even in proximity, because of the rolling terrain and dense vegetation. Viewers in proximity to the Project may have unobstructed or partially screened views (primarily along Sycamore Cross Drive, Mill Swamp Road, and Beechland Road). The solar arrays and fencing would be installed in both existing cultivated and open fields, as well as within areas currently covered by pine timber lands which would be cleared for the Project. Therefore, tree removal would be a noticeable effect of the Project, in addition to direct views of Project components. Large-scale silviculture harvest is assumed to be a frequent occurrence in the area, and viewers are assumed to be familiar with the changes to views resulting from a timber stand being cleared.

No visual impacts would occur to identified designated scenic resources, and although the Sycamore Cross Solar facility would introduce new views of solar infrastructure from public roadways and a small number of private residents immediately adjacent to the Project site, visual effects are not expected to occur from viewpoints away from the immediate Project area. Additionally, the Project

will install landscape buffers consisting of trees and shrubs along rights of way and abutting residential parcels, per the Isle of Wight zoning code Section B. Article V. § 5-5003 Part 4e.

3.0 CONCLUSIONS

This Environmental Resource Impact Assessment identified the following environmental resources and associated potential impacts:

- 2,281 linear feet of streams, 36 acres of wetlands, and 0.39 acres of open water features may be impacted by the are located within the Fenceline Area, however, no impacts to wetlands, streams or waterbodies are anticipated with the current Project design. These features will be included in the Project site plan and will be avoided to the greatest extent practicable. Any unavoidable impacts will be permitted through the proper regulators prior to construction.
- The western portion of the Project study area, along Blackwater River, is located within a FEMA flood zone with a one percent chance annual flood hazard. No impacts to floodplains are anticipated based on current Project design.
- Based on the current design of the Project and the Fenceline Area, approximately 32 acres of outstanding priority forestland will be impacted, approximately 63 acres of very high priority, and approximately 139 acres of high priority forestland may be impacted.
- Based on the current design of the Project and the Fenceline Area, approximately 94 acres of ecological cores classified as very high value will be impacted, and approximately 32 acres of high value ecological cores will be impacted. Wildlife corridors will be implemented in Project design to mitigate potential habitat fragmentation.
- Based on the current design of the Project and the Fenceline Area, approximately 614 acres (26%) of prime farmland, 236 acres (10%) of prime farmland if drained, and 35 acres (1.5%) of farmland of statewide importance may be temporarily impacted. However, following decommissioning of the Project, the land may be returned to agricultural use with improved soil quality due to the resting of these soils over the life of the Project.
- Bald eagles were identified as potentially present within the Project study area and were observed during site visits; however, no recorded nests were identified within the Project study area or direct vicinity. Additional nest surveys will be conducted if construction is anticipated to occur within the breeding season, and appropriate buffers will be implemented as necessary.
- No suitable habitat is present within the Project study area for the red cockaded woodpecker, and no impacts to this species are anticipated.
- Suitable habitat is present within the Project study area for three listed bat species- NLEB, Rufinesque's bat, and tricolor bat. Agency coordination will be conducted; additional species presence surveys, such as acoustic surveys or mist-net surveys, will be conducted if deemed necessary prior to any tree-clearing activities.
- The yellow lance mussel is potentially present within the Project study area and direct vicinity in stream channels. Avoidance of streams will be implemented to the greatest extent

practicable; if any impacts to streams are unavoidable, agency coordination will be initiated and additional species presence surveys will be conducted prior to construction activities.

- Approximately 23.7 percent of the Project study area contains moderate to highly erodible soils. The implementation of erosion and sediment control BMPs would minimize soil erosion and impacts to on-site and off-site resources.

Additionally, the Environmental Resources Impact Analysis identified NLEB as federally-listed endangered and state-listed threatened, red-cockaded woodpecker as federally-listed endangered, eastern big-eared as state-listed endangered, tri-colored bat as state-listed endangered and federally proposed endangered, and yellow lance as federally-listed threatened and state-listed threatened species that have the potential to occur within and in the vicinity of the Project study area.

Potential impacts to threatened and endangered species and their habitats will be reduced by avoiding and minimizing Project impacts, including but not limited to excavation, tree removal, and fill activities, to potential habitat areas including wetlands, forested areas, streams, and riparian corridors. The Project plans to avoid these resources to the maximum extent possible and coordinate with USFWS, VDWR, and VDCR to determine the potential for further site-specific surveys.

The Project plans to avoid and minimize impacts to aquatic features to the greatest practicable extent. Coordination and permitting with the U.S. Army Corps of Engineers, Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission will be undertaken for planned potential impacts to aquatic features. Methods including utilizing temporary matting, staging of equipment in upland areas, and using best management practices during construction will be planned to avoid and minimize potential impacts to aquatic features.

4.0 REFERENCES

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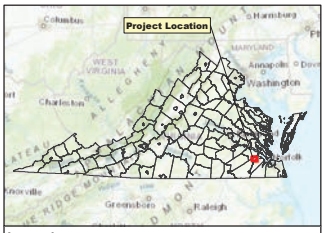
FIGURES





Legend

- Project Study Area
- Outside Project Study Area
- County Boundary

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0 0.25 0.5 1 Miles

Figure 1
Orthoimagery Project Location Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/12/2023

Source: Esri, et. al., 2022; AES, 2022; Virginia Open Data Portal, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

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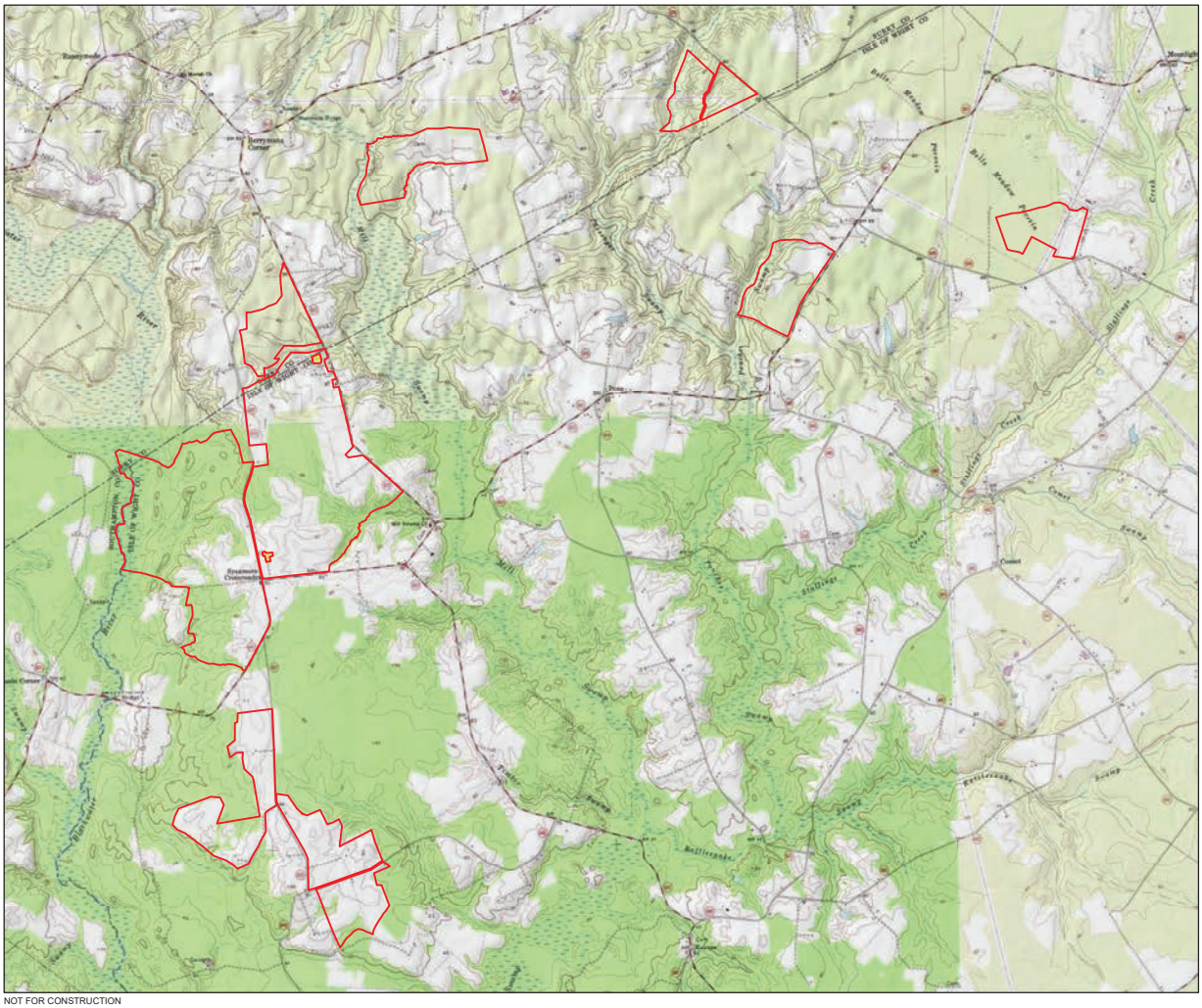

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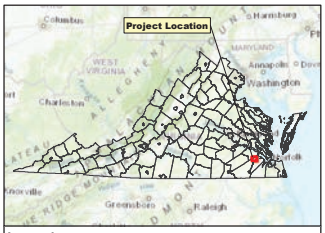

Legend

- Project Study Area
- Outside Project Study Area

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Figure 2
Topographic Project Location Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/12/2023

Source: Esri, et. al., 2022; AES, 2022; Virginia Open Data Portal, 2022; USGS Topo Quads - Dendron, Runnymede, Ivor, Raynor, 2023.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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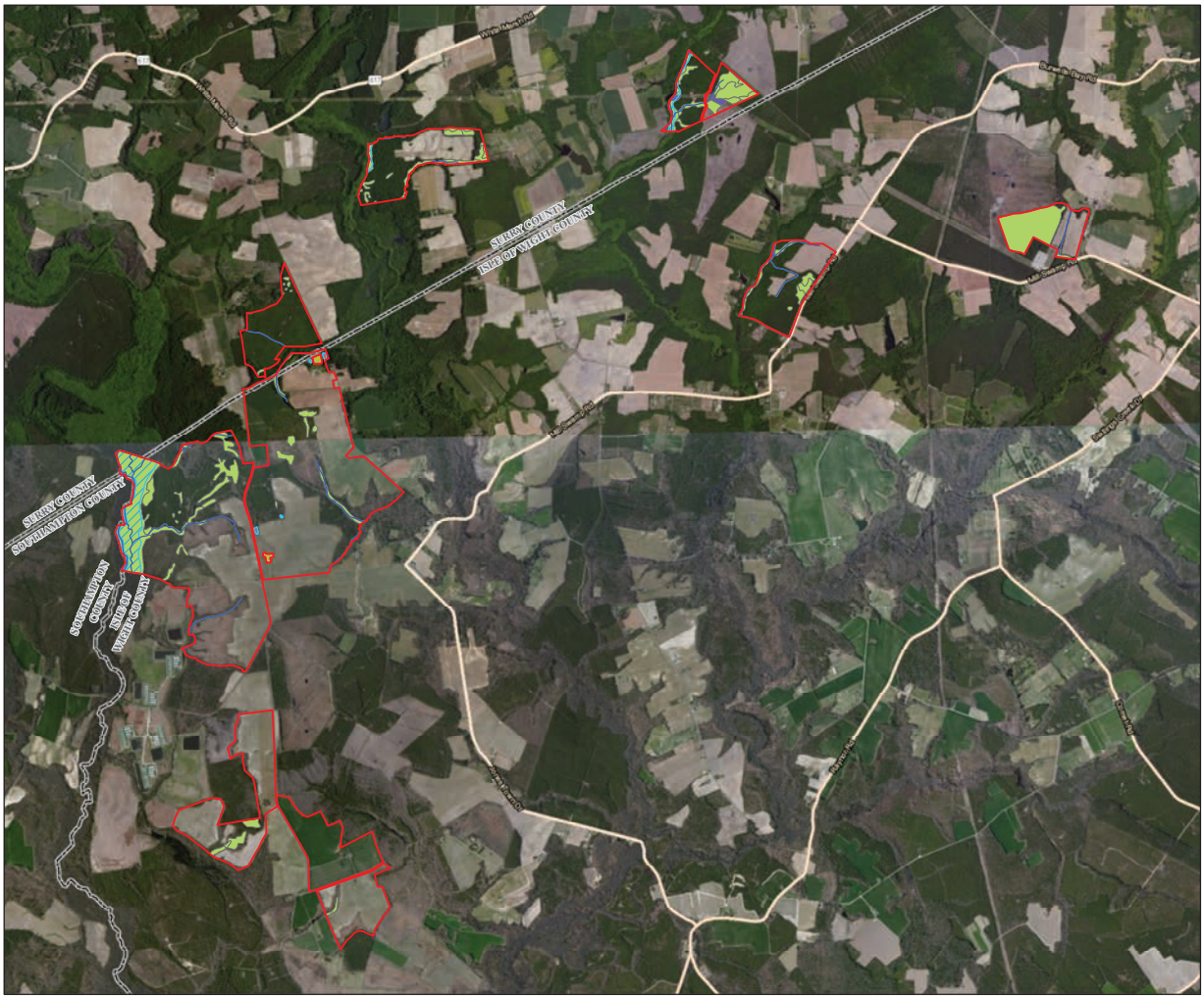

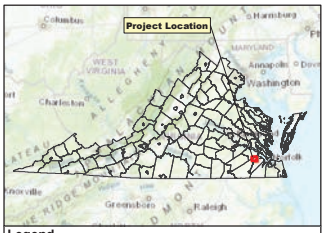

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- NHD Flowlines
- NHD Waterbodies

NWI Wetland Type

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

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Figure 3
NHD and NWI Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/12/2023

Source: Esri, et. al., 2022; AES, 2022; NHD, 2022; NWI; 2022; Virginia Open Data Portal, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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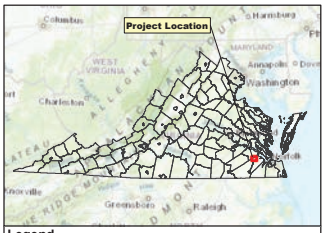

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary

Forest Conservation Value

- 1: Average
- 2: Moderate
- 3: High
- 4: Very High
- 5: Outstanding

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0 0.25 0.5 1 Miles

Figure 4
VDCR Forest Conservation Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH | Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; VDCR, 2020.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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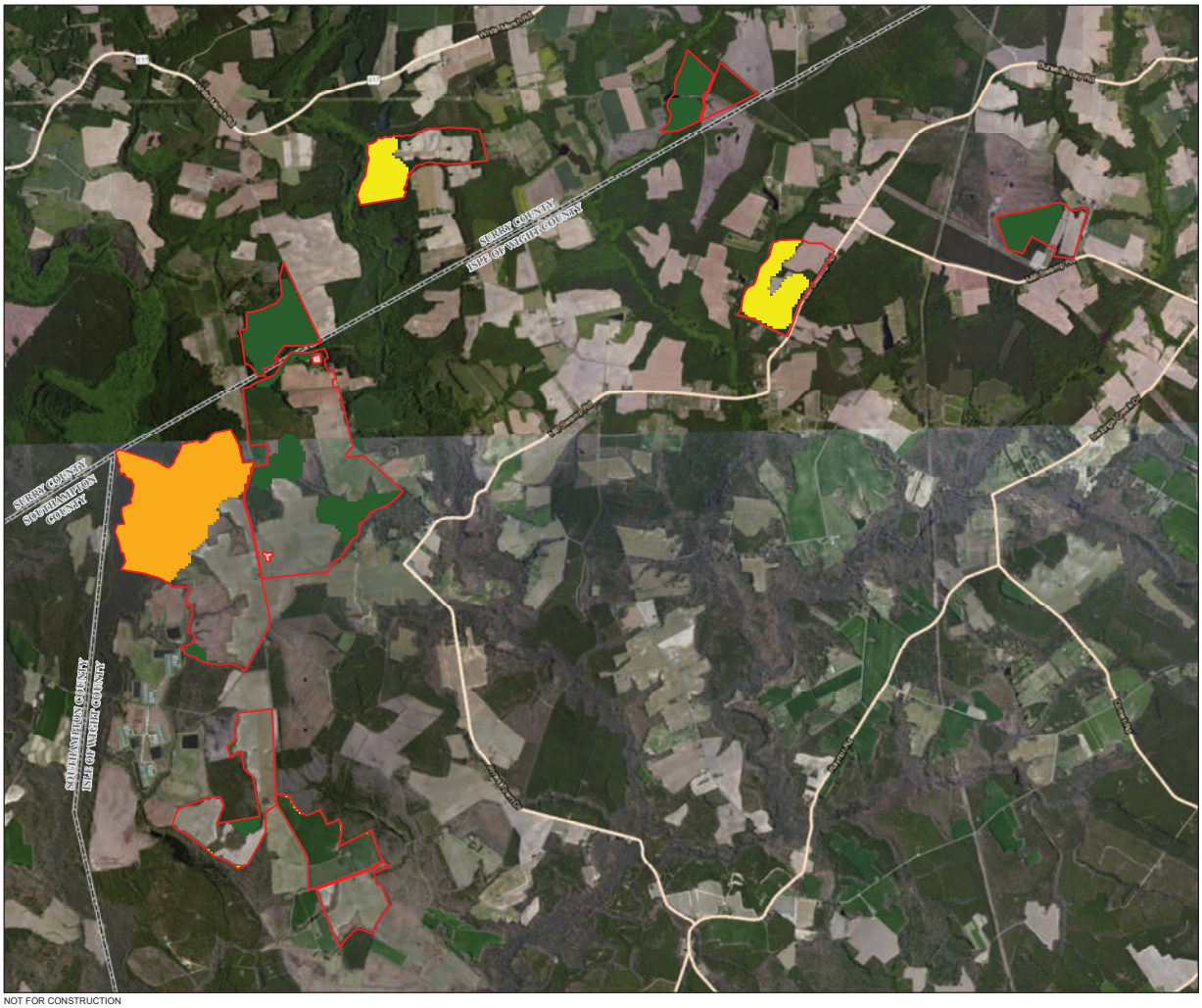

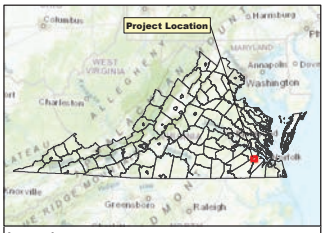

Legend

- Project Study
- Outside Project Study
- County Boundary

Core Rank

- C2: Very High
- C3: High
- C5: General

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0 0.25 0.5 1 Miles

Figure 5
VDCR Ecological Cores Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; VDCR, 2017.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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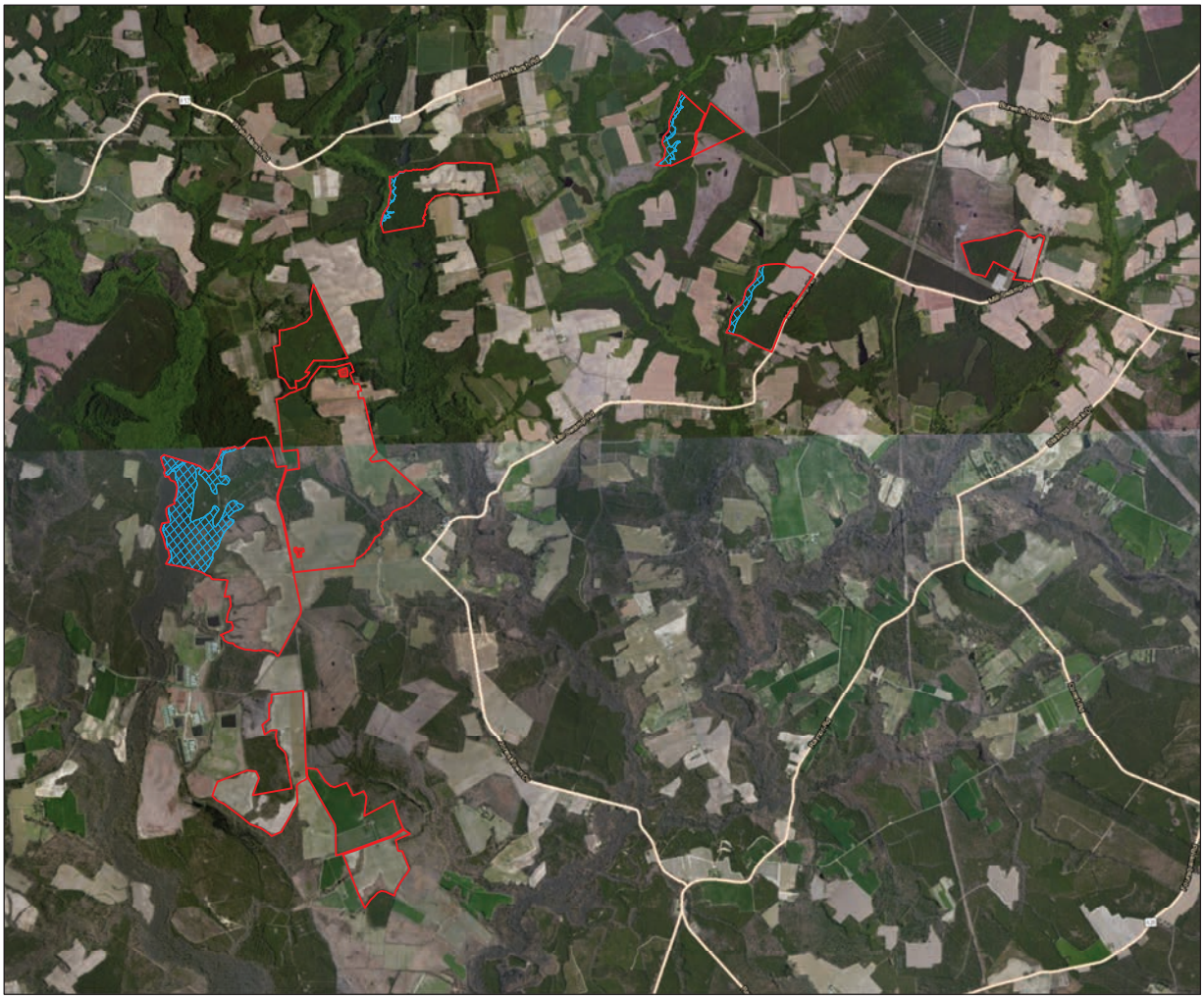

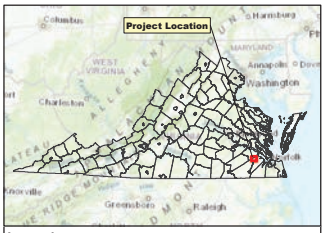

Legend

- Project Study Area
- Outside Project Study Area

FEMA Flood Risk

- 100-year Floodplain, 1% annual chance of flooding

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0 0.25 0.5 1 Miles

Figure 6
FEMA Flood Hazard Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/14/2023

Source: Esri, et. al., 2022; AES, 2022; FEMA, 2022; FEMA FIRM number (FEMA FIRM Number 51093C0125E, effective December 2, 2015; 51093C0050E, effective December 1, 2015; and 51181C0225E, effective April 5, 2022); Virginia Open Data Portal, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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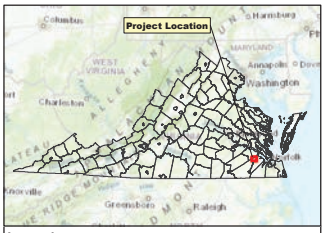

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Steep Slope (>25%)

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0 0.25 0.5 1 Miles

Figure 7
Steep Slopes Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Virginia Open Data Portal, 2022, USGS, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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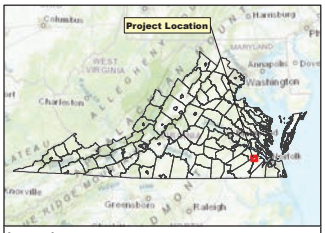

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Detail Map Page

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Figure 8

Delineated Aquatic Resources Features Map Overview Map

Sycamore Cross Solar Project

Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia Open Data Portal, 2022; Virginia GIS Clearinghouse, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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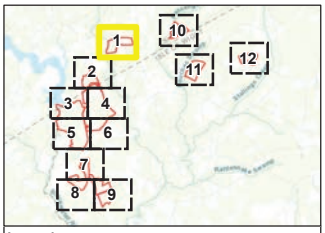

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N W E S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 1 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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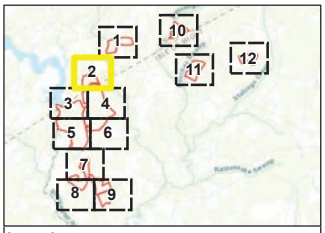

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N W E S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 2 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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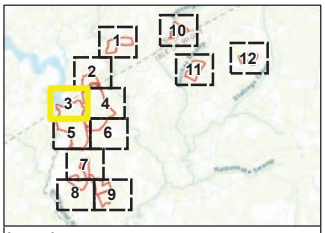

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

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Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 3 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

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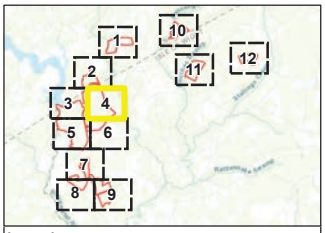

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

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0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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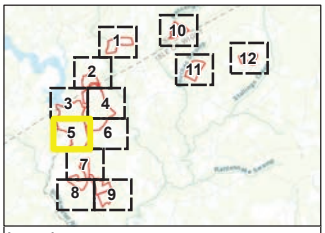

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N W E S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 5 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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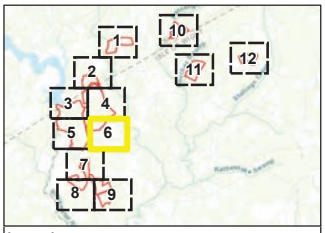

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N W E S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 6 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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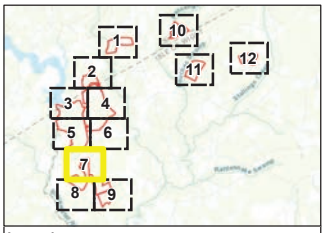

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

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0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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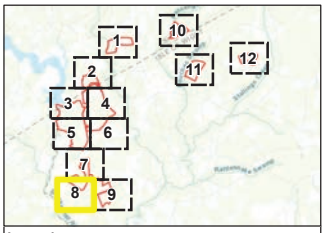

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

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Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

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Date: 4/13/2023

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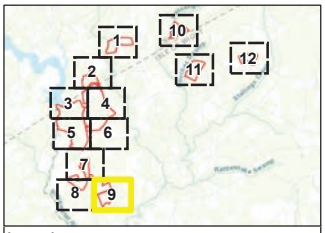

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

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0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 9 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

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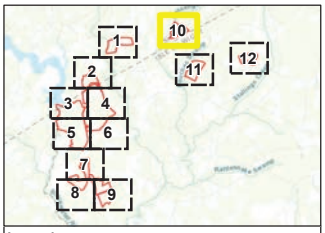

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N W E S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 10 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

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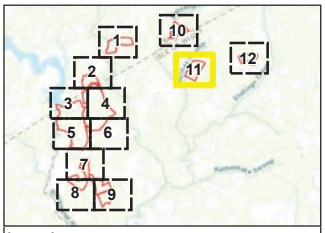

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

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Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

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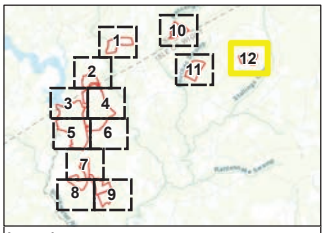

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

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Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 12 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

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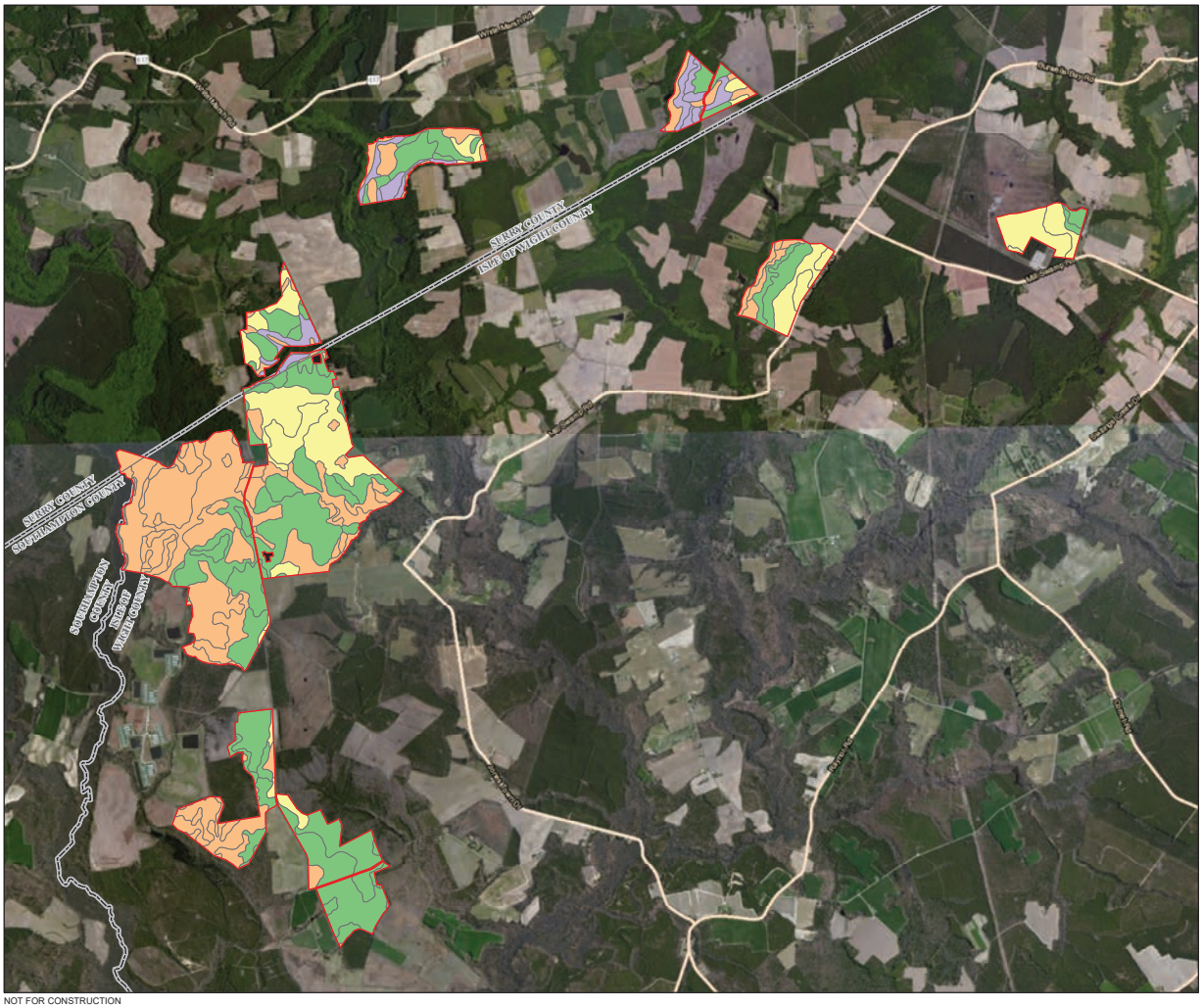

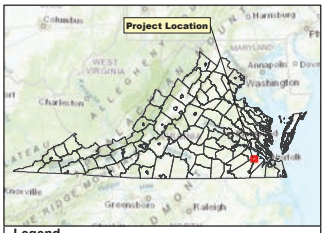

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary

Farmland Class

- All areas are prime farmland
- Farmland of statewide importance
- Not prime farmland
- Prime farmland if drained

N
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Figure 9
Prime Farmland Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; NHD, 2022; NWI; 2022; USDA, 2022; NRCS, 2022; SSURGO, 2022; Virginia Open Data Portal, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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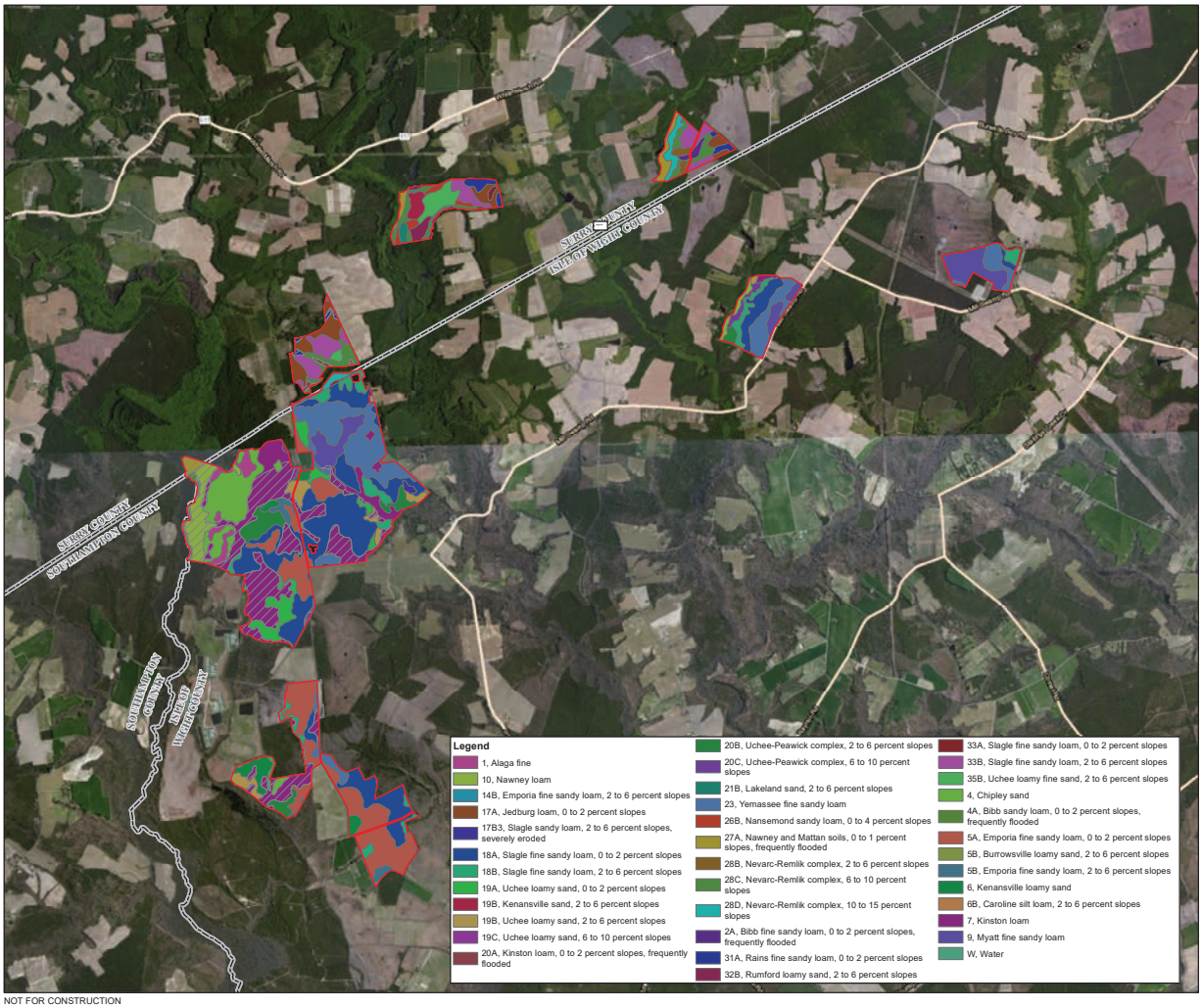

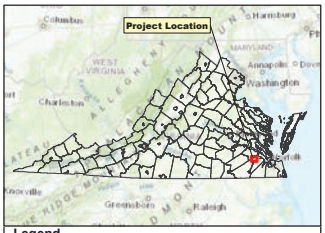

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Hydric Soil

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0 0.25 0.5 1 Miles

Figure 10
USDA-NRCS Soil Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; NHD, 2022; NWI; 2022; USDA, 2022; NRCS, 2022; SSURGO, 2022; Virginia Open Data Portal, 2022.

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APPENDIX A: USDA-NRCS SOIL REPORT

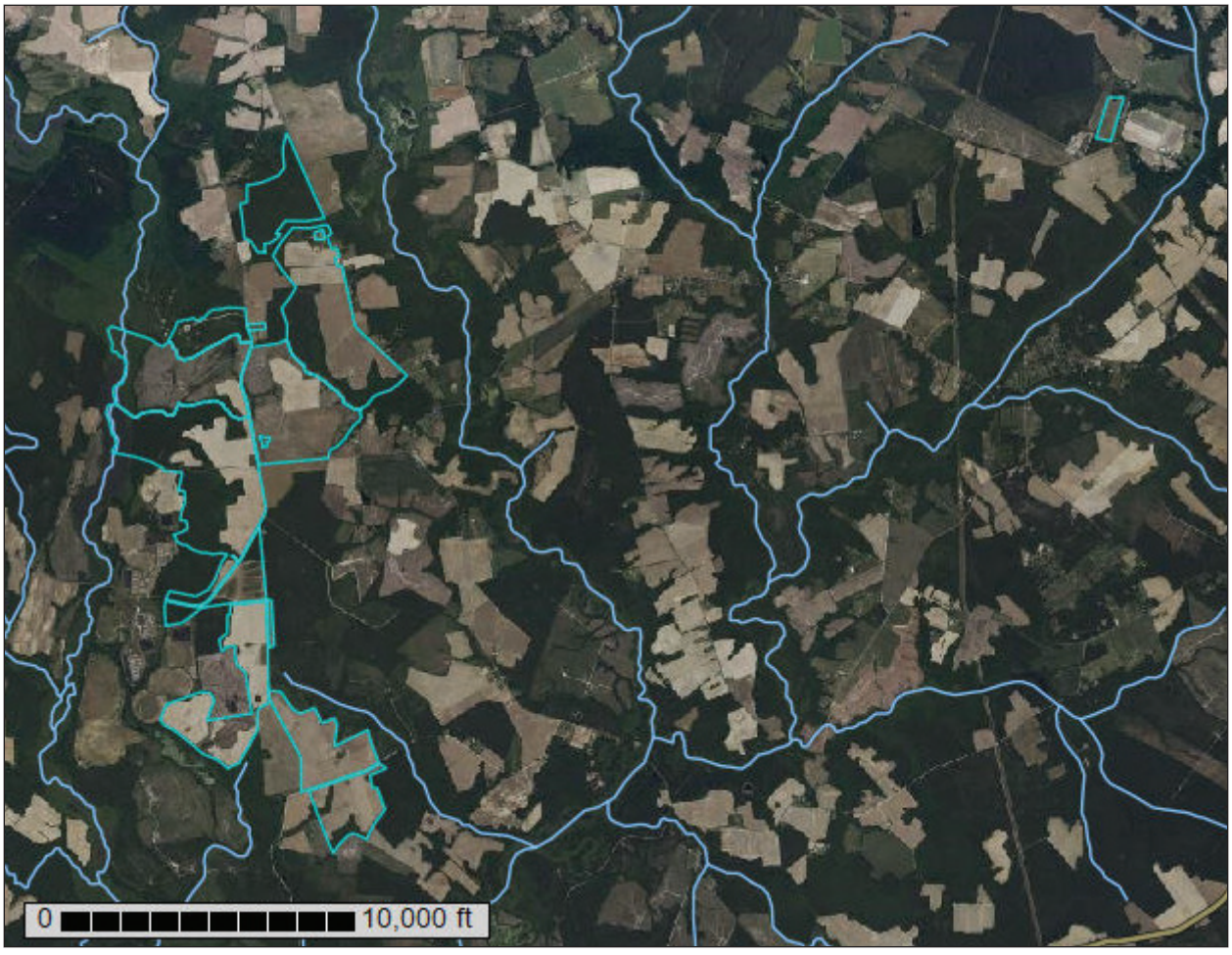
United States Department of Agriculture

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 Isle of Wight County, Virginia, Southampton County, Virginia, and Surry County, Virginia



March 31, 2023

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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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.

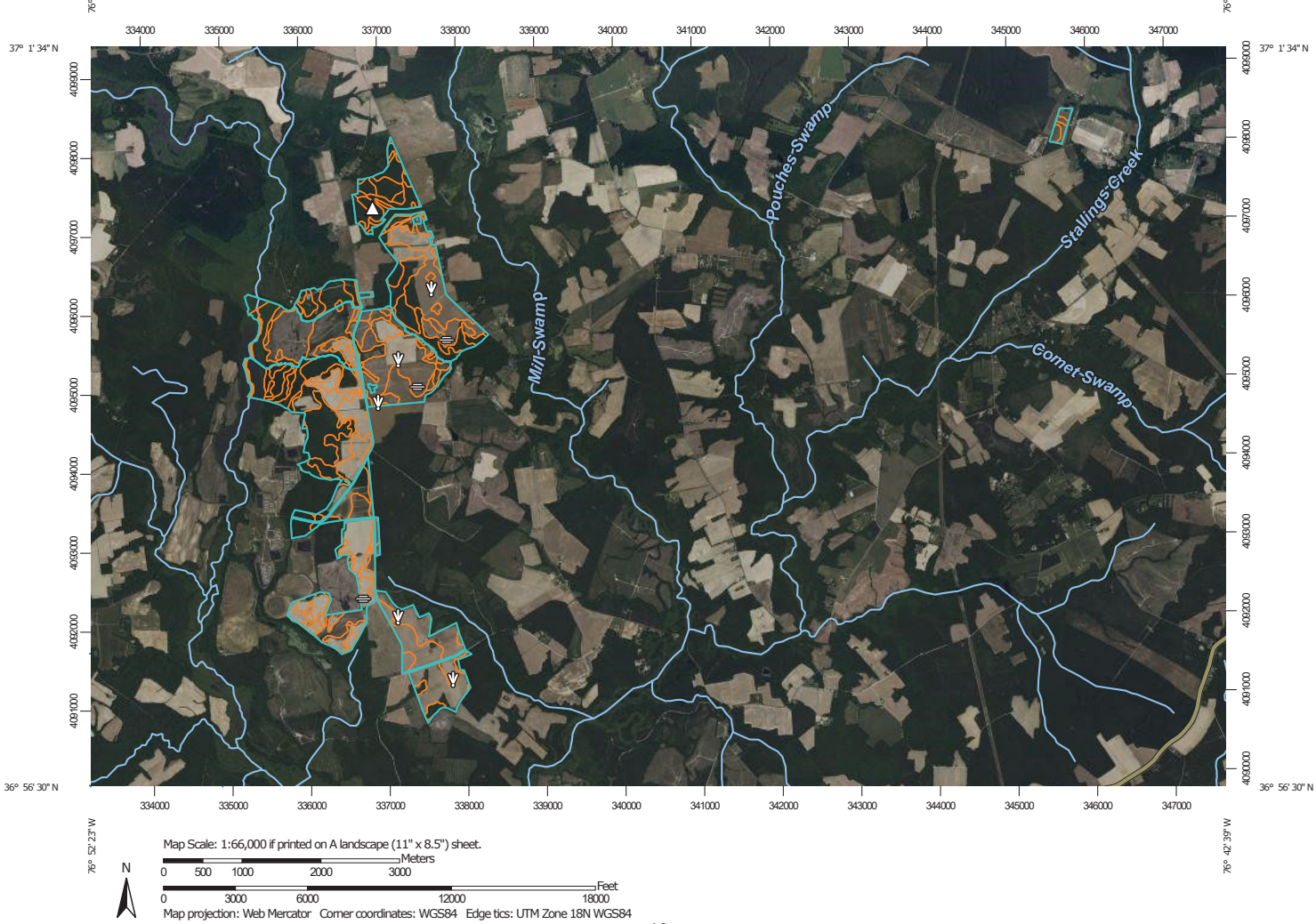
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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 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 scales ranging from 1:15,800 to 1:24,000.

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: Isle of Wight County, Virginia
Survey Area Data: Version 18, Aug 29, 2022

Soil Survey Area: Southampton County, Virginia
Survey Area Data: Version 21, Aug 22, 2022

Soil Survey Area: Surry County, Virginia
Survey Area Data: Version 19, Aug 22, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: May 18, 2022—Jul 13, 2022

MAP LEGEND

MAP INFORMATION

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
1	Alaga fine sand	29.3	1.6%
4	Chipley sand	116.0	6.2%
5A	Emporia fine sandy loam, 0 to 2 percent slopes	274.8	14.6%
5B	Emporia fine sandy loam, 2 to 6 percent slopes	21.0	1.1%
6	Kenansville loamy sand	41.6	2.2%
7	Kinston loam	367.5	19.5%
9	Myatt fine sandy loam	38.4	2.0%
10	Nawney loam	55.9	3.0%
17B3	Slagle sandy loam, 2 to 6 percent slopes, severely eroded	3.7	0.2%
18A	Slagle fine sandy loam, 0 to 2 percent slopes	401.3	21.3%
18B	Slagle fine sandy loam, 2 to 6 percent slopes	58.5	3.1%
19A	Uchee loamy sand, 0 to 2 percent slopes	61.1	3.2%
19B	Uchee loamy sand, 2 to 6 percent slopes	40.0	2.1%
19C	Uchee loamy sand, 6 to 10 percent slopes	2.1	0.1%
20B	Uchee-Peawick complex, 2 to 6 percent slopes	57.2	3.0%
20C	Uchee-Peawick complex, 6 to 10 percent slopes	9.3	0.5%
23	Yemassee fine sandy loam	155.4	8.3%
W	Water	4.1	0.2%
Subtotals for Soil Survey Area		**1,737.1**	**92.3%**
Totals for Area of Interest		**1,881.1**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4A	Bibb sandy loam, 0 to 2 percent slopes, frequently flooded	3.9	0.2%
W	Water	3.4	0.2%
Subtotals for Soil Survey Area		**7.3**	**0.4%**
Totals for Area of Interest		**1,881.1**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5B	Burrowsville loamy sand, 2 to 6 percent slopes	0.1	0.0%
6B	Caroline silt loam, 2 to 6 percent slopes	0.0	0.0%
14B	Emporia fine sandy loam, 2 to 6 percent slopes	0.5	0.0%
17A	Jedburg loam, 0 to 2 percent slopes	40.2	2.1%
20A	Kinston loam, 0 to 2 percent slopes, frequently flooded	6.9	0.4%
21B	Lakeland sand, 2 to 6 percent slopes	1.7	0.1%
27A	Nawney and Mattan soils, 0 to 1 percent slopes, frequently flooded	9.4	0.5%
28B	Nevarc-Remlik complex, 2 to 6 percent slopes	0.2	0.0%
28C	Nevarc-Remlik complex, 6 to 10 percent slopes	23.9	1.3%
28D	Nevarc-Remlik complex, 10 to 15 percent slopes	5.7	0.3%
31A	Rains fine sandy loam, 0 to 2 percent slopes	5.3	0.3%
33A	Slagle fine sandy loam, 0 to 2 percent slopes	1.1	0.1%
33B	Slagle fine sandy loam, 2 to 6 percent slopes	37.3	2.0%
35B	Uchee loamy fine sand, 2 to 6 percent slopes	4.2	0.2%
Subtotals for Soil Survey Area		**136.5**	**7.3%**
Totals for Area of Interest		**1,881.1**	**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.

Isle of Wight County, Virginia

1—Alaga fine sand

Map Unit Setting

National map unit symbol: 404h
Elevation: 10 to 350 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Alaga and similar soils: 85 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alaga

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 3 inches: fine sand
H2 - 3 to 60 inches: loamy fine sand

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Leon

Percent of map unit: 5 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Nawney

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

4—Chipley sand

Map Unit Setting

National map unit symbol: 4058
Elevation: 10 to 300 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Chipley and similar soils: 85 percent
Minor components: 14 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chipley

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy marine deposits

Typical profile

H1 - 0 to 6 inches: sand
H2 - 6 to 60 inches: sand

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Kinston
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Leon
Percent of map unit: 4 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

5A—Emporia fine sandy loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 4059
Elevation: 20 to 150 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Emporia and similar soils: 85 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Emporia

Setting
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 15 inches: fine sandy loam
H2 - 15 to 33 inches: sandy clay loam
H3 - 33 to 60 inches: sandy 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 (0.20 to 1.98 in/hr)
Depth to water table: About 36 to 54 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): 1
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Nawney

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

5B—Emporia fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 405b
Elevation: 20 to 150 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Emporia and similar soils: 85 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Emporia

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 15 inches: fine sandy loam
H2 - 15 to 33 inches: sandy clay loam
H3 - 33 to 60 inches: sandy loam

Properties and qualities

Slope: 2 to 6 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 (0.20 to 1.98 in/hr)
Depth to water table: About 36 to 54 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
Hydric soil rating: No

Minor Components

Nawney

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

6—Kenansville loamy sand

Map Unit Setting

National map unit symbol: 405c
Elevation: 0 to 300 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days

Farmland classification: Not prime farmland

Map Unit Composition

Kenansville and similar soils: 80 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kenansville

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 28 inches: loamy sand
H2 - 28 to 41 inches: sandy loam
H3 - 41 to 60 inches: sand

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 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: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 8 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

7—Kinston loam

Map Unit Setting

National map unit symbol: 405d
Elevation: 50 to 300 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Kinston

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 4 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 12 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

9—Myatt fine sandy loam

Map Unit Setting

National map unit symbol: 405g
Elevation: 0 to 100 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Myatt and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Myatt

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 15 inches: fine sandy loam
H2 - 15 to 51 inches: sandy clay loam
H3 - 51 to 60 inches: sandy clay 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 (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

10—Nawney loam

Map Unit Setting

National map unit symbol: 404j
Elevation: 0 to 80 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Nawney and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nawney

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 44 inches: loam
H3 - 44 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very 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 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

17B3—Slagle sandy loam, 2 to 6 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 404t
Elevation: 50 to 350 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Slagle and similar soils: 85 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Slagle

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 4 inches: sandy loam
H2 - 4 to 25 inches: sandy clay loam
H3 - 25 to 60 inches: sandy clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 7 percent
Landform: Flood plains

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

18A—Slagle fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 404v
Elevation: 50 to 350 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Slagle and similar soils: 85 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Slagle

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 13 inches: fine sandy loam
H2 - 13 to 25 inches: sandy clay loam
H3 - 25 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 7 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

18B—Slagle fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2sgy1
Elevation: 70 to 330 feet
Mean annual precipitation: 32 to 51 inches
Mean annual air temperature: 47 to 70 degrees F
Frost-free period: 158 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Slagle and similar soils: 83 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Slagle

Setting

Landform: Marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Riser, tread, rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bt - 8 to 51 inches: sandy clay loam
C - 51 to 70 inches: sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Myatt

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

19A—Uchee loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 404y
Elevation: 50 to 700 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Uchee and similar soils: 85 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Uchee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 28 inches: loamy sand
H2 - 28 to 52 inches: sandy clay loam
H3 - 52 to 60 inches: sandy 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 (0.20 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 7 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

19B—Uchee loamy sand, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 404z
Elevation: 50 to 700 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Uchee and similar soils: 85 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Uchee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 28 inches: loamy sand
H2 - 28 to 52 inches: sandy clay loam
H3 - 52 to 60 inches: sandy loam

Properties and qualities

Slope: 2 to 6 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 (0.20 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Nawney

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Kinston

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

19C—Uchee loamy sand, 6 to 10 percent slopes

Map Unit Setting

National map unit symbol: 4050
Elevation: 50 to 700 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Uchee and similar soils: 85 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Uchee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 28 inches: loamy sand
H2 - 28 to 52 inches: sandy clay loam
H3 - 52 to 60 inches: sandy loam

Properties and qualities

Slope: 6 to 10 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 (0.20 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

20B—Uchee-Peawick complex, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 4052
Elevation: 20 to 700 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Uchee and similar soils: 45 percent
Peawick and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Uchee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 28 inches: loamy sand
H2 - 28 to 52 inches: sandy clay loam
H3 - 52 to 60 inches: sandy loam

Properties and qualities

Slope: 2 to 6 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 (0.20 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Peawick

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 70 inches: clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
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 18 to 36 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
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

20C—Uchee-Peawick complex, 6 to 10 percent slopes

Map Unit Setting

National map unit symbol: 4053
Elevation: 20 to 700 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Uchee and similar soils: 45 percent
Peawick and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Uchee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 28 inches: loamy sand
H2 - 28 to 52 inches: sandy clay loam
H3 - 52 to 60 inches: sandy loam

Properties and qualities

Slope: 6 to 10 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 (0.20 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Peawick

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 70 inches: clay loam

Properties and qualities

Slope: 6 to 10 percent
Depth to restrictive feature: More than 80 inches
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 18 to 36 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): 3e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

23—Yemassee fine sandy loam

Map Unit Setting

National map unit symbol: 4056
Elevation: 0 to 40 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Yemassee and similar soils: 85 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Yemassee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 10 inches: fine sandy loam
H2 - 10 to 52 inches: sandy clay loam
H3 - 52 to 60 inches: fine sandy 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 12 to 18 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): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Myatt

Percent of map unit: 7 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

W—Water

Map Unit Setting

National map unit symbol: 405h
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Southampton County, Virginia

4A—Bibb sandy loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: rnwb
Elevation: 0 to 110 feet
Mean annual precipitation: 42 to 54 inches
Frost-free period: 180 to 208 days
Farmland classification: Not prime farmland

Map Unit Composition

Bibb and similar soils: 95 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bibb

Setting

Landform: Flood plains, drainageways
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy and/or loamy alluvium

Typical profile

H1 - 0 to 8 inches: sandy loam
H2 - 8 to 50 inches: sandy loam
H3 - 50 to 84 inches: loamy sand

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 12 inches
Frequency of flooding: NoneFrequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Chastain, frequently flooded

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear
Across-slope shape: Linear

Hydric soil rating: Yes

Myatt

Percent of map unit: 1 percent
Landform: Depressions on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Riser, tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: Yes

W—Water

Map Unit Setting

National map unit symbol: rnxs
Mean annual precipitation: 42 to 54 inches
Frost-free period: 180 to 208 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform: Swamps, lakes, perenial streams

Surry County, Virginia

5B—Burrowsville loamy sand, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 43fs
Elevation: 60 to 100 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Burrowsville

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine sediments

Typical profile

H1 - 0 to 11 inches: loamy sand
H2 - 11 to 32 inches: fine sandy loam
H3 - 32 to 59 inches: fine sandy loam
H4 - 59 to 70 inches: sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 18 to 36 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Low
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 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

6B—Caroline silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 43ft
Elevation: 90 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Caroline

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey marine sediments

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 14 inches: silt loam
H3 - 14 to 70 inches: clay
H4 - 70 to 80 inches: clay

Properties and qualities

Slope: 2 to 6 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 low to moderately high (0.14 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

14B—Emporia fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 43gz
Elevation: 60 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Emporia

Setting

Landform: Marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine sediments

Typical profile

H1 - 0 to 6 inches: fine sandy loam
H2 - 6 to 14 inches: loamy fine sand
H3 - 14 to 18 inches: fine sandy loam
H4 - 18 to 41 inches: sandy clay loam
H5 - 41 to 54 inches: sandy clay
H6 - 54 to 72 inches: stratified sandy loam to sandy clay loam

Properties and qualities

Slope: 2 to 6 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 (0.20 to 1.98 in/hr)
Depth to water table: About 36 to 54 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

17A—Jedburg loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 43h4
Elevation: 60 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Jedburg and similar soils: 85 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Jedburg

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy marine sediments

Typical profile

H1 - 0 to 5 inches: loam
H2 - 5 to 57 inches: loam
H3 - 57 to 72 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Rains

Percent of map unit: 6 percent
Landform: Marine terraces

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

20A—Kinston loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 43h9
Elevation: 0 to 130 feet
Mean annual precipitation: 25 to 59 inches
Mean annual air temperature: 46 to 70 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Kinston and similar soils: 75 percent
Minor components: 21 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kinston

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvial sediments

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 52 inches: sandy clay loam
H3 - 52 to 74 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly 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 0 to 12 inches
Frequency of flooding: NoneFrequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Bibb

Percent of map unit: 8 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney

Percent of map unit: 3 percent
Landform: Swamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Rains

Percent of map unit: 3 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Bohicket

Percent of map unit: 2 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Levy

Percent of map unit: 2 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Lawnes

Percent of map unit: 2 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Mattan

Percent of map unit: 1 percent
Landform: Swamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

21B—Lakeland sand, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 43hd
Elevation: 10 to 70 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Lakeland

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy eolian sediments

Typical profile

H1 - 0 to 5 inches: sand
H2 - 5 to 74 inches: sand

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 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: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Hydric soil rating: No

27A—Nawney and Mattan soils, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 43hm
Elevation: 0 to 130 feet
Mean annual precipitation: 25 to 59 inches
Mean annual air temperature: 46 to 70 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Nawney and similar soils: 50 percent
Mattan and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nawney

Setting

Landform: Swamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvial sediments

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 44 inches: loam
H3 - 44 to 70 inches: loamy sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
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 6 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Description of Mattan

Setting

Landform: Swamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Organic and loamy alluvial sediments

Typical profile

Oa1 - 0 to 14 inches: muck
Oa2 - 14 to 40 inches: muck
H3 - 40 to 48 inches: loamy sand
H4 - 48 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
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 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Bibb

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Kinston

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Bohicket

Percent of map unit: 1 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear

Across-slope shape: Linear
Hydric soil rating: Yes

Lawnes

Percent of map unit: 1 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Levy

Percent of map unit: 1 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

28B—Nevarc-Remlik complex, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 43hx
Elevation: 50 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Nevarc and similar soils: 36 percent
Remlik and similar soils: 34 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nevarc

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey alluvial and marine sediments

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 50 inches: clay loam
H3 - 50 to 74 inches: fine sandy loam

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: 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 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Remlik

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy and sandy alluvial and marine sediments

Typical profile

H1 - 0 to 22 inches: loamy fine sand
H2 - 22 to 39 inches: fine sandy loam
H3 - 39 to 74 inches: sand

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 48 to 79 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

28C—Nevarc-Remlik complex, 6 to 10 percent slopes

Map Unit Setting

National map unit symbol: 43j0
Elevation: 50 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Nevarc and similar soils: 36 percent
Remlik and similar soils: 34 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nevarc

Setting

Landform: Marine terraces
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey alluvial and marine sediments

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 50 inches: clay loam
H3 - 50 to 74 inches: fine sandy loam

Properties and qualities

Slope: 6 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well 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 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Remlik

Setting

Landform: Marine terraces
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy and sandy alluvial and marine sediments

Typical profile

H1 - 0 to 22 inches: loamy fine sand
H2 - 22 to 39 inches: fine sandy loam
H3 - 39 to 74 inches: sand

Properties and qualities

Slope: 6 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 48 to 79 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Hydric soil rating: No

28D—Nevarc-Remlik complex, 10 to 15 percent slopes

Map Unit Setting

National map unit symbol: 43j1
Elevation: 10 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Nevarc and similar soils: 40 percent
Remlik and similar soils: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nevarc

Setting

Landform: Marine terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Clayey alluvial and marine sediments

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 50 inches: clay loam
H3 - 50 to 74 inches: fine sandy loam

Properties and qualities

Slope: 10 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well 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 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Remlik

Setting

Landform: Marine terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy and sandy alluvial and marine sediments

Typical profile

H1 - 0 to 22 inches: loamy fine sand
H2 - 22 to 39 inches: fine sandy loam
H3 - 39 to 74 inches: sand

Properties and qualities

Slope: 10 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 48 to 79 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Hydric soil rating: No

31A—Rains fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 43j8
Elevation: 70 to 110 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Rains

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy marine sediments

Typical profile

H1 - 0 to 12 inches: fine sandy loam
H2 - 12 to 72 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
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 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

33A—Slagle fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 43jg
Elevation: 60 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Slagle and similar soils: 80 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Slagle

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy marine sediments

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 41 inches: sandy clay loam
H3 - 41 to 70 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Rains

Percent of map unit: 2 percent
Landform: Marine terraces

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

33B—Slagle fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2sgy1
Elevation: 70 to 330 feet
Mean annual precipitation: 32 to 51 inches
Mean annual air temperature: 47 to 70 degrees F
Frost-free period: 158 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Slagle and similar soils: 83 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Slagle

Setting

Landform: Marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Riser, tread, rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bt - 8 to 51 inches: sandy clay loam
C - 51 to 70 inches: sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Myatt

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

35B—Uchee loamy fine sand, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 43jp
Elevation: 50 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Uchee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine sediments

Typical profile

H1 - 0 to 34 inches: loamy fine sand
H2 - 34 to 72 inches: sandy clay loam

Properties and qualities

Slope: 2 to 6 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 (0.20 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

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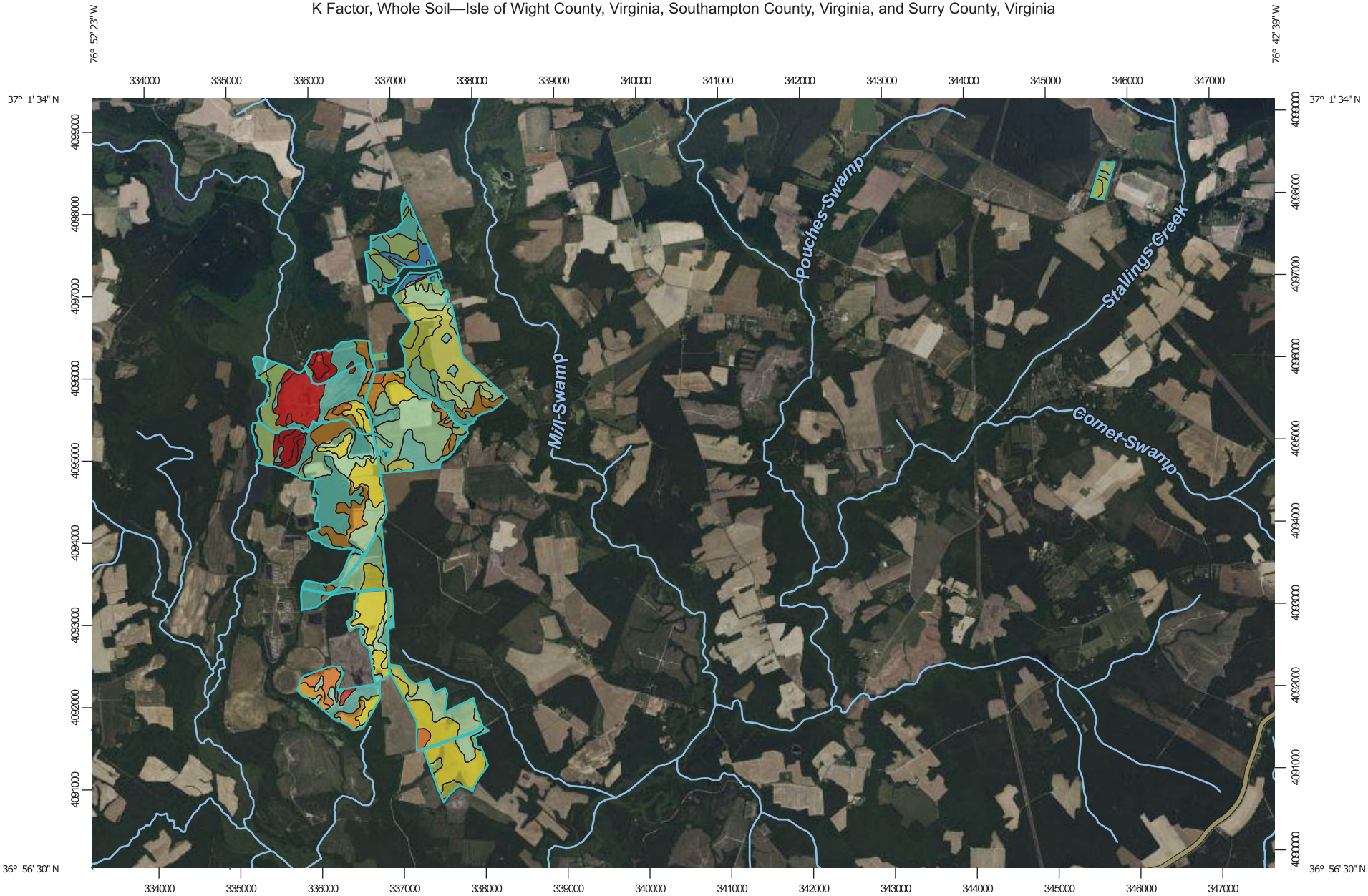


Map Scale: 1:66,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 500 1000 2000 3000

Feet
0 3000 6000 12000 18000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Lines

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Points

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

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 scales ranging from 1:15,800 to 1:24,000.

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: Isle of Wight County, Virginia
Survey Area Data: Version 18, Aug 29, 2022

Soil Survey Area: Southampton County, Virginia
Survey Area Data: Version 21, Aug 22, 2022

Soil Survey Area: Surry County, Virginia
Survey Area Data: Version 19, Aug 22, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: May 18, 2022—Jul 13, 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.

K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Alaga fine sand	.02	29.3	1.6%
4	Chipley sand	.02	116.0	6.2%
5A	Emporia fine sandy loam, 0 to 2 percent slopes	.17	274.8	14.6%
5B	Emporia fine sandy loam, 2 to 6 percent slopes	.17	21.0	1.1%
6	Kenansville loamy sand	.05	41.6	2.2%
7	Kinston loam	.32	367.5	19.5%
9	Myatt fine sandy loam	.20	38.4	2.0%
10	Nawney loam	.24	55.9	3.0%
17B3	Slagle sandy loam, 2 to 6 percent slopes, severely eroded	.24	3.7	0.2%
18A	Slagle fine sandy loam, 0 to 2 percent slopes	.28	401.3	21.3%
18B	Slagle fine sandy loam, 2 to 6 percent slopes	.24	58.5	3.1%
19A	Uchee loamy sand, 0 to 2 percent slopes	.10	61.1	3.2%
19B	Uchee loamy sand, 2 to 6 percent slopes	.10	40.0	2.1%
19C	Uchee loamy sand, 6 to 10 percent slopes	.10	2.1	0.1%
20B	Uchee-Peawick complex, 2 to 6 percent slopes	.10	57.2	3.0%
20C	Uchee-Peawick complex, 6 to 10 percent slopes	.10	9.3	0.5%
23	Yemassee fine sandy loam	.20	155.4	8.3%
W	Water		4.1	0.2%
Subtotals for Soil Survey Area			**1,737.1**	**92.3%**
Totals for Area of Interest			**1,881.1**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
4A	Bibb sandy loam, 0 to 2 percent slopes, frequently flooded	.20	3.9	0.2%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
W	Water		3.4	0.2%
Subtotals for Soil Survey Area			**7.3**	**0.4%**
Totals for Area of Interest			**1,881.1**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5B	Burrowsville loamy sand, 2 to 6 percent slopes	.10	0.1	0.0%
6B	Caroline silt loam, 2 to 6 percent slopes	.43	0.0	0.0%
14B	Emporia fine sandy loam, 2 to 6 percent slopes	.24	0.5	0.0%
17A	Jedburg loam, 0 to 2 percent slopes	.32	40.2	2.1%
20A	Kinston loam, 0 to 2 percent slopes, frequently flooded	.28	6.9	0.4%
21B	Lakeland sand, 2 to 6 percent slopes	.02	1.7	0.1%
27A	Nawney and Mattan soils, 0 to 1 percent slopes, frequently flooded	.32	9.4	0.5%
28B	Nevarc-Remlik complex, 2 to 6 percent slopes	.43	0.2	0.0%
28C	Nevarc-Remlik complex, 6 to 10 percent slopes	.43	23.9	1.3%
28D	Nevarc-Remlik complex, 10 to 15 percent slopes	.43	5.7	0.3%
31A	Rains fine sandy loam, 0 to 2 percent slopes	.17	5.3	0.3%
33A	Slagle fine sandy loam, 0 to 2 percent slopes	.24	1.1	0.1%
33B	Slagle fine sandy loam, 2 to 6 percent slopes	.24	37.3	2.0%
35B	Uchee loamy fine sand, 2 to 6 percent slopes	.15	4.2	0.2%
Subtotals for Soil Survey Area			**136.5**	**7.3%**
Totals for Area of Interest			**1,881.1**	**100.0%**

Description

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Factor K does not apply to organic horizons and is not reported for those layers.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

APPENDIX B: USFWS IPAC AND FEDERAL-LISTED SPECIES INFORMAL REVIEW

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To:
Project Code: 2023-0061833
Project Name: Sycamore Cross

March 29, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

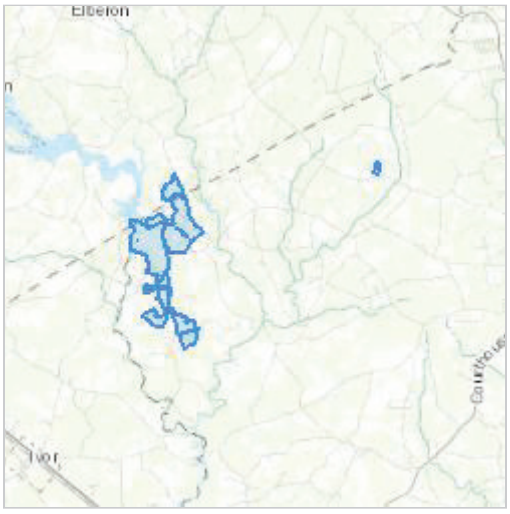
This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

PROJECT SUMMARY

Project Code: 2023-0061833
Project Name: Sycamore Cross
Project Type: Power Gen - Solar
Project Description: Sycamore Cross
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@36.985725,-76.84112557757788,14z



Counties: Isle of Wight , Southampton , and Surry counties, Virginia

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

BIRDS

NAME	STATUS
Red-cockaded Woodpecker *Picoides borealis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7614	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Brown-headed Nuthatch *Sitta pusilla* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Jul 15
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

NAME	BREEDING SEASON
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12

(0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

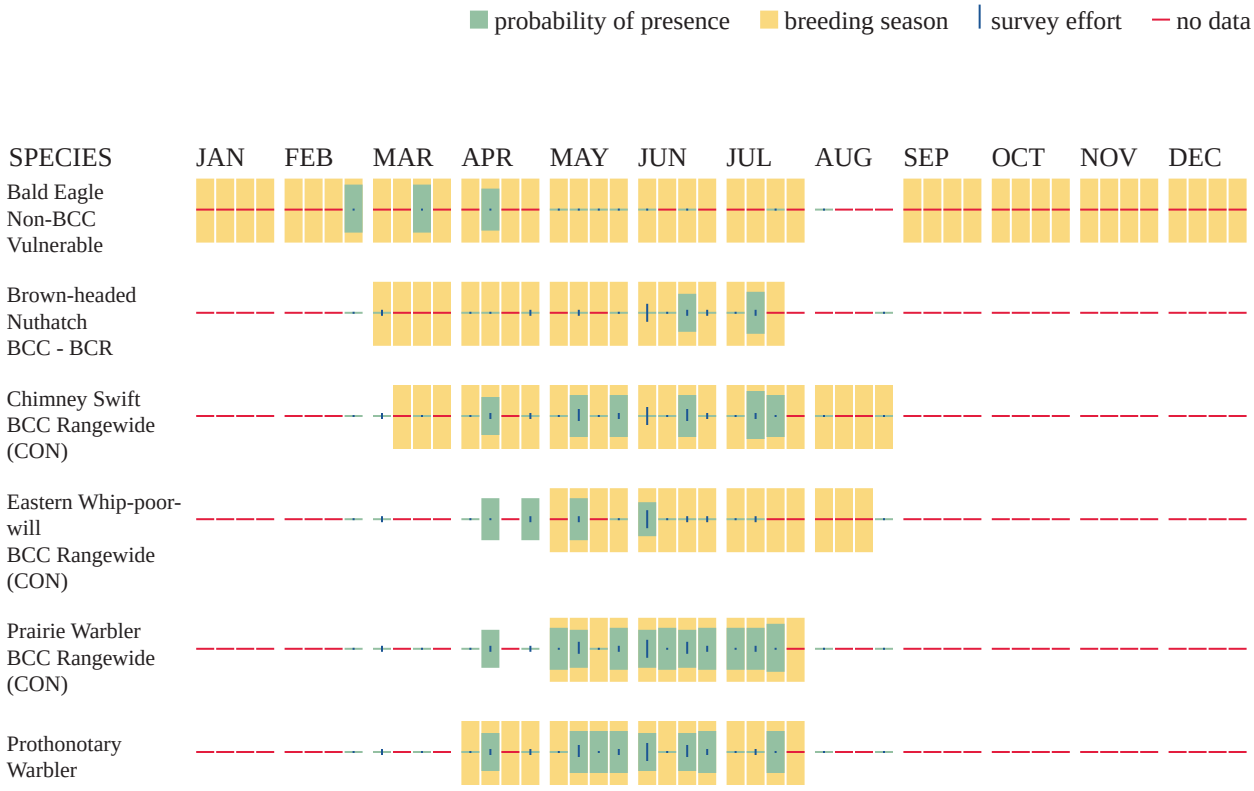
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

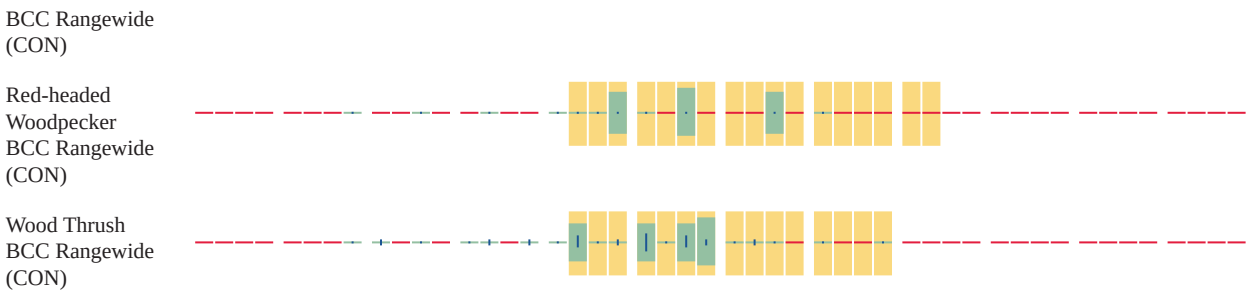
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list

of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical

Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

IPAC USER CONTACT INFORMATION

Agency:	Tetra Tech
Name:	Justin Ahn
Address:	4101 Cox Road
Address Line 2:	Suite 120
City:	Glen Allen
State:	VA
Zip:	23060
Email	justin.ahn@tetratech.com
Phone:	6105730764

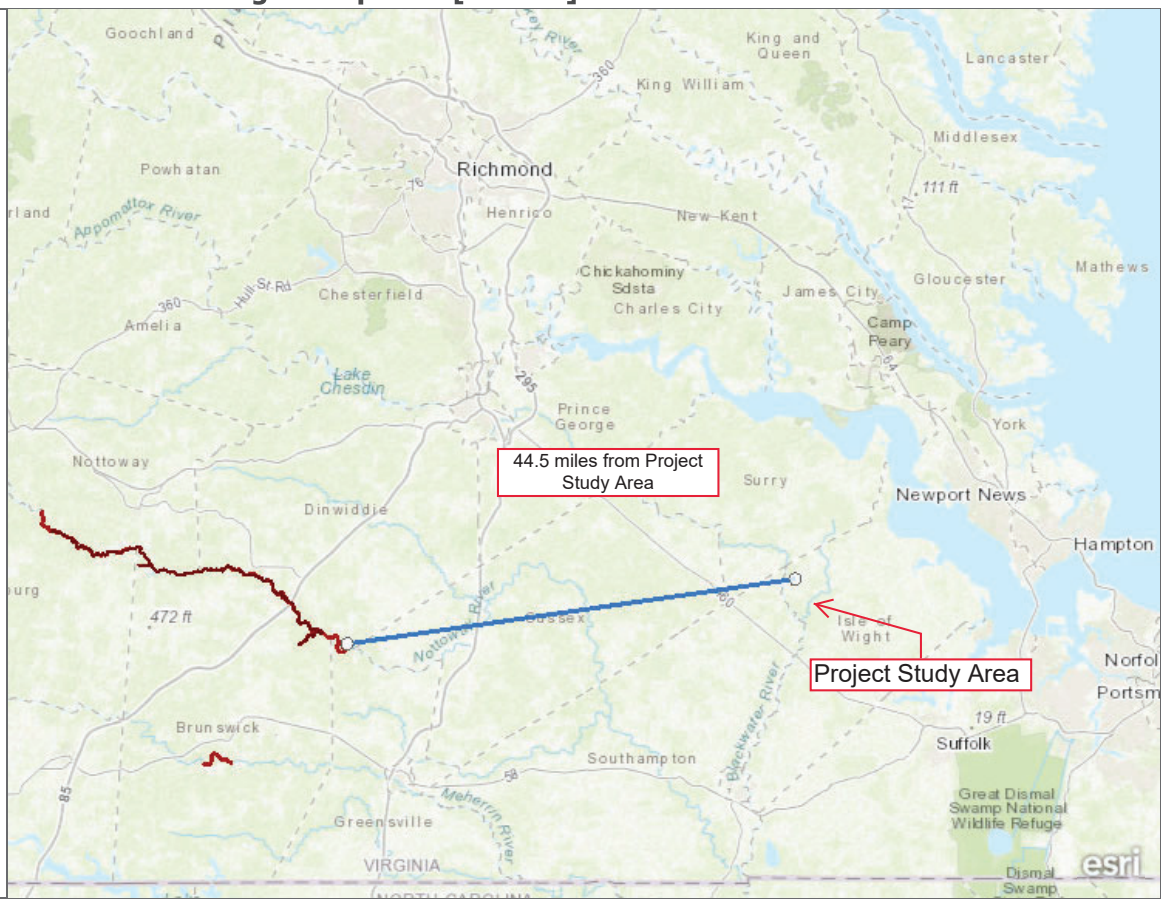
Critical Habitat for Threatened & Endangered Species [USFWS]

Final Polygon Features

Final Linear Features

Proposed Polygon Features

Proposed Linear Features



A specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

Esri, HERE, Garmin, FAO, USGS, NGA, EPA, NPS

CCB Mapping Portal



Layers: VA Eagle Nest Buffers, VA Eagle Nest Locator

Map Center [longitude, latitude]: [-76.83631896972655, 36.933702217046296]

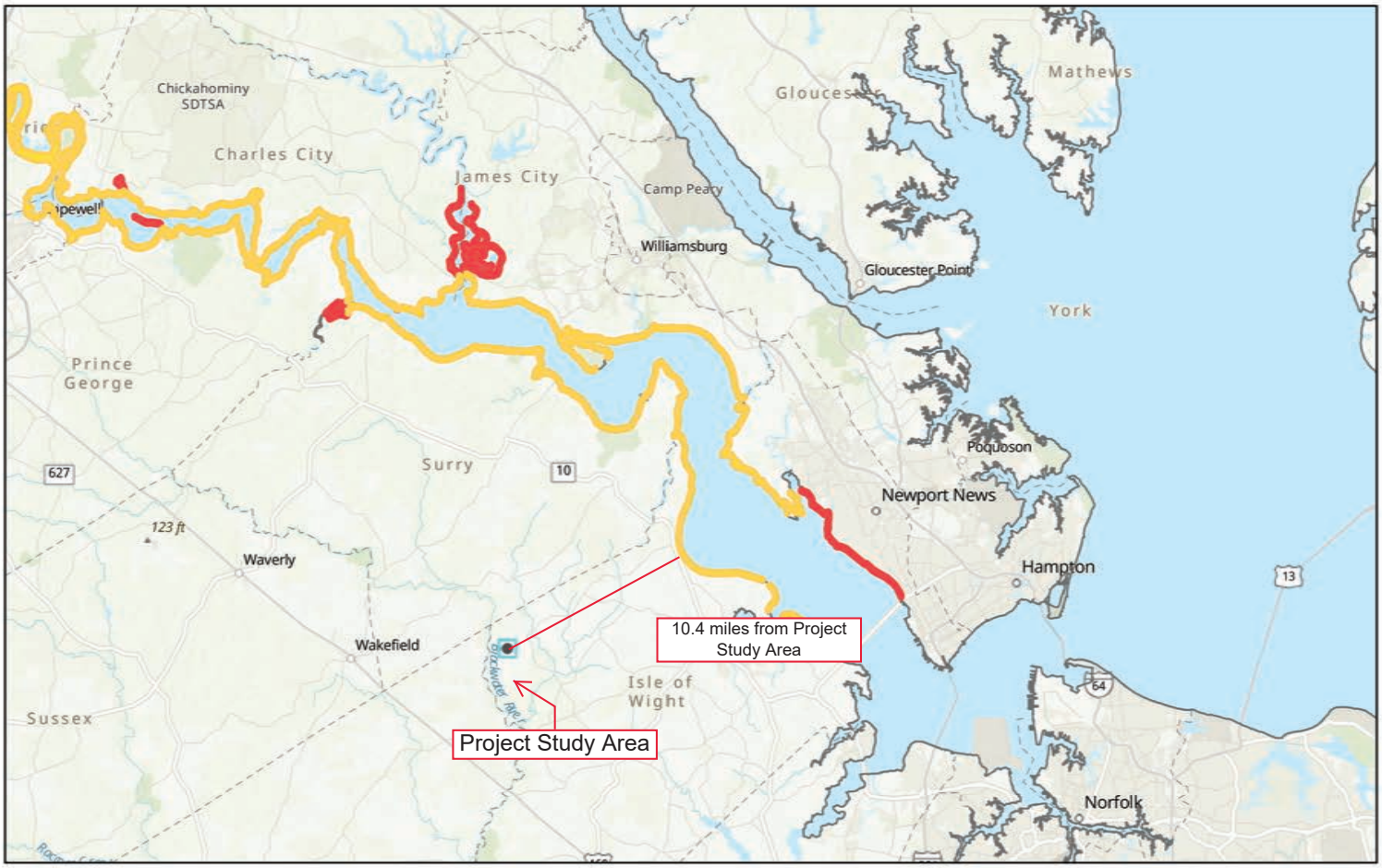
Map Link:
https://www.ccbbirds.org/maps/#layer=VA+Eagle+Nest+Buffers&layer=VA+Eagle+Nest+Locator&zoom=11&lat=36.933702217046296&lng=-76.83631896972655&legend=legend_tab_7c321b7e-e523-11e4-aaa0-0e0c41326911&base=Street+Map+%28OSM%2FCarto%29

Report Generated On: 03/27/2023

The Center for Conservation Biology (CCB) provides certain data online as a free service to the public and the regulatory sector. CCB encourages the use of its data sets in wildlife conservation and management applications. These data are protected by intellectual property laws. All users are reminded to view the Data Use Agreement to ensure compliance with our data use policies. For additional data access questions, view our Data Distribution Policy, or contact our Data Manager, Marie Pitts, at mlpitts@wm.edu or 757-221-7503.

Area A

BECA



March 27, 2023

1:577,791

0 4 8 16 mi

0 5 10 20 km

Esri, CGIAR, USGS, VGIN, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

APPENDIX C: STATE-LISTED SPECIES INFORMAL REVIEW

Site Location

37,00,52.7 -76,49,49.6
is **the Search Point**

Show Position Rings
(•) Yes ( ) No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
(•) Yes ( ) No
2 Search distance miles buffer

Display at center | **Search Point** is not at map center

Base Map Choices
Topography

Map Overlay Choices
Current List: Position, Search, BECAR, BAEANests, TEWaters, TierII, Habitat, Trout, Anadromous

Map Overlay Legend

T & E Waters
Federal
State

Predicted Habitat WAP Tier I & II
Aquatic
Terrestrial

Trout Waters
Class I - IV
Class V - VI

Anadromous Fish Reach
Confirmed
Potential

123 Impediment

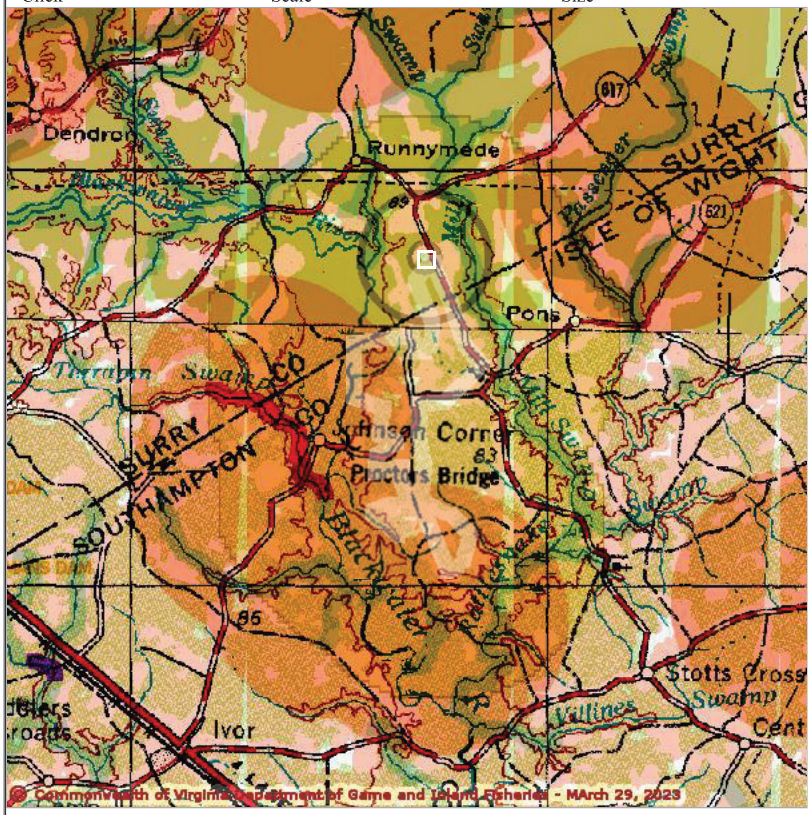
Position Rings 1 mile and 1/4 mile at the Search Point

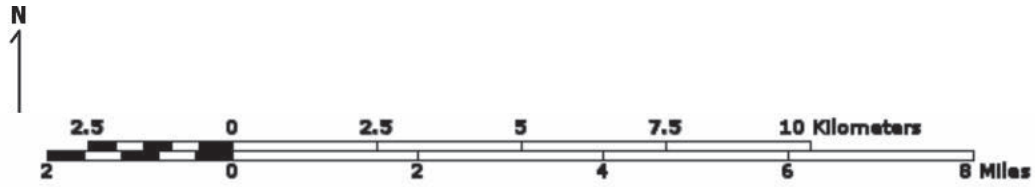
2 mile radius Search Area

Bald Eagle Concentration Areas and Roosts

Refresh Browser Page

Map Click: Pan | Id | M
Map Scale: In Zoom Out
Screen Size: Small Size Big
Help





Point of Search 37,00,52.7 -76,49,49.6
Map Location 36,58,55.9 -76,50,04.8

Select **Coordinate System:**
(•) Degrees,Minutes,Seconds Latitude - Longitude
( ) Decimal Degrees Latitude - Longitude
( ) Meters UTM NAD83 East North Zone
( ) Meters UTM NAD27 East North Zone

Base Map source: USGS 1:250,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 327114 and top 4104072. Pixel size is 23. . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 19200 meters east to west by 19200 meters north to south for a total of 368.6 square kilometers. The map display represents 63002 feet east to west by 63002 feet north to south for a total of 142.3 square miles.

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2023-03-29 10:45:27 (qa/qc March 21, 2016 12:20 - tn=1469798.0 dist=3218 I)
$poi=37.0146500 -76.8304699

| DGIF | Credits | Disclaimer | Contact vafwis_support@dgif.virginia.gov |Please view our privacy policy |
© 1998-2023 Commonwealth of Virginia Department of Game and Inland Fisheries

Commonwealth of Virginia Governor

Skip to Content Privacy Policy Contact Us

Search Va DGIF Go

Virginia Department of Game and Inland Fisheries

VaFWIS Search Report Compiled on 3/29/2023, 10:45:04 AM

Known or likely to occur within a **2 mile buffer around polygon; center 37.0146500 -76.8304699** in **093 Isle of Wight County, 175 Southampton County, 181 Surry County, VA**

View Map of Site Location

593 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 39) (39 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
040228	FESE	Ia	Woodpecker, red-cockaded	Picoides borealis		BOVA
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
010214	FESE	IIa	Logperch, Roanoke	Percina rex		BOVA
030071	FTST	Ia	Turtle, loggerhead sea	Caretta caretta		BOVA
040144	FTST	Ia	Knot, red	Calidris canutus rufa		BOVA,HU6
040110	FTSE	Ia	Rail, eastern black	Laterallus jamaicensis jamaicensis		BOVA
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
060029	FTST	IIa	Lance, yellow	Elliptio lanceolata	Yes	BOVA,TEWaters,SppObs,HU6
010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Potential	BOVA,Habitat,HU6
030064	SE	Ia	Turtle, eastern chicken	Deirochelys reticularia reticularia		BOVA
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050034	SE	Ia	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis	Yes	BOVA,SppObs,HU6
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus	Yes	BOVA,SppObs,HU6
020052	SE	IIa	Salamander, eastern tiger	Ambystoma tigrinum		BOVA
030013	SE	IIa	Rattlesnake, canebrake	Crotalus horridus	Potential	Habitat,HU6
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
040385	ST	Ia	Sparrow, Bachman's	Peucaea aestivalis		BOVA,HU6
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Potential	BOVA,Habitat,HU6
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100079	FC	IIIa	Butterfly, monarch	Danaus plexippus		BOVA
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Potential	BOVA,Habitat
030063	CC	IIIa	Turtle, spotted	Clemmys guttata	Yes	BOVA,SppObs,HU6
030031	CC	IIIc	Kingsnake, scarlet	Lampropeltis elapsoides		BOVA
010174		Ia	Bass, Roanoke	Ambloplites cavifrons		BOVA
010077		Ia	Shiner, bridle	Notropis bifrenatus		BOVA
070131		Ic	Isopod, Phreatic	Caecidotea phreatica		BOVA
020063		IIa	Toad, oak	Anaxyrus quercicus	Yes	BOVA,Habitat,SppObs,HU6
020002		IIa	Treefrog, barking	Hyla gratiosa		BOVA,HU6
040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6
040033		IIa	Egret, snowy	Egretta thula		BOVA

040029		IIa	Heron, little blue	Egretta caerulea caerulea		BOVA
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040181		IIa	Tern, common	Sterna hirundo		BOVA,HU6
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140		IIa	Woodcock, American	Scolopax minor		BOVA,HU6
060071		IIa	Lampmussel, yellow	Lampsilis cariosa		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii		BOVA,HU6

To view **All 593 species** View 593

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.; b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.; c - No on the grou

View Map of All Query Results from All Observation Tables

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Impediments to Fish Passage

N/A

Colonial Water Bird Survey (3 records)

View Map of All Query Results Colonial Water Bird Survey

Colony_Name	N Obs	Latest Date	N Species			View Map
			Different Species	Highest TE*	Highest Tier**	
Sycamore Crossroads	1	Jun 2 2003	1			Yes
Blackwater River at Surry	1	Jun 1 1993	1			Yes
Rattlesnake Swamp	1	Jun 1 1993	1			Yes

Displayed 3 Colonial Water Bird Survey

Threatened and Endangered Waters (13 Reaches)

View Map of All Threatened and Endangered Waters

Stream Name	T&E Waters Species							View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name						
Terrapin Swamp (0283664)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0285385)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0287738)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0289129)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0289623)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0290117)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0291410)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0291935)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0293016)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0294529)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0298333)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0302220)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0302289)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Species Observations (56 records - displaying first 20 , 6 Observations with Threatened or Endangered species) View Map of All Query Results Species Observations

obsID	class	Date Observed	Observer	N Species	
				Different Species	Highest TE
55516	SppObs	May 7 1998	BEATY, AND ZEYTOONIAN, VIRGINIA COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT.	3	FTST
55237	SppObs	May 7 1998	BRAVEN B. BEATY AND RICHARD J. NEVES, DEPARTMENT OF FISHERIES AND WILDLIFE AT VA TECH	3	FTST
635308	SppObs	Aug 18 2021	Shane Brodnick	1	SE
58094	SppObs	Aug 7 1997	Steven M. Roble, Ph. D. , Staff Zoologist	1	SE
53381	SppObs	Aug 8 1996	Steven M. Roble, Ph. D. , DCR	2	FPSE
9410	SppObs	Apr 5 1988	Mitchell D. Norman, VDGIF	3	CC
614290	SppObs	Jun 26 2007	John; Kleopfer| Robert ; Clontz	1	
375284	Aquatics	Oct 12 2007	B. T. Watson, M. E. Bradley	7	
426929	SppObs	May 17 2005	VCU - INSTAR	14	
62424	SppObs	Aug 11 1999	Ryan Smith, DGIF	12	
11331	SppObs	Sep 6 1985	NORMAN	19	
426934	SppObs	Sep 6 1985	VCU - INSTAR	19	
426951	SppObs	Sep 6 1984	VCU - INSTAR	10	
10425	SppObs	Sep 6 1984	Norman	10	
10433	SppObs	Aug 29 1984	Norman	23	
338036	SppObs	Jan 1 1984	MDN-B-NORMAN	23	
338051	SppObs	Jan 1 1984	MDN-B-NORMAN	10	
15411	SppObs	May 5 1962	R D ROSS	4	
332815	SppObs	Jan 1 1962	VPI-B-VA. POLY. INST.	4	
426942	SppObs	May 12 2005	VCU - INSTAR	5	

Displayed 20 Species Observations

Selected 56 Observations View all 56 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species (5 Reaches) View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

Stream Name	Tier Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Hickaneck Swamp (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes
Mill Swamp (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes
Rattlesnake Swamp (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes
Terrapin Swamp (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes
tributary (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes
tributary (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species (4 Species) View Map of Combined Terrestrial Habitat Predicted for 4 WAP Tier I & II Species Listed Below

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
030013	SE	IIa	Rattlesnake, canebrake	Crotalus horridus	Yes
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Yes
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Yes
020063		IIa	Toad, oak	Anaxyrus quercicus	Yes

Virginia Breeding Bird Atlas Blocks (2 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
55056	Dendron, SE	43		III	Yes
56056	Runnymede, SE	65		III	Yes

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
093	Isle of Wight	421	FESE	I
175	Southampton	402	FESE	I
181	Surry	445	FESE	I

USGS 7.5' Quadrangles:
Ivor
Dendron
Raynor
Runnymede

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
CU59	Blackwater River-Terrapin Swamp	99	FTSE	I
CU60	Mill Swamp-Moores Swamp	89	FTSE	I
CU61	Rattlesnake Swamp	88	FTSE	I
CU62	Blackwater River-Antioch Swamp	92	FTSE	I

Compiled on 3/29/2023, 10:45:05 AM I1469798.0 report=all searchType= P dist= 3218 poi= 37.0146500 -76.8304699 siteDD= 37.0146550 -76.8304718;37.0066990 -76.8254288;37.0001450 -76.8230508;36.9967600 -76.8213098;36.9930180 -76.8166158;36.9852540 -76.8256298;36.9847270 -76.8336928;36.9804500 -76.8326788;36.9788090 -76.8335 -76.8324618;36.9563430 -76.8367528;36.9612070 -76.8454438;36.9632160 -76.8392578;36.9610180 -76.8391648;36.9615850 -76.8345228;36.9685120 -76.8383148;36.9712350 -76.8373848;36.9696540 -76.8447548;36.9730630 -76.8446968;36.9763590 -76.8378158;36.9781580 -76.8437688;36.9839170 -76.8427458;36.9859910 -76.8507688;36.9910220 -76.8303698;37.0146550 -76.8304718;.

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| 3/29/2023, 10:45:05 AM | DGIF | Credits | Disclaimer | Please view our privacy policy |
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I 1469798

If you have difficulty reading or accessing documents, please Contact Us for assistance.

Natural Heritage Resources

Your Criteria

Taxonomic Group: Select All

Global Conservation Status Rank: Select All

State Conservation Status Rank: Select All

Federal Legal Status: Select All

State Legal Status: Select All

County: Isle of Wight,Surry

Physiographic Province: Select All

Watershed (8 digit HUC): 03010202 - Blackwater River

Subwatershed (12 digit HUC): CU59 - Blackwater River-Terrapin Swamp,CU60 - Mill Swamp-Moores Swamp,CU61 - Rattlesnake Swamp

Planning District: Select All

Virginia Coastal Zone: Select All

Search Run: 3/27/2023 15:27:24 PM

Result Summary

Total Species returned: 3

Total Communities returned: 0

Click scientific names below to go to NatureServe report.

Click column headings for an explanation of species and community ranks.

Common Name/Natural Community	Scientific Name	Scientific Name Linked	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status	Statewide Occurrences	Virginia Coastal Zone
Isle of Wight								
Southern Coastal Plain Blackwater Blackwater River-Terrapin Swamp								

Common Name/Natural Community	Scientific Name	Scientific Name Linked	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status	Statewide Occurrences	Virginia Coastal Zone
Hampton Roads								
MAMMALS								
Eastern Big-eared Bat	Corynorhinus rafinesquii macrotis	Corynorhinus rafinesquii macrotis	G3G4T3	S2	None	LE	44	Y
Rattlesnake Swamp								
Hampton Roads								
MAMMALS								
Eastern Big-eared Bat	Corynorhinus rafinesquii macrotis	Corynorhinus rafinesquii macrotis	G3G4T3	S2	None	LE	44	Y

Surry

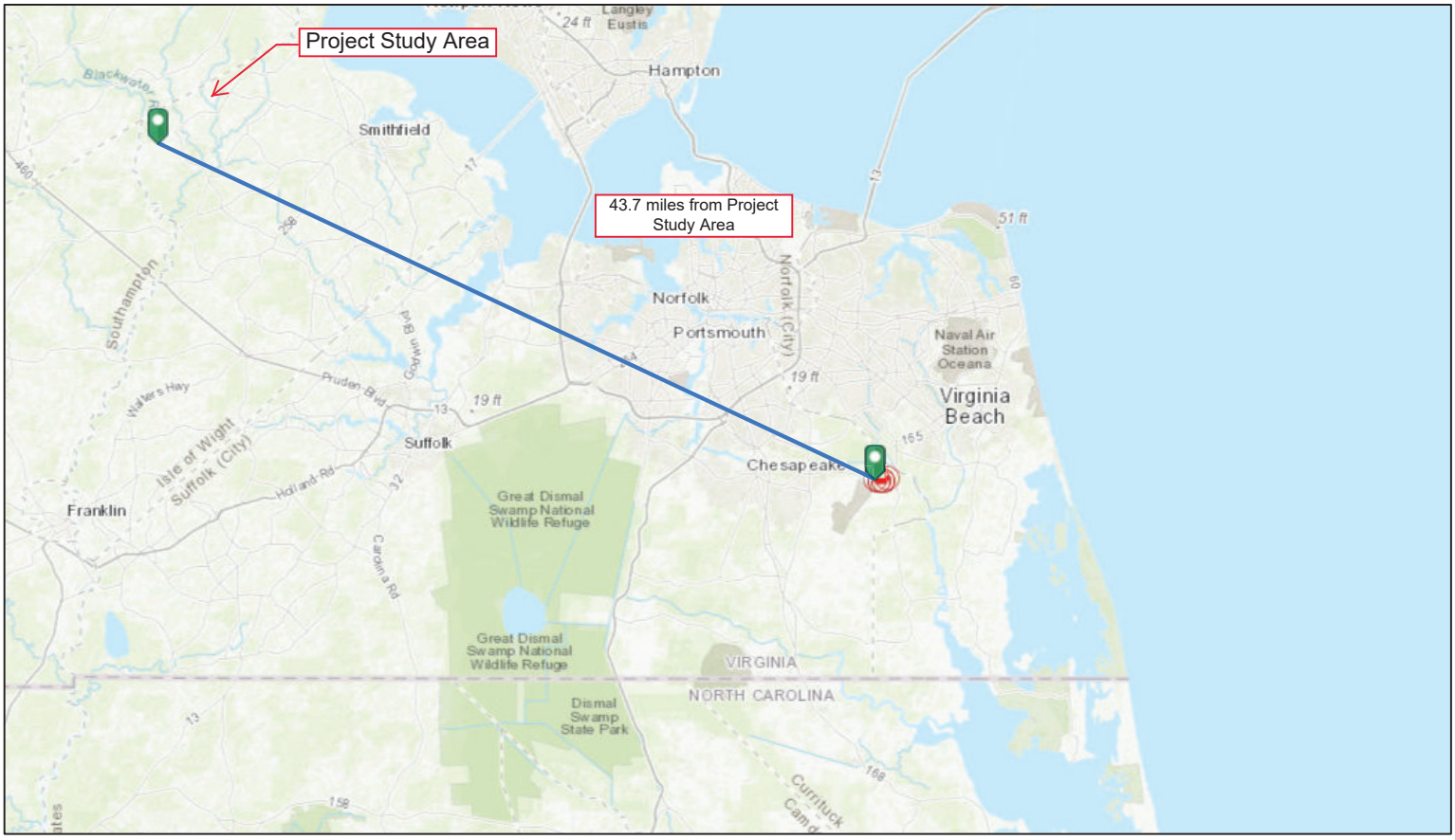
Southern Coastal Plain								
Blackwater								
Rattlesnake Swamp								
Crater								
MAMMALS								
Eastern Big-eared Bat	Corynorhinus rafinesquii macrotis	Corynorhinus rafinesquii macrotis	G3G4T3	S2	None	LE	44	Y

Note: On-line queries provide basic information from DCR's databases at the time of the request. They are NOT to be substituted for a project review or for on-site surveys required for environmental assessments of specific project areas.

For Additional Information on locations of Natural Heritage Resources please submit an information request.

To Contribute information on locations of natural heritage resources, please fill out and submit a rare species sighting form.

NLEB Locations and Roost Trees



3/27/2023, 2:38:01 PM

NLEB Known Occupied Maternity Roost (Summer Habitat)

1:577,791

0 4 8 16 mi

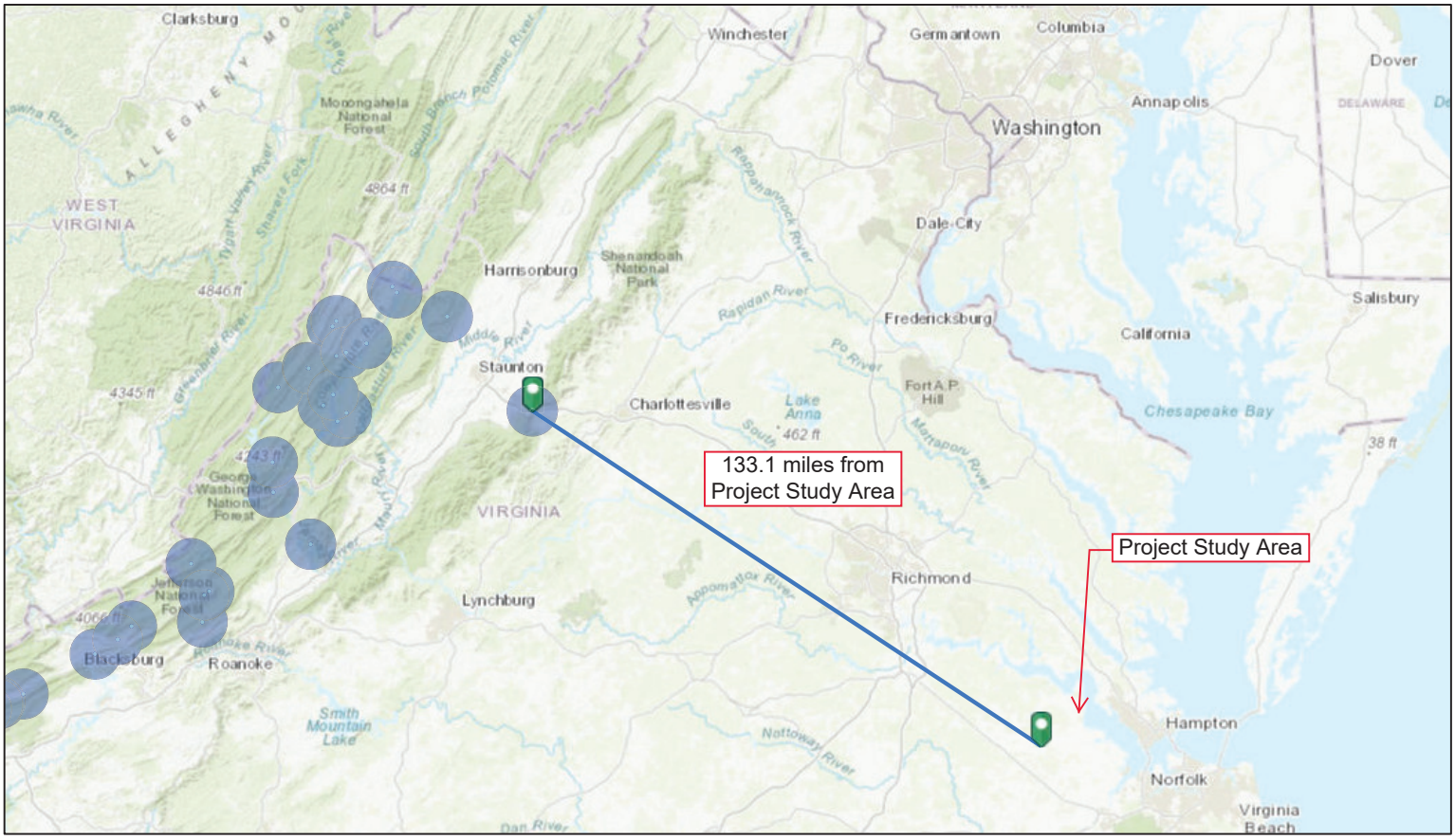
0 5 10 20 km

Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

VA Dept. Game & Inland Fisheries

Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS |

MYLU PESU



3/27/2023, 2:55:31 PM

1:2,311,162

0 15 30 60 mi

0 20 40 80 km

Esri, HERE, Garmin, FAO, USGS, EPA, NPS

Tri-colored and Little Brown Hibernaculum Half Mile Buffer

Tri-colored and Little Brown Hibernaculum 5.5 Mile Buffer

Dept. Game and Inland Fisheries

Esri, HERE, Garmin, FAO, USGS, EPA, NPS |

Attachment N
Historical and Cultural Resources Report

REPORT >

Phase IA Cultural Resource Assessment of the ±817.46 Hectare (2,020 Acre) Sycamore Cross Solar Project Area

DATE > August 2023

LOCATION > Isle of Wight and Surry Counties, Virginia

PREPARED FOR >
AES Clean Energy



PREPARED BY >
Dutton + Associates, LLC

Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

PHASE IA CULTURAL RESOURCES ASSESSMENT OF THE ±817.46 Hectare (2,020 Acre) SYCAMORE CROSS SOLAR STUDY AREA

ISLE OF WIGHT AND SURRY COUNTIES, VIRGINIA

PREPARED FOR:
AES CLEAN ENERGY
4200 INNSLAKE DRIVE
SUITE 302
GLEN ALLEN, VIRGINIA 23060

***PREPARED BY*:**
DUTTON + ASSOCIATES, LLC
1115 CROWDER DRIVE
MIDLOTHIAN, VIRGINIA 23113
804.897.1960

PRINCIPAL INVESTIGATOR:
ROBERT J. TAYLOR, JR., M.A.

PROJECT ARCHAEOLOGIST:
HOPE SMITH, PH.D.

AUGUST 2023

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ABSTRACT

In August 2023 Dutton +Associates, LLC (D+A) completed a Phase IA cultural resource assessment of the ±817.46-Hectare (2,020-Acre) Sycamore Cross Solar study area in Isle of Wight and Surry counties, Virginia. The assessment was conducted for planning purposes in order to confirm existing conditions of the study area, note surface evidence of cultural activity, and identify recommended survey methods based upon the results of the background research and field reconnaissance. The study area is located near the border of Isle of Wight and Surry counties generally along Sycamore Cross Road, Ramsey Road, Mill Swamp Road, Rattlesnake Trail, and White Hill Trail. The study area consists of multiple parcels and tracts of land that may not correspond precisely with the boundaries chosen for the final development of the project. Rather, the study area represents the maximum extent of the parcels being considered for development.

Analysis of historic maps and aerial photographs from the mid-nineteenth to early-twentieth century reveal a well-established network of roads and a number of dwellings scattered across the study area during that period. Previous cultural resource survey has recorded a number of buildings from that period, although many have since been demolished and the study area is now sparsely developed. Just seven (7) building/building complexes remain extant within the study area, although they range from good condition and occupied to ruinous and abandoned. Several additional homes and building complexes are within or bordering the overall study area limits but are in carve-out parcels excluded from development. Buildings/complexes within the study area include two ruinous early-nineteenth century dwellings, three late-nineteenth century dwellings, a vacant early-twentieth century dwelling, and a mid-twentieth century dwelling. Field inspection revealed evidence of two additional map projected buildings that remain only as sites.

The study area is bordered by Blackwater River and Mill Swamp and crossed by numerous swamps, drainages, and pocosins. These natural resources would have been attractive to prehistoric hunters and gatherers, but the terrain within the study was not likely to have supported large, permanent settlements. The primary prehistoric resources that are likely to be present are small, temporary procurement camps located above the wetlands, however, no such sites have been previously recorded within the study area limits.

Although the study area contains a number of site-predictive factors, such as the natural resources, a historic road network, and mapped buildings, land use throughout the twentieth and twenty-first centuries has negatively impacted the stratigraphic integrity of the soils. Much of the study area has been used to produce timber for an extended period of time and multiple harvests resulting in multiple episodes of clearcutting, planting, and regrowth. Most of the regrowth has been in the form of trees planted in steeply-banked rows interspersed with deep furrows, and in most cases the topsoil and eluviated layers have been destroyed or displaced. Areas not put to use for timber have been used agriculturally and therefore subject to regular plow and tilling.

Based on the above observations, the locations of the map-projected buildings that were field verified as well as previously recorded architectural resources should be considered high potential for historic sites. Together, these account for an area covering about ***34 hectares (85 acres)*** *total. The map-projected locations of buildings that were not visible through surface reconnaissance but reveal evidence of prior disturbance from logging should be considered moderate potential for*

historic sites. Landforms bordering Blackwater River should likewise be considered moderate potential for prehistoric sites, in addition to open, well-drained fields that have not be previously disturbed by logging. Together, the moderate potential area covers an area of about ***365 hectares (901 acres)*** *total. A 25% sample of the moderate potential areas should be subjected to targeted subsurface testing. This sample should include the least disturbed landforms that correspond to or share similar characteristics as the locations of buildings depicted on historic maps. The remainder of the study area that does not lie in wetland should be considered low potential for archaeological resources. A sample constituting 10% of the low-potential area should be subjected to subsurface testing. This 10% should include the least-disturbed terraces overlooking wetlands and intersections of streams to test for prehistoric resources; along the edges of roads and field depicted on Civil War-era maps to test for early historic sites; and any other areas that appear to be less disturbed in the field. The total low probability area is about* ***170 hectares (421 acres)****. A large tract of land at the northern end of the study area has been subject to recent, approved phase I survey and that area will not require further investigation as part of this effort The table below details these areas.*

Potential	***Reason***	***STP Sample***	***Total Area***	***STP Area***
High	*Yard space around extant and map-projected architectural resources*	*100%*	*34 hectares 85 acres*	*34 hectares 85 acres*
Moderate	*Yard space around map-projected architectural resources in areas of documented disturbance. Finger ridges and terraces overlooking Blackwater River and confluences.*	*25%, chosen based on field conditions, pedestrian survey of remainder*	*365 hectares 901 acres*	*91 hectares 225 acres*
Low	*Areas with no site predictors*	*10%, chosen based on field conditions, pedestrian survey of remainder*	*170 hectares 421 acres*	*17 hectares 42 acres*
No Subsurface Testing	*Wetlands, water-saturated soils, slopes greater than 15%, previously surveyed areas*	*Pedestrian survey where possible*	*248 hectares 613 acres*	*Pedestrian survey where possible*
Total			***817.46 hectares 2,020 acres***	***142 hectares 352 acres***

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Table 7-1: Summary of archaeological potential within the study area. 7-2

1. INTRODUCTION

In July 2023 Dutton +Associates, LLC (D+A) completed a Phase IA cultural resource assessment of the ±817.46-Hectare (2,020-Acre) Sycamore Cross Solar study area in Isle of Wight and Surry counties, Virginia. Fieldwork for the study was conducted January 4th and 5th, and June 28th and 29th, 2023. The D+A effort is intended to provide a comprehensive archival study that will include a complete listing and discussion of previously recorded historic properties located within and in the vicinity of the study area, a historical map review of the study area in order to better understand the development and use of the properties and their role in the larger community, provide a basis for interpreting previously recorded historic properties, define potential locations where historic resources (above and below ground) are present or likely to be present, as well as delineate areas where consideration of archaeological resources is not necessary to assist in the development of a strategy for addressing historic resource issues going forward in the Certificate of Public Convenience and Need (CPCN) process.

Robert J. Taylor, Jr., M.A. served as the Principal Investigator, oversaw all project tasks, and co-authored the report. Hope Smith, Ph.D., served as the Project Archaeologist, coauthored the report, and was assisted in the field by Rebecca Mattson and Courtney Roark. Dara Friedberg, M.S., conducted background research for the project and coauthored the report. Copies of all field notes, maps, correspondence, and research materials are on file at D+A's main office in Midlothian, Virginia.

STUDY AREA

The study area is located near the border of Isle of Wight and Surry counties generally along Sycamore Cross Road, Ramsey Road, Mill Swamp Road, Rattlesnake Trail, and White Hill Trail (Figure 1-1). The study area consists of multiple parcels and tracts of land that may not correspond precisely with the boundaries chosen for the final development of the project. Rather, the study area represents the maximum extent of the parcels being considered for development, and the final project area may be smaller than the current study area.

As part of the effort, field reconnaissance to document existing conditions was limited to those parcels where access was expressly granted while the rest of the study area was limited to desktop review only (Figure 1-2).



Figure 1-1: General location of the study area. Source: USGS

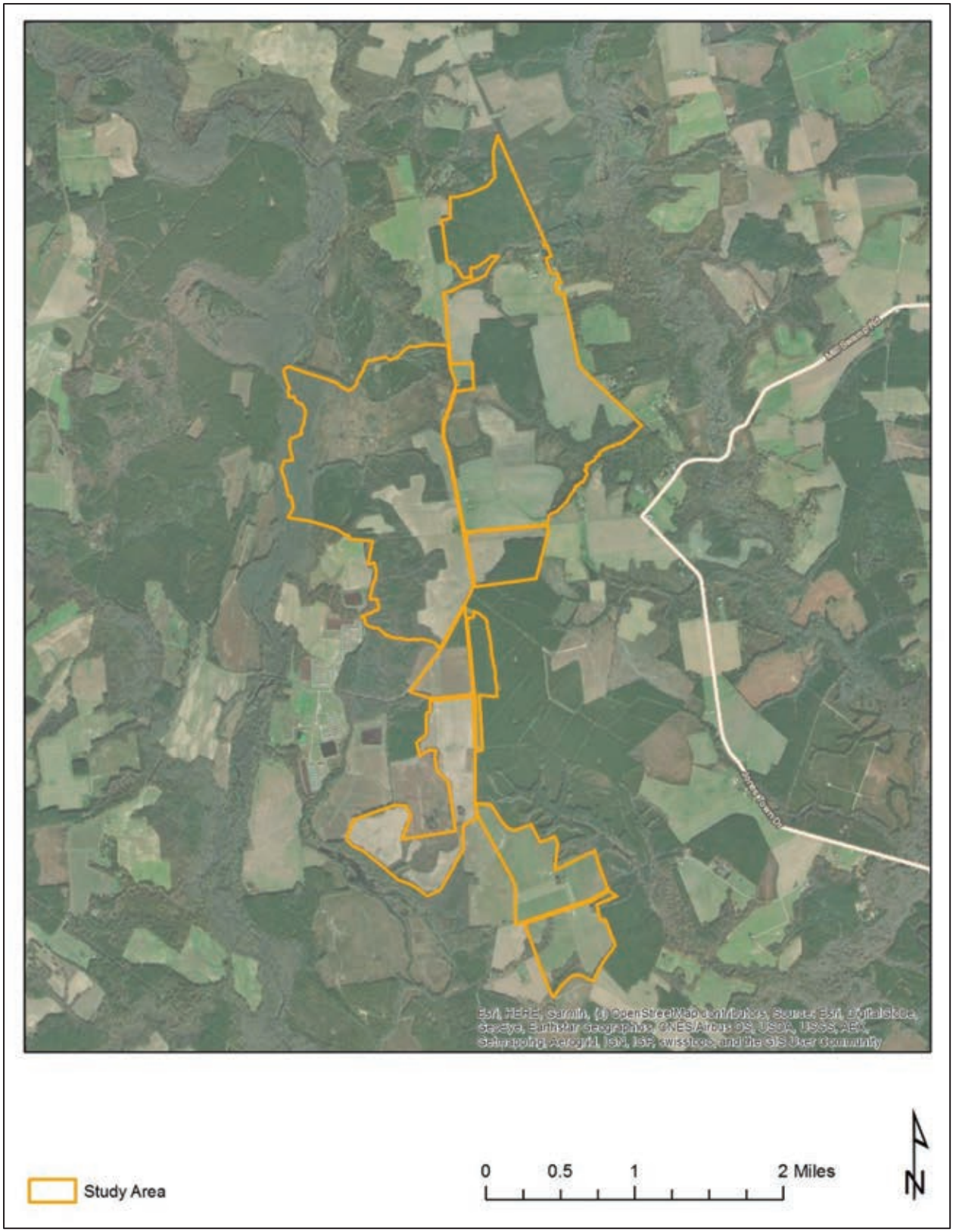

Figure 1-2: Aerial view of study area depicting parcels subject to full assessment as well as desktop-only.

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2. RESEARCH DESIGN

The Phase IA cultural resource assessment of the Sycamore Cross Solar study area was undertaken to provide a comprehensive archival study of previous cultural resource investigations in the study area, a historical map review to understand the land-use and development of properties within the study area, and define potential locations within the study area where historic resources (above and below ground) are present or likely to be present. Limited field reconnaissance was also conducted to verify existing conditions and note visible evidence of cultural resources, previous disturbance, or other pertinent landscape features. The background research, field reconnaissance, and field survey methodologies are summarized below.

ARCHIVAL RESEARCH

In January 2023, D+A conducted background research with the goal of identifying all previously recorded historic properties located within and in the vicinity of the study area in accordance with VDHR's guidance document titled *Guidelines for Conducting Cultural Resources Survey in Virginia* (Revised October 2017). Background research was conducted at the VDHR and on the internet and including the following sources:

- VDHR V-CRIS site files; and
- National Park Service, American Battlefield Protection Program, maps and related documentation.

In further preparation for the Phase IA survey, D+A conducted additional review of the following documents and sources for information relative to unrecorded historic property locations in the study area:

- County Tax Assessors records;
- USDA Historic Aerial Imagery;
- U.S. Geological Survey Topographic Maps;
- Previous historic resource survey documents; and
- Local historical society archives.

ARCHAEOLOGICAL FIELD SURVEY

For those parcels within the study area where field access was granted, a limited pedestrian survey was conducted to document existing conditions and to note surface evidence of cultural activity or material. In addition, a limited number of judgmentally placed shovel tests were excavated in order to assess and document soil conditions throughout the project area. For any newly encountered archaeological resources identified during the reconnaissance, photographs were taken of the general vicinity and of any visible features. A field map was prepared showing feature locations, permanent landmarks, topographic and vegetation variation, as well as sources of disturbance. Sufficient information was included on the map to permit easy re-identification of the resources.

REPORT AND RECORD PREPARATION

The results of the background research and field reconnaissance were synthesized and summarized in this report accompanied by maps and photographs as appropriate. All research material and documentation generated by this project are on file at D+A's office in Midlothian, Virginia.

QUALIFICATIONS AND STANDARDS

The D+A personnel who directed and conducted this survey meet the professional qualification standards of the Department of the Interior (48 FR 44738-9). All work was conducted in accordance with the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (Federal Register 48:44716-44742, September 29, 1983), and VDHR's *Guidelines for Conducting Historic Resource Survey in Virginia* (rev. 2017).

3. ENVIRONMENTAL CONTEXT

PHYSICAL DESCRIPTION AND LOCATION

The Sycamore Cross Solar study area consists of ±817.46-Hectare (2,020 Acres) of land divided into multiple contiguous and discontiguous parcels. The study area is located along the border of Isle of Wight and Surry counties within a primarily rural area of the Coastal Plain of Southside Virginia. The landscape within and bordering the study area is a mix of cultivated agricultural field, planted timber stands, and native woodland, particularly bordering the numerous drainages and swamps that dissect the area (Figure 3-1).

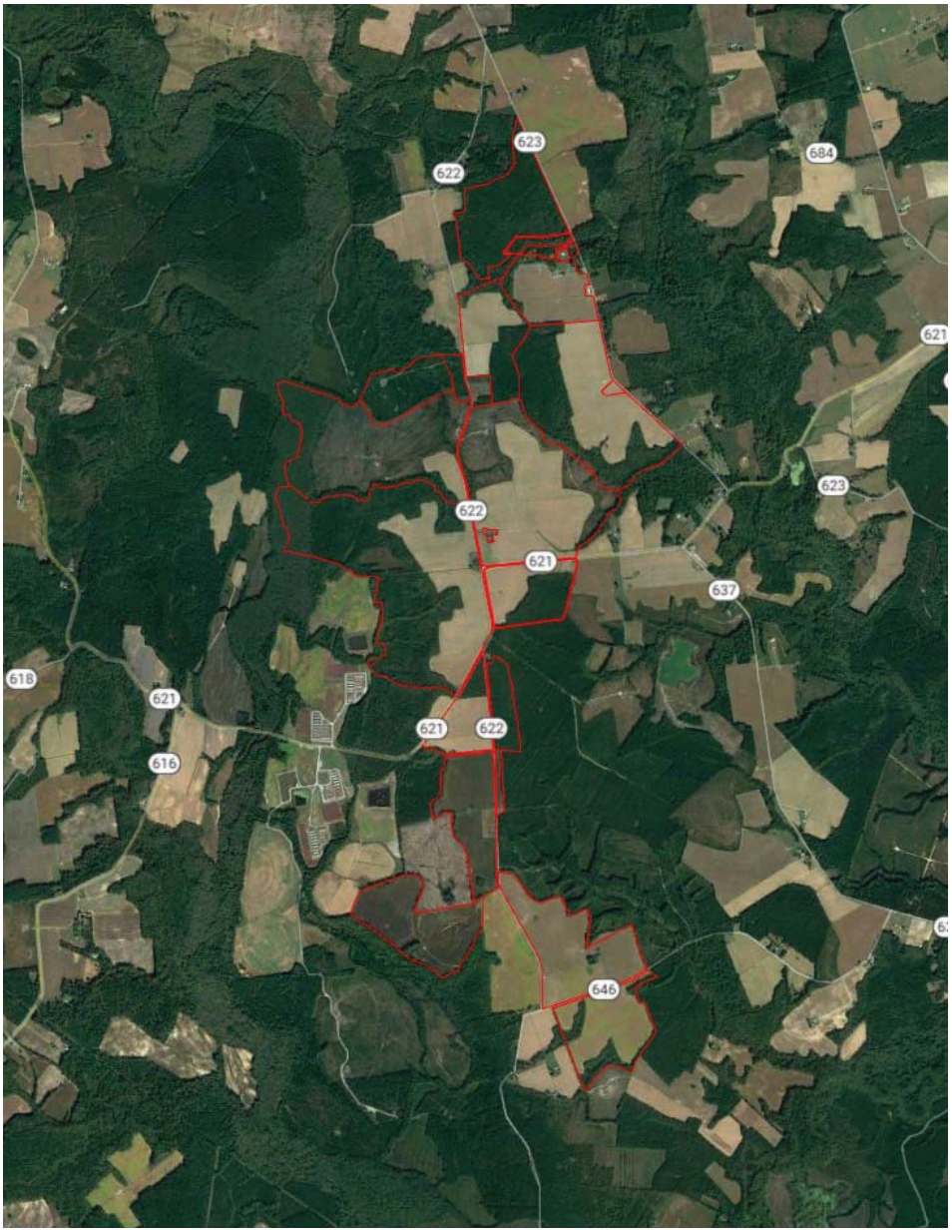

Figure 3-1. Aerial view of study area illustrating existing conditions.

GEOLOGY AND TOPOGRAPHY

The study area topography is characterized by primarily flat level terrain associated with the Lowland subprovince of the Coastal Plain region. The area is underlain by a thick wedge of sediments resting on an eroded surface of Precambrian to early Mesozoic rock. Generally, a lightly dissected, dendritic drainage pattern occurs throughout this region with broad, low landforms and shallow, sluggish drainageways. The elevation of the study area ranges from approximately ±7.9 meters (26 feet) to ±27.4 meters (90 feet) above mean sea level with the highest elevations located along the crest of a broad ridge along the eastern edge of the study area and the lowest elevations bordering the Blackwater River along the western edge.

HYDROLOGY

Most of the study area drains west into Blackwater River, although portions of the eastern edge drain eastward into Mill Swamp which flows into Rattlesnake Swamp and ultimately into Blackwater River. This flows south into North Carolina where it empties into the Chowan River, which flows into Albemarle Sound, which empties into the Currituck Sound before ultimately draining into the Atlantic Ocean.

PEDOLOGY

The study area is dominated by sandy loams and sandy clay loams formed from marine sediments. The most prominent soil type is Slagel fine sandy loam which is moderately well drained and covers about 25% of the study area. The second most prominent soil type is Kinston loam, which represents about 17.8% of the study area and is considered poorly drained. Well-drained Emporia fine sandy loam are the only other soils types that account for a significant portion of the study area at 15.2%. The rest of the study area is comprised of assorted sandy loams and complexes. Approximately 39.7% of the soils within the study area are classified as poorly to somewhat poorly drained (Figure 3-2 and Table 3-1).

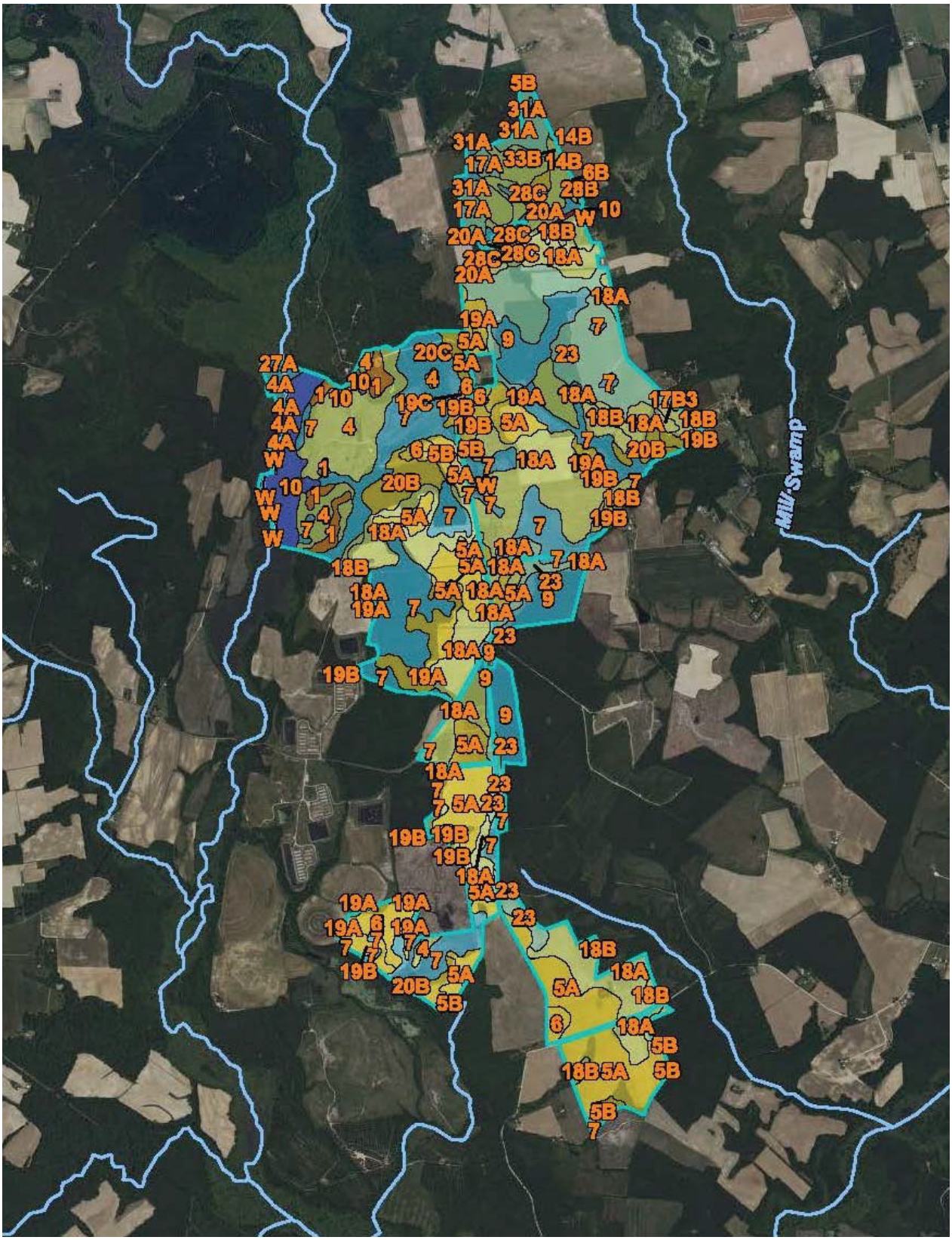

Figure 3-2: Soil survey of the Sycamore Cross study area showing drainage class (USDA 2023).

Table 3-1: Soil survey data for study area parcel cluster, showing drainage rating. Source: USDA.

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Alaga fine sand	Somewhat excessively drained	29.3	1.5%
4	Chipley sand	Moderately well drained	116.0	5.7%
5A	Emporia fine sandy loam, 0 to 2 percent slopes	Well drained	286.6	14.2%
5B	Emporia fine sandy loam, 2 to 6 percent slopes	Well drained	21.0	1.0%
6	Kenansville loamy sand	Well drained	41.6	2.1%
7	Kinston loam	Poorly drained	347.0	17.2%
9	Myatt fine sandy loam	Poorly drained	119.0	5.9%
10	Nawney loam	Very poorly drained	55.9	2.8%
17B3	Slagle sandy loam, 2 to 6 percent slopes, severely eroded	Moderately well drained	3.7	0.2%
18A	Slagle fine sandy loam, 0 to 2 percent slopes	Moderately well drained	401.5	19.9%
18B	Slagle fine sandy loam, 2 to 6 percent slopes	Moderately well drained	56.9	2.8%
19A	Uchee loamy sand, 0 to 2 percent slopes	Well drained	66.8	3.3%
19B	Uchee loamy sand, 2 to 6 percent slopes	Well drained	40.1	2.0%
19C	Uchee loamy sand, 6 to 10 percent slopes	Well drained	2.1	0.1%
20B	Uchee-Peawick complex, 2 to 6 percent slopes	Well drained	57.3	2.8%
20C	Uchee-Peawick complex, 6 to 10 percent slopes	Well drained	9.2	0.5%
23	Yemassee fine sandy loam	Somewhat poorly drained	205.4	10.2%
W	Water		4.1	0.2%
Subtotals for Soil Survey Area			**1,863.4**	**92.2%**
Totals for Area of Interest			**2,020.4**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
4A	Bibb sandy loam, 0 to 2 percent slopes, frequently flooded	Poorly drained	3.9	0.2%

Table 3-1 (cont.): Soil survey data for primary study area parcel cluster, showing drainage rating. Source: USDA.

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
W	Water		3.4	0.2%
Subtotals for Soil Survey Area			**7.3**	**0.4%**
Totals for Area of Interest			**2,020.4**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5B	Burrowsville loamy sand, 2 to 6 percent slopes	Moderately well drained	0.1	0.0%
6B	Caroline silt loam, 2 to 6 percent slopes	Well drained	0.0	0.0%
14B	Emporia fine sandy loam, 2 to 6 percent slopes	Well drained	0.5	0.0%
17A	Jedburg loam, 0 to 2 percent slopes	Somewhat poorly drained	40.1	2.0%
20A	Kinston loam, 0 to 2 percent slopes, frequently flooded	Poorly drained	13.0	0.6%
21B	Lakeland sand, 2 to 6 percent slopes	Excessively drained	1.7	0.1%
27A	Nawney and Mattan soils, 0 to 1 percent slopes, frequently flooded	Poorly drained	9.4	0.5%
28B	Nevarc-Remlik complex, 2 to 6 percent slopes	Moderately well drained	0.5	0.0%
28C	Nevarc-Remlik complex, 6 to 10 percent slopes	Moderately well drained	28.4	1.4%
28D	Nevarc-Remlik complex, 10 to 15 percent slopes	Moderately well drained	5.7	0.3%
31A	Rains fine sandy loam, 0 to 2 percent slopes	Poorly drained	5.3	0.3%
33A	Slagle fine sandy loam, 0 to 2 percent slopes	Moderately well drained	1.1	0.1%
33B	Slagle fine sandy loam, 2 to 6 percent slopes	Moderately well drained	39.7	2.0%
35B	Uchee loamy fine sand, 2 to 6 percent slopes	Well drained	4.2	0.2%
Subtotals for Soil Survey Area			**149.6**	**7.4%**
Totals for Area of Interest			**2,020.4**	**100.0%**

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4. PREVIOUS INVESTIGATIONS

This section includes a summary of all the cultural resource management events that have taken place within the study area registered at VDHR through July 2023. It also lists all previously identified architectural resources and archaeological sites located within the study area, as well as within one mile of the study area.

PREVIOUS SURVEYS RELEVANT TO THE STUDY AREA

VCRIS reveals that three Phase I cultural resource surveys have been conducted within one mile of the study area, one of which included portions of the study area (Table 4-1 and Figure 4-1). These surveys are archaeological in nature, although some include architectural resource investigations as well. The three surveys were conducted as part of assorted utility and infrastructure projects.

Table 4-1: Previously conducted Phase I surveys within one mile of the study area. Orange highlight denotes survey including portions of the study area.

Report Number	Survey Title	Author/ Affiliation	Year	VDHR Review File
IW-105	Phase I Cultural Resources Survey for the Align RNG Virginia – Waverly Renewable Natural Gas Project, Isle of Wight County, Virginia	TRC	2022	2021-0097
SY-079	Phase I Cultural Resource Survey of the ±2,106.02-Hectare (±5,204.1-Acre) Cavalier Solar Study Area, Isle of Wight and Surry Counties, Virginia	DUTTON	2020	2020-0521
VA-176	Phase I Archaeological Survey, Virginia Reliability Project, Cities of Chesapeake and Suffolk, and Greensville, Isle of Wight, Prince George, Southampton, Surry, and Sussex Counties, Virginia	ERM	2022	2021-0026

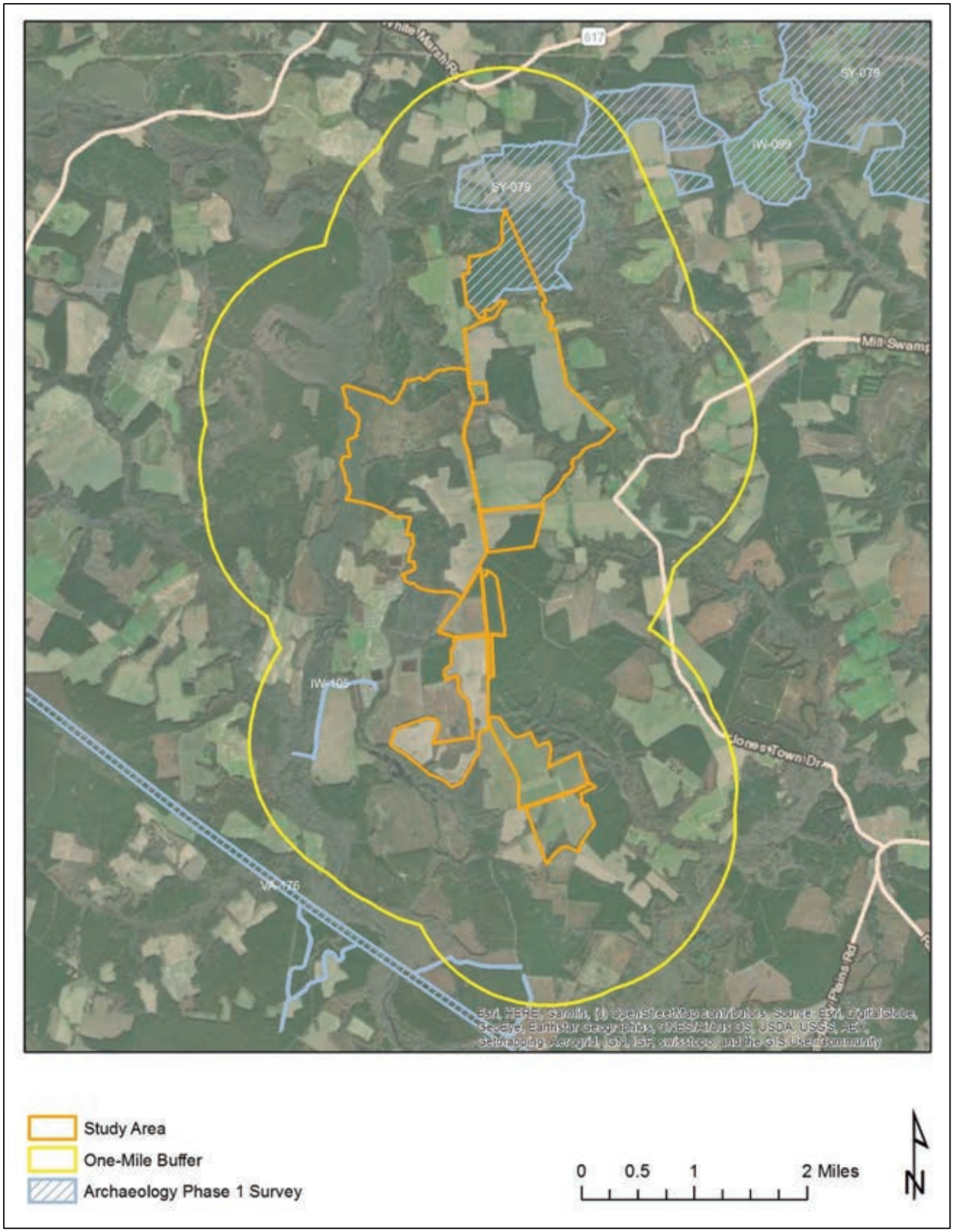

Figure 4-1: Previous Phase I surveys conducted within one mile of the study area Source: V-CRIS

PREVIOUSLY IDENTIFIED ARCHAEOLOGICAL SITES WITHIN ONE MILE

There are ten (10) previously recorded archaeological sites located within one mile of study area, two of which are located within the study area (Table 4-2 and Figure 4-2). The sites within one mile include prehistoric lithic scatters and camps; as well as historic period domestic sites and refuse scatters. Of the sites within one mile, eight (8) have been determined not eligible and two (2) have not been formally evaluated by the VDHR. Of the two sites within the study area, both are historic period artifact scatters that have been determined not eligible for listing in the NRHP.

Table 4-2: Table detailing all archaeological resources within one mile of study area. Orange highlight denotes site is within the limits of the study area.

VDHR #	Site Type	Cultural Designation	Temporal Association	NRHP Status
44IW0327	Camp	Native American	Early Archaic Period (8500 - 6501 B.C.E), Middle Archaic Period (6500 - 3001 B.C.E), Late Archaic Period (3000 - 1201 B.C.E), Early Woodland (1200 B.C.E - 299 C.E), Middle Woodland (300 - 999 C.E)	Not Evaluated
44IW0336	Lithic scatter	Native American	Pre-Contact	DHR Staff: Not Eligible
44SY0128	Dwelling, single	Indeterminate	Historic/Unknown	Not Evaluated
44SY0316	Dwelling, single	Indeterminate	World War I to World War II (1917 - 1945)	DHR Staff: Not Eligible
44SY0317	Artifact scatter	Indeterminate	Reconstruction and Growth (1866 - 1916)	DHR Staff: Not Eligible
44SY0318	Dwelling, single	Indeterminate	Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945)	DHR Staff: Not Eligible
44SY0319	Artifact scatter	Indeterminate	Reconstruction and Growth (1866 - 1916)	DHR Staff: Not Eligible
44SY0320	Dwelling, single	Indeterminate	World War I to World War II (1917 - 1945)	DHR Staff: Not Eligible
44SY0321	Outbuilding	Indeterminate	Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945)	DHR Staff: Not Eligible
44SY0322	Artifact scatter, Lithic scatter	Indeterminate	Pre-Contact, Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991)	DHR Staff: Not Eligible

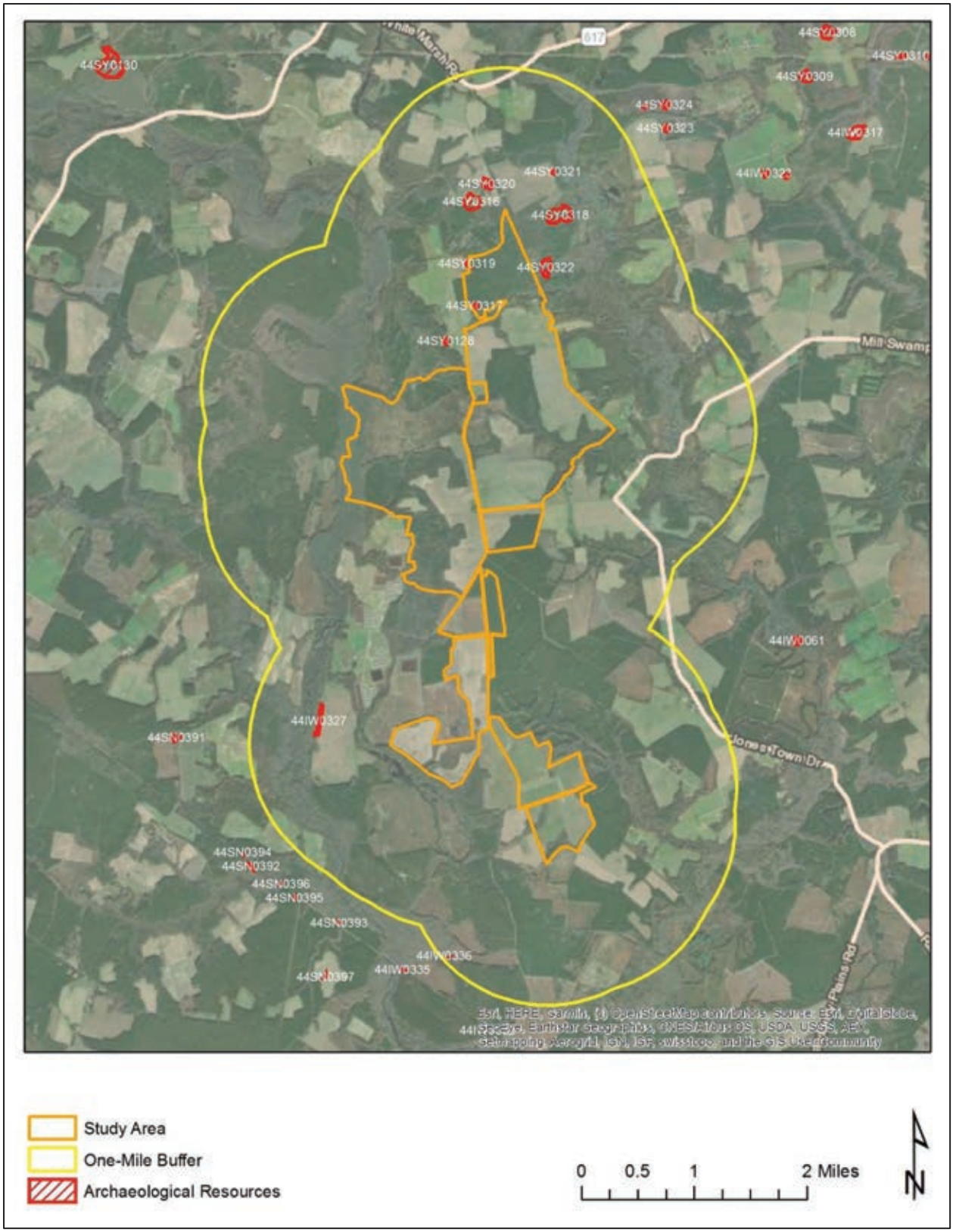

Figure 4-2: Previously recorded archaeological sites located within one mile of the study area. Source: V-CRIS

PREVIOUSLY IDENTIFIED ARCHITECTURAL RESOURCES WITHIN ONE MILE

There are thirty-two (32) previously recorded architectural resources located one mile of the study area, nine (9) of which are located within the study area (Table 4-3 and Figure 4-3). The resources within one mile include single-family homes from the mid-eighteenth to mid-twentieth century, a commercial building from the turn-of-the-twentieth century, a church from the early-twentieth century, and a family cemetery from the early-twentieth century. Thirteen of the resources have been determined not eligible for listing in the NRHP by the VDHR and the rest have not been formally evaluated. Of the nine resources within the study area, nine are dwellings with four from the early-nineteenth century, four from the late-nineteenth century, and one from the early-twentieth century; and one is a late-nineteenth century commercial building. One late-nineteenth and one early-twentieth century dwelling have been determined not eligible for listing in the NRHP and the rest have not been formally evaluated.

Table 4-3: Previously identified architectural resources located within one mile of the study area. Orange highlight denotes resource is located within the study area.

VDHR ID#	Resource Name	Type	Year	NRHP Status
046-0029	House, Route 622 (Function/Location)	Single Dwelling	c.1800	Not Evaluated
046-0030	Betts House (Historic)	Single Dwelling	c.1802	Not Evaluated
046-0032	Dudley House and Outbuildings (Historic)	Single Dwelling	c.1820	Not Evaluated
046-0055	Tenant House, Sycamore Crossroads (Historic/Current)	Secondary Dwelling	c.1800	Not Evaluated
046-0056	Grays' Brick House (Historic/Current)	Single Dwelling	c.1825	Not Evaluated
046-0057	Brick House (Descriptive)	Single Dwelling	c.1825	Not Evaluated
046-0068	Wilson Hollemon House, Mill Swamp Rd (Rt 621) (Historic/Location)	Single Dwelling	c.1830	Not Evaluated
046-5147	Farmhouse, 14537 Rattlesnake Trail (Function/Location)	Single Dwelling	1850	Not Evaluated
046-5148	Farmhouse, 13407 Ramsey Road (Function/Location)	Single Dwelling	1880	Not Evaluated
046-5149	Store, Intersection of Mill Swamp Road and Sycamore Cross Drive (Function/Location)	Commercial Building	1899	Not Evaluated
046-5150	Farmhouse, 11356 Proctors Bridge Road (Function/Location)	Single Dwelling	1899	Not Evaluated
046-5151	Mill Swamp Baptist Church & Cemetery (Historic/Current)	Church/Chapel	1928	Not Evaluated
046-5152	Store, 6159 Jones Town Road (Function/Location)	Service Station	c.1930	Not Evaluated
046-5234	William Gray House (Historic/Current)	Single Dwelling	c.1825	Not Evaluated
046-5260	House, 6330 Mill Swamp Road (Function/Location), Mill Swamp Baptist Church Parsonnage (Historic)	Single Dwelling	c.1900	Not Evaluated
046-5550	Dwelling, 10126 White Hill Trail (Function/Location)	Single Dwelling	1890	DHR Staff: Not Eligible
046-5551	Dwelling, 10106 White Hill Trail (Function/Location)	Single Dwelling	1944	DHR Staff: Not Eligible
046-5552	Dwelling, 10088 White Hill Trail (Function/Location)	Single Dwelling	c.1930	DHR Staff: Not Eligible
087-0003	Binford House (Historic)	Single Dwelling	c.1750	Not Evaluated

VDHR ID#	Resource Name	Type	Year	NRHP Status
087-5328	Brantley Home (Historic), Pretlow Farm (Historic)	Single Dwelling	c.1900	Not Evaluated
087-5509	1760 Henley Pretlow House (Historic), Captain Pretlow House (Historic), House 4071 Proctor's Bridge Road (Function/Location)	Single Dwelling	1760	Not Evaluated
090-0051	Stratman House (Historic/Current)	Single Dwelling	c.1750	Not Evaluated
090-5160	Dwelling, 9091 White Marsh Road (Function/Location)	Single Dwelling	1905	DHR Staff: Not Eligible
090-5161	Dwelling, 9100 White Marsh Road (Function/Location)	Single Dwelling	1949	DHR Staff: Not Eligible
090-5162	Dwelling, 274 Berrymans Corner Road (Function/Location)	Single Dwelling	c.1890	DHR Staff: Not Eligible
090-5163	Dwelling, 337 Berrymans Corner Road (Function/Location)	Single Dwelling	1942	DHR Staff: Not Eligible
090-5164	Dwelling, 285 Berrymans Corner Road (Function/Location)	Single Dwelling	c.1900	DHR Staff: Not Eligible
090-5165	Simmons and Brown Cemetery (Current Name)	Cemetery	c.1900	DHR Staff: Not Eligible
090-5166	Dwelling, 1122 Berrymans Corner Road (Function/Location)	Single Dwelling	c.1930	DHR Staff: Not Eligible
090-5167	Dwelling, 1097 Berrymans Corner Road (Function/Location)	Single Dwelling	c.1965	DHR Staff: Not Eligible
090-5168	Dwelling, 1676 Berrymans Corner Road (Function/Location)	Single Dwelling	1870	DHR Staff: Not Eligible
090-5174	House, Berrymans Corner Road (Function/Location)	Single Dwelling	c.1920	DHR Staff: Not Eligible

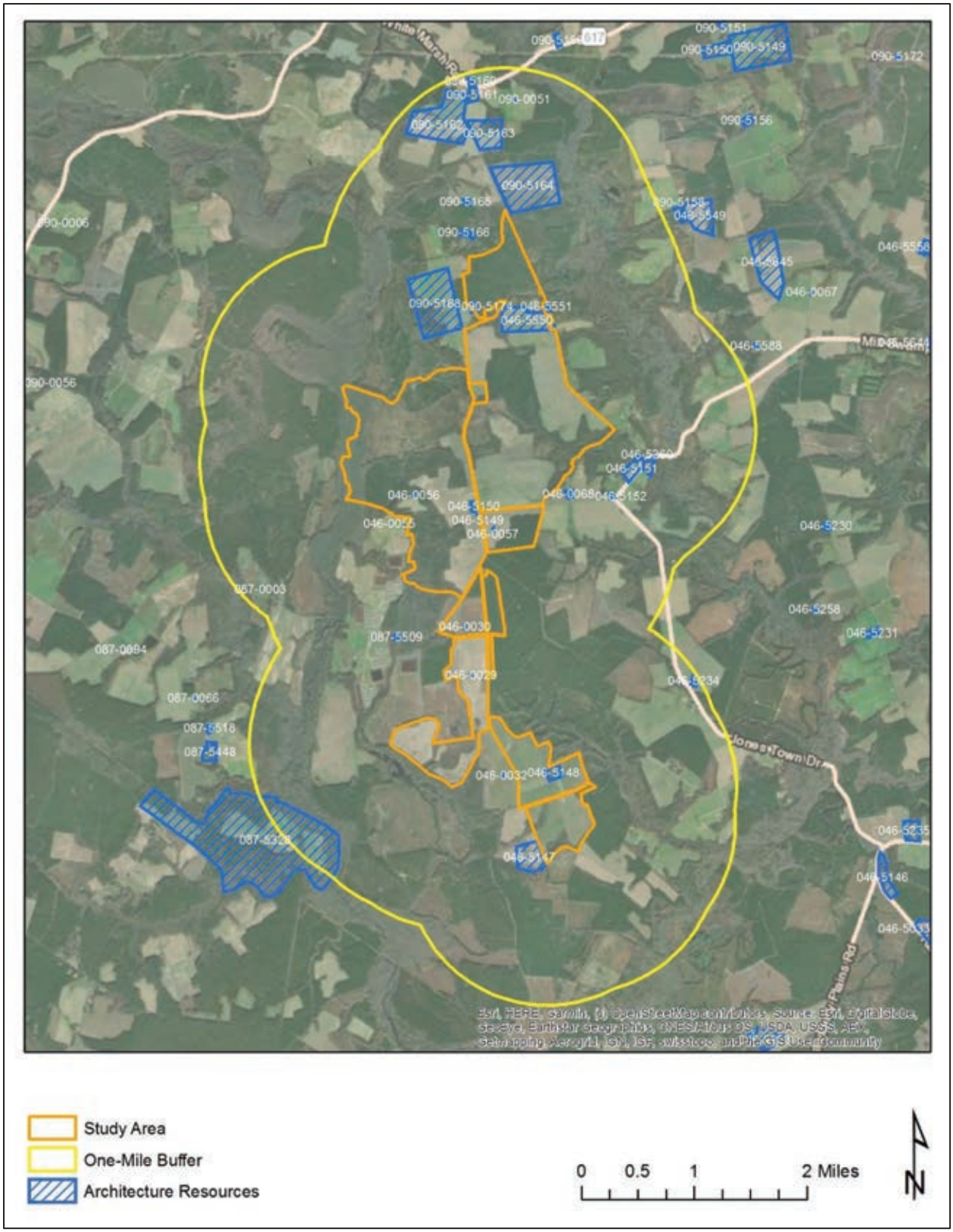

Figure 4-3: Previously recorded architectural resources within one mile of the study area. Source: V-CRIS

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5. HISTORIC MAP REVIEW

The Sycamore Cross Solar study area is located at the northwestern corner of Isle of Wight County, spanning the county line into Surry County. Prior to English arrival to Virginia, the region was home to the Warraskoyak living in the two major villages of Mathomank, near present-day Burwell's Bay, and Mokete, at Pagan Point. Though the tribes' primary villages were along the James River, they used interior lands up to at least 20 miles inland (King 1993:1). As early as 1608, the English crossed the James River to what is now Isle of Wight County though it would not be until 1619 when the first permanent English settlement was initiated in the future county (Morrison and Gwaltney 2006). While the south side of the James River was rich, the lands were fringed by swamps and the harbors were fewer and shallower making the region a bit less desirable (Rouse 1968:17).

The study area would have remained the frontier as settlement was focused along the James River. By 1634, the population of the Virginia Colony had grown to the point that King Charles I directed the formation of eight shires (counties). James City County spanned both sides of the James River and encompassed Surry County. To the east of it was Warroaquyoake, later renamed Isle of Wight (Rouse 1969:67).

Despite unrest between European settlers and American Indians, land continued to be granted. Land was first settled along the James River and its tributaries after which colonists were forced to move farther inland into the more swampy land. In the vicinity of the study area are Blackwater River and Mill Swamp.

By the mid-eighteenth century, the population increasingly moved inland from the James River and the farms in Isle of Wight County were typically between 500 to 1,700 acres (David 2007:9). According to V-CRIS records, several mid- to late eighteenth century homes were constructed less than two miles of the study area. During the American Revolution, though the British passed through Isle of Wight and Surry counties, closer to the James River, the war did not impact this region as it did nearby port towns, like Norfolk and Portsmouth (Figure 5-1).

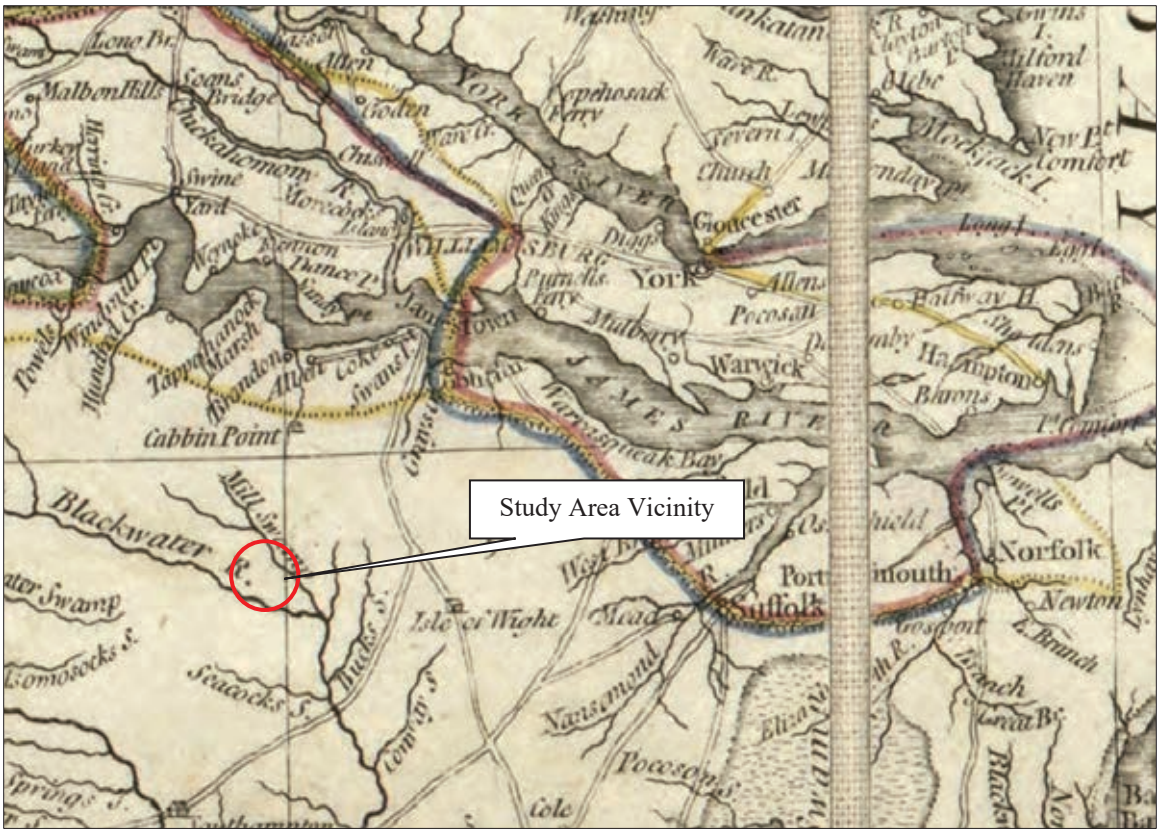

Figure 5-1: Detail of *The marches of Lord Cornwallis in the Southern Provinces*, 1787, depicting general vicinity of the study area. Source: Library of Congress

As time passed, the almost exclusively agrarian society was beginning to accommodate urban centers and small hamlets, although farming continued to be the primary means of livelihood. While the population remained relatively steady, there was a shift to the southern half of the county as people were enticed by the open lands and inland roadways. Roads began to increasingly cross the county and homesteads continued to be erected, including within the study area and the general vicinity (Figure 5-2).

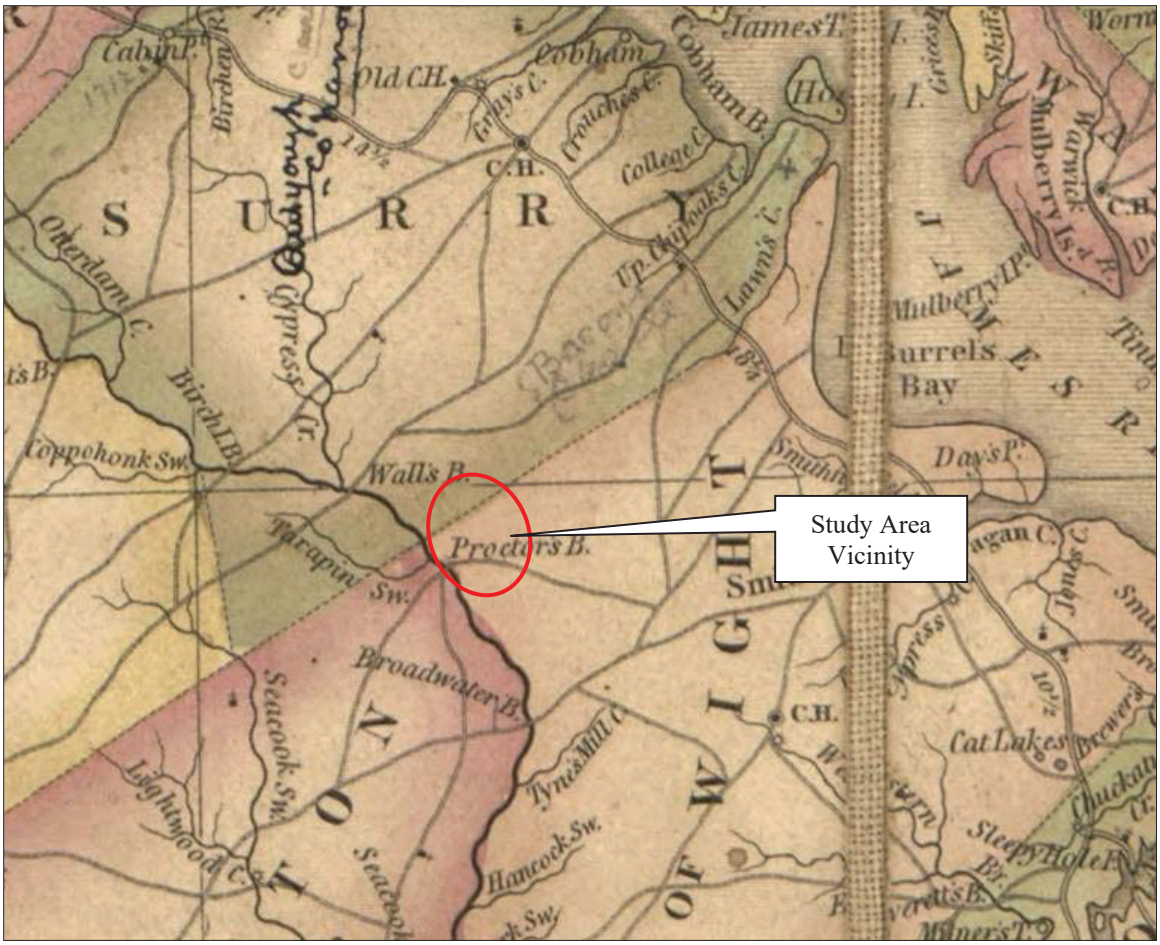

Figure 5-2: Detail of *A map of the state of Virginia*, 1827, depicting the vicinity of the study area. Source: Library of Congress

By the 1830s, a lasting migration from older settled regions of Virginia to lands opening in the west and an agricultural depression affected area's commerce and population. Between 1830 and 1850, the population of Isle of Wight County decreased 11 percent and that of Surry County fell by more than 13 percent (USCB). Despite the drop in population, the enslaved and free black population remained about 50 percent of the total population. Approximately 90 percent of the total population was involved in agriculture and identified as farmers (David 2007:10).

Despite the number of marshes crossing the study area, structures within it and in the vicinity were common by the mid-nineteenth century as evidenced by mid-nineteenth century maps. In Surry County, the study area appears to have been completed wooded (Figure 5-3). Mapping illustrates several buildings within or adjacent to the study area in Isle of Wight County, however (Figure 5-4). This includes homes related to the Bell, Betts, and Barlow families. According to a Works Progress Administration survey of Virginia's historical inventory, there was a small family cemetery associated with the Betts House that may be within the study area (Jordan 1937). The cemetery is not identified in Find-a-Grave or on topographic maps. Major roads crossed through the study area in Isle of Wight County, including that connecting to Proctor's Bridge over the Blackwater River. Also located in Isle of Wight County, on Rattlesnake Road (now Sycamore Cross Drive, Route 622) were a store and a schoolhouse.



Figure 5-3: Detail of *Map of Surry Sussex and Southampton counties, Virginia*, 1863, depicting the portion of the study area in Surry County. Source: Library of Congress



Figure 5-4: Detail of *Map of Isle of Wight and part of Nansemond*, 1864, depicting the primary study area parcel cluster in Isle of Wight County. Source: Library of Congress

During the Civil War, no major battles took place in the county, although a skirmishes did occur. The products of the countryside were depleted in service of the Confederate cause. Following the War Between the States, the longstanding agricultural economy of Tidewater Virginia began to recover and the production of peanuts increased. In addition to peanuts, the county produced oats, potatoes, fruits, vegetables, and oysters (Morrison and Gwaltney 2006). Timbering also prospered, as did the bacon and ham industry. As population increased, commerce also grew, particularly along the intersections of major inland roadways in the form crossroad stores. With improved

inland transportation corridors, crossroads stores became more common, within the study area was Sycamore Crossroads.

As the twentieth century continued, the number of farms steadily increased. Additionally, during this time many farms were subdivided and new single family homes were constructed or new dwellings replaced older homes on farms (David 2007:18). Topographic maps from this period illustrate the increase of buildings within and around the study area as well as a lumber railroad in the study area in Surry County (Figure 5-5).



Figure 5-5: Detail of the 1919 and 1920 topographic maps, *Surry* and *Ivor,* depicting the primary study area parcel cluster. Source: USGS

The end of World War II brought with it a building boom that would begin to change the character of the earlier farmsteads within counties, particularly Isle of Wight. With its proximity to Newport News, Portsmouth, and Norfolk, the county began to become a bedroom community. As the twentieth century continued and transitioned in the twenty-first, the study area remained much as it had historically, as a mixture of forested land and agricultural fields with some farmsteads (Figure 5-6 through Figure 5-10). Buildings previously depicted in the study area in Surry County, were no longer illustrated by the mid-twentieth century. Sycamore Crossroads remained, though it was referred as McClelland on the 1944 topographic map. On the same map, south of McClelland, McClelland School was depicted within the study area. This was a small school that served black students (Locations n.d.). The study area continues to show evidence of agriculture and timbering on its land.

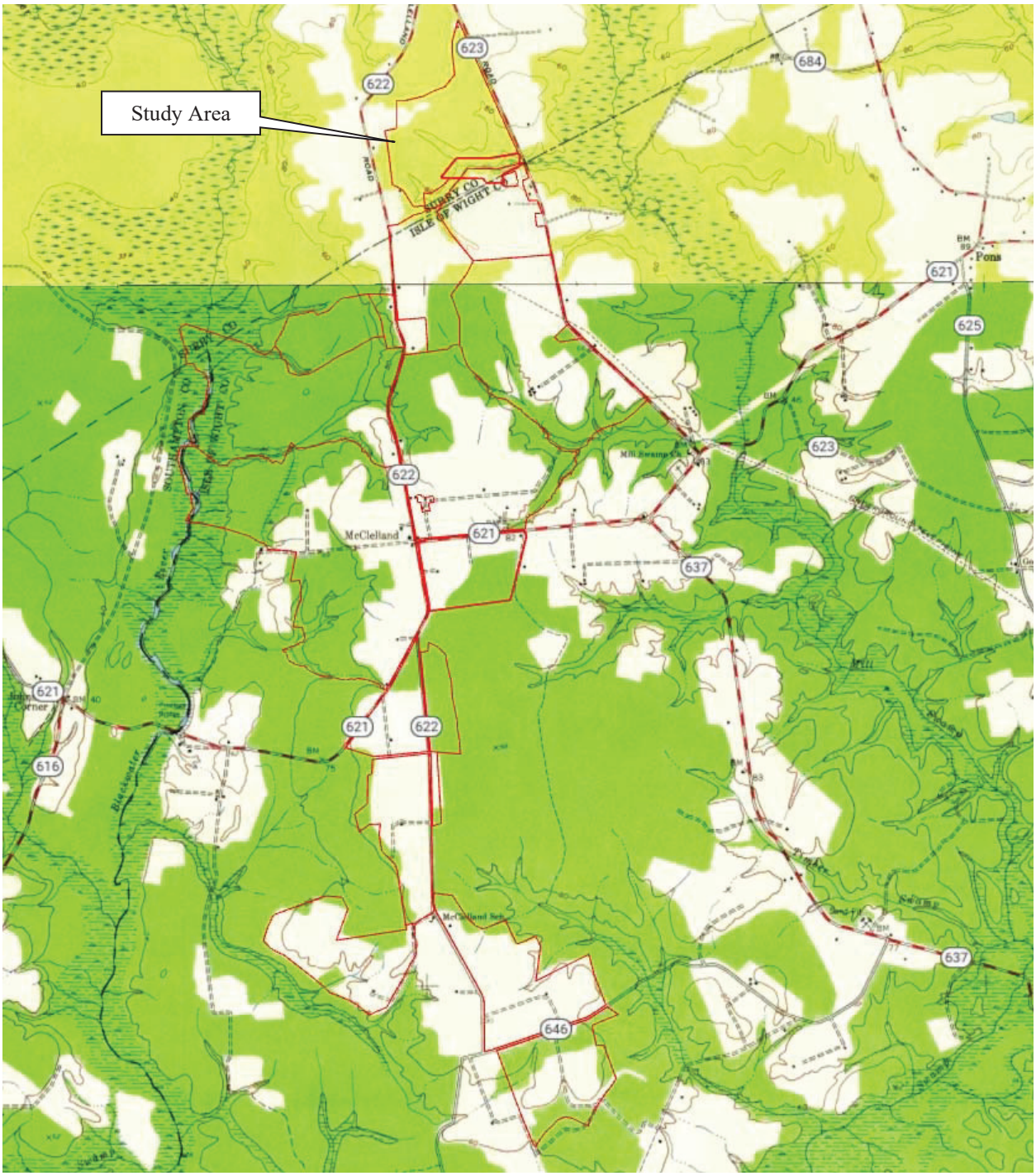

Figure 5-6: Detail of the 1944 and 1954 topographic maps, *Raynor* and *Runnymeade*, depicting the primary study area parcel cluster. Source: USGS

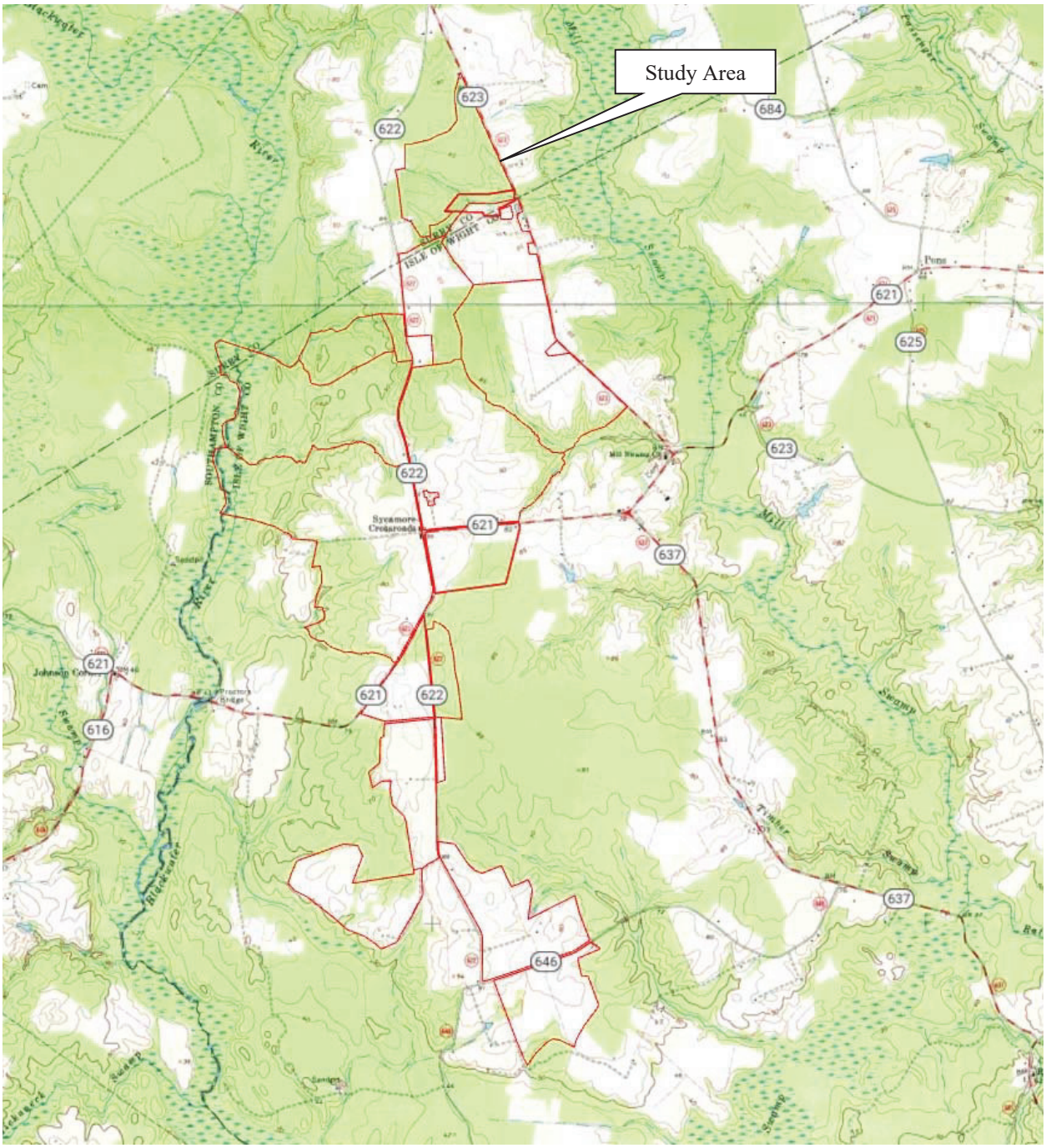

Figure 5-7: Detail of the 1968 and 1971 topographic maps, *Raynor* and *Runnymeade*, depicting the primary study area parcel cluster. Source: USGS

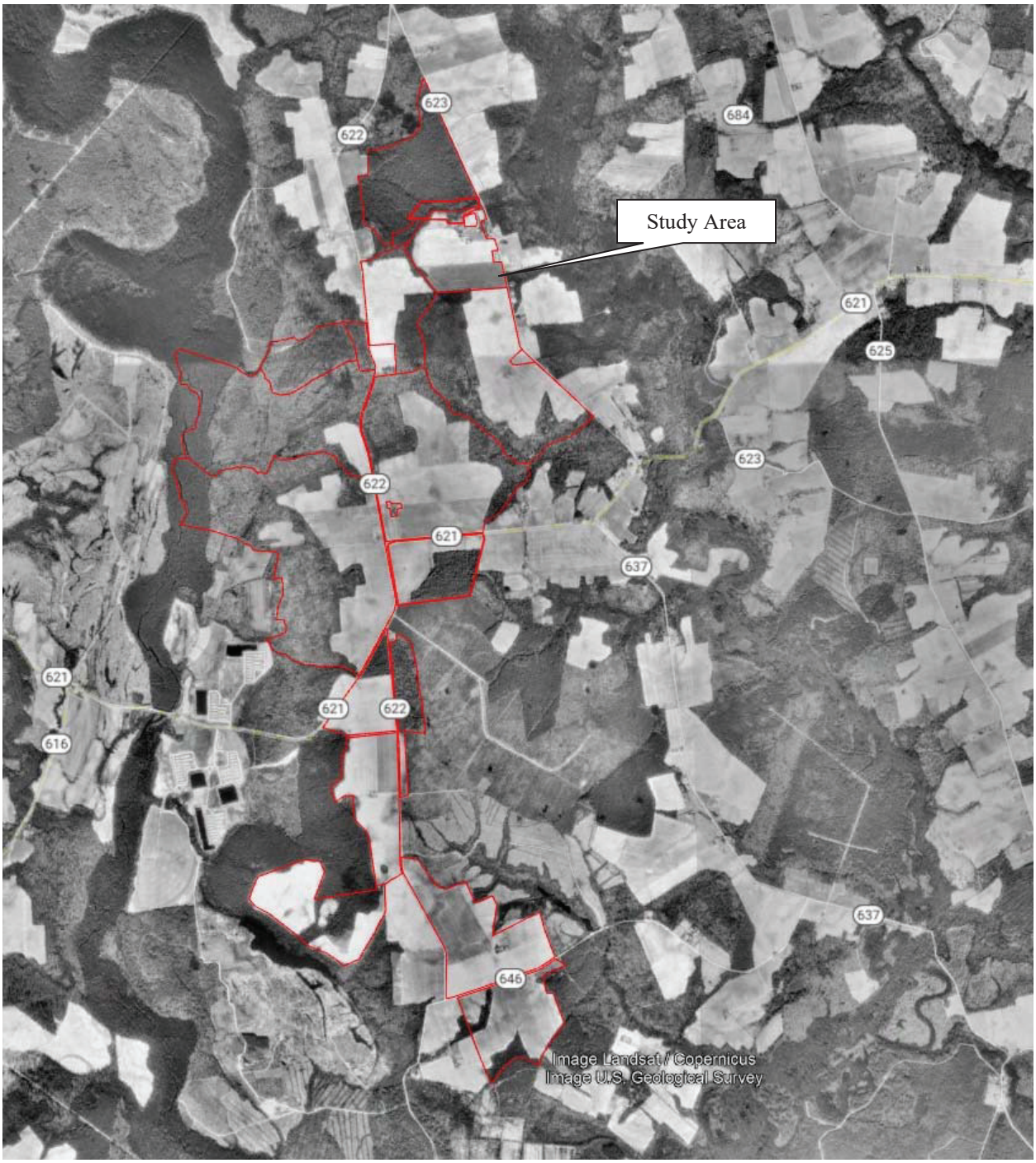

Figure 5-8: Detail of a 1990 aerial depicting the primary study area parcel cluster. Source: Google Earth

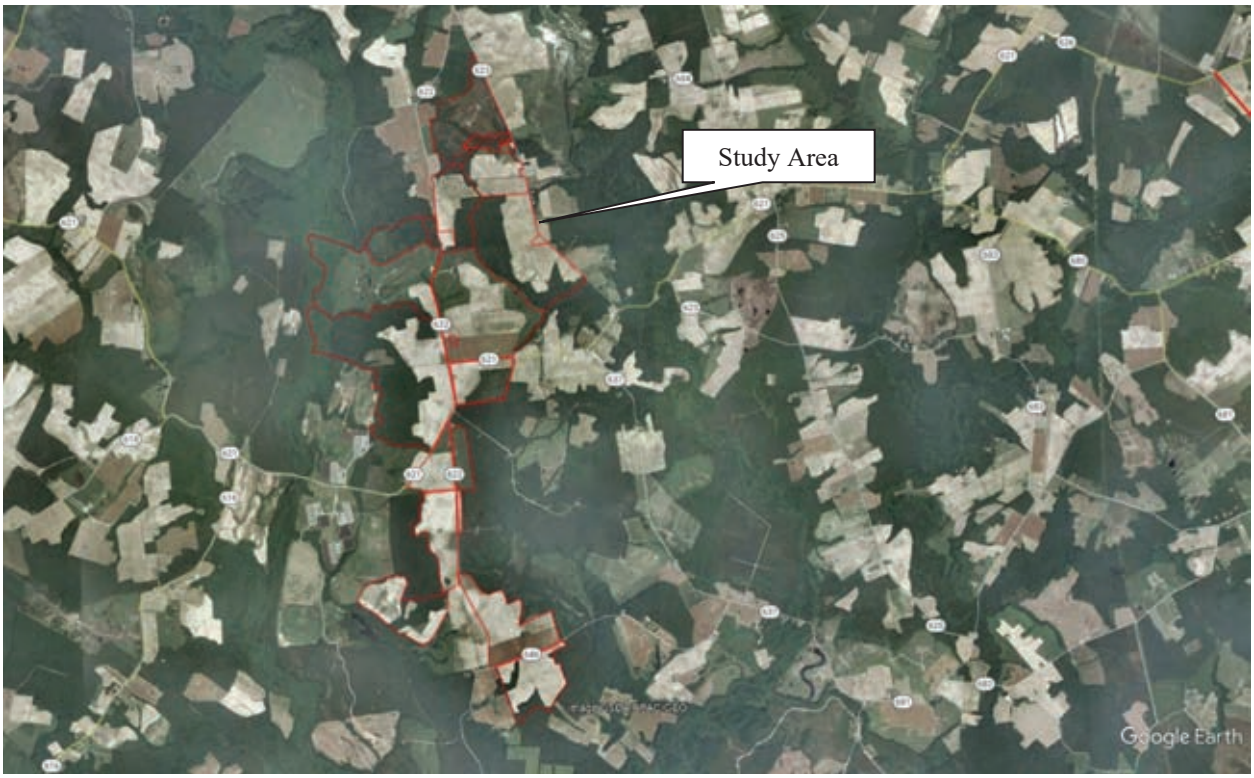

Figure 5-9: Detail of a 2003 aerial depicting the study area. Source: Google Earth

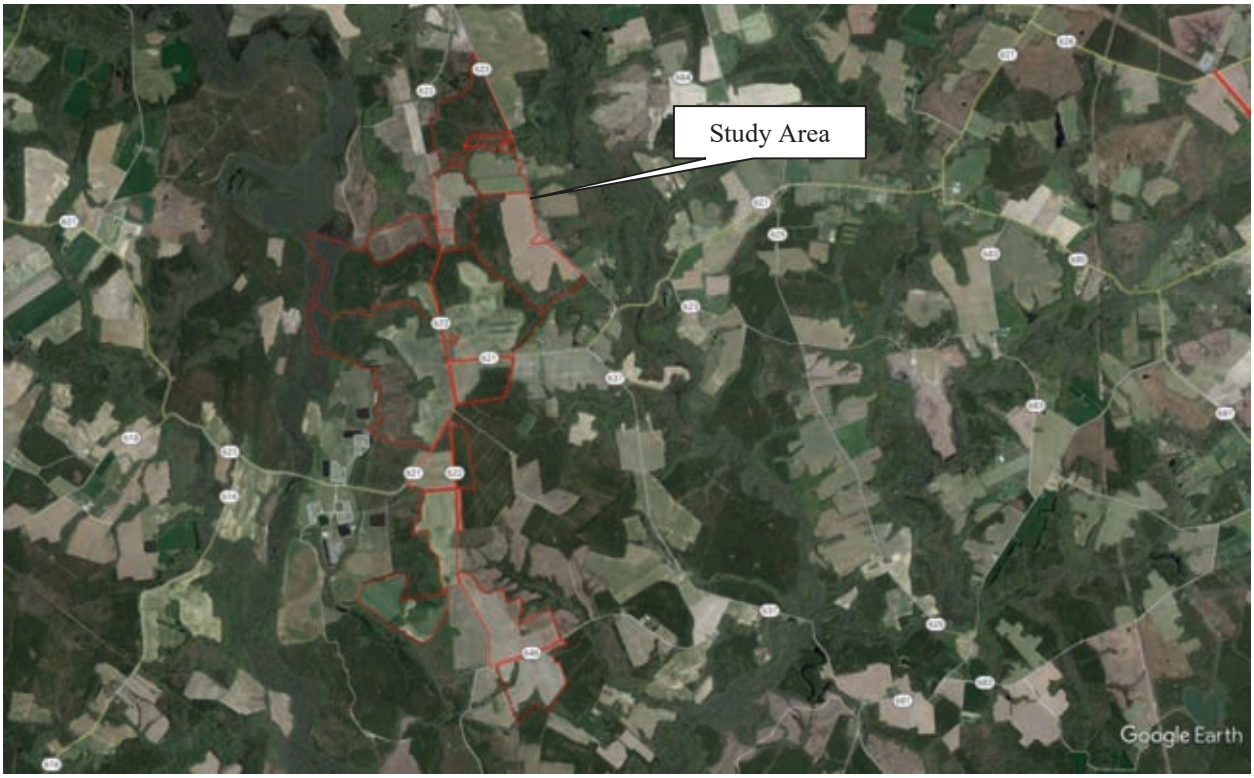

Figure 5-10: Detail of a 2017 aerial depicting the study area. Source: Google Earth

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6. ASSESSMENT RESULTS

On January 4th and 5th and June 28th and 29th, 2023, D+A performed field reconnaissance for the Phase IA cultural resources assessment of the Sycamore Cross Solar study area in Isle of Wight and Surry counties, Virginia. The field investigations involved a walkover reconnaissance of the study area tracts, as well as the excavation of nine (9) judgmental shovel test pits in order to determine soil stratigraphy within them. To organize the field investigations, the study area was divided into three sections, including the northern, central, and southern parcels (Figure 6-1). The results of the assessment are summarized below.



Figure 6-1: Sycamore Cross Study Area depicting Field Reconnaissance Areas.

NORTHERN PARCELS

The Northern Parcels area consists of six tracts of land at the northern edge of the overall study area. The parcels are generally located between Berrymans Corner Road to the west and Mill Swamp Road to the east, and north of an unnamed tributary to Mill Swamp (Figure 6-2).

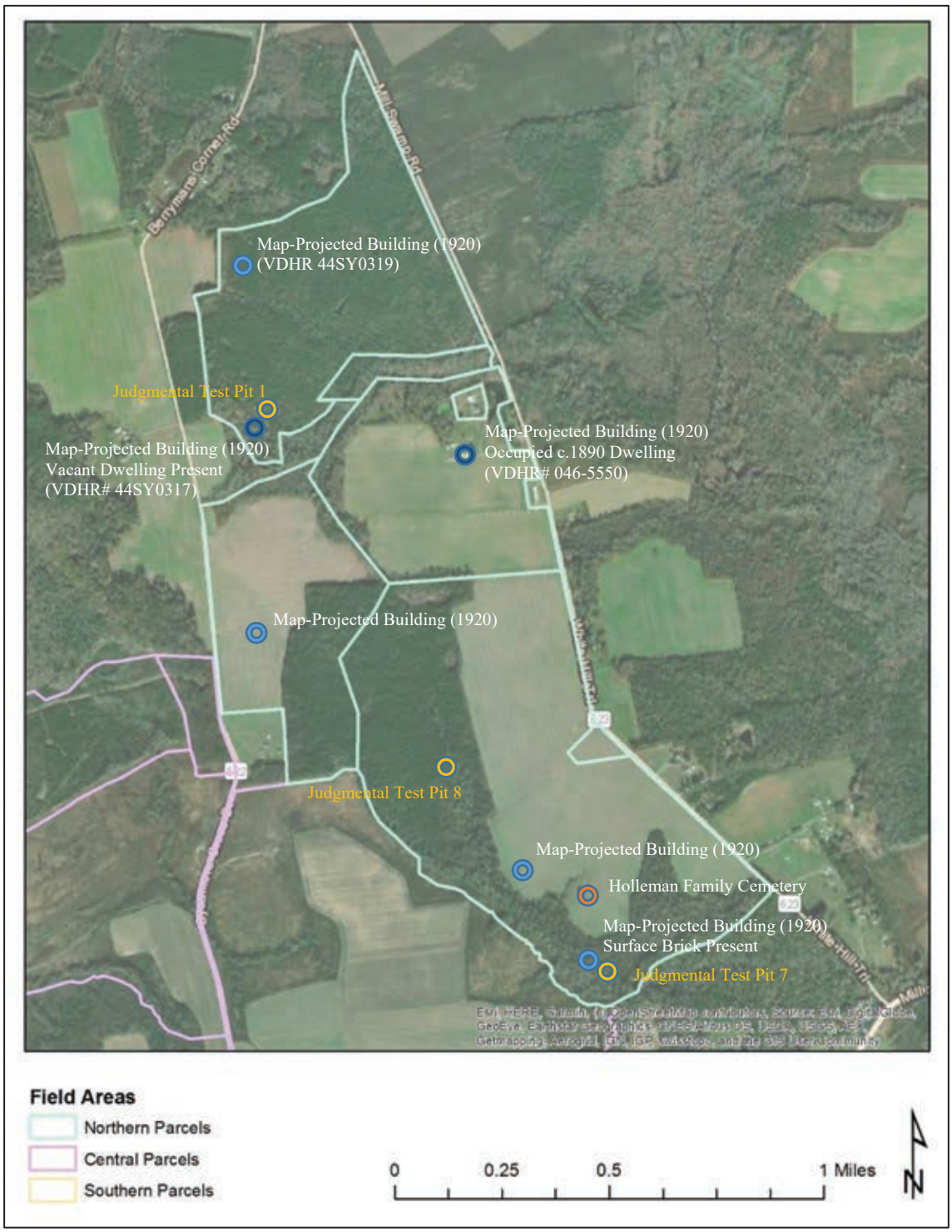


Figure 6-2: Northern parcels map.

At present time, the northernmost two parcels are completely wooded, while the lower parcels are a mix of open agricultural field, primarily occupying the portions of the area along the road while the central areas along the Mill Swamp tributary are wooded. Vegetation in the northern parcels consisted of mature planted pine with scrub understory (Figure 6-3) while the vegetation within the lower areas is a mix of native woodland along the drainage and mature planted pine (Figure 6-4 and Figure 6-5). The agricultural fields were fallow at the time of inspection in January and planted with corn as of June (Figure 6-6). The terrain of the area is generally flat, except along the drainages that cross through the lower edge of the northernmost parcel and centrally through the lower parcels, enroute towards Mill Swamp to the east.

One occupied dwelling and farm complex is located near the northern edge of this area just south of a drainage leading into Mill Swamp. This building appears to coincide with one labeled as "Turner" on Civil War-era maps and has been previously recorded as a circa 1890 dwelling (VDHR# 046-5550) (Figure 6-7). Two additional previously recorded dwellings from the early- to mid-twentieth century are located along the road to the front of this house (VDHR# 046-5551 and 046-5552), but both are excluded from the project study area.

One abandoned dwelling with an associated outbuilding was observed in the western edge of the northernmost parcel (Figure 6-8). This building is located within the limits of previously recorded site VDHR# 44SY0317, recorded as a Reconstruction and Growth (1866-1916) era site that has been determined not eligible. Civil War-era maps reveal what is now Sycamore Cross Road was present along the western edge of the area, but suggests the area remained wooded and undeveloped at that time. However, a 1920 topographic map reveals a building present by that time in generally the same location as the abandoned home. A driveway off Berrymans Corner Road (SR 622) leads to the home.

The 1920s topographic map also reveals several additional buildings scattered throughout the northern parcel area, none of which remain extant, although evidence of several remain. One in the northwestern corner of the area coincides with site 44SY0319 but no surface evidence was observed. This site has been recorded as a Reconstruction and Growth (1866-1916) era site that was determined not eligible for listing in the NRHP by the VDHR. A relic farm lane from Sycamore Cross Drive in the western most parcel leads to the location of one of the map-projected buildings although field inspection did not reveal surface evidence of the building. The 1920 map projects two additional buildings along the drainage in the southernmost parcel of this area of which a brick was observed on the surface in the vicinity of one (Figure 6-9) but no evidence was observed of the second. A family cemetery associated with the Holleman family was observed within a copse of trees set between the map-projected locations of these buildings (Figure 6-10).



Figure 6-3: Planted pine forest of northernmost Parcel, looking South from Judgmental 1



Figure 6-4: Field edge within southernmost Parcel, looking northeast from near Judgmental 7



Figure 6-5: Wooded area along drainage in southernmost parcel, looking northwest from Judgmental 8



Figure 6-6: Corn planted within southernmost parcel, looking southeast



Figure 6-7: Occupied dwelling along Mill Swamp Road generally coinciding with "Turner" on Civil War-era maps and previously recorded as circa 1890 VDHR# 046-5550.



Figure 6-8: Vacant dwelling in the northernmost parcel coinciding with Site 44SY0317.



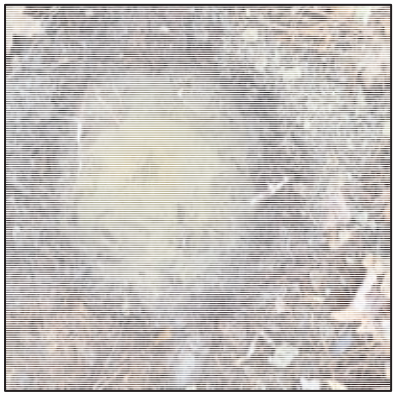
Figure 6-9: Brick on surface in the vicinity of a 1920 map projected building

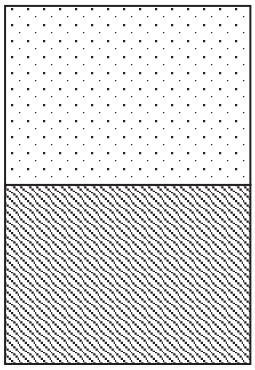


Figure 6-10: Headstone within family cemetery, looking east.

Three judgmental shovel tests were excavated throughout the northern parcel assessment area, including one in the northwestern portion of the area near a standing home in the vicinity of Site 44SY0317 (STP 1), one within a wooded area bordering the drainage that extends through the central portion of the area (STP 2), and one in the southern portion of the area in the vicinity of a 1920 map projected home where a brick was encountered on the surface (STP 3).

Judgmental STP 1 confirmed disturbed topsoil in what appears to be a previously logged area and was negative for cultural material. Soils consisted of a topsoil layer of 2.5Y 5/4 silty clay loam topsoil (A horizon) over top of 2.5Y 5/6 silty clay subsoil (B horizon) (Figure 6-11). The shovel test pit was highly disturbed, with little historic integrity remaining.





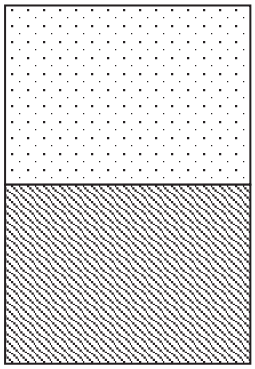
2.5Y 5/4 silty clay loam
0-33 cm

2.5Y 5/6 silty clay
33-40 cm

Figure 6-11: Soil profile of Judgmental 1.

Judgmental STP 8 confirmed disturbed topsoil in what appears to be a previously logged area and was negative for cultural material. Soils consisted of a topsoil layer of 2.5Y 5/6 sandy clay loam topsoil (A horizon) over top of 2.5Y 6/6 sandy clay subsoil (B horizon) (Figure 6-12).





2.5Y 5/6 sandy clay loam
0-41 cm

2.5Y 6/6 sandy clay
41-51 cm

Figure 6-12: Soil profile of Judgmental 8.

Judgmental STP 7 revealed natural soil stratigraphy within an area of native vegetation bordering a drainage and was negative for cultural material. Soils consisted of a topsoil layer of 10YR 7/4

sandy loam topsoil (A horizon) overlying 2.5Y 7/3 sandy clay loam, over top of 5Y 6/4 sandy clay subsoil (B horizon) (Figure 6-13).

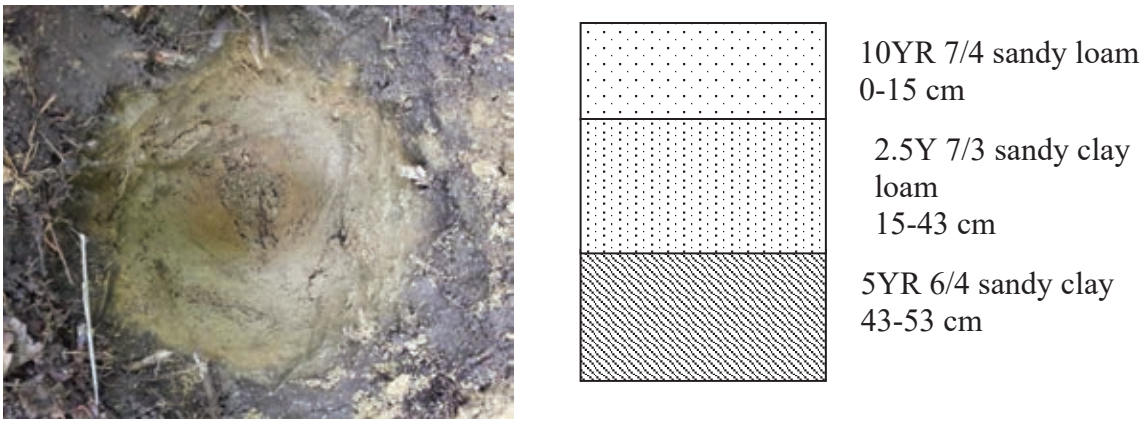


Figure 6-13: Soil profile of Judgmental 7.

CENTRAL PARCELS

The Central Parcels area consists of six tracts of land sited centrally within the overall study area. The area spans Sycamore Cross Drive/Proctors Bridge Road (State Rte 622) and borders Blackwater River to the west and an offshoot of Mill Swamp to the east (Figure 6-14).



Figure 6-14: Central parcels map.

At present time, the area is a mix of open agricultural field and woodland, including both native forest and planted pine. The terrain in the crop fields of the central area parcels is generally flat while the forested and timbered areas to the rear of the parcels are slightly more rolling down to the bordering rivers and swampy areas. Most of the two parcels east of Sycamore Cross Drive are cleared as agricultural fields that are currently in crop. The northern field is bordered by a planted pine stand that has been logged within the last three years (Figure 6-15), although a narrow drainage extends through the front of the parcel along and crossing Sycamore Cross Road (Figure 6-16). The entrances to the timbered areas do not appear well maintained or easily accessible but there are farm roads in the crop fields that provide access to the properties. The southern field is bordered by a large patch of deciduous forest (Figure 6-17). Of the tracts on the west side of Sycamore Cross Road, the front portions (nearest the road) are cleared field while the rear portions nearer Blackwater River are wooded. The majority of the woodland in the southern tract is a mix of young-growth pine interspersed with native hardwood and swampy wetland vegetation along a network of drainages leading into the river (Figure 6-18). The large middle parcel was planted timber that was harvested within the last three years leaving just narrow lines of native vegetation along a drainage at the front of the tract and along Blackwater River to the rear. The northernmost two tracts on the west side of Sycamore Cross Road is a mix of native hardwood, young pine, and scrub brush (Figure 6-19 and Figure 6-20).

There were four standing buildings observed within the Central parcels area, one of which is located within a small parcel excluded from the study area footprint, while the other three are within the study area limits. Two of the extant buildings appear to coincide with structures depicted on Civil War-era maps and a third is also believed to be Antebellum but is not illustrated on maps from that period. At that time, two buildings were shown in proximity to the intersection of Sycamore Cross Road and Mill Swamp Drive including one on the northeast corner that was labeled as a "store" and an unlabeled building was mapped across the road to the south. The mapped location of the store coincides with the location of the standing building that is located within an exclusion parcel (Figure 6-21). This building functions as a dwelling, but may historically have operated as a tavern or "store". The building mapped on the south side of the intersection appears to coincide with a ruinous structure that remains within an agricultural field that is recorded as VDHR# 046-0057 (Figure 6-22 through Figure 6-24). A third building believed to be Antebellum was observed near the western edge of the assessment area, but does not appear to be depicted on Civil War-era maps. The structure has been previously recorded as the circa 1825 "Gray's House" (VDHR# 046-0056). The dwelling remains in ruinous condition, however, a variety of materials and evidence of other features, including brick fall, and subsurface pits were observed in the vicinity of the house (Figure 6-25 through Figure 6-30). Civil War-era maps do depict a building on the west side of Sycamore Cross Drive north of Gray's House and therefore may represent the same building with a mapping discrepancy. Field investigation did not reveal any surface evidence of a structure in the map-projected location of this building, however, there were artifacts such as whiteware, terracotta drainpipe, solarized glass, and brick fragments observed in the plowed field where the building was map-projected. In the trees to the west of the field, there was a push pile with a large stone and some modern detritus but no indications of extant structures or foundations (Figure 6-31).

The 1920 topographic map also reveals eight additional buildings present by that time, one of which coincides with the fourth standing buildings observed in the area. This building has been previously recorded as an 1899 dwelling (VDHR# 046-5150) (Figure 6-32). Field inspection did

not reveal surface evidence of any of the other map-projected buildings. None of the previously recorded buildings have been formally evaluated for NRHP-eligibility.



Figure 6-15: Recently timbered terrain and vegetation around Judgmental 3, looking East.



Figure 6-16: Drainage between Berrymans Corner Rd and timbered field, looking East.



Figure 6-17: Debris pile within wooded area along southeastern edge of area, looking southwest.



Figure 6-18: Planted pine and wetland vegetation, looking west from Judgmental 4.



Figure 6-19: Deciduous vegetation and scrub in northern tract on west side of Sycamore Cross Road, looking south.



Figure 6-20: Planted pine in northern tract on west side of Sycamore Cross Road, looking southeast.



Figure 6-21: Intersection of Sycamore Cross Drive and Mill Swamp Road showing Civil War-era "store" to the right (within exclusion parcel) and c.1899 farmhouse (VDHR# 046-5150) to the left, looking north.



Figure 6-22: Ruinous c.1825 structure (VDHR# 046-0057) located southeast of Sycamore Cross Road and Mill Swamp Drive, looking east.



Figure 6-23: View of ruinous c.1825 structure (VDHR# 046-0057), looking north.



Figure 6-24: Interior view of ruinous c.1825 structure (VDHR# 046-0057), looking southeast



Figure 6-25: Circa 1825 "Gray's Brick House" (VDHR# 046-0056) in western portion of assessment area, looking northeast.



Figure 6-26: Depression near Gray's Brick House, looking west.



Figure 6-27: Second depression near Gray's Brick House, looking north.



Figure 6-28: Brick pile near Gray's Brick House, looking southeast.



Figure 6-29: Gray's Brick House setting, looking north.



Figure 6-30: Swampy area at rear of western parcel, looking northeast.



Figure 6-31: Push-pile and stone in treeline near Civil War-era map-projected building site in western parcel, looking southwest.



Figure 6-32: View of c.1899 farmhouse (VDHR# 046-5150), looking west.

Four judgmental shovel test pits were excavated throughout this testing area including one near the standing c.1825 Grays Brick House (Judgmental STP 5), one within an area of native woodland (Judgmental STP 4), one within an area of young, mixed vegetation (Judgmental STP 9), and one

within a recently timbered area (Judgmental STP 3). Soils in these parcels vary drastically based on location. Soils near the Gray's House were undisturbed, primarily consisting of 10YR 4/3 sandy loam topsoil over top of 2.5Y 5/4 sandy clay subsoil (Figure 6-33). The shovel test pit in the native woodland area had similar stratigraphy; dry, although with wetland qualities, consisting of 10YR 3/2 Silty loam over 10YR 6/1 Sandy clay (Figure 6-34). The judgmental tests in the recently timbered areas were considerably deeper and disturbed. The soils in STP 3 consisted of a 2.5Y 5/6 Sandy clay loam (A horizon) over 10YR 5/6 Sandy clay (B horizon) (Figure 6-35).



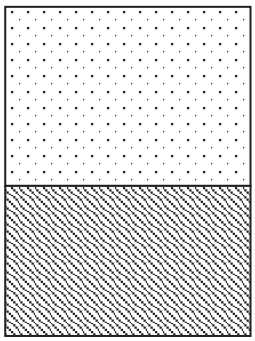


Figure 6-33: Soil Profile of Judgmental 5.



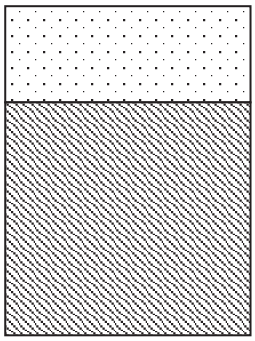
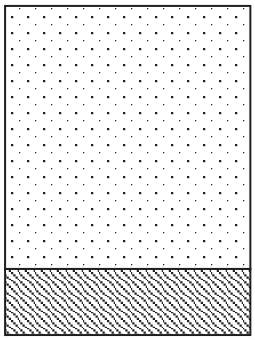


Figure 6-34: Soil Profile of Judgmental 4.





2.5Y 5/6 Sandy clay loam
0-68 cm

10YR 5/6 Sandy clay
68-80 cm

Figure 6-35: Soil Profile of Judgmental 3.

SOUTHERN PARCELS

The Southern Parcels area consists of seven tracts of land sited at the southern end of the overall study area. The area spans Ramsey Road (State Rte 622) with three parcels on the west side of the road and three on the east side, as well as one on the south side of Rattlesnake Trail. The parcels generally back up to small drainages that dissect the area (Figure 6-36).

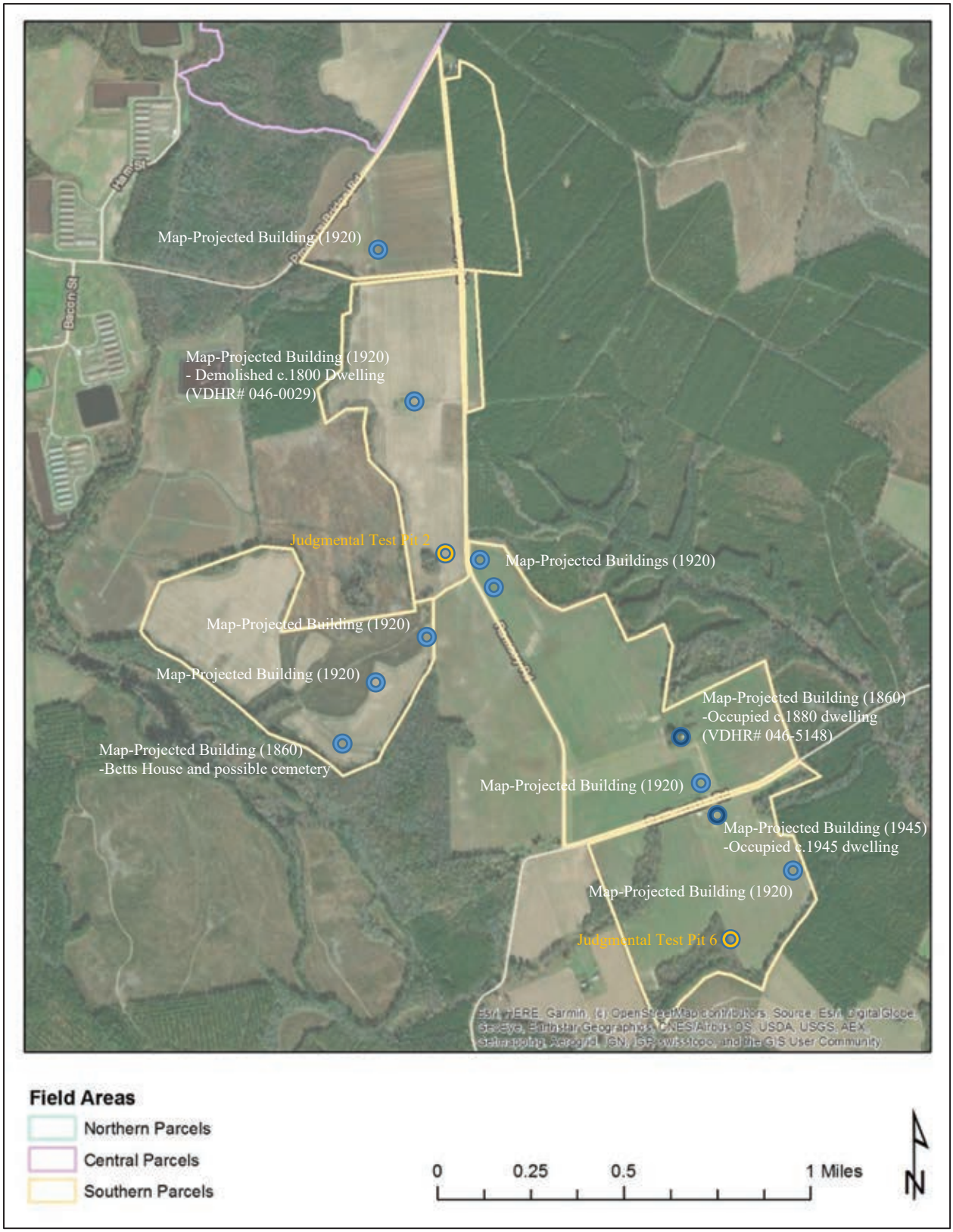


Figure 6-36: Southern parcels map.

At present time, this area is primarily open agricultural field with just small patches of planted and recently harvested timber, as well as smaller patches of vegetated native woodland. The timber harvested area is limited to the southwestern-most parcel abutting a drainage leading to Blackwater River that was harvested within the last three years. A network of logging roads leads through this parcel and beyond the timbered area to an agricultural field at the rear. Another large patch of planted pine is situated on the east side of Ramsay Road at the northeastern edge of this area. The native woodlands are limited to treelines bordering two low drainages that cross through the southeastern-most parcel and a larger patch of woodland in the northernmost parcel (Figure 6-37 and Figure 6-38). Vegetation in these areas consists of a mix of deciduous trees and some evergreens. The remaining portions of the southern parcel area are primarily agricultural fields that are currently in crop (Figure 6-39 through Figure 6-41). Terrain of this area is nearly flat, particularly within the crop field areas, while the edges and rear of the parcels slopes gently towards the short, low drainages that cross through the southernmost two parcels (Figure 6-42).

There were two standing building complexes observed within the Southern Parcels area, including a single-family home and associated outbuilding set near the road in the front of the southernmost parcel along Rattlesnake Road and a farm complex across the road to the north. The building on the north side of Rattlesnake Road appears to coincide with a Civil War-era map projected building, however, the home is previously recorded as a c.1880 dwelling (VDHR# 046-5148) (Figure 6-43 through Figure 6-45). The extant building on the south side of Rattlesnake Road coincides with a building depicted on a 1945 topographic map. The small frame building appears to date from the second-quarter of the twentieth century (Figure 6-46). Civil War-era maps reveal what is now Ramsey Road was present, as was Rattlesnake Trail, although this road was depicted at that time as secondary route. Another road crossing the area was also depicted and coincides with what is now a private farm lane along the lower edge of the southwestern-most parcel. In addition to the extant home on the north side of Rattlesnake Road that coincides with a Civil War map-projected building but is recorded as a c.1880 dwelling, another home labeled as "Betts" was depicted west of Ramsay Road. That building continues to be depicted on a 1920 topographic map of the area and was inventoried in the 1930s as part of a WPA project. That documentation noted the home as a frame structure and mentioned a family burial in the vicinity, however, no evidence of the structure or cemetery was observed at this time. The 1920 map depicts a number of additional buildings throughout the area as well, including two along the west side of Ramsay Road in the northwestern two parcels, two more set further back from Ramsay Road in the southwestern parcel, two set immediately along the east side of Ramsay Road, and two spanning Rattlesnake Road. Field investigation revealed evidence of one building projected on the west side of Ramsay Road on the 1920 topographic map, but none of the other map-projected buildings from the Civil War-era or 1920 topo map. The building site on the west side of Ramsay Road verified through field inspection was also previously recorded in 1973 as a c.1800 dwelling frame dwelling. At that time, it was noted as remaining in ruinous condition and was updated to demolished by 2005 (VDHR# 046-0029). Field inspection at this time confirmed the building is no longer extant, but the site is still evident as a grassy patch with relic hardwood vegetation at the end of a dirt lane within the center of an otherwise plowed and cultivated agricultural field. Located south of this homesite within the same parcel is a small patch of trees that is not depicted on maps until a 1960s aerial that reveals it as a ring of trees. Inspection at this time revealed a ring of hardwood trees with scrub brush and greenbriers throughout the interior (Figure 6-47). Several fence posts remain around the ring, and the soils were soft and uneven. A surface scatter of cultural materials included iron scrap and a twentieth century bottle dump (Figure 6-48 and Figure 6-49).



Figure 6-37: Wooded area in northern parcel, looking east.



Figure 6-38: View of treeline in vicinity of Judgmental 6, looking north.



Figure 6-39: Landscape within southeastern parcel, looking north.



Figure 6-40: View towards map-project building site (VDHR# 046-0029) within northwestern parcel, looking north.



Figure 6-41: Crops within fields bordering Ramsay Road, looking north.



Figure 6-42: Terrain at edge of field in southernmost parcel, looking south.



Figure 6-43: Extant building on the north side of Rattlesnake Road coinciding with a Civil War map project and previously recorded as a c.1880 dwelling (VDHR# 046-5148), looking northeast.



Figure 6-44: Barn in the vicinity of the previously recorded c.1880 dwelling (VDHR# 046-5148), looking north.



Figure 6-45: Shed in the vicinity of the previously recorded c.1880 dwelling (VDHR# 046-5148), looking northeast.



Figure 6-46: Extant twentieth century dwelling along south side of Rattlesnake Road, looking southwest.



Figure 6-47: Tree ring in northwestern parcel, looking north.



Figure 6-48: Vegetation within tree ring, looking north.



Figure 6-49: Iron scrap within tree ring, looking west.

Two judgmental shovel test pits were excavated in the southern parcels area, including one within an agricultural field in the northwestern parcel in the vicinity of the tree ring, and the other within the southwestern parcel near the edge of a field just inside the deciduous treeline. The shovel test within the field revealed a 28-cm deep 2.5Y 4/4 plow zone over a 2.5Y 5/6 A Horizon that extended to 44 cm deep resting on a 10YR 5/6 sandy clay subsoil (Figure 6-50). The shovel test within the treeline revealed a more natural soil profile consisting of a 2.5Y 4/2 sandy loam layer over 2.5YR 5/6 sandy clay loam (Figure 6-51).

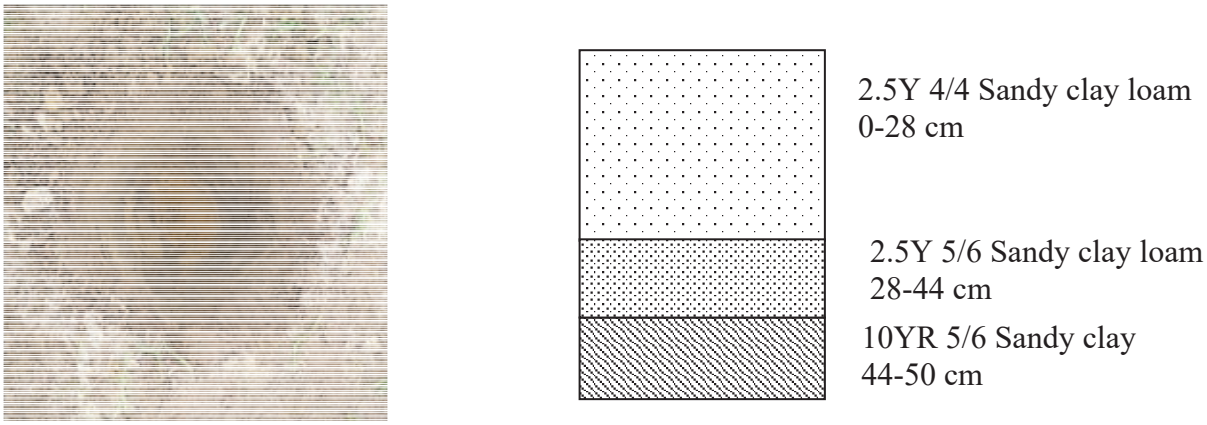
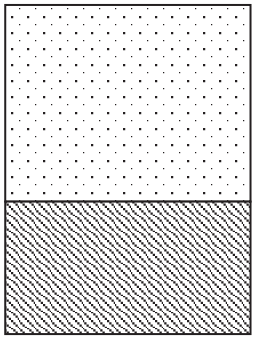


Figure 6-50: Soil Profile of Judgmental 2.





2.5Y 4/2 Sandy loam
0-24 cm

2.5Y 5/6 Sandy clay loam
24-37 cm

Figure 6-51: Soil Profile of Judgmental 6.

7. CONCLUSIONS AND RECOMMENDATIONS

In August 2023 Dutton +Associates, LLC (D+A) completed a Phase IA cultural resource assessment of the ±817.46-Hectare (2,020-Acre) Sycamore Cross Solar study area in Isle of Wight and Surry counties, Virginia. The assessment was conducted for planning purposes in order to confirm existing conditions of the study area, note surface evidence of cultural activity, and identify recommended survey methods based upon the results of the background research and field reconnaissance. The study area is located near the border of Isle of Wight and Surry counties generally along Sycamore Cross Road, Ramsey Road, Mill Swamp Road, Rattlesnake Trail, and White Hill Trail. The study area consists of multiple parcels and tracts of land that may not correspond precisely with the boundaries chosen for the final development of the project. Rather, the study area represents the maximum extent of the parcels being considered for development.

Analysis of historic maps and aerial photographs from the mid-nineteenth to early-twentieth century reveal a well-established network of roads and a number of dwellings scattered across the study area during that period. Previous cultural resource survey has recorded a number of buildings from that period, although many have since been demolished and the study area is now sparsely developed. Just seven (7) building/building complexes remain extant within the study area, although they range from good condition and occupied to ruinous and abandoned. Several additional homes and building complexes are within or bordering the overall study area limits but are in carve-out parcels excluded from development. Buildings/complexes within the study area include two ruinous early-nineteenth century dwellings, three late-nineteenth century dwellings, a vacant early-twentieth century dwelling, and a mid-twentieth century dwelling. Field inspection revealed evidence of two additional map projected buildings that remain only as sites.

The study area is bordered by Blackwater River and Mill Swamp and crossed by numerous swamps, drainages, and pocosins. These natural resources would have been attractive to prehistoric hunters and gatherers, but the terrain within the study was not likely to have supported large, permanent settlements. The primary prehistoric resources that are likely to be present are small, temporary procurement camps located above the wetlands, however, no such sites have been previously recorded within the study area limits.

Although the study area contains a number of site-predictive factors, such as the natural resources, a historic road network, and mapped buildings, land use throughout the twentieth and twenty-first centuries has negatively impacted the stratigraphic integrity of the soils. Much of the study area has been used to produce timber for an extended period of time and multiple harvests resulting in multiple episodes of clearcutting, planting, and regrowth. Most of the regrowth has been in the form of trees planted in steeply-banked rows interspersed with deep furrows, and in most cases the topsoil and eluviated layers have been destroyed or displaced. Areas not put to use for timber have been used agriculturally and therefore subject to regular plow and tilling.

Based on the above observations, the locations of the map-projected buildings that were field verified as well as previously recorded architectural resources should be considered high potential for historic sites. Together, these account for an area covering about **34 hectares (85 acres)** total. The map-projected locations of buildings that were not visible through surface reconnaissance but reveal evidence of prior disturbance from logging should be considered moderate potential for

historic sites. Landforms bordering Blackwater River should likewise be considered moderate potential for prehistoric sites, in addition to open, well-drained fields that have not be previously disturbed by logging. Together, the moderate potential area covers an area of about **365 hectares (901 acres)** total. A 25% sample of the moderate potential areas should be subjected to targeted subsurface testing. This sample should include the least disturbed landforms that correspond to or share similar characteristics as the locations of buildings depicted on historic maps. The remainder of the study area that does not lie in wetland should be considered low potential for archaeological resources. A sample constituting 10% of the low-potential area should be subjected to subsurface testing. This 10% should include the least-disturbed terraces overlooking wetlands and intersections of streams to test for prehistoric resources; along the edges of roads and field depicted on Civil War-era maps to test for early historic sites; and any other areas that appear to be less disturbed in the field. The total low probability area is about **170 hectares (421 acres).** A large tract of land at the northern end of the study area has been subject to recent, approved phase I survey and that area will not require further investigation as part of this effort (Table 7-1 and Figure 7-1 and Figure 7-2).

Table 7-1: Summary of archaeological potential within the study area.

Potential	Reason	STP Sample	Total Area	STP Area
High	Yard space around extant and map-projected architectural resources	100%	34 hectares 85 acres	34 hectares 85 acres
Moderate	Yard space around map-projected architectural resources in areas of documented disturbance. Finger ridges and terraces overlooking Blackwater River and confluences.	25%, chosen based on field conditions, pedestrian survey of remainder	365 hectares 901 acres	91 hectares 225 acres
Low	Areas with no site predictors	10%, chosen based on field conditions, pedestrian survey of remainder	170 hectares 421 acres	17 hectares 42 acres
No Subsurface Testing	Wetlands, water-saturated soils, slopes greater than 15%, previously surveyed areas	Pedestrian survey where possible	248 hectares 613 acres	Pedestrian survey where possible
Total			**817.46 hectares 2,020 acres**	**142 hectares 352 acres**

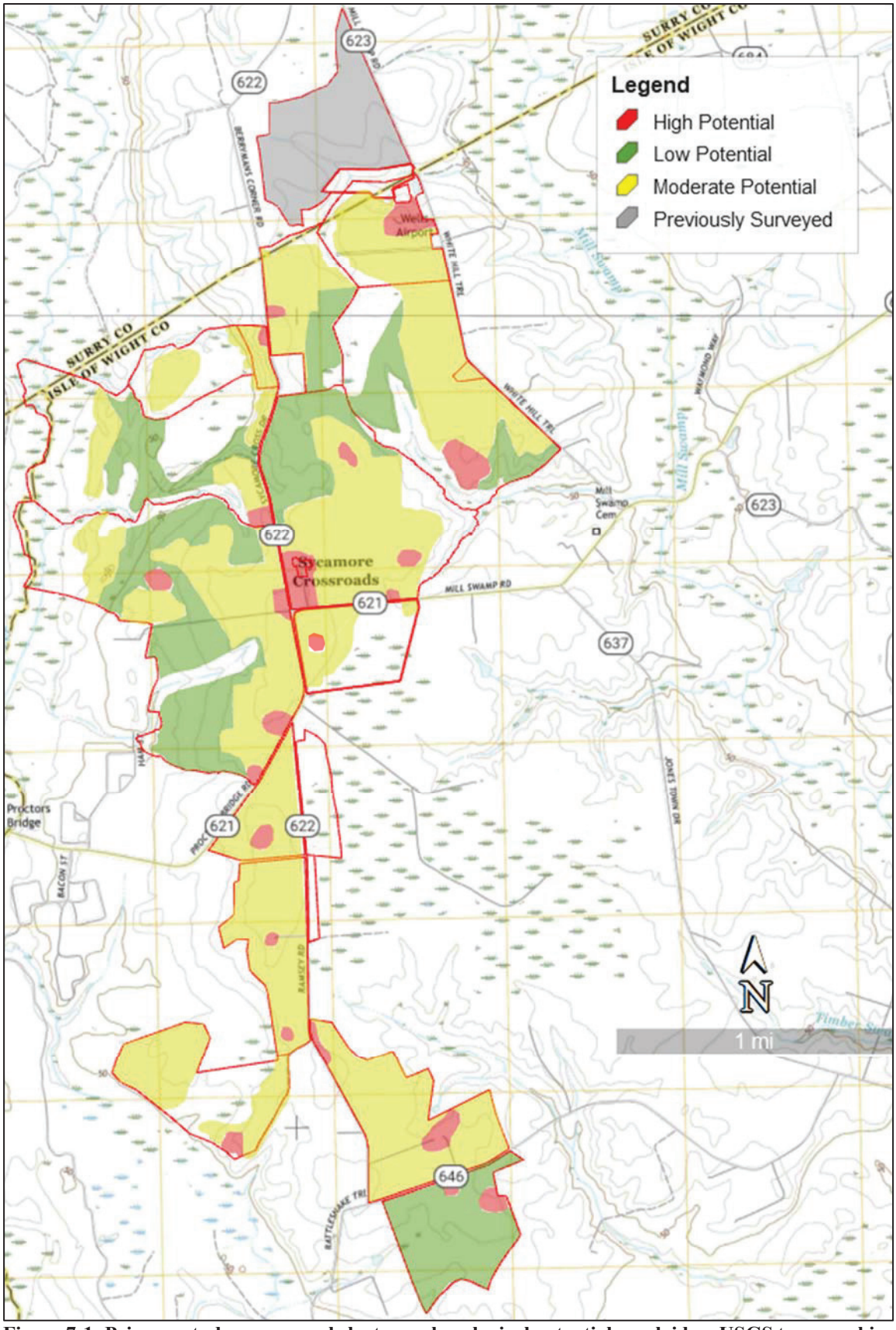


Figure 7-1: Primary study area parcel cluster archaeological potential overlaid on USGS topographic map.

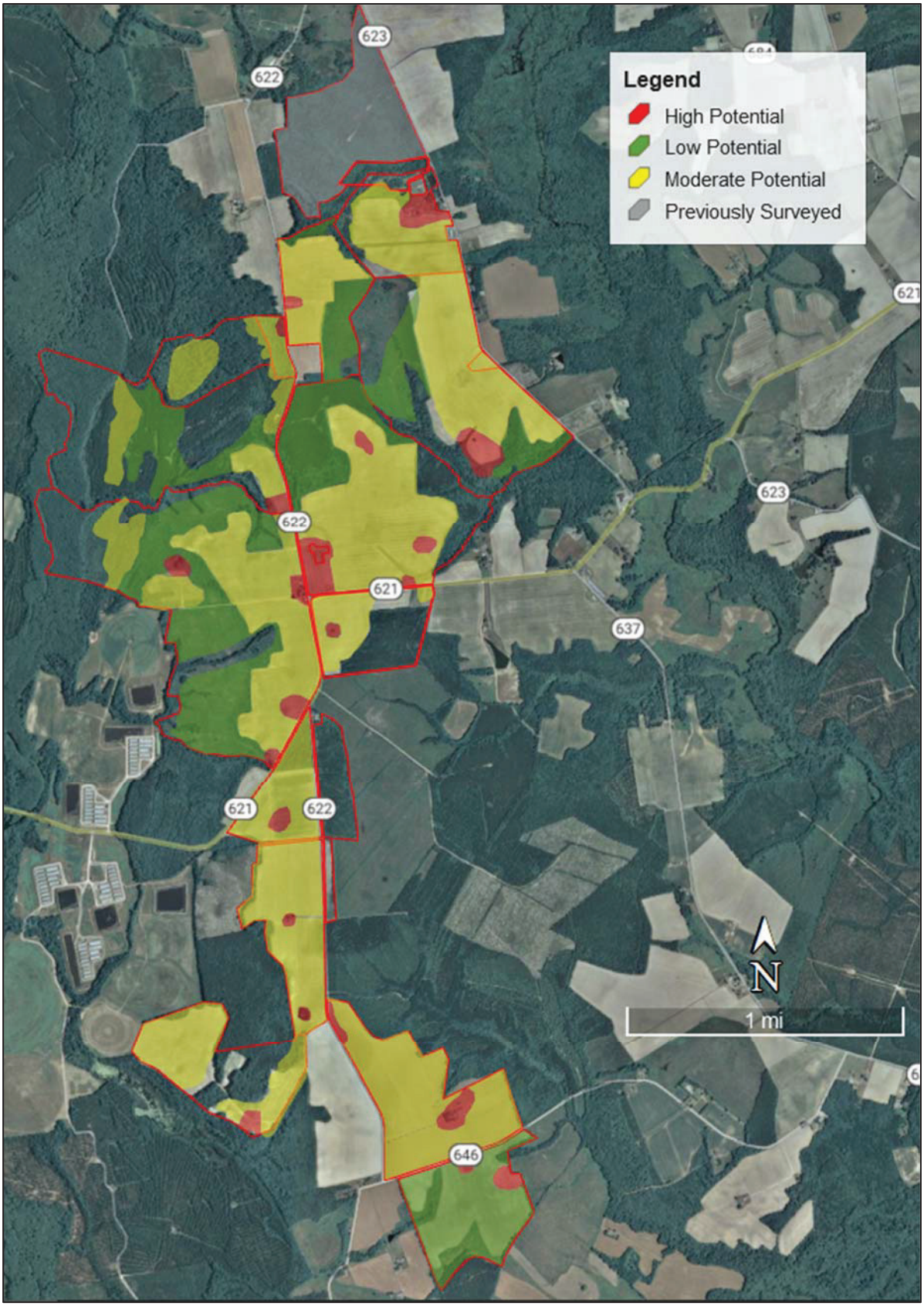


Figure 7-2: Primary study area parcel cluster archaeological potential overlaid on aerial photography.

COMMONWEALTH of VIRGINIA

Travis A. Voyles
Secretary of Natural and Historic Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director
Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

August 28, 2023

Julia Wellman
Dept. of Environmental Quality
Office of Environmental Impact Review
P.O. Box 1105
Richmond, VA 23218

RE- Application of Sycamore Cross Solar, LLC, PUR-2023-00126
Isle of Wight and Surry Counties, VA
DEQ #23-108S
DHR File No. 2023-4691

Dear Ms. Wellman

We have received your request for comments on the project referenced above. Our comments are provided as assistance to the Department of Environmental Quality (DEQ) and the State Corporation Commission (SCC) in the review of this application. In general, the SCC application does not reflect the full record of consultation on this project, nor does it sufficiently identify potential impacts to historic properties that may be eligible for listing in the Virginia Landmarks Register (VLR)/National Register of Historic Places (NRHP).

On August 2, 2023, DHR received the OEIR review request. The application includes a Phase IA desktop analysis and proposed survey strategy for the Sycamore Cross Solar project area. Typically, DHR does not consider desktop analyses to be sufficient for identifying historic properties that may be eligible for the listing in the VLR/NRHP. Furthermore, the proposed survey strategy included in the application for the Sycamore Cross Solar project is, in our opinion, inadequate for identifying archaeological resources within the project area.

In a letter dated August 14, 2023, DHR provided comments to the applicant's consultants, Dutton and Associates (D+A) regarding the proposed survey strategy in the Phase IA desktop analysis report. DHR recommended revising the probability map to more accurately reflect previous disturbance and site probability. On August 24, 2023, DHR received a revised Phase IA report from D+A. The newly revised survey strategy is generally sufficient for identifying archaeological resources within the project area; however, this revised Phase IA is not included in the SCC application. The application should be amended to include the revised Phase IA report.

As stated earlier, desktop analyses are typically not considered sufficient for identifying historic resources that are eligible for listing in the VLR/NRHP and assessing the full impacts of a project on historic resources. Without a sufficient identification of historic properties, it is difficult for DHR to provide meaningful comments about potential adverse impacts. The desktop analysis does state that there are areas with moderate to high potential

for archaeological resources. These areas should be adequately surveyed, and any identified sites should be evaluated for eligibility for listing in the VLR/NRHP and assessed for impacts. The desktop analysis also listed previously identified architectural resources within the study area that have not been evaluated for the VLR/NRHP. Moderate to severe impacts to VLR/NRHP-eligible/listed resources should be avoided, minimized or mitigated in consultation with DHR and other stakeholders.

While DHR often supports the phased review of electric transmission line projects regulated by the SCC, solar projects often have much larger footprints and more extensive impacts on historic resources. We are concerned that any approval by the SCC at this time would be made with insufficient information to make an informed decision regarding the potential impact of this project on significant historic resources. That said, in order to fully identify and address impacts to historic resources, we recommend the following:

1. The SCC application must be updated to include the revised Phase IA report and amended survey plan.
2. Any project approval should allow for sufficient flexibility in design to accommodate avoidance of significant archaeological sites and minimization of visual impacts to adjacent properties and construction should not commence until the studies and analyses listed below and completed.
3. Archaeological and architectural surveys should be completed by qualified professionals in accordance with DHR's *Survey Guidelines* and the revised Phase IA report prior to any significant project-related ground disturbance. All identified resources should be evaluated for listing in the VLR/NRHP.
4. The results of the archaeological and architectural surveys should be submitted to DHR for review and comment.
5. Potential direct and indirect impacts to all VLR/NRHP-eligible/listed resources, including previously inaccessible properties, should be assessed in consultation with DHR.
6. All moderate to severe impacts to VLR/NRHP-eligible/listed resources should be avoided, minimized, and/or mitigated by the applicant in consultation with DHR and other stakeholders.

If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,



Jenny Bellville-Marrion
Project Review Archaeologist
Review and Compliance Division

Cc: Robert Taylor, Dutton and Associates

ISLE of WIGHT COUNTY MUSEUM

MEMORANDUM

TO: Amy Ring, Director of Community Development, Isle of Wight County

FROM: Jennifer England
Director, Isle of Wight County Museum
Historic Resources Manager, Isle of Wight County

RE: Sycamore Cross Solar Energy Generation Facility
Conditional Use Permit (CUP-8-23) – Third Submittal Tax Map Numbers 09-01-001, 10-01-017, 11-01-015, 16-01-002, 16-01- 002A, 16-01-003, 16-01-008, 16-01-009, 17-01-003, 17-01-003C, 17-01- 001, 17-01-002, 27-01-003, and 27-01-004

DATE: March 26, 2024

After reviewing the **Updated Historical and Cultural Resources Report Dated August 2023** as prepared by Dutton + Associates for AES Clean Energy and sPower with reference to Conditional Use Permit (CUP-8-23), the Isle of Wight County Museum/Isle of Wight County Department of Historic Resources acknowledges that much of the acreage to be developed as a solar energy facility has been plowed, logged and utilized as farmland for many years. However, there are still a few notable concerns, and some of them are noted here as they were in a previous memorandum.

The report's study area includes multiple parcels and tracts of land--some of these span Isle of Wight County's border to cross into Surry County. Within the project area, there are multiple recorded archaeological and architectural resources. These sites as well as their boundaries are considered high potential for archaeological discovery. Expanding the project area by one mile adds other resources to this list. Vegetative cover may be required for the varied project locations within the viewshed of some of these historic resources.

103 Main Street
Smithfield, VA 23430
(757) 356-1014
(757) 357-0114 FAX

ISLE of WIGHT COUNTY MUSEUM

Of particular note are these sites. Avoidance with a 100-foot buffer is recommended. In the event that is not possible, a Phase II evaluation should be required.

- Site 44SYO309, farmstead
- Site 44SY0310, archaeological materials with a single grave
- Cemeteries in areas D2 and D3

There are nine previously recorded architectural resources located within the study area. Only two have been formally evaluated by Virginia Department of Historic Resources staff for eligibility on the National Register of Historic Places. Before proceeding with the project, the remaining resources should be formally evaluated. Additionally, these dwellings may or may not have associated cemeteries which will require avoidance.

Overall, the proposed project will certainly impact – both directly and indirectly - archaeological, cultural or architectural historic resources in Isle of Wight County. Determining the full extent of the project's archaeological history may not be possible because of size; however, if the project proceeds, an on-site archaeologist during site preparation and construction should be considered.

The potential on the project site for archaeological artifacts is highly likely. As the project proceeds, the Isle of Wight County Museum should be the repository for discovered artifacts and future finds on this site as they will further the interpretation or discovery of Isle of Wight County history.

103 Main Street
Smithfield, VA 23430
(757) 356-1014
(757) 357-0114 FAX

SYCAMORE CROSS SOLAR
ECONOMIC & FISCAL CONTRIBUTION TO THE COUNTIES OF SURRY AND ISLE OF WIGHT, VIRGINIA



Prepared for

aes

MANGUM economics

4198 COX ROAD, SUITE 104
GLEN ALLEN, VIRGINIA 23060
804-322-7777

MANGUMECONOMICS.COM

SEPTEMBER 2023

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About Mangum Economics, LLC

Mangum Economics is a Glen Allen, Virginia based firm that was founded in 2003. Since then, we have become known as a leader in industry analysis, economic impact assessment, policy and program evaluation, and economic and workforce strategy development. The Mangum Team specializes in producing objective and actionable quantitative economic research that our clients use for strategic decision making in a variety of industries and environments. We know that our clients are unique, and that one size does not fit all. As a result, we have a well-earned reputation for tailoring our analyses to meet the specific needs of specific clients, with a specific audience.

Most of our research falls into four general categories:

- **Economic Development and Special Projects:** The Mangum Team has performed hundreds of analyses of proposed economic development projects. One recent example was an analysis of the proposed $2.3 billion Green City "net-zero eco district." The Mangum Team has also authored multiple economic development plans, including identifying industry recruitment opportunities created by the high-speed MAREA and BRUSA sub-sea cable landings in Virginia Beach.
- **Energy:** The Mangum Team has produced analyses of the economic and fiscal impact of over 23 GW of proposed solar, wind, battery, and hydro projects spanning twenty states. Among those projects was Dominion Energy's 2.6 GW Coastal Virginia Offshore Wind project off of Virginia Beach. In addition, the Mangum Team has also performed economic and fiscal impact analyses for the natural gas, nuclear, oil, and pipeline industries.
- **Information Technology:** Working with some of the largest names in the industry, to date the Mangum Team has produced analyses of the economic and fiscal impact of the data center industry in multiple states. Among those, were studies conducted in IL, MD, and VA that were instrumental in the passage of industry-specific legislation.
- **Policy Analysis:** The Mangum Team also has extensive experience in identifying and quantifying the intended and unintended economic consequences of proposed legislative and regulatory initiatives.

The Project Team

Rebecca Kyle, *Senior Research Analyst*

Martina Arel, M.B.A., *Director – Economic Development & Energy Research*

A. Fletcher Mangum, Ph.D., *Founder and CEO*

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Executive Summary

This report assesses the economic and fiscal contribution that the proposed Sycamore Cross Solar project would make to the counties of Surry and Isle of Wight, Virginia. The primary findings from that assessment are as follows:

1) **Sycamore Cross Solar is a proposed 240-megawatt (MW) alternating current (AC) solar photovoltaic power generating facility. The project would be located northeast of US Highway 460 and west of Route 10 in the counties of Surry and Isle of Wight, Virginia. The total acreage leased and purchased for the project would be approximately 1,156 acres of timberland and agricultural land.**
    - The actively used, fenced-in portion of the project site would encompass approximately 125 acres located in Surry County and approximately 1,030 acres located in Isle of Wight County.
    - The project would involve an investment of $437.1 million in capital equipment and improvements to the existing property. Approximately $34.6 million of that total would be located in Surry County and approximately $402.5 million would be located in Isle of Wight County.[1]

2) **The proposed Sycamore Cross Solar project would make a significant economic contribution to the counties of Surry and Isle of Wight:**
    - The proposed Sycamore Cross Solar project would provide an estimated one-time pulse of economic activity to the counties of Surry and Isle of Wight during its construction phase supporting approximately:
        - 197 direct, indirect, and induced job years.
        - $9.9 million in associated wages and benefits.
        - $91.6 million in economic output.
    - The proposed Sycamore Cross Solar project would provide an estimated annual economic impact to the counties of Surry and Isle of Wight during its ongoing operational phase supporting approximately:
        - 7 direct, indirect, and induced jobs.
        - $0.6 million in associated wages and benefits.
        - $1.6 million in economic output.

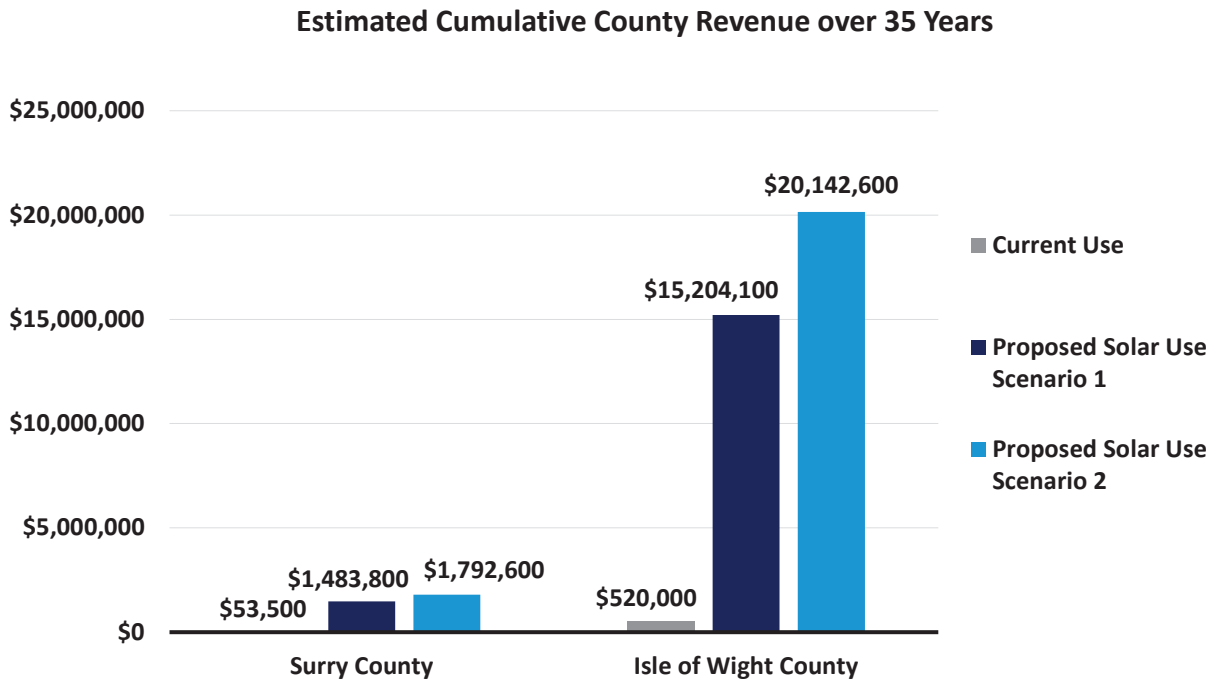
3) **The proposed Sycamore Cross Solar project would also make a significant fiscal contribution to the counties of Surry and Isle of Wight. The proposed project would generate approximately:**
    - $1.4 million in state and local tax revenue from the one-time pulse of economic activity associated with the project's construction.

[1] Data Source: AES Corporation. Allocation of generation capacity and investment subject to change based on final design.

- Surry County:
  - $1.5 million in cumulative county revenue over the facility's anticipated 35-year operational life assuming revenues are generated from the reassessment of the real property and the taxation of the associated capital investments, (Scenario 1); or
  - $1.8 million in cumulative county revenue over the facility's anticipated 35-year operational life assuming revenues are generated from the reassessment of the real property and payments associated with a locally adopted revenue share ordinance. The payments would be based on the project's generation capacity and would include a 10 percent escalator every five years (Scenario 2).
- Isle of Wight County:
  - $15.2 million in cumulative county revenue over the facility's anticipated 35-year operational life assuming revenues are generated from the reassessment of the real property and the taxation of the associated capital investments, (Scenario 1); or
  - $20.1 million in cumulative county revenue over the facility's anticipated 35-year operational life assuming revenues are generated from the reassessment of the real property and payments associated with a locally adopted revenue share ordinance. The payments would be based on the project's generation capacity and would include a 10 percent escalator every five years (Scenario 2).

4) **The proposed Sycamore Cross Solar project would have a significantly greater fiscal impact on The counties of Surry and Isle of Wight than the property generates in its current use:**

- Surry County: The proposed Sycamore Cross Solar project would generate approximately $1.5 million (from taxation on capital investments) or $1.8 million (from a revenue share ordinance) in cumulative county revenue over the facility's anticipated 35-year operational life, as compared to approximately $53,500 in cumulative county revenue in the property's current use – that's a 28- to 34-fold increase over the current use revenues.
- Isle of Wight County: The proposed Sycamore Cross Solar project would generate approximately $15.2 million (from taxation on capital investments) or $20.1 million (from a revenue share ordinance) in cumulative county revenue over the facility's anticipated 35-year operational life, as compared to approximately $520,000 in cumulative county revenue in the property's current use – that's a 29- to 39-fold increase over current use revenues.



The estimates provided in this report are based on the best information available and all reasonable care has been taken in assessing the quality of that information. However, because these estimates attempt to foresee the consequences of circumstances that have not yet occurred, it is not possible to be certain that they will be representative of actual events. These estimates are intended to provide a good indication of likely future outcomes and should not be construed to represent a precise measure of those outcomes.

Introduction

This report assesses the economic and fiscal contribution that the proposed Sycamore Cross Solar project would make to the Counties of Surry and Isle of Wight, Virginia. This report was commissioned by AES Clean Energy (AES) and produced by Mangum Economics.

The Project

Sycamore Cross Solar is a proposed 240-megawatt (MW) alternating current (AC) solar photovoltaic power generating facility. The project would be located northeast of US Highway 460 and west of Route 10 in the counties of Surry and Isle of Wight, Virginia. The total acreage leased and purchased for the project would be approximately 1,156 acres of timberland and agricultural land. The estimated actively used, fenced-in solar site encompasses approximately 125 acres in Surry County and 1,030 acres in Isle of Wight County.

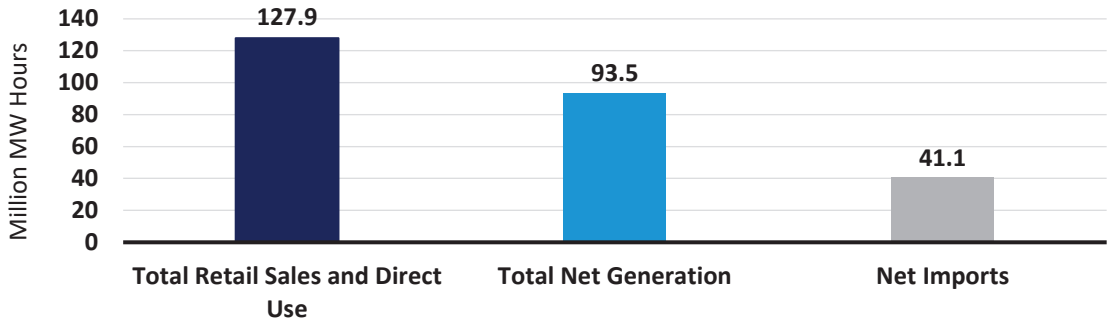
Electricity Production in Virginia

This section provides a backdrop for the proposed Sycamore Cross Solar project by profiling Virginia's electricity production sector and the role that solar energy could play in that sector.

Overall Market

As shown in Figure 1, in 2021 electricity sales and direct use in Virginia totaled 127.9 million megawatt hours, ranking the state 10th among the fifty states in terms of electricity consumption. However, only 73 percent of that demand was met by in-state utilities, independent producers, and other sources. As a result, Virginia had to import the remaining electricity it consumed from producers in other states. As with all imports, this means that the jobs, wages, and economic output created by that production went to localities in those states, not to localities in Virginia.

Figure 1: Demand and Supply of Electricity in Virginia in 2021 (in millions of megawatt-hours)[2]



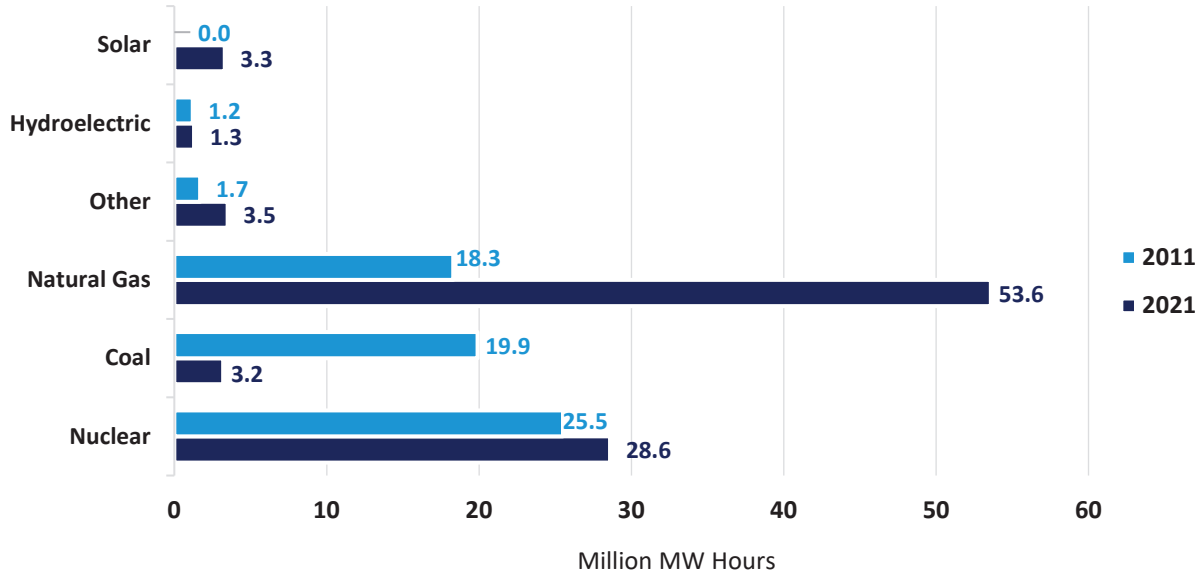
[2] Data Source: U.S. Energy Information Administration. In this chart, "Net Imports" also takes into account losses during transmission. As a result, it does not directly equal the residual of "Total Net Generation" minus "Total Retail Sales and Direct Use."

Sources of Production

Between 2011 and 2021, the total amount of electricity produced in Virginia increased from 66.7 to 93.5 million megawatt hours, while retail and direct consumption of electricity increased from 112.1 to 127.9 million megawatt hours. Consequently, imports of electricity decreased by 11.8 million megawatt hours (or 22 percent) during this time.[3] Figure 2 provides a comparison of the energy sources that were used to produce electricity in Virginia in each of those years. As these data show, the most significant change between 2011 and 2021 was a decrease in the use of coal and an increase in the use of natural gas. Where coal was the state's second largest source of electricity in 2011, accounting for 19.9 million megawatt hours (or 29.9 percent) of production, by 2021 production had fallen by 16.7 million megawatt hours, making coal a distant fifth place source of electricity with only 3.4 percent of production.

In contrast, the share of electricity produced using cleaner-burning low-emissions energy sources increased over the period. Where natural gas accounted for only 18.3 million megawatt hours (or 27.5 percent) of Virginia's electricity production in 2011, by 2021 that proportion had almost tripled to 53.6 million megawatt hours (or 57.3 percent of production), making natural gas the state's largest source of electricity. In addition, solar, which entered the Virginia electricity production market in 2016, increased its share to 3.3 million megawatt hours in 2021.

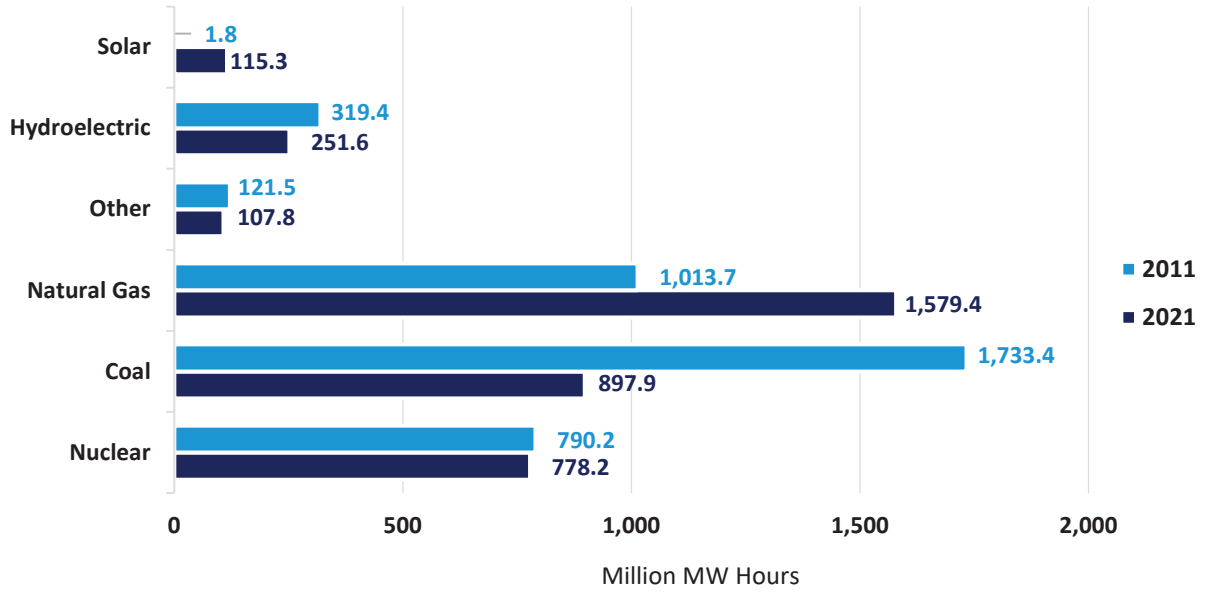
Figure 2: Electricity Generation in Virginia by Energy Source in 2011 and 2021 (in millions of megawatt-hours)[4]



[3] Imports also takes into account losses during transmission. As a result, totals do not equal sum of components.
[4] Data Source: U.S. Energy Information Administration. The "Other" category includes battery, wood, wind, petroleum, other biomass, "other", and pumped storage.

Figure 3 provides similar data for the U.S. as a whole. A quick comparison of Figures 2 and 3 shows that although the degree of reliance on specific energy sources for electricity production is quite different between the U.S. and Virginia, the trend toward lower-emissions energy sources is the same. Nationally, between 2011 and 2021 the amount of electricity produced using coal declined by 835.5 million megawatt hours from 42 to 22 percent of production, while in contrast the amount of electricity produced using natural gas increased by 565.7 million megawatt hours from 25 to 38 percent of production. Nationwide, as in Virginia, the reliance on renewable energy sources such as solar increased during this time but at a slower pace than in Virginia. Between 2011 and 2021, the amount of electricity produced using solar increased by 113.5 million megawatt hours to 2.8 percent of total electricity production in the nation compared to 3.5 percent of total electricity production in Virginia.

Figure 3: Electricity Generation in the United States by Energy Source in 2011 and 2021 (in millions of megawatt-hours)[5]

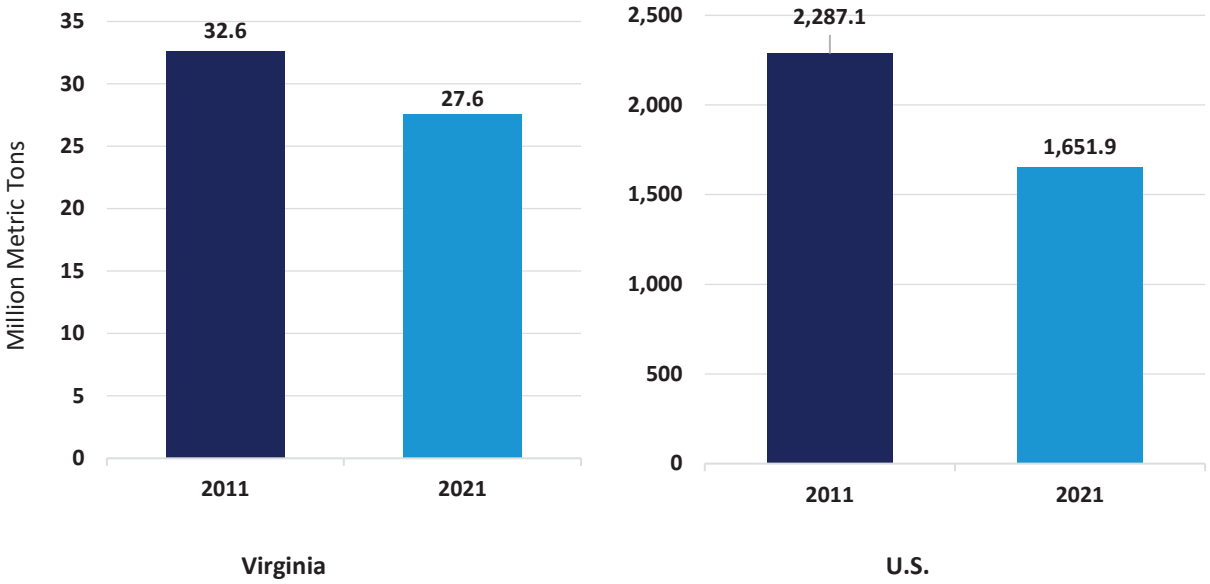


Impact on the Environment

In discussing the impact of these trends on the environment, it is important to realize that electricity production is one of the U.S.'s largest sources of greenhouse gas emissions. Figure 4 depicts carbon dioxide emissions from electricity production in 2011 and 2021 for both Virginia and the U.S. As these data indicate, between 2011 and 2021, as the share of electricity produced in Virginia by coal fell from 29.9 to 3.4 percent, carbon dioxide emissions from electricity production fell from 32.6 to 27.6 million metric tons. Where at the national level, as the share of electricity produced by coal fell from 42 to 22 percent, carbon dioxide emissions from electricity production fell from 2,287.1 to 1,651.9 million metric tons.

[5] Data Source: U.S. Energy Information Administration. "Other" includes battery, geothermal, hydroelectric, other, other biomass, other gas, petroleum, pumped storage, wind, and wood.

Figure 4: Carbon Dioxide Emissions from Electricity Production (millions of metric tons)[6]



[6] Data Source: U.S. Energy Information Administration.

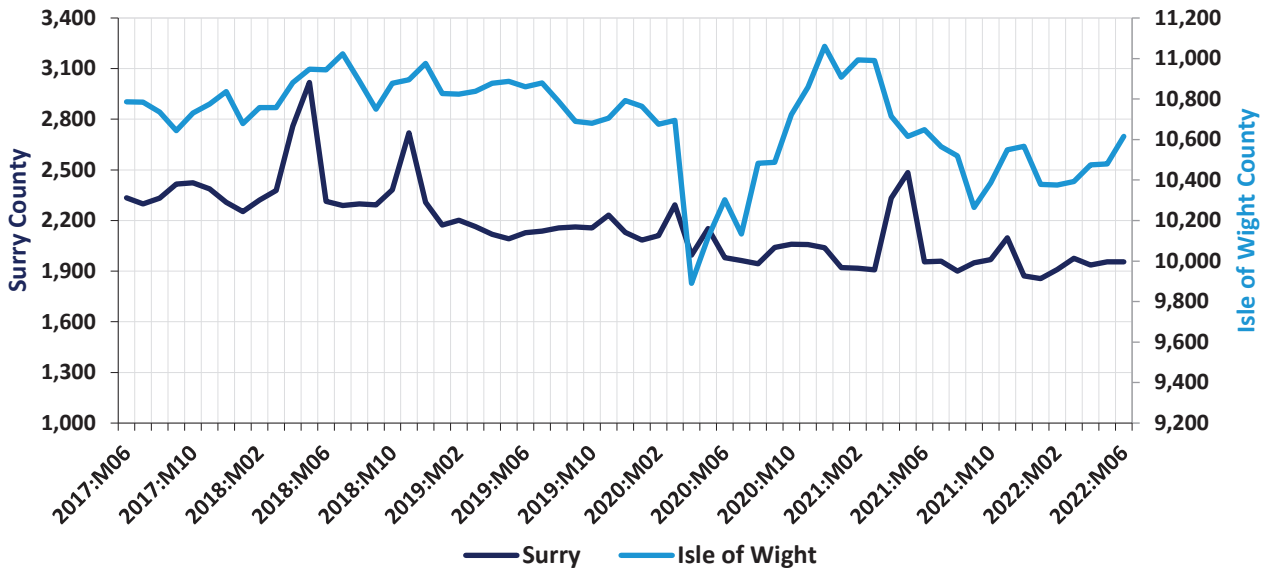
Local Economic Profile

This section provides context for the economic and fiscal impact assessments to follow by profiling the local economies of the counties of Surry and Isle of Wight.

Total Employment

Figure 5 depicts the trend in total employment in the counties of Surry and Isle of Wight from June 2017 through June 2022. As these data show, employment in Surry County generally declined through the five-year period. Employment in Isle of Wight County remained generally stable until the decrease in economic activity associated with the COVID-19 pandemic led to a steep employment decline in Isle of Wight County in April 2020. Since then, employment has rebounded back to pre-pandemic levels. As of June 2022, county employment stood at 1,956 jobs in Surry County and 10,616 jobs in Isle of Wight County. This represents an overall decrease in employment of 16.2 percent (or 379 jobs) in Surry County and 1.6 percent (or 170 jobs) in Isle of Wight County over the five-year period. To put this number in perspective, over this same period, total statewide employment in Virginia increased by 1.5 percent.[7]

Figure 5: Total Employment in the Counties of Surry and Isle of Wight– June 2017 to June 2022[8]

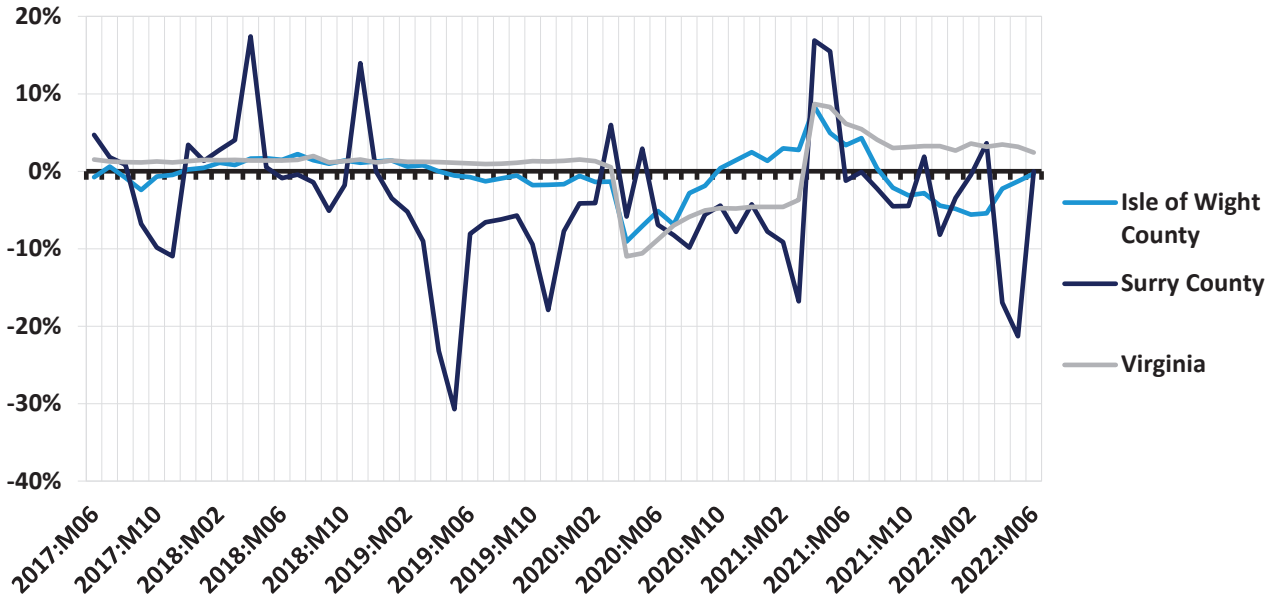


To control for seasonality and provide a point of reference, Figure 6 compares the year-over-year change in total employment in the counties of Surry and Isle of Wight to that of the state of Virginia over the same five-year period. Any point above the zero line in this graph indicates an increase in employment, while any point below the zero line indicates a decline in employment. As these data show, Surry County experienced periods of high employment growth and high employment loss throughout the period. Isle of Wight County tracked closely with the statewide trend throughout the

[7] Data Source: U.S. Bureau of Labor Statistics.
[8] Data Source: U.S. Bureau of Labor Statistics.

five-year period. As of June 2022, the year-over-year change in total employment was 0 percent in Surry County and minus 0.3 percent in Isle of Wight County as compared to 2.4 percent statewide in Virginia.

Figure 6: Year-Over-Year Change in Total Employment – June 2017 to June 2022[9]



Employment and Wages by Industry Supersector

To provide a better understanding of the underlying factors motivating the total employment trends depicted in Figures 5 and 6, Figures 7 through 9 provide data on private employment and wages in the counties of Surry and Isle of Wight by industry supersector.[10]

Figure 7 provides an indication of the distribution of private sector employment across industry supersectors in the counties of Surry and Isle of Wight in the second quarter of 2022. As these data indicate, the largest industry sector that quarter in Surry County was Trade, Transportation, and Utilities (873 jobs). In Isle of Wight County, the largest industry sector that quarter was Manufacturing (2,646 jobs).

Figure 8 provides a similar ranking for average private sector weekly wages by industry supersector in the counties of Surry and Isle of Wight in the second quarter of 2022. As these data show, the highest paying industry sector that quarter in Surry County was Trade, Transportation and Utilities ($2,088 per week). In Isle of Wight County, the highest paying sector was Information ($2,089 per week).

[9] Data Source: U.S. Bureau of Labor Statistics.
[10] A "supersector" is the highest level of aggregation in the coding system that the Bureau of Labor Statistics uses to classify industries.

Figure 7: Private Employment by Industry Supersector in the Counties of Surry and Isle of Wight– 2nd Qu. 2022[11]

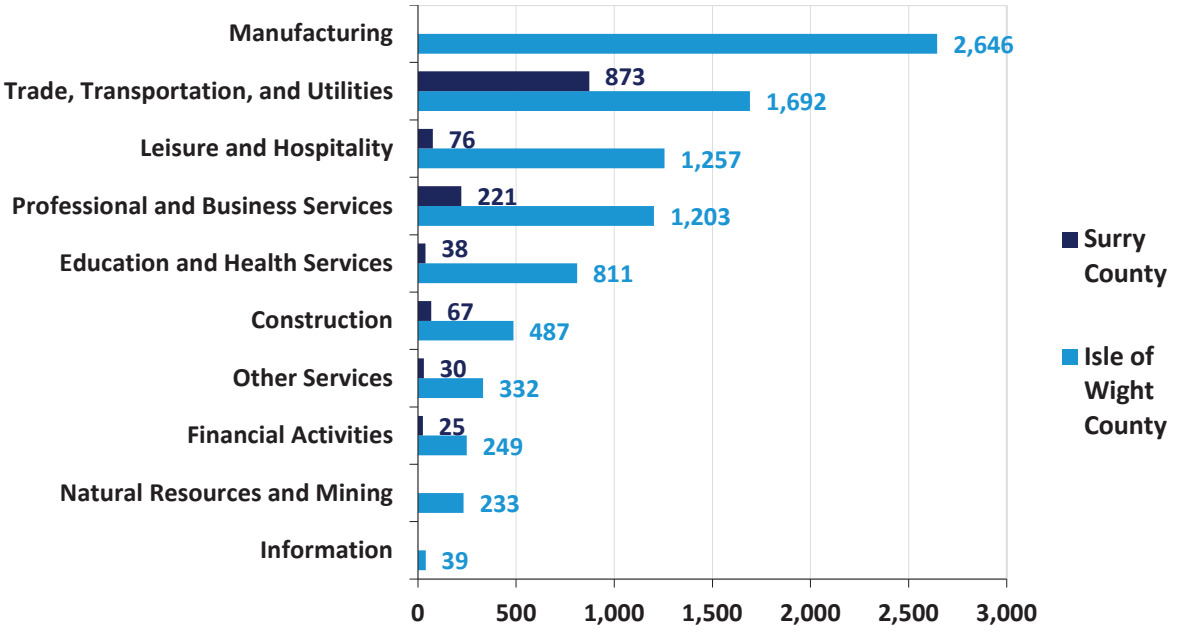
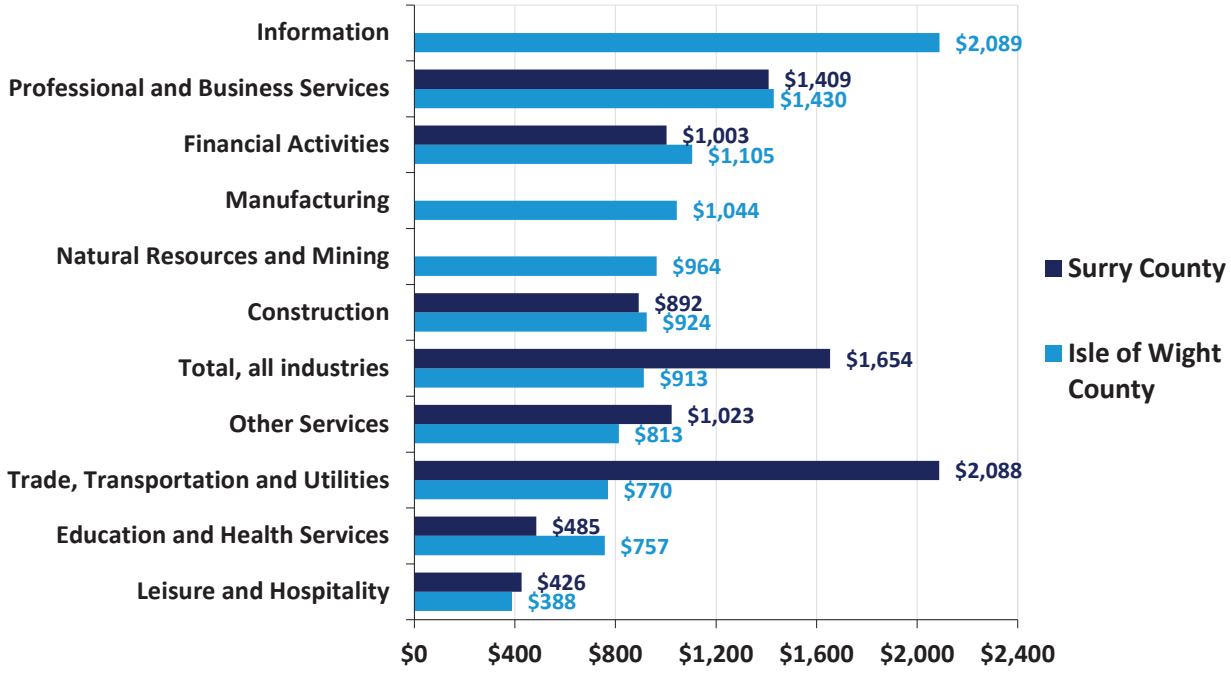


Figure 8: Average Private Weekly Wages by Industry Supersector in the Counties of Surry and Isle of Wight – 2nd Qu. 2022[12]

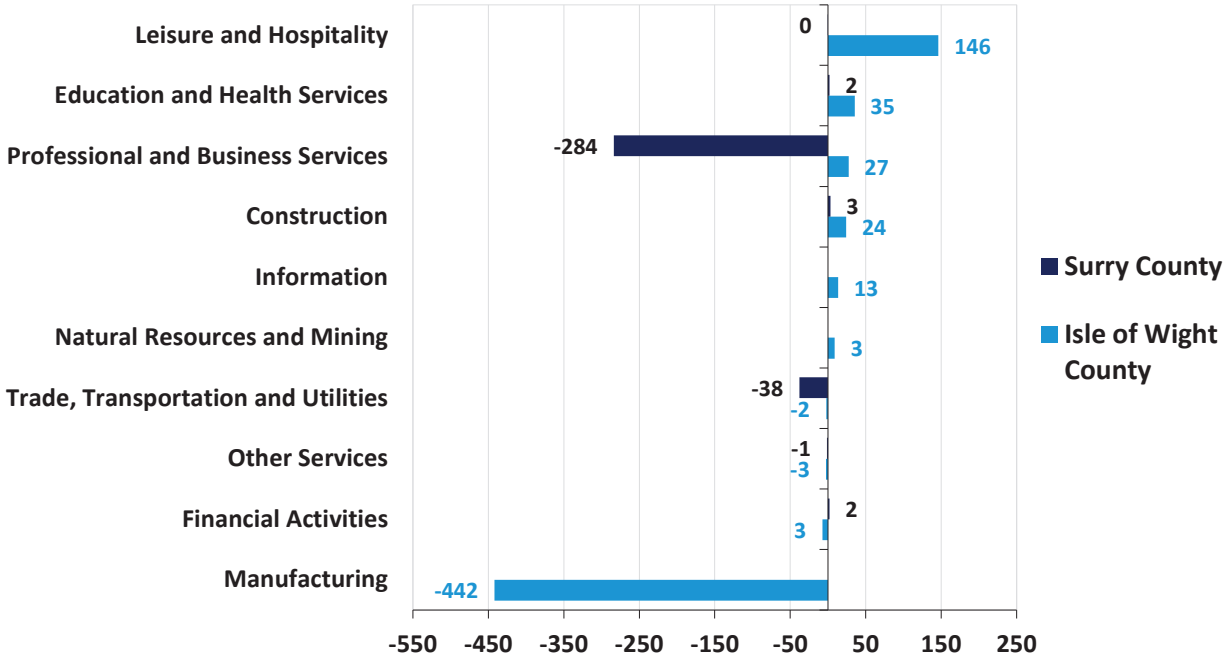


[11] Data Source: U.S. Bureau of Labor Statistics. Data on the Natural Resources and Mining, Manufacturing, and Information sectors in Surry County have been suppressed due to data confidentiality.

[12] Data Source: U.S. Bureau of Labor Statistics. Data on the Natural Resources and Mining, Manufacturing, and Information sectors in Surry County have been suppressed due to data confidentiality.

Figure 9 details the year-over-year change in private sector employment from the second quarter of 2021 to the second quarter of 2022 in the counties of Surry and Isle of Wight by industry supersector. Over this period, the largest employment gains in Surry County occurred in the Construction (up 3 jobs) sector, and the largest employment loss occurred in the Professional and Business Services (down 284 jobs) sector. The largest employment gain in Isle of Wight County occurred in the Leisure and Hospitality (up 146 jobs) sector, and the largest employment loss occurred in the Manufacturing (down 442 jobs) sector.

Figure 9: Change in Private Employment by Industry Supersector in the Counties of Surry and Isle of Wight from 2nd Qu. 2021 to 2nd Qu. 2022[13]

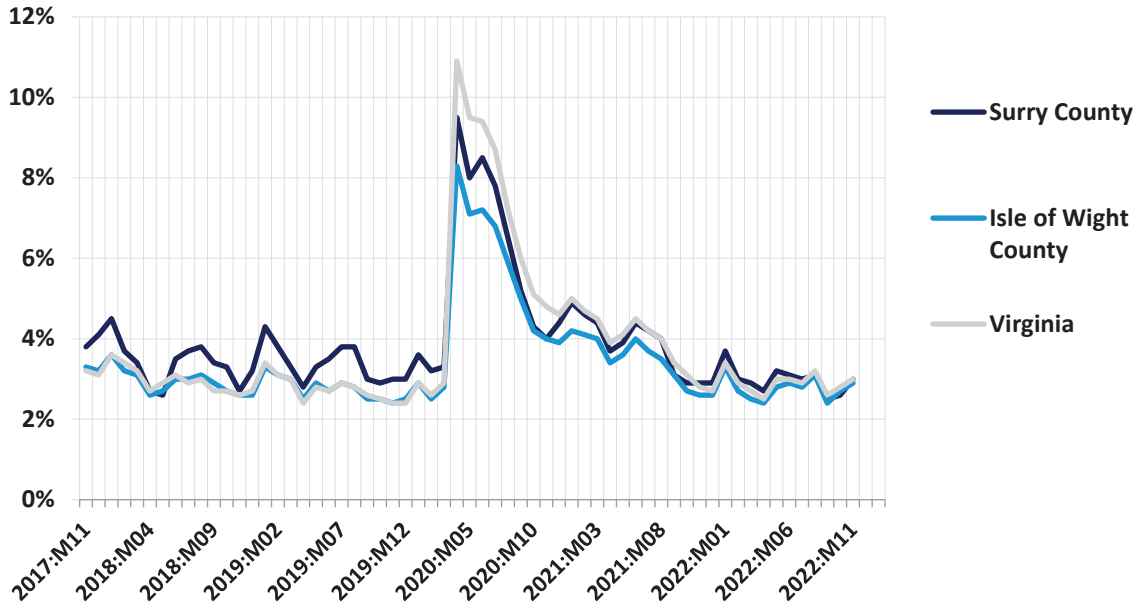


Unemployment

Figure 10 illustrates the unemployment trend in the counties of Surry and Isle of Wight over the five-year period from November 2017 through November 2022 and benchmarks those data against the statewide trend for Virginia. As these data show, unemployment rates in the counties of Surry and Isle of Wight generally tracked closely to the statewide norm. In April 2020 unemployment in both the counties and the state significantly rose as a result of the labor dislocations caused by the COVID-19 pandemic. The counties' unemployment rates did not peak as high as the statewide rate. As of November 2022, unemployment stood at 3.0 percent in Surry County, 2.9 percent in Isle of Wight County, and 3.0 percent in Virginia as a whole.

[13] Data Source: Bureau of Labor Statistics. Data on the Natural Resources and Mining, Manufacturing, and Information sectors in Surry County have been suppressed due to data confidentiality.

Figure 10: Unemployment Rate – November 2017 to November 2022[14]



[14] Data Source: Bureau of Labor Statistics.

Economic and Fiscal Impact

This section quantifies the economic and fiscal contribution that the proposed Sycamore Cross Solar project would make to the counties of Surry and Isle of Wight. The analysis separately evaluates the one-time pulse of economic activity that would occur during the construction phase of the project, as well as the annual economic activity that the project would generate during its ongoing operations phase.

Method

To empirically evaluate the likely local economic impact attributable to the proposed Sycamore Cross Solar project, the analysis employs a regional economic impact model called IMPLAN.[15] The IMPLAN model is one of the most commonly used economic impact simulation models in the U.S., and in Virginia is used by UVA's Weldon Cooper Center, the Virginia Department of Planning and Budget, the Virginia Employment Commission, and other state agencies and research institutes. Like all economic impact models, the IMPLAN model uses economic multipliers to quantify economic impact.

Economic multipliers measure the ripple effects that an expenditure generates as it makes its way through the economy. For example, as when the Sycamore Cross Solar project purchases goods and services – or when contractors hired by the facility use their salaries and wages to make household purchases – thereby generating income for someone else, which is in turn spent, thereby becoming income for yet someone else, and so on, and so on. Through this process, one dollar in expenditures generates multiple dollars of income. The mathematical relationship between the initial expenditure and the total income generated is the economic multiplier.

One of the primary advantages of the IMPLAN model is that it uses regional and national production and trade flow data to construct region-specific and industry-specific economic multipliers, which are then further adjusted to reflect anticipated actual spending patterns within the specific geographic study area that is being evaluated. As a result, the economic impact estimates produced by IMPLAN are not generic. They reflect as precisely as possible the economic realities of the specific industry, and the specific study area, being evaluated.

In the analysis that follows, these impact estimates are divided into three categories. First round direct impact measures the direct economic contribution of the entity being evaluated (e.g., own employment, wages paid, goods and services purchased by the Sycamore Cross Solar project). Second round indirect and induced impact measures the economic ripple effects of this direct impact in terms of business to business, and household (employee) to business, transactions. Total impact is simply the sum of the preceding two. These categories of impact are then further defined in terms of employment (the jobs that are created), labor income (the wages and benefits associated with those jobs), and economic output (the total amount of economic activity that is created in the economy).

[15] IMPLAN is produced by IMPLAN Group, LLC.

Construction Phase

This portion of the section assesses the economic and fiscal impact that the one-time pulse of activity associated with construction of the proposed Sycamore Cross Solar project would have on the counties of Surry and Isle of Wight.

Inputs and Assumptions

The analysis is based on the following inputs and assumptions:

- Total investment in the Sycamore Cross Solar project is estimated to be approximately $437.1 million.[16]
- Of that total:
    - Architecture, engineering, site preparation, and other construction and development costs are estimated to be approximately $253.1 million.[17]
    - Capital equipment costs are estimated to be approximately $184.0 million.[18] It is anticipated that no capital equipment would be purchased from vendors in the counties of Surry and Isle of Wight.[19]
- For ease of analysis, all construction expenditures are assumed to take place in a single year.

Economic Impact

Applying these inputs in the IMPLAN model results in the following estimates of one-time economic and fiscal impact. As shown in Table 1, construction of the proposed Sycamore Cross Solar project would directly provide a one-time pulse supporting approximately: 1) 102 job years, 2) $5.3 million in wages and benefits, and 3) $75.9 million in economic output to the counties of Surry and Isle of Wight.

Taking into account the economic ripple effects that direct investment would generate, the total estimated one-time impact on the counties of Surry and Isle of Wight would support approximately: 1) 197 job years, 2) $9.9 million in wages and benefits, 3) $91.6 million in economic output, and 4) $1.4 million in state and local tax revenue.

[16] Data Source: AES.
[17] Data Source: AES.
[18] Data Source: AES.
[19] Data Source: IMPLAN Group LLC.

Table 1: Estimated One-Time Economic and Fiscal Impact on the Counties of Surry and Isle of Wight from Construction of the Sycamore Cross Solar Project[20,21]

Economic Impact	Employment (Job Years)[22]	Wages and Benefits	Output
1st Round Direct Economic Activity	102	$5,253,400	$75,938,700
2nd Round Indirect and Induced Economic Activity	95	$4,671,900	$15,708,700
Total Economic Activity	**197**	**$9,925,300**	**$91,647,400**
Fiscal Impact			
State and Local Tax Revenue			**$1,431,500**

**Totals may not sum due to rounding.*

Ongoing Operations Phase

This portion of the section assesses the annual economic and fiscal impact that the proposed Sycamore Cross Solar project would have on the counties of Surry and Isle of Wight during its anticipated 35-year operational phase.

Economic Impact Inputs

The analysis is based on the following inputs:

- The Sycamore Cross Solar project would employ approximately five individuals and spend approximately $1.3 million each year for maintenance and repair, vegetative control, and other operational expenditures.[23]

Economic Impact

Applying these inputs in the IMPLAN model results in the following estimates of annual economic impact. As shown in Table 2, annual operation of the proposed Sycamore Cross Solar project would on average directly support approximately: 1) 5 jobs, 2) $0.5 million in wages and benefits, and 3) $1.3 million in economic output to the counties of Surry and Isle of Wight.

[20] It is important to note that construction sector jobs are not necessarily new jobs, but the investments made can also support an existing job during the construction of the project. Due to preliminary nature of the project, the analysis is based on industry averages. Actual spending patterns may vary based on vendor contracts and final design.
[21] A construction sector job, also referred to as a job year, is equal to one job over one year. It is used to denote employment on construction projects where the construction schedule extends beyond one year and to account for the fact that actual on-site employment may vary over the period.
[22] Please note that it is not possible to determine how much of the economic impact would take place in specifically Isle of Wight County or Surry County. That level of granularity is not available for a regional analysis.
[23] Data Source: AES.

Taking into account the economic ripple effects that direct impact would generate, the total estimated annually supported impact on the counties of Surry and Isle of Wight would be approximately: 1) 7 jobs, 2) $0.6 million in wages and benefits, and 3) $1.6 million in economic output.

Table 2: Estimated Annual Economic Impact on the Counties of Surry and Isle of Wight from the Ongoing Operation of the Sycamore Cross Solar Project[24]

Economic Impact	Employment	Wages and Benefits	Output
1st Round Direct Economic Activity	5	$501,200	$1,250,000
2nd Round Indirect and Induced Economic Activity	2	$82,900	$302,700
Total Economic Activity	**7**	**$584,100**	**$1,552,700**

**Totals may not sum due to rounding.*

Fiscal Impact Inputs and Assumptions

The analysis is based on the following inputs and assumptions:

- The Sycamore Cross Solar project would involve an investment of approximately $437.1 million in capital equipment and improvements to the existing property. Approximately $34.6 million of that total would be invested in Surry County and approximately $402.5 million in Isle of Wight County.[25]
- The Sycamore Cross Solar project would be situated on approximately 125 acres in Surry County and on approximately 1,030 acres in Isle of Wight County.[26]
- The actively used, fenced-in acreage in Surry County would be reassessed at $13,000 per acre.[27]
- The actively used, fenced-in acreage in Isle of Wight County would be removed from the land use program and reassessed at $15,000 per acre.[28]
- Tax rates and locality ratios remain constant throughout the analysis.
- The initial interconnection request for Sycamore Cross Solar was filed in March 2017.[29]
- The Sycamore Cross Solar project's total generation capacity would be 240 MW AC, of which approximately 19 MW would be located in Surry County and approximately 221 MW would be located in Isle of Wight County.[30]
- The Sycamore Cross Solar project would become operational in the fourth quarter of 2026.[31]

[24] Please note that it is not possible to determine how much of the economic impact would take place in specifically Isle of Wight County or Surry County. That level of granularity is not available for a regional analysis.
[25] Data Source: AES.
[26] Data Source: AES.
[27] Data Source: Surry County Commissioner of Revenue's Office. Current assessment value of existing solar farm in the county.
[28] Data Source: Isle of Wight County Commissioner of Revenue's Office. Current assessment value of existing solar farm in the county.
[29] Data Source: AES.
[30] Data Source: AES.
[31] Data Source: AES.

Fiscal Impact – Surry County

This portion of the section quantifies the direct fiscal contribution that the proposed Sycamore Cross Solar project would make to Surry County. The analysis considers two scenarios. Both scenarios include the additional revenue that the Sycamore Cross Solar project would generate for Surry County over a 35-year period from the increased property assessments associated with reassessing the site as solar use property. Scenario 1 then describes the additional revenue Sycamore Cross Solar would generate for Surry County from taxes levied on the capital investment, while Scenario 2 assumes tax revenue generated from the capital investment will be replaced with revenue associated with a locally adopted revenue share ordinance and based on the project's total generation capacity.

Reassessment of Property

Table 3 details the increased property assessments associated with reassessing the 125-acre fenced-in site as solar use property. The county real estate tax revenue from the project after reassessment is estimated to be approximately $11,600 per year, for a cumulative total of approximately $404,600 over the project's anticipated 35-year operational life expectancy.[32] In contrast, the property currently generates approximately $1,530 per year in real estate tax revenue for the county, for a cumulative total of approximately $53,500 over 35 years.[33]

Table 3: Estimated Surry County Revenue Generated by the Proposed Sycamore Cross Solar Project over 35 Years from Real Estate Taxes

Estimated Increased Appraised Value of Property under Solar Use[34]	$1,628,100
Surry County Real Estate Tax Rate	0.0071
Annual County Real Estate Tax – Solar Use	$11,600
Cumulative Revenue over 35 Years	**$404,600**

**Totals may not sum due to rounding.*

Scenario 1: Taxation of Capital Investment

Table 4 separately details the additional annual revenue that the proposed Sycamore Cross Solar project would generate for Surry County over a 35-year period from taxes levied on capital investment. This calculation is based on: 1) the taxable portion of capital investments pursuant to the 80 percent local tax exemption pursuant to Virginia Code §58.1-3660[35], times 2) the State Corporation Commission's utility assessment ratio for taxation of public utilities in Surry County, times 4) the State Corporation

[32] Assumes property will be reassessed at $13,000 per acre once it is under solar use.
[33] Derived from Surry County's Real Estate Assessment database. Includes value of existing structures.
[34] Calculated as 125 acres times $13,000.
[35] The Virginia Code §58.1-3660 stipulates that solar facilities over 20MW for which an interconnection request was filed between January 1, 2015 and June 30, 2018 are subject to an 80 percent exemption from local property taxes.

Commission's depreciation guidelines for solar facilities, times 5) Surry County's real property tax rate of $0.71 per $100 of assessed value pursuant to Virginia Code §58.1-2606.

As the data in Table 4 indicate, based on these calculations the estimated additional county revenue from taxation of capital investments associated with the proposed Sycamore Cross Solar project would be approximately $43,600 in the project's first year of operation, with that figure projected to decline to approximately $4,800 in the project's 34th year of operation and thereafter, as the value of the proposed capital investments is depreciated, for a cumulative total of approximately $1.1 million.

Table 4: Estimated Surry County Revenue by Proposed Solar Investment Over 35 Years

Year	Total Capital Investment subject to Exemption[36]	Depreciated Value of Taxable Capital Investment[37]	Additional Annual County Tax Revenue Solar Investment[38]
1	$34,602,325	$6,141,221	$43,600
2	$34,602,325	$6,141,221	$43,600
3	$34,602,325	$6,141,221	$43,600
4	$34,602,325	$6,141,221	$43,600
5	$34,602,325	$6,141,221	$43,600
6	$34,602,325	$6,141,221	$43,600
7	$34,602,325	$6,141,221	$43,600
8	$34,602,325	$6,141,221	$43,600
9	$34,602,325	$6,120,068	$43,500
10	$34,602,325	$6,016,349	$42,700
11	$34,602,325	$5,906,490	$41,900
12	$34,602,325	$5,790,489	$41,100
13	$34,602,325	$5,667,664	$40,200
14	$34,602,325	$5,536,652	$39,300
15	$34,602,325	$5,398,133	$38,300
16	$34,602,325	$5,251,426	$37,300
17	$34,602,325	$5,095,848	$36,200
18	$34,602,325	$4,931,400	$35,000
19	$34,602,325	$4,756,034	$33,800
20	$34,602,325	$4,571,115	$32,500
21	$34,602,325	$4,374,596	$31,100
22	$34,602,325	$4,166,477	$29,600
23	$34,602,325	$3,946,075	$28,000

[36] Data Source: AES.
[37] Accounts for the State Corporation Commission's depreciation guidelines for solar facilities and the utility assessment ratio for taxation of public utilities in Surry County. Also accounts for the 80 percent exemption from local property taxes pursuant to Virginia Code §58.1-3660 for projects over 20 MW with an interconnection request between January 1, 2015 and June 30, 2018.
[38] Calculated pursuant to Virginia Code §58.1-2606 which stipulates that capital equipment owned by utilities is taxed as real property and the local tax rate on that capital equipment would be capped at Surry County's real property tax rate of $0.72 per $100 of assessed value.

Year	Total Capital Investment subject to Exemption[36]	Depreciated Value of Taxable Capital Investment[37]	Additional Annual County Tax Revenue Solar Investment[38]
24	$34,602,325	$3,712,027	$26,400
25	$34,602,325	$3,464,331	$24,600
26	$34,602,325	$3,200,941	$22,700
27	$34,602,325	$2,922,539	$20,800
28	$34,602,325	$2,627,078	$18,700
29	$34,602,325	$2,314,558	$16,400
30	$34,602,325	$1,982,250	$14,100
31	$34,602,325	$1,630,835	$11,600
32	$34,602,325	$1,258,268	$8,900
33	$34,602,325	$863,183	$6,100
34	$34,602,325	$682,358	$4,800
35	$34,602,325	$682,358	$4,800
Estimated Cumulative Total			**$1,079,200**

**Totals may not sum due to rounding.*

Scenario 1: Total Fiscal Impact

Table 5 combines the results from the calculations depicted in Tables 3 and 4 to provide an estimate of the cumulative fiscal contribution that the proposed Sycamore Cross Solar project would make to Surry County over its 35-year anticipated operational life under Scenario 1. As these data indicate, that cumulative total is approximately $1.5 million.

Table 5: Estimated Cumulative Surry County Revenue from the Proposed Sycamore Cross Solar Project over 35 Years under Scenario 1

County Real Estate Tax	$404,600
County Revenue from Taxation of Capital Investments	$1,079,200
Total Cumulative Revenue over 35 Years	**$1,483,800**

**Totals may not sum due to rounding.*

Scenario 2: Revenue Share Ordinance

The following section describes the additional annual revenue that the proposed Sycamore Cross Solar project would generate for Surry County assuming the county adopts an energy revenue share ordinance under Virginia Code §58.1-2636 in lieu of taxes on capital investment. This statute currently stipulates that a locality may assess an annual revenue share of up to $1,400 per megawatt (MW) alternating current (AC) generation capacity of a solar facility. However, legislation that was passed in the 2021 General Assembly (SB 1201/HB 2006) and went into effect July 1, 2021, allows a 10 percent escalator to be applied to the $1,400 per MW revenue share every five years, beginning in 2026.

Table 6 details the revenue generated from a revenue share ordinance including the 10 percent escalator. Based on a total generation capacity of 19 MW AC and an assumed commissioning date in the fourth quarter of 2026, a revenue share ordinance would generate approximately $1.4 million over the anticipated 35-year operational life of the project.

Table 6: Estimated Surry County Revenue Generated from a Revenue Share Ordinance over 35 Years

Year	MW	Revenue Share per MW with Escalator	Annual County Revenue
1	19	$1,540	$29,300
2	19	$1,540	$29,300
3	19	$1,540	$29,300
4	19	$1,540	$29,300
5	19	$1,540	$29,300
6	19	$1,694	$32,200
7	19	$1,694	$32,200
8	19	$1,694	$32,200
9	19	$1,694	$32,200
10	19	$1,694	$32,200
11	19	$1,863	$35,400
12	19	$1,863	$35,400
13	19	$1,863	$35,400
14	19	$1,863	$35,400
15	19	$1,863	$35,400
16	19	$2,050	$38,900
17	19	$2,050	$38,900
18	19	$2,050	$38,900
19	19	$2,050	$38,900
20	19	$2,050	$38,900
21	19	$2,255	$42,800
22	19	$2,255	$42,800
23	19	$2,255	$42,800
24	19	$2,255	$42,800
25	19	$2,255	$42,800
26	19	$2,480	$47,100
27	19	$2,480	$47,100
28	19	$2,480	$47,100
29	19	$2,480	$47,100
30	19	$2,480	$47,100
31	19	$2,728	$51,800
32	19	$2,728	$51,800
33	19	$2,728	$51,800
34	19	$2,728	$51,800
35	19	$2,728	$51,800
Cumulative Total			**$1,388,000**

Scenario 2: Total Fiscal Impact

Table 7 combines the results from the calculations depicted in Tables 3 and 6 to provide an estimate of the cumulative fiscal contribution that the proposed Sycamore Cross Solar project would make to Surry County over its 35-year anticipated operational life under Scenario 2. As these data indicate, that cumulative total is approximately $1.8 million.

Table 7: Estimated Cumulative Surry County Revenue from the Proposed Sycamore Cross Solar Project over 35 Years under Scenario 2

	Total Revenue
County Real Estate Tax	$404,600
County Revenue from Revenue Share Ordinance	$1,388,000
Total Cumulative Revenue over 35 Years	**$1,792,600**

Fiscal Impact – Isle of Wight County

This portion of the section quantifies the direct fiscal contribution that the proposed Sycamore Cross Solar project would make to Isle of Wight County. The analysis considers two scenarios. Both scenarios include the additional revenue that the Sycamore Cross Solar project would generate for Isle of Wight County over a 35-year period from the increased property assessments associated with reassessing the site as solar use property. Scenario 1 then describes the additional revenue Sycamore Cross Solar would generate for Isle of Wight County from taxes levied on the capital investment, while Scenario 2 assumes tax revenue generated from the capital investment will be replaced with revenue associated with a locally adopted revenue share ordinance and based on the project's total generation capacity.

Reassessment of Property

Table 8 details the increased property assessments associated with removing the affected acreage from the land use program and reassessing the 1,030-acre fenced-in site as solar use property. The county real estate tax revenue from the project after reassessment is estimated to be approximately $109,700 per year, for a cumulative total of approximately $3.8 million over the project's anticipated 35-year operational life expectancy.[39] Adding one-time rollback taxes of approximately $157,700 increases that cumulative total to approximately $4.0 million. In contrast, the property currently generates approximately $14,900 per year in real estate tax revenue for the county, for a cumulative total of approximately $520,000 over 35 years.[40]

Table 8: Estimated Isle of Wight County Revenue Generated by the Proposed Sycamore Cross Solar Project over 35 Years from Real Estate Taxes

Estimated Increased Appraised Value of Property under Solar Use[41]	$15,455,300
Isle of Wight County Real Estate Tax Rate	0.0071
Annual County Real Estate Tax – Solar Use	$109,700
Cumulative Revenue over 35 Years	**$3,840,600**
One-time Rollback Taxes[42]	**$157,700**
Cumulative Revenue over 35 Years	**$3,998,300**

**Totals may not sum due to rounding.*

[39] Assumes property will be reassessed at $15,000 per acre once it is under solar use.
[40] Derived from Isle of Wight County's Real Estate Assessment database. Includes value of existing structures.
[41] Calculated as 1,030 acres times $15,000.
[42] Rollback taxes are computed as the difference between the land use value assessment tax and the tax on the fair market value for the affected acreage for five complete tax years plus the current year, including simple interest. Does not account for changes in assessment values.

Scenario 1: Taxation of Capital Investment

Table 9 separately details the additional annual revenue that the proposed Sycamore Cross Solar project would generate for Isle of Wight County over a 35-year period from taxes levied on capital investment. This calculation is based on: 1) the taxable portion of capital investments pursuant to the 80 percent local tax exemption pursuant to Virginia Code §58.1-3660[43], times 2) the State Corporation Commission's utility assessment ratio for taxation of public utilities in Isle of Wight County, times 4) the State Corporation Commission's depreciation guidelines for solar facilities, times 5) Isle of Wight County's real property tax rate of $0.71 per $100 of assessed value pursuant to Virginia Code §58.1-2606.

As the data in Table 9 indicate, based on these calculations the estimated additional county revenue from taxation of capital investments associated with the proposed Sycamore Cross Solar project would be approximately $452,700 in the project's first year of operation, with that figure projected to decline to approximately $50,300 in the project's 34th year of operation and thereafter, as the value of the proposed capital investments is depreciated, for a cumulative total of approximately $11.2 million.

Table 9: Estimated Isle of Wight County Revenue by Proposed Solar Investment Over 35 Years

Year	Total Capital Investment subject to Exemption[44]	Depreciated Value of Taxable Capital Investment[45]	Additional Annual County Tax Revenue Solar Investment[46]
1	$402,479,675	$63,767,270	$452,700
2	$402,479,675	$63,767,270	$452,700
3	$402,479,675	$63,767,270	$452,700
4	$402,479,675	$63,767,270	$452,700
5	$402,479,675	$63,767,270	$452,700
6	$402,479,675	$63,767,270	$452,700
7	$402,479,675	$63,767,270	$452,700
8	$402,479,675	$63,767,270	$452,700
9	$402,479,675	$63,547,627	$451,200
10	$402,479,675	$62,470,669	$443,500
11	$402,479,675	$61,329,943	$435,400
12	$402,479,675	$60,125,450	$426,900
13	$402,479,675	$58,850,105	$417,800

[43] The Virginia Code §58.1-3660 stipulates that solar facilities over 20MW for which an interconnection request was filed between January 1, 2015 and June 30, 2018 are subject to an 80 percent exemption from local property taxes.
[44] Data Source: AES.
[45] Accounts for the State Corporation Commission's depreciation guidelines for solar facilities and the utility assessment ratio for taxation of public utilities in Isle of Wight County. Also accounts for the 80 percent exemption from local property taxes pursuant to Virginia Code §58.1-3660 for projects over 20 MW with an interconnection request between January 1, 2015 and June 30, 2018.
[46] Calculated pursuant to Virginia Code §58.1-2606 which stipulates that capital equipment owned by utilities is taxed as real property and the local tax rate on that capital equipment would be capped at Isle of Wight County's real property tax rate of $0.71 per $100 of assessed value.

Year	Total Capital Investment subject to Exemption[44]	Depreciated Value of Taxable Capital Investment[45]	Additional Annual County Tax Revenue Solar Investment[46]
14	$402,479,675	$57,489,736	$408,200
15	$402,479,675	$56,051,430	$398,000
16	$402,479,675	$54,528,101	$387,100
17	$402,479,675	$52,912,663	$375,700
18	$402,479,675	$51,205,118	$363,600
19	$402,479,675	$49,384,208	$350,600
20	$402,479,675	$47,464,104	$337,000
21	$402,479,675	$45,423,552	$322,500
22	$402,479,675	$43,262,550	$307,200
23	$402,479,675	$40,974,013	$290,900
24	$402,479,675	$38,543,772	$273,700
25	$402,479,675	$35,971,825	$255,400
26	$402,479,675	$33,236,918	$236,000
27	$402,479,675	$30,346,135	$215,500
28	$402,479,675	$27,278,221	$193,700
29	$402,479,675	$24,033,175	$170,600
30	$402,479,675	$20,582,658	$146,100
31	$402,479,675	$16,933,753	$120,200
32	$402,479,675	$13,065,205	$92,800
33	$402,479,675	$8,962,844	$63,600
34	$402,479,675	$7,085,252	$50,300
35	$402,479,675	$7,085,252	$50,300
Estimated Cumulative Total			**$11,205,800**

**Totals may not sum due to rounding.*

Scenario 1: Total Fiscal Impact

Table 10 combines the results from the calculations depicted in Tables 8 and 9 to provide an estimate of the cumulative fiscal contribution that the proposed Sycamore Cross Solar project would make to Isle of Wight County over its 35-year anticipated operational life under Scenario 1. As these data indicate, that cumulative total is approximately $15.2 million.

Table 10: Estimated Cumulative Isle of Wight County Revenue from the Proposed Sycamore Cross Solar Project over 35 Years under Scenario 1

County Real Estate Tax	$3,998,300
County Revenue from Taxation of Capital Investments	$11,205,800
Total Cumulative Revenue over 35 Years	**$15,204,100**

Scenario 2: Revenue Share Ordinance

The following section describes the additional annual revenue that the proposed Sycamore Cross Solar project would generate for Isle of Wight County assuming the county adopts an energy revenue share ordinance under Virginia Code §58.1-2636 in lieu of taxes on capital investment. This statute currently stipulates that a locality may assess an annual revenue share of up to $1,400 per megawatt (MW) alternating current (AC) generation capacity of a solar facility. However, legislation that was passed in the 2021 General Assembly (SB 1201/HB 2006) and went into effect July 1, 2021, allows a 10 percent escalator to be applied to the $1,400 per MW revenue share every five years, beginning in 2026.

Table 11 details the revenue generated from a revenue share ordinance including the 10 percent escalator. Based on a total generation capacity of 221 MW AC and an assumed commissioning date in the fourth quarter of 2026, a revenue share ordinance would generate approximately $16.1 million over the anticipated 35-year operational life of the project.

Table 11: Estimated Isle of Wight County Revenue Generated from a Revenue Share Ordinance over 35 Years

Year	MW	Revenue Share per MW with Escalator	Annual County Revenue
1	221	$1,540	$340,300
2	221	$1,540	$340,300
3	221	$1,540	$340,300
4	221	$1,540	$340,300
5	221	$1,540	$340,300
6	221	$1,694	$374,400
7	221	$1,694	$374,400
8	221	$1,694	$374,400
9	221	$1,694	$374,400
10	221	$1,694	$374,400
11	221	$1,863	$411,800
12	221	$1,863	$411,800
13	221	$1,863	$411,800
14	221	$1,863	$411,800
15	221	$1,863	$411,800
16	221	$2,050	$453,000
17	221	$2,050	$453,000
18	221	$2,050	$453,000
19	221	$2,050	$453,000
20	221	$2,050	$453,000
21	221	$2,255	$498,300
22	221	$2,255	$498,300
23	221	$2,255	$498,300
24	221	$2,255	$498,300
25	221	$2,255	$498,300
26	221	$2,480	$548,100

Year	MW	Revenue Share per MW with Escalator	Annual County Revenue
27	221	$2,480	$548,100
28	221	$2,480	$548,100
29	221	$2,480	$548,100
30	221	$2,480	$548,100
31	221	$2,728	$602,900
32	221	$2,728	$602,900
33	221	$2,728	$602,900
34	221	$2,728	$602,900
35	221	$2,728	$602,900
Cumulative Total			**$16,144,300**

Scenario 2: Total Fiscal Impact

Table 12 combines the results from the calculations depicted in Tables 8 and 11 to provide an estimate of the cumulative fiscal contribution that the proposed Sycamore Cross Solar project would make to Isle of Wight County over its 35-year anticipated operational life under Scenario 2. As these data indicate, that cumulative total is approximately $20.1 million.

Table 12: Estimated Cumulative Isle of Wight County Revenue from the Proposed Sycamore Cross Solar Project over 35 Years under Scenario 2

	Total Revenue
County Real Estate Tax	$3,998,300
County Revenue from Revenue Share Ordinance	$16,144,300
Total Cumulative Revenue over 35 Years	**$20,142,600**

Current Agricultural Use

This section provides a benchmark for the previous estimates of the economic contribution that the proposed Sycamore Cross Solar project would make to the counties of Surry and Isle of Wight by estimating the economic and fiscal contribution that the site makes to the counties in its current use.

Economic Impact Inputs and Assumptions

The analysis is based on the following inputs and assumptions:

- The proposed Sycamore Cross Solar project would be situated on an approximately 1,156-acre tract of land, of which approximately 125 acres are located in Surry County and 1,030 acres are located in Isle of Wight County.[47]
- The land currently is timberland and agricultural land used to produce corn, soybeans, cotton, and peanuts.[48]

Economic Impact

Applying these inputs to the IMPLAN model results in the following estimates of annual economic impact. As shown in Table 13, in its current use, the proposed Sycamore Cross Solar project site directly supports approximately: 1) 1 job, 2) $0.1 million in wages and benefits, and 3) $0.4 million in economic output to the counties of Surry and Isle of Wight.

Taking into account the economic ripple effects that direct impact generates, on average, the total annually supported impact on the counties of Surry and Isle of Wight is approximately: 1) 2 jobs, 2) $0.2 million in wages and benefits, and 3) $0.5 million in economic output.

Table 13: Total Estimated Annual Economic Impact of the Sycamore Cross Solar Project Site on the Counties of Surry and Isle of Wight– Current Use[49]

Economic Impact	Employment	Wages and Benefits	Output
1st Round Direct Economic Activity	1	$111,400	$382,200
2nd Round Indirect and Induced Economic Activity	1	$56,700	$163,800
Total Economic Activity	**2**	**$168,100**	**$546,000**

**Totals may not sum due to rounding.*

[47] Data Source: AES.
[48] Data Source: AES.
[49] Calculations based data from the U.S. Department of Agriculture and IMPLAN Group, LLC for Isle of Wight County, Surry County, and Virginia.

Fiscal Impact Inputs and Assumptions

The analysis is based on the following inputs and assumptions:

- The proposed Sycamore Cross Solar project would be situated on an approximately 1,156-acre tract of land, of which approximately 125 acres would be located in Surry County and 1,030 acres would be located in Isle of Wight County.[50]
- The current assessment value of the affected acreage in Surry County is approximately $0.2 million.[51]
- The current assessment value of the affected acreage in Isle of Wight County is approximately $2.1 million.[52]

Fiscal Impact – Surry County

Table 14 details the estimated tax revenue that the proposed Sycamore Cross Solar site generates for Surry County in its current use. As the data in Table 14 indicate, the current county real estate tax revenue from the project site is estimated to be approximately $1,530 per year, for a cumulative total of approximately $53,500 over 35 years.

Table 14: Estimated Surry County Revenue Generated by the Proposed Sycamore Cross Solar Project Site over 35 Years from Real Estate Taxes – Current Use

Estimated Assessed Value of Property – Current Use	$215,300
Surry County Current Real Estate Tax Rate	0.0071
Estimated Annual County Real Estate Tax – Current Use	$1,530
Total Cumulative Revenue over 35 Years	**$53,500**

**Totals may not sum due to rounding.*

Fiscal Impact – Isle of Wight County

Table 15 details the estimated tax revenue that the proposed Sycamore Cross Solar site generates for Isle of Wight County in its current use. As the data in Table 15 indicate, the current county real estate tax revenue from the project site is estimated to be approximately $14,900 per year, for a cumulative total of approximately $520,000 over 35 years.

[50] Data Source: AES.
[51] Data Source: Derived from Surry County's Real Estate Assessment database. Includes value of existing structures.
[52] Data Source: Derived from Isle of Wight County's Real Estate Assessment database. Includes value of existing structures.

Table 15: Estimated Isle of Wight County Revenue Generated by the Proposed Sycamore Cross Solar Project Site over 35 Years from Real Estate Taxes – Current Use

Estimated Assessed Value of Property – Current Use	$2,092,500
Isle of Wight County Current Real Estate Tax Rate	0.0071
Estimated Annual County Real Estate Tax – Current Use	$14,900
Total Cumulative Revenue over 35 Years	**$520,000**

The estimates provided in this report are based on the best information available and all reasonable care has been taken in assessing the quality of that information. However, because these estimates attempt to foresee the consequences of circumstances that have not yet occurred, it is not possible to be certain that they will be representative of actual events. These estimates are intended to provide a good indication of likely future outcomes and should not be construed to represent a precise measure of those outcomes.

COUNTY OF ISLE OF WIGHT

OFFICE OF THE COMMISSIONER OF THE REVENUE
Post Office Box 107
Isle of Wight, Virginia 23397
(757) 365-6222

Gerald H. Gwaltney
Commissioner of the Revenue

MEMORANDUM

TO: Amy M. Ring
Community Development Director

FROM: Gerald H. Gwaltney,
Commissioner of the Revenue

DATE: May 16, 2024

RE: **Sycamore Cross Solar Project**
Conditional Use Permit (CUP-8-23), Third Submittal

I have completed the review of the Sycamore Cross Solar Project Third Submittal. The solar project's initial interconnection request for Sycamore Cross Solar was filed in March 2017. This date is important because it occurs within the period (Jan. 1, 2015 – June 30, 2018) in which all solar equipment related to the application received an 80% exemption. No other category of taxable property in Isle of Wight receives such an exemption.

Below are several deficiencies in their submittal relating to the tax revenue analysis.

- **Real Estate**

  Rollback Taxes – the third submittal incorrectly calculates the rollback taxes. The amount of rollback taxes is overstated because "simple interest" is not applied in Isle of Wight County. This error indicates Sycamore Cross Solar, LLC did not review the County's land use ordinance.

  The study did not provide the worksheet detailing the rollback taxes by year for each parcel subject to the rollback tax, making it impossible to confirm the calculations.

- **Equipment**

  The State Corporation Commission will assess the solar equipment. Table 9 lists the "Depreciated Value of Taxable Capital Investment" as $63,767,270 for years 1 through 8. The study defines the formula used to arrive at the value. This formula includes the "SCC utility assessment ratio for taxation of public utilities in Isle of Wight County." If the 2023 sales ratio was used, then the capital investment taxes are overstated.

  The study did not provide the worksheet detailing the rates used to determine the taxes on the equipment, making it impossible to confirm the calculations.

Please let me know if you have any questions.

Sycamore Cross A and B Solar Projects with Approved Solar Energy Generation Facilities as of 5/21/24

PROJECT	DEVELOPED AREA (PER CUP)	PRIME FARMLAND /SOILS OF STATEWIDE IMPORTANCE*	% OF TOTAL PRIME SOILS (rounded)	LOCATION	% OF TOTAL FARMLAND**	TOTAL MW	APPROVAL DATE
Woodland	180	124	0.10%	Longview	0.22%	20	2015
Solidago	170	170	0.14%	Redhouse	0.21%	20	2018
Ho-Fel	330	315	0.26%	Lees Mill	0.41%	55	2019; Amended 2023
Windsor PV1	630	630	0.52%	Windsor	0.78%	85	2019; Amended in 2021
Cavalier	500	500	0.41%	Hardy	0.62%	240	2021
Nuby Run	20	20	0.02%	Orbit	0.02%	2	2022
Carver	637	297	0.24%	Windsor	0.79% 0.00%	71	Approved 7/23/2023
Prairie Solar	152	152	0.12%	Longview	0.19% 0.00%	20	Approved 8/17/23
Courthouse Solar	18	18	0.01%	Route 258	0.02%	3	Approved 11/16/23
Sycamore Cross A & B (Proposed)	1,030	1,030	0.84%	Ramsey/Mill Swamp/White Hill Trail/Sycamore Cross/Rattlesnake	1.28%	240	Under Review
TOTAL	**3,667**	**3,256**	**2.66%**		**4.57%**	**756**	

Prime soils include Prime Farmland, Prime, If Drained, and Soils of Statewide Importance – 122,296 total acres in County

Total active agricultural lands as of 2022 Census of Agriculture – 80,316 acres

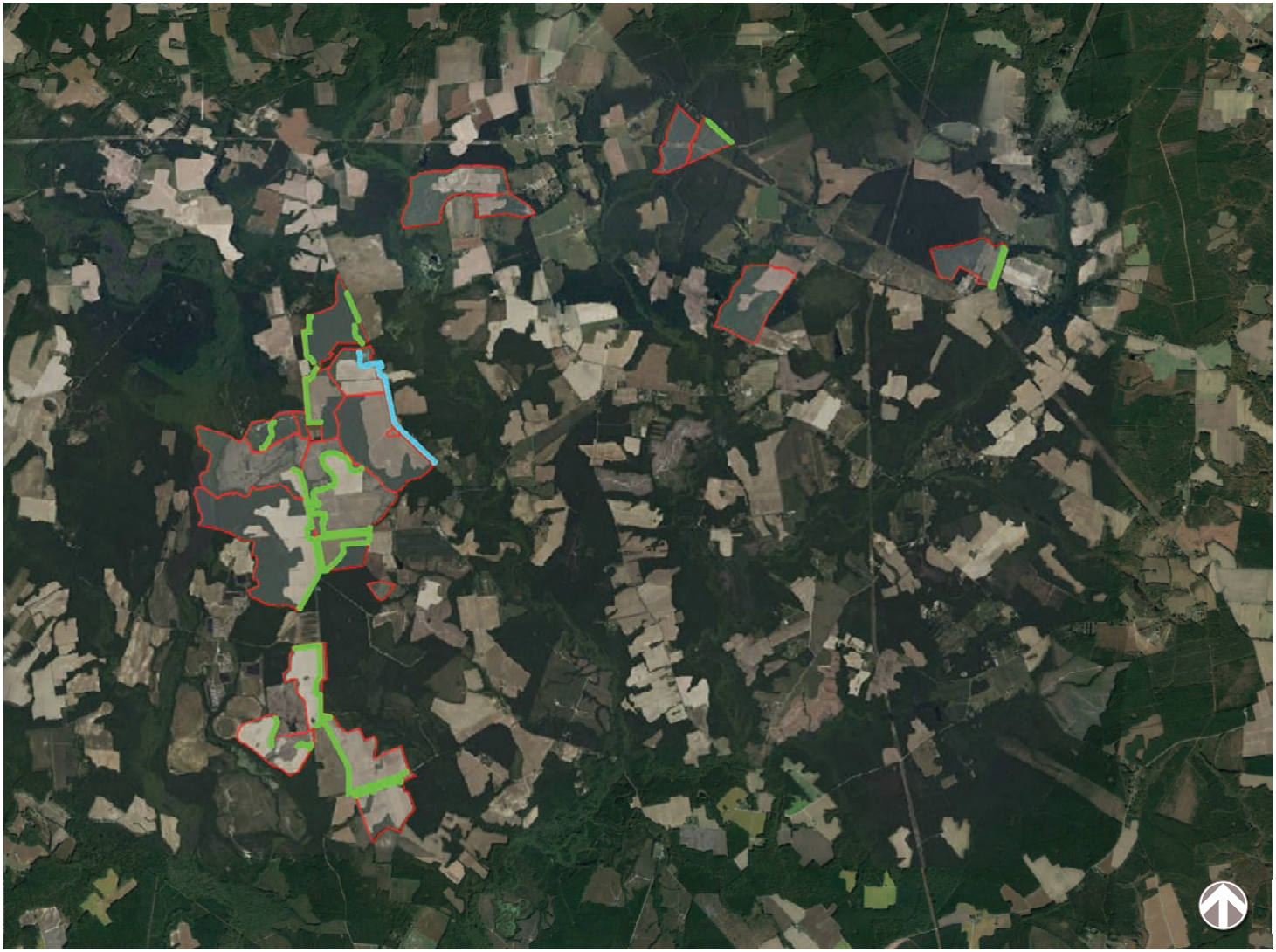
SYCAMORE CROSS SOLAR PROJECT

Isle of Wight and Surry Counties, Virginia

CONCEPTUAL LANDSCAPE

FEBRUARY 2024

LANDSCAPE SCREENING BY ZONE



LEGEND

FRONTAGE ZONE

BUFFER ZONE

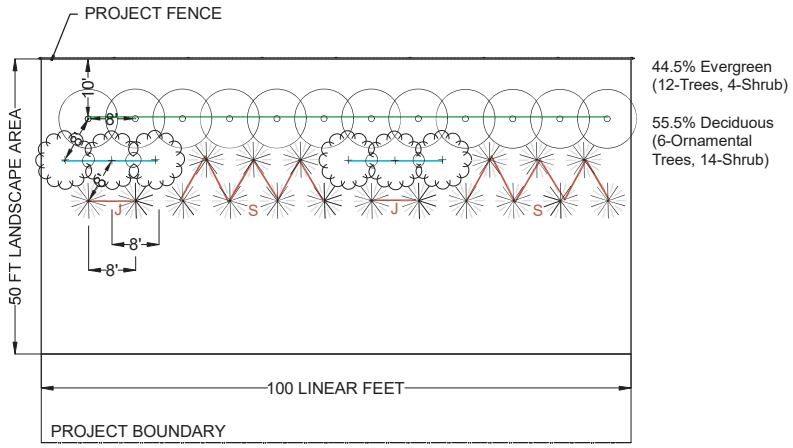
SCREENING ZONE - EXISTING VEGETATION TO REMAIN AND NEW VEGETATION TO BE PLANTED WHERE NECESSARY

SYCAMORE CROSS SOLAR FACILITY

LANDSCAPE SCREENING - PLANT SCHEMATICS AND CONCEPTUAL PLANT LISTS

FRONTAGE ZONE LANDSCAPE

Apply to landscape screening areaalong public roadways with ROW greater than 50 feet

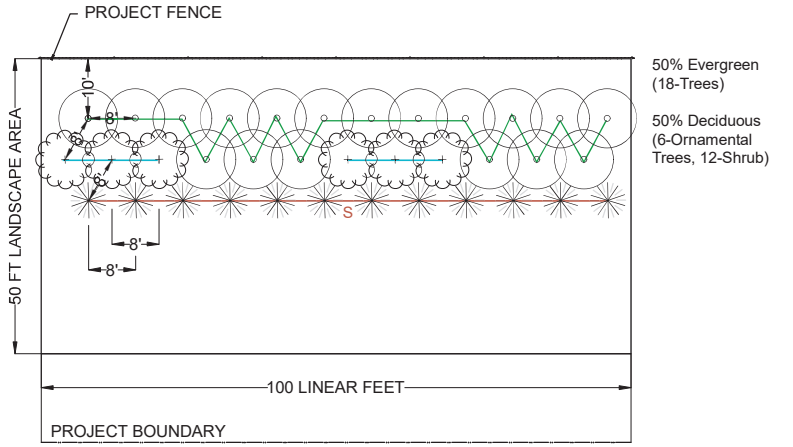


44.5% Evergreen (12-Trees, 4-Shrub)

55.5% Deciduous (6-Ornamental Trees, 14-Shrub)

BUFFER ZONE LANDSCAPE - ABUTTING RESIDENTIAL PARCELS

Apply to Abutting Residential Parcels where the existing vegetation not present



50% Evergreen (18-Trees)

50% Deciduous (6-Ornamental Trees, 12-Shrub)

CONCEPTUAL PLANT LIST

CONCEPT PLANT LIST				
Botanical Name	**Common Name**	**Height at Planting**	**Mature height**	**Mature Spread**
EVERGREEN				
Ilex X 'Conap' oakleaf	Red Holly/ Oakleaf Holly	6 FT	15 FT	9 FT
Ilex X mary nell	Mary Nell Holly	6 FT	20 FT	10 FT
Juniperus virginiana 'Brodie'	Eastern Red Cedar	6 FT	15 FT	6 FT
Myrica cerifera	Southern Wax Myrtle	6 FT	15 FT	20 FT
Thuja Occidentalis 'techny'	Eastern Arborvitae	6 FT	15 FT	10 FT
ORNAMENTAL				
Amelanchier canadensis	Shadblow serviceberry	6 FT	25 FT	15 FT
Chionanthus virginicus	Fringetree	6 FT	20 FT	20 FT
Magnolia Virginiana	Sweetbay Magnolia	6 FT	20 FT	20 FT
SHRUB				
Juniperus communis var. depressa	Juniper	1.5 FT	4 FT	10 FT
Lindera benzion	Spicebush	1.5 FT	10 FT	10 FT

J

S

SCREENING ZONE - EXISTING VEGETATION TO REMAIN AND NEW VEGETATION TO BE PLANTED WHERE NECESSARY

SYCAMORE CROSS SOLAR FACILITY

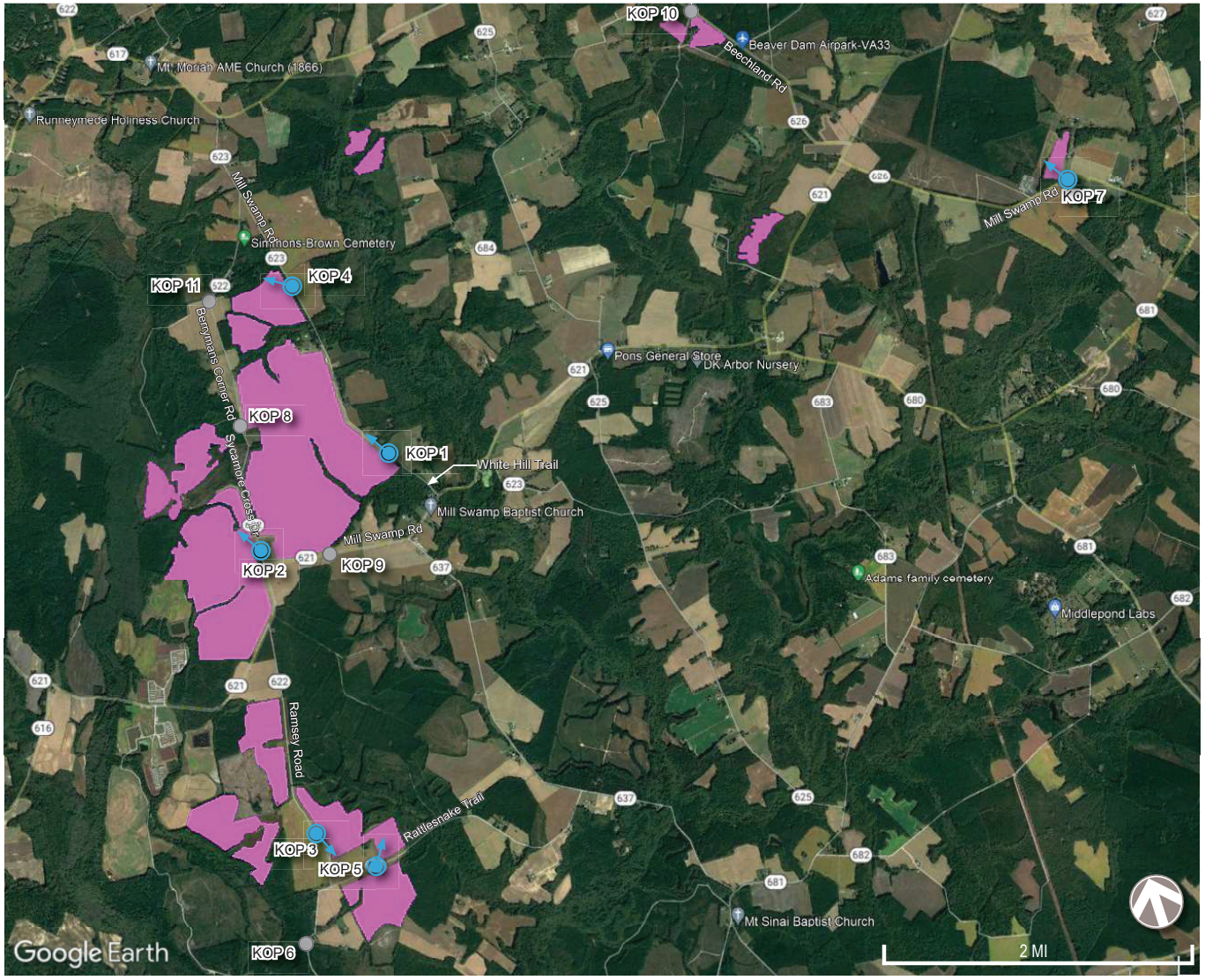
LANDSCAPE SCREENING - PLANT SCHEMATICS AND CONCEPTUAL PLANT LISTS

SYCAMORE CROSS SOLAR PROJECT

Isle of Wight and Surry Counties, Virginia

PHOTO SIMULATIONS

APRIL 2024

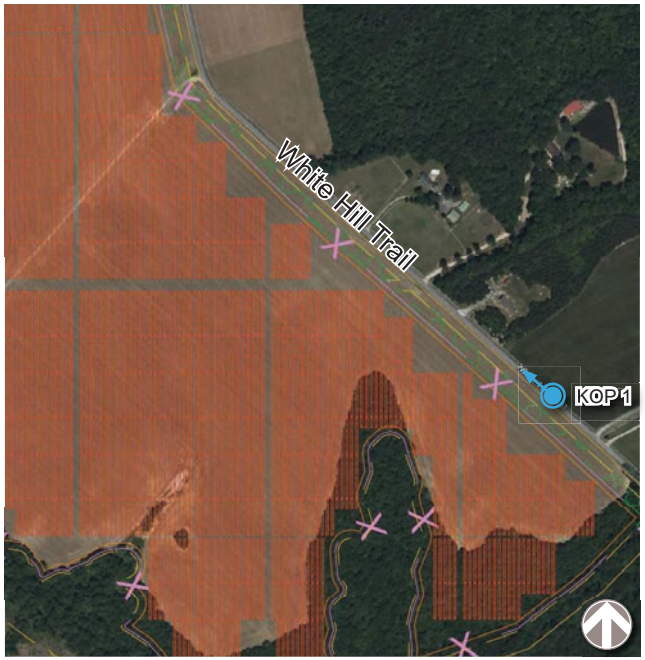


LEGEND

- Photo Simulation / Viewing Direction
- Project Area
- Candidate KOP Location

SYCAMORE CROSS SOLAR FACILITY

KEY OBSERVATION POINT LOCATION MAP



KOP 1:
WHITE HILL TRAIL



KOP 2:
SYCAMORE CROSS DRIVE



KOP 3:
RAMSEY RD

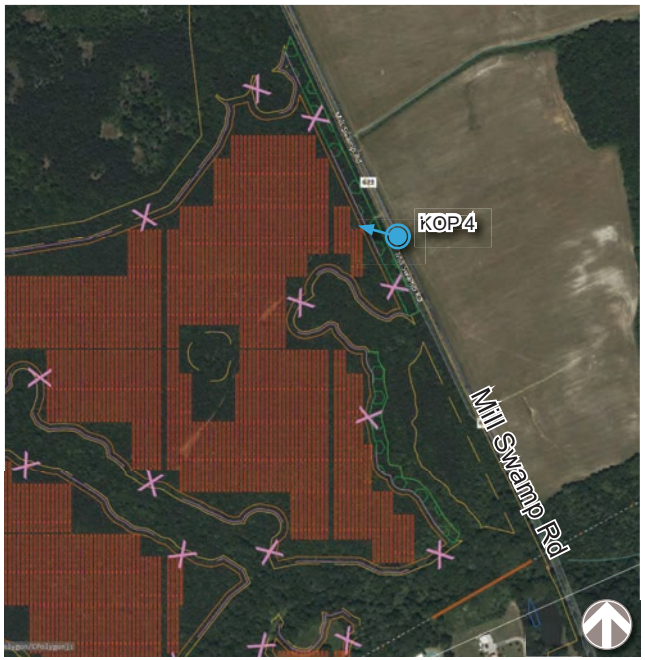
LEGEND

- PV Area
- Panels
- Fenceline
- Vegetative Buffer Area

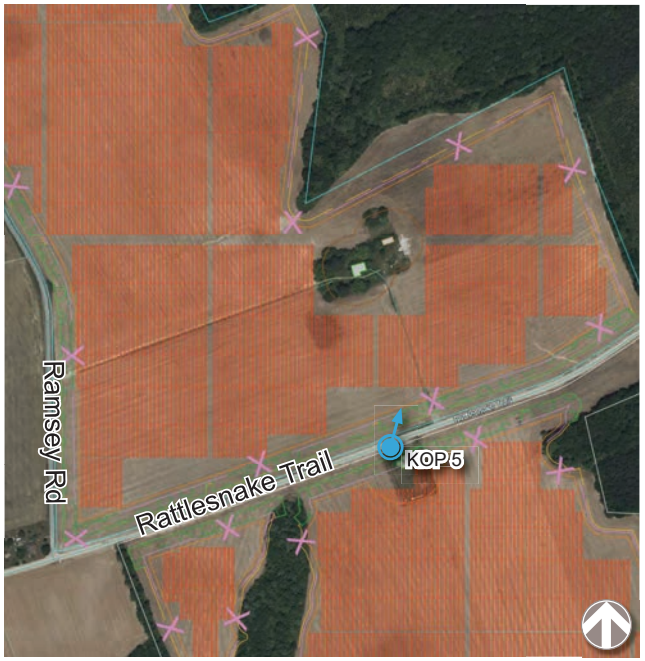
PHOTO LOCATION
& VIEWING DIRECTION

SYCAMORE CROSS SOLAR FACILITY

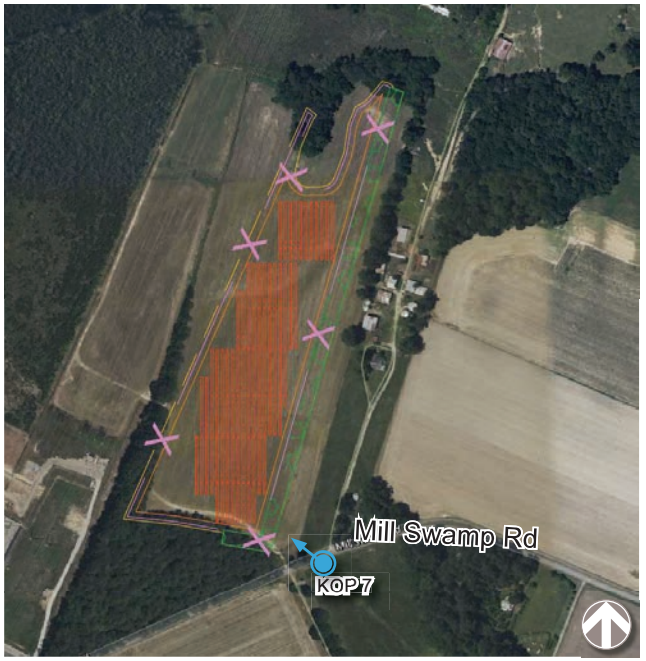
LANDSCAPE BUFFER VISUALIZATION - PHOTO LOCATIONS



KOP 4:
MILL SWAMP ROAD



KOP 5:
RATTLESNAKE TRAIL



KOP 7:
MILL SWAMP ROAD

LEGEND

- PV Area
- Panels
- Fenceline
- Vegetative Buffer Area

PHOTO LOCATION
& VIEWING DIRECTION

SYCAMORE CROSS SOLAR FACILITY

LANDSCAPE BUFFER VISUALIZATION - PHOTO LOCATIONS

KOP 1:
WHITE HILL TRAIL

PHOTOGRAPH INFORMATION

TIME:	11:18 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.994477°
LONGITUDE:	-76.817906°
DISTANCE TO PROJECT:	155 FT



EXISTING



SIMULATED - WITH PLANT SCREENING: AT PLANTING



SIMULATED - WITH PLANT SCREENING: AT MATURE HEIGHT

KOP 2:
SYCAMORE CROSS DRIVE

PHOTOGRAPH INFORMATION

TIME:	10:20 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.986213°
LONGITUDE:	-76.833997°
DISTANCE TO PROJECT:	175 FT



EXISTING



SIMULATED - WITH PLANT SCREENING: AT PLANTING



SIMULATED - WITH PLANT SCREENING: AT MATURE HEIGHT

KOP 3:
RAMSEY ROAD

PHOTOGRAPH INFORMATION

TIME:	9:32 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	SOUTHEAST
LATITIUDE:	36.959386°
LONGITUDE:	-76.829939°
DISTANCE TO PROJECT:	145 FT



EXISTING



SIMULATED - WITH PLANT SCREENING: AT PLANTING



SIMULATED - WITH PLANT SCREENING: AT MATURE HEIGHT

DISCLAIMER: The photographs used as the base for these simulations were collected during winter months where existing deciduous trees are pictured in the leaf-off condition. The landscape screening simulated shows full leaf-on conditions for all vegetation used for screening. While this does not match existing conditions, it demonstrates the maximum extent of screening proposed.

SYCAMORE CROSS SOLAR FACILITY

LANDSCAPE BUFFER VISUALIZATION - BEFORE AND AFTER BUFFER INSTALLATION

KOP 4:
MILL SWAMP ROAD

PHOTOGRAPH INFORMATION

TIME:	11:35 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.011385°
LONGITUDE:	-76.827799°
DISTANCE TO PROJECT:	190 FT



EXISTING



SIMULATED - WITH PLANT SCREENING: AT PLANTING

KOP 5:
RATTLESNAKE TRAIL

PHOTOGRAPH INFORMATION

TIME:	8:53 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHEAST
LATITIUDE:	36.955797°
LONGITUDE:	-76.823667°
DISTANCE TO PROJECT:	400 FT



EXISTING



SIMULATED - WITH PLANT SCREENING: AT PLANTING



SIMULATED - WITH PLANT SCREENING: AT MATURE HEIGHT

KOP 7:
MILL SWAMP ROAD

PHOTOGRAPH INFORMATION

TIME:	1:05 PM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.014834°
LONGITUDE:	-76.733937°
DISTANCE TO PROJECT:	270 FT



EXISTING



SIMULATED - WITH PLANT SCREENING: AT PLANTING



SIMULATED - WITH PLANT SCREENING: AT MATURE HEIGHT

DISCLAIMER: The photographs used as the base for these simulations were collected during winter months where existing deciduous trees are pictured in the leaf-off condition. The landscape screening simulated shows full leaf-on conditions for all vegetation used for screening. While this does not match existing conditions, it demonstrates the maximum extent of screening proposed.

SYCAMORE CROSS SOLAR FACILITY

LANDSCAPE BUFFER VISUALIZATION - BEFORE AND AFTER BUFFER INSTALLATION

SYCAMORE CROSS SOLAR PROJECT

KOP 1: White Hill Trail

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	11:18 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.994477°
LONGITUDE:	-76.817906°
DISTANCE FROM PROJECT:	155 FT

DISCLAIMER: PRELIMINARY VISUALIZATIONS ARE FOR REFERENCE ONLY; PROJECT LAYOUT AND LANDSCAPE DETAILS ARE IN DEVELOPMENT AND SUBJECT TO CHANGE.

SYCAMORE CROSS SOLAR PROJECT

KOP 1: White Hill Trail

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	11:18 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.994477°
LONGITUDE:	-76.817906°
DISTANCE FROM PROJECT:	155 FT

DISCLAIMER:
The photographs used as the base for these simulations were collected during winter months where existing deciduous trees are pictured in the leaf-off condition. The landscape screening simulated shows full leaf-on conditions for all vegetation used for screening. While this does not match existing conditions, it demonstrates the maximum extent of screening proposed.

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SYCAMORE CROSS SOLAR PROJECT

KOP 1: White Hill Trail

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	11:18 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.994477°
LONGITUDE:	-76.817906°
DISTANCE FROM PROJECT:	155 FT

DISCLAIMER:
The photographs used as the base for these simulations were collected during winter months where existing deciduous trees are pictured in the leaf-off condition. The landscape screening simulated shows full leaf-on conditions for all vegetation used for screening. While this does not match existing conditions, it demonstrates the maximum extent of screening proposed.

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SYCAMORE CROSS SOLAR PROJECT

KOP 2: Sycamore Cross Dr

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	10:20 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.986213°
LONGITUDE:	-76.833997°
DISTANCE FROM PROJECT:	175 FT

DISCLAIMER: PRELIMINARY VISUALIZATIONS ARE FOR REFERENCE ONLY; PROJECT LAYOUT AND LANDSCAPE DETAILS ARE IN DEVELOPMENT AND SUBJECT TO CHANGE.

SYCAMORE CROSS SOLAR PROJECT

KOP 2: Sycamore Cross Dr

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	10:20 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.986213°
LONGITUDE:	-76.833997°
DISTANCE FROM PROJECT:	175 FT

DISCLAIMER:
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PHOTO SIMULATION





VICINITY MAP

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SYCAMORE CROSS SOLAR PROJECT

KOP 3: Ramsey Rd

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	9:32 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	SOUTHEAST
LATITIUDE:	36.959386°
LONGITUDE:	-76.829939°
DISTANCE FROM PROJECT:	145 FT

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SYCAMORE CROSS SOLAR PROJECT

KOP 3: Ramsey Rd

PHOTO SIMULATION





VICINITY MAP

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- PHOTO SIMULATION LOCATION
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PHOTO SIMULATION





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SYCAMORE CROSS SOLAR PROJECT

KOP 4: Mill Swamp Rd

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	11:35 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	37.011385°
LONGITUDE:	-76.827799°
DISTANCE FROM PROJECT:	190 FT

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SYCAMORE CROSS SOLAR PROJECT

KOP 4: Mill Swamp Rd

PHOTO SIMULATION



PROJECT VIEWS ARE OBSTRUCTED BY EXISTING VEGETATION



VICINITY MAP

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- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

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SYCAMORE CROSS SOLAR PROJECT

KOP 5: Rattlesnake Trail

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	8:53 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHEAST
LATITIUDE:	36.955797°
LONGITUDE:	-76.823667°
DISTANCE FROM PROJECT:	400 FT

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SYCAMORE CROSS SOLAR PROJECT

KOP 5: Rattlesnake Trail

PHOTO SIMULATION





VICINITY MAP

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PHOTO SIMULATION





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SYCAMORE CROSS SOLAR PROJECT

KOP 7: Mill Swamp Rd

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	1:05 PM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	37.014834°
LONGITUDE:	-76.733937°
DISTANCE FROM PROJECT:	270 FT

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SYCAMORE CROSS SOLAR PROJECT

KOP 7: Mill Swamp Rd

PHOTO SIMULATION





VICINITY MAP

LEGEND

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SYCAMORE CROSS SOLAR PROJECT

KOP 7: Mill Swamp Rd

PHOTO SIMULATION





VICINITY MAP

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PLANNING REPORT

APPLICATION:

Application (CUP-5-24) of Sycamore Cross Solar , LLC, applicant, for a for a conditional use permit to allow the expansion of an existing major utility service, specifically a six MW utility-scale solar energy generation facility and associated six medium voltage lines known as Sycamore Cross B, on approximately 240 acres located on tax parcel numbers 10-01-017, 11-01-015, 10-01-023, 10-01-025, 10-01-027, 10-01-028A, 10-01-030, and 11-01-005 located on Jones Drive (Rte. 626), Burwells Bay Road (Rte. 621), Mill Swamp Road (Rte. 621) and James Wilson Way

ELECTION DISTRICT:

D5

LOCATION:

The project site includes properties that are part of the existing Cavalier Solar facility as well as one new property with tax map numbers 10-01-028A that will be crossed by an easement only for a proposed medium voltage transmission line. The conditional use permit would allow the expansion of the existing facility on the existing Cavalier parcels with tax map numbers 10-01-017 and 11-01-015 by up to 240 acres. The other existing Cavalier parcels associated with this application will be crossed by medium voltage transmission lines.

The project site is generally bounded by Surry County on the north, James Wilson Way on the west, and Stallings Creek to the east and south. The project has road frontage on Jones Drive (Rte. 626), Burwells Bay Road (Rte. 621), Mill Swamp Road (Rte. 621) and James Wilson Way. The site lies adjacent to agricultural, forestal, and dispersed single-family residential uses.

Property location and proximity maps are attached to this staff report.

BACKGROUND:

All of the properties that are part of the application with the exception of 10-10-028A are part of the existing Cavalier solar facility. At its meeting on May 20, 2021, the Isle of Wight County Board of Supervisors approved Cavalier (CUP-3-19) to allow a Utility Scale Solar Energy Facility for up to 500 acres. This

application would allow the expansion of the solar facility on two of the properties to up to 240 acres. Most of facility has been constructed and is awaiting final landscaping inspection and permit approval.

According to County records, the new property with tax map number 10-01-028A located at 9621 Burwells Bay Road is 75.24 acres and has historically been used for agriculture. County real estate records show an existing dwelling built in 1933 along with several outbuildings and a cemetery. The applicant plans to install a medium voltage transmission line to serve the Cavalier facility on the property.

DESCRIPTION:

The Sycamore Cross B solar facility application was submitted in conjunction with the accompanying Sycamore Cross A solar project application which lies approximately 2.5 miles away. Sycamore Cross A consists of 13 project parcels parcel totaling 1,795 acres, includes one medium voltage easement only parcel and will account for approximately 214 MWac. The Sycamore Cross B project will consist of two parcels with panels totaling 240 acres accounting for approximately 6 MW and six medium voltage easement only parcels.

The project will consist of solar photovoltaic modules on a single axis tracker system and associated electrical equipment. The Project will utilize an existing substation location shared with the Cavalier Solar facility.

New 34.5kV feeder lines will interconnect the various solar generation equipment comprising Sycamore Cross A to the project's collector substation. The Sycamore Cross project is using the same utility corridor as Cavalier Solar. The project will use an existing 500 kV gen-tie line that was constructed for the Cavalier Solar facility and that will interconnect the project's substation with the VEPCO Septa 500 kV Substation. The applicant states that no improvements will be required to the VEPCO substation or the 500 kV gen-tie. These improvements are being completed as part of the Cavalier facility. As part of the site construction activities, one house is proposed for demolition at 14195 Rattlesnake Trail which was built in 1950. The applicant states that other structures may be considered for demolition to accommodate the final design of the solar facility, although none have been specifically identified in this application.

The Project will serve the PJM (Pennsylvania-Jersey-Maryland) wholesale market. The final interconnection service agreement identifying the transmission capacity was executed on April 3, 2023. The maximum facility output is 240 MW for projects, which is also referred to as the "installed capacity", and the total

project has rights to inject the full 240 MW into the grid. A redacted version of the interconnection service agreement is attached to the staff report.

The application anticipates construction of the Project to begin in Spring 2025 and completed by the end of 2026. Construction activity is proposed between the hours of 7 a.m. and 7 p.m., Monday through Saturday.

The applicant submitted the required the supporting studies in support of both the Sycamore Cross A and B projects. Staff assessed the application for its consistency with the County's plans and ordinances as well as potential impacts to natural and cultural resources, public facilities and services. Unless otherwise noted, the following analysis is for both projects. The following is a summary of the projected benefits, potential impacts and any mitigation measures proposed by the applicant.

Public Facility Impacts:

The impacts of the proposed facility on public roads will occur primarily during construction and will be minimal once the use is established. In establishing the use, the enjoyment of neighboring properties may also be temporarily impacted by construction traffic and noise generation.

The applicant has provided a proposed construction transportation route which has been reviewed by the Virginia Department of Transportation (VDOT), and they stated they had no concerns. The construction traffic route alternative plan is attached to the staff report.

The applicant has submitted three options for proposed construction traffic routes, each of which includes escorted heavy haul routes, a delivery route, and anticipated employee commuter routes. Sycamore Cross has suggested a preferred delivery route using Proctor's Bridge (Rte. 616) from Route 460 in Southampton County to Proctor's Bridge (Rte. 621) in Isle of Wight to a main staging area within the project site. From the staging area, deliveries will be escorted to various project areas on the local road network and back to the staging area. Factors used to determine Sycamore Cross Solar's preferred routing includes traffic counts, road characterizations as defined by VDOT, bridge capacities, road widths, current road conditions, challenges based on superelevation, and proximity to residences. The applicant states that construction activities and associated construction traffic for the Cavalier Solar project are expected to be completed and end before construction starts for the Sycamore Cross Project.

Staff expressed concerns to the applicant in regard to the narrowness of all three proposed routes as well as bridge capacity, lack of shoulders or passing areas, and proximity to residences. The roads surrounding the project site are not well suited to construction traffic. In addition, staff recommends that no construction should occur on Sundays by any party involved with the project, to include the solar developer, its contractors, and Dominion Energy contractors and that deliveries and hauling activities should occur outside of school bus traffic times.

Environmental Assessment:

The project lies within the Blackwater River watershed area and contains several types of sensitive environmental features, including wetlands, streams, and floodplains. According to the information the Department of Conservation and Recreation (DCR), the Pouches Creek Stream Conservation Unit is located within the project site. Stream Conservation Units (SCUs) identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. The Pouches Creek SCU has been given a biodiversity ranking of 83, which represents a site of high significance.

A wetland delineation performed by the applicant shows 2,281 linear feet of streams, 36 acres of wetlands, and 0.39 acres of open water features located within the fenced area of the project. The applicant states they will continue to avoid and minimize impacts to these features through the site plan design phase of the project.

Review comments from DCR reveal there is a potential for rare and threatened species such as the Barking treefrog and the Eastern Big Eared Bat to occur in the project area. The proposed project will impact one or more ecological cores with very high (C2) to outstanding (Cl) ecological integrity.

Ecological core areas are classified into five categories of ecological integrity: C1 – Outstanding; C2 – Very High; C3 – High; C4 – Moderate; and C5 – General. Scores are enhanced if the core or habitat fragment is part of a larger complex of natural lands. Scores also increase for those cores and habitat fragments that contribute to water quality enhancement. In general, larger, more biologically diverse areas are given higher scores. DCR recommends avoidance of impacts to cores. However, when avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the

edges of cores, so that the most interior remains intact.

According to the applicant, approximately 77 acres of very high value ecological cores, 32 acres of high value ecological cores, 3.3 acres of moderate value ecological cores, and 423.7 acres of general value ecological cores may be impacted by the Project. The Project does not intersect any outstanding value ecological cores. The applicant states that they have made a concerted effort to minimize impacts wherever possible.
Further investigation of these impacts is recommended and DCR-ONH can conduct a formal impact analysis upon request. This analysis would estimate impacts to cores and habitat fragments, providing an estimate of the total acreage of direct and indirect impacts of the project. A copy of DCR's review comments are attached to this letter.

The applicant's environmental assessment also identified the project's potential impacts to important forestland in the area. The Forest Conservation Value (FCV) model was designed by the Virginia Department of Forestry to identify forestland with the highest priority for conservation within Virginia with the intent to maximize the conservation efforts to the highest quality, most productive, and most vulnerable forestland within Virginia (DCR 2021). The classifications of the values range from average to outstanding, indicating the value of forestlands for conservation (DCR 2021). The DCR FCV model indicated that approximately 1,254 acres of the Project study area were mapped as forest with approximately 213 acres categorized as outstanding priority for conservation, 293 acres as very high, and 384 acres categorized as high priority forestland for conservation.

Based on the current design of the project, approximately 32 acres of outstanding priority forestland will be impacted, approximately 63 acres of very high priority, and approximately 139 acres of high priority forestland may be impacted. The applicant states they will consult with DCR in connection with the potential impact of outstanding, very high, and high value forestland.

When considering soil classifications inside the fence of the project, the project's environmental assessment states the USDA NRCS Web Soils Survey was queried to identify soils classified as prime approximately 895 acres of prime farmland soils were identified, an additional 433 acres are classified as prime farmland if drained, and approximately 109 acres of farmland of statewide importance were identified within the Project study area.

Based on the current design of the project, approximately 614 acres of prime farmland (26% of the Project study area), 236 acres (10%) of prime farmland if

drained, and 35 acres (1.5%) of farmland of statewide importance may be impacted.

Staff has concerns with regard to the potential impacts to highly important environmental resources such as the Pouches Swamp stream conservation unit area and ecological core areas. Staff would recommend that no impacts be permitted to the stream conservation unit area, the C1-C3 ecological core areas, or the priority forest areas. In addition, staff would recommend that the applicant be required to conduct a formal impact analysis within the project area with DCR as recommended. A copy of the environmental impact assessment is attached to this report.

Historical Resources Assessment:

The applicant conducted a Phase IA archeological assessment of the project area, and it is attached to this report. Review comments from both the County's historic resources staff at the Isle of Wight County Museum as well as the Virginia Department of Historic Resources (VDHR) are also attached. Both agencies recommend that additional investigation is needed for the project site due to the high probability of archeological resources in the vicinity and known archeological and architectural resources in the area.

As of the date of this staff report, the applicant confirmed that their cultural team has wrapped up field work and are working on a Phase IB report. The Phase IB survey is used to determine the presence or absence of cultural resources in the probable impact areas. The areas to be subjected to testing are selected on the basis of the data gathered in the Phase IA evaluation and the probable locations of ground disturbing activities. They have stated that they will share it with County staff, County Museum staff, and SCC staff along with submitting the report to VDHR for concurrence on findings and mitigating measures. They likely won't have that final report for another few weeks, so it is not possible to determine impacts to historical resources at this time.

Economic Impact Assessment:

According to the applicant's economic impact analysis, both Sycamore Cross A and Sycamore Cross B together encompass approximately 1,030 acres of active project area. The economic impact assessment states the projects will generate seven direct and indirect jobs in both Isle of Wight and Surry Counties, however, the report does not state whether they are permanent or full time jobs.

The report states that the project would involve an investment of $402.5 million in capital equipment and improvements to the existing property within Isle of Wight County. Both Sycamore Cross Solar projects would generate approximately $15.2 million (from taxation on capital investments) or $20.1 million with the siting agreement in cumulative county revenue over the facility's anticipated 35-year operational life, as compared to approximately $520,000 in cumulative county revenue in the property's current use, representing a 29- to 39-fold increase over current use revenues. This is assuming the actively used, fenced-in acreage in Isle of Wight County would be removed from the land use program and reassessed at $15,000 per acre.

The applicant states that the 891 acres, or 35.8% of the project site, is currently used for crop production. This includes 221 acres of corn, 40 acres of cotton, 433 acres for soybeans, and 197 acres for peanuts.

According to the 2022 Census of Agriculture (USDA-NASS), Isle of Wight County has 212 farms totaling 80,316 aces of land. The average farm size is 379 acres. The average annual market value of agricultural products sold per farm is $346,011. Using the same data to derive market values for crops cultivated on 891 acres within the fenced area of this project, the farmland generates an estimated $813,483 in market value.

Currently, agriculture and silviculture are two of the County's top industries. Both Sycamore Solar facilities together would be the tenth solar energy generation facility in the County and represents a subtraction of approximately 1.28% of the County's cultivated land (USDA-NASS, 2017). A table showing the previously approved and proposed solar energy facilities is attached to the staff report.

Viewshed Analysis:

The applicant provided several viewshed renderings comparing how the existing site looks currently to what it would look immediately after the landscaping buffers are planted and again at the time of maturity. The analysis includes perspectives from each of the project's road frontages. Current ordinance requirements include three rows of staggered landscaping along all street frontages and adjacent to residential properties and properties with historical and cultural significance. The viewshed perspective renderings are included as an attachment to the staff report.

COMPREHENSIVE LAND USE PLAN:

The future recommended land use designation for these properties is Rural Agricultural Conservation (RAC) and Environmental Conservation (EC) under the adopted Comprehensive Plan. Appropriate uses for the RAC land use designation include agriculture, horticulture, forest lands, and scattered low-density residential uses. Other uses such as resource extraction and utility-scale solar facilities are also permitted when appropriately sited. Appropriate uses for the EC land use designation include wetlands, farms, forest uses, open space, and limited park facilities.

Solar Energy facilities are considered compatible with the RAC land use when properly sited and with the application of appropriate development criteria. The area designated as EC should be preserved due to environmental constraints unless site-specific analysis demonstrates there are no environmental concerns in a specific area.

Staff has concerns about the appropriate siting of this facility due to the lack of suitable roads for construction traffic as well as impacts to agricultural land and sensitive environmental features.

ORDINANCE REVIEW:

The zoning district classification for the subject properties is Rural Agricultural Conservation (RAC). The RAC zoning district is intended to preserve an protect areas of the County that are predominantly in agricultural and forestall use and to maintain the existing land base to support those activities.

The applicant proposes to establish a 240 MW solar energy facility with both projects, which is classified as a major utility serve use type in the Zoning Ordinance. These facilities are permitted as conditional uses in the RAC, RR, and GC zoning districts and may be considered compatible with appropriate conditions to mitigate any potential negative impacts on the surrounding community.

Section 1-1017 of the Zoning Ordinance provides standards for review of a conditional use application that the Planning Commission and Board of Supervisors shall consider before granting a conditional use permit. They are as follows:

1. That the establishment, maintenance, and operation of the conditional use will not be detrimental to or endanger the public health, safety, and general welfare;
2. That the conditional use will not be injurious to the use and enjoyment of

other property in the immediate vicinity for the purposes already permitted, nor substantially impair the use of other property within the immediate proximity;
3. That adequate utilities, water, sewer or septic system, access roads, storm drainage and/or other necessary public facilities and improvements have been or will be provided;
4. That adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion on the public streets;
5. That the proposed conditional use is not contrary to the goals and objectives of the Isle of Wight County Comprehensive Plan;
6. That the conditional use shall, in all other respects, conform to the applicable regulations of the zoning district classification in which it is located and to the special requirements established for the specific use; and
7. That the use(s) at the location proposed will not result in a multiplicity or saturation of similar uses in the same general neighborhood of the proposed use

In addition to the standards and other guidelines described in the Zoning Ordinance, the Board may impose conditions or limitations on any approval, including the posting of performance guarantees. Such conditions may include, but are not necessarily limited to:

1. The number of persons living or working in the immediate area and the proposed hours of operation, as may applicable;
2. Traffic conditions, including facilities for pedestrians, such as sidewalks and parking facilities; the access of vehicles to roads; peak periods of traffic; and proposed roads, but only if construction of such roads will commence within the reasonably foreseeable future;
3. The orderly growth of the neighborhood and community and the fiscal impact on the County;
4. The effect of odors, dust, gas, smoke, fumes, vibration, glare, and noise upon the use of surrounding properties;
5. Facilities for police, fire protection, sewerage, water, trash and garbage collection and disposal, and the ability of the County or persons to supply such services;
6. The degree to which the development is consistent with generally accepted engineering and planning principles and practices;
7. The structures in the vicinity such as schools, houses of worship, theaters, hospitals, and similar places of public use;
8. The purposes set forth in this ordinance, the County's Comprehensive Plan, and related studies for land use, roads, parks, schools, sewers, water,

population, recreation, and the like;
9. The environmental impact, the effect on sensitive natural features, and opportunities for recreation and open space; and
10. The preservation of cultural and historic resources of landmarks.

Should the CUP be approved, the applicant will be required to submit a site plan for review and approval in accordance with Zoning Ordinance requirements and conditions of approval.

AGENCY REVIEW:

- Fire Rescue: All concerns have been addressed in the application.
- Commissioner of the Revenue: Comments are attached separately.
- Sheriff's Department: Similar to the Moonlight project, there will be an increase in patrol during the construction phase and the traffic impacts on proposed transportation routes. These are primarily secondary roads with no to minimal shoulders and are also shared with farm vehicles. During the construction phase they will be bringing in heavy equipment and large vehicles which will require escorts or even road closures. Also, there being multiple sites there is a concern of the operation of heavy equipment on the roads from one parcel to another.
- County Attorney: Only include conditions that go above what is now required under the zoning ordinance.
- VDOT: All concerns have been addressed in the application.
- Isle of Wight County Museum: Comments are attached separately.

Please note that, should this CUP be approved, it will be subject to review and approval from all associated agencies during site plan review. The project will be required to comply with all Zoning Ordinance requirements in effect at the time of site plan submittal.

STAFF CONCLUSIONS:

Strengths:

1. The proposed use will generate additional nonresidential tax revenue for needed public services and facilities.

Weaknesses:

1. The proposed use would remove agricultural land from production.
2. Temporary impact to residential development in the area from construction

traffic and noise is expected during the construction phase.

3. The project may create impacts to archeological and architectural resources pending final study.
4. The project will impact identified ecological core areas, priority forest land, and prime farm soils.
5. Approval of the project would result in a multiplicity and saturation of similar uses other solar energy generation facilities nearby.
6. With no to minimal shoulders and deep ditches at several points along the proposed transportation route there may be safety issues that arise as construction vehicles meet along the route.
7. Due to poor transportation route alternatives and impacts to environmentally sensitive areas, the project's proposed location is not well suited and therefore is not consistent with the recommendations of the Comprehensive Plan.

STAFF RECOMMENDATION:

Based on the identified weaknesses, staff recommends denial of the Conditional Use Permit request. However, should the CUP and withdrawal be approved staff recommends the following conditions: 1) Topsoil shall be stockpiled on the site and shall be stored out of view from adjacent properties and public roads. 2) The applicant shall submit an invasive species management plan as recommended by DCR with the submission of the final site plan. 3) No impacts shall be permitted to the Pouches Swamp stream conservation unit area, the C1-C3 ecological core areas, or the priority forestland areas. The applicant shall submit a formal ecological core impact assessment with DCR as recommended. 4) The applicant shall submit a seed mix for site groundcover that includes native pollinators blooming in spring/summer as recommended by DCR. 5) The applicant will work directly with the Isle of Wight County Chamber of Commerce, Paul D. Camp Community College, and the Economic Development Department to ensure inclusion of local contractors in the bidding process. 6) A laminated Emergency Response Poster will be mounted near the front gate. The poster will include a general site plan, evacuation routes and muster points, emergency response chain of command, directions to the closest hospital, coordinates to the closest life flight landing area, and other pertinent information associated with the facility during an emergency response. 7) The facility perimeter fencing will be equipped with push bar pedestrian gates to permit emergency exits from the facility. 8) Adherence to the proposed transportation plan shall be required for all facility traffic. Truck traffic shall be limited to only to the preferred route as described in in the transportation plan. No other local routes in Isle of Wight County may be used. The applicant shall coordinate deliveries outside of school bus pickup and drop-off times. 9) Excluding the bufferyards, the ground between the panels and in areas

not otherwise covered by gravel or infrastructure shall be planted and maintained with a vegetative cover. This vegetative cover will be managed with mowing and/or grazing. 10) Hours of operation for construction and post-construction operation shall be limited to Monday through Friday, 7:00 a.m. to 6:00 p.m. Saturdays from 7:00 a.m. to 5:00 p.m. No construction is to occur on Sundays by any party involved with the project. 11) As part of the site plan review, the applicant shall provide documentation that the selected panels and all power-generating equipment on-site are "Tier 1" modules, as established by the most recent "PV Module Tier 1 List" issued by Bloomberg NEF or a similar third party analysis widely accepted in the solar industry. Additionally, the make and model of the selected panels and all power-generating equipment initially installed and replaced on the site must qualify, for disposal purposes only, as non-hazardous waste under applicable U.S. Environmental Protection Agency tests (e.g. TCLP). 12) The applicant shall implement a program for the collection of baseline data establishing pre-construction soil conditions for the production of row crops for the agricultural areas within the project area. The program shall establish the relevant characteristics of the topsoil. The baseline data shall be derived from field and laboratory testing of soil conditions, including depth, density, and quality from representative locations. Laboratory testing shall be conducted by an accredited laboratory. Parameters for assessing soil quality may include the following: infiltration rate, bulk density, water holding capacity, pH, percent organic matter, cation exchange capacity, Phosphorous/Phosphate (P), Nitrogen (N), and Potassium/Potash (K). After 30 years of operation and again after 35 years of operation, soil conditions shall be determined for the same sampling locations using the same parameters and the results used to plan soil restoration activities. After equipment is removed as part of decommissioning, soil conditions shall be determined for the same sampling locations using the same parameters. Soil restoration activities shall be performed as necessary during operations or decommissioning to return soil conditions to at least baseline conditions. The County will be provided with data of soil conditions within 30 days after the receipt of results. 13) Any recommendations provided by VDHR during site plan review will be adhered to, in addition to requirements in the zoning ordinance.

ATTACHMENTS:

Description	Type	Upload Date
Sycamore Cross B application	Backup Material	5/21/2024
Project Narrative	Backup Material	5/21/2024
Sycamore Cross B Location Map	Backup Material	5/21/2024
Sycamore Cross A and B Proximity Map	Backup Material	5/21/2024
Concept Plan A and B	Backup Material	5/21/2024

Environmental Assessment	Backup Material	5/21/2024
DCR comments	Backup Material	5/21/2024
Phase IA Historical Resources Survey	Cover Memo	5/21/2024
VDHR comments	Backup Material	5/21/2024
Isle of Wight Museum Comments	Backup Material	5/21/2024
Economic Analysis	Backup Material	5/21/2024
Commissioner of Revenue Comments	Backup Material	5/21/2024
Viewshed Impact Perspectives	Backup Material	5/21/2024
Solar Table	Cover Memo	5/21/2024

Local Roots, Global Reach
ISLE OF WIGHT
COUNTY, VIRGINIA
DEPARTMENT OF PLANNING AND ZONING

APPLICATION FOR CONDITIONAL / SPECIAL USE PERMIT

This application should be used to petition for a permit for certain uses which, because of their unique characteristics or potential impacts on adjacent land uses, are not generally permitted in certain zoning districts as a matter of right, but which may, under the right set of circumstances and conditions be acceptable in certain specific locations. The following application requirements are consistent with the procedures set forth in Section 1-1017, *Conditional Uses,* and Section 1-1018, *Special Use Permits for Uses Not Provided For,* of the Isle of Wight County Zoning Ordinance, as amended.

A. APPLICATION FOR (CHECK ALL THAT APPLY):

[X] Conditional Use Permit (Are applicant proposed conditions attached?): X Yes _____ No

The proposed use or activity is listed as a conditional use in the RAC zoning district as per Section 4-2003 in Article IV of the Isle of Wight County Zoning Ordinance.

[ ] Special Use Permit (Are applicant proposed conditions attached?): _____ Yes _____ No

Proposed Use or Activity: Civic Use (Utility/Major) Solar Farm

B. PROJECT DESCRIPTION:

Project Name: Sycamore Cross B

Property Address (if any): See Exhibit F

Election District: D5 (formerly Carrsville)

Comprehensive Plan Designation: Environmental Conservation and RAC

The use permit will apply to 240 acres out of 2036 total acres

Tax Parcel Identification # See Attached Number of acres to be effected: _____

Tax Parcel Identification # _____ Number of acres to be effected: _____

Tax Parcel Identification # _____ Number of acres to be effected: _____

Proposed Utilities (check all that apply): Public Water _____ Private Well _____

Public Sewer _____ Private Septic _____

C. **APPLICATION INFORMATION:**

Applicant(s) Name(s): Sycamore Cross Solar, LLC

Address: 2180 South 1300 East, Suite 600

City, State, Zip Code: Salt Lake City, Utah 84106

Phone No.: 804-334-9882 Email: gregory.creswell@aes.com Fax No.:

Property Owner(s) Name(s): See Exhibit E

Address:

City, State, Zip Code:

Phone No.: Email: Fax No.:

4/29/24

Applicant Signature **Date**

See Exhibit G of Sycamore Cross A application

Owner Signature *if different* **Date**

NOTICE: THE ATTACHED CHECKLIST MUST BE COMPLETED, CERTIFIED, AND SUBMITTED OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE.

Remit Application to: Isle of Wight County Central Permitting, 17140 Monument Circle, Suite 100
P. O. Box 80, Isle of Wight, Virginia 23397

FOR OFFICE USE ONLY:

Complete Application Received On: 5/2/2024 Fees Paid: $1,200.00

Tax Query: [X] Current [ ] Delinquent Distribution Date: 5/2/2024 (PREVIOUS SUBMITTALS REVIEWED - APP FOR B ONLY)

Posted/Date to Post: 5/15/2024

AGENCIES REFERRALS:

_____ Department of Conservation & Recreation
_____ Economic Development
_____ Emergency Services
_____ General Services
_____ Environmental Planner
_____ Health Department
_____ Transportation Manager
_____ Commission of Revenue
_____ Other _____

_____ Inspections
_____ Sheriff's Office
_____ Town of Smithfield
_____ Town of Windsor
_____ VDOT
_____ Schools
_____ Budget & Finance
_____ County Attorney

Verified By: Amy M. Brin Date: 5/2/2024

Sycamore Cross Part B, Parcels Within Project Boundaries

Tax Parcel Identification Number	Parcel Acres	Property Owner Name	Property Owner Address
10-01-017	145	MILL SWAMP ROAD HOLDINGS LLC	804 GENERAL PICKETT DRSUFFOLK VA 23434
11-01-015	95	BATTEN MITCHELL DELK	11231 MILL SWAMP RDSMITHFIELD VA 23430

Anticipated Medium Voltage Easement Only Parcels, Isle of Wight Only

Tax Parcel Identification Number	Parcel Acres	Property Owner Name	Property Owner Address
10-01-023	120	SEWARD MICHAEL A & EMILY B	9310 JONES DRIVE SMITHFIELD VA 23430
10-01-025	120	BARCROFT JEAN E SOLE TRUSTEE JEAN E BARCROFT LIVING TRUST	11470 MODEST NECK RD IVOR VA 23866
10-01-027	130	SEWARD MICHAEL A	9310 JONES DRIVE SMITHFIELD VA 23430
10-01-028A	75	THACKER SHELTON L & ANN	11073 MILL SWAMP RD SMITHFIELD VA 23430
10-01-030	129	MILL SWAMP ROAD HOLDINGS LLC	804 GENERAL PICKETT DR SUFFOLK VA 23434
11-01-005	448	476, LLC	632 HAMPTON HIGHWAY 632 HAMPTON HIGHWAY

SUBMITTAL CHECKLIST FOR CONDITIONAL / SPECIAL USE PERMIT APPLICATIONS

In conjunction with Section 1-1017, *Conditional Uses*, and Section 1-1018, *Special Uses Permits for Uses Not Provided For*, of the Isle of Wight County Zoning Ordinance, as amended, the following information shall be submitted for a Conditional / Special Use Permit Application. Please note that it is the applicant's responsibility to ensure that the application is in compliance with all Federal, State and County regulations.

No application for a Conditional / Special Use shall be certified as complete unless the following information is provided. **The required number of copies may be reduced with permission of the Zoning Administrator.**

- ☑ Application: Ten (10) copies of the original, executed application, one (1) digital copy of all application documents, and one (1) original executed application. Both the applicant(s) and the property owner(s) must have their signature(s) notarized on page 3 of the application.
- ☑ The appropriate fees have been submitted with the application. Checks should be made payable to: Treasurer, Isle of Wight County.
- ☑ Ten (10) copies of a statement of the reasons for seeking such permit and if applicable, a statement of conditions.
- ☑ Ten (10) copies of a narrative description of the property which shall include the Tax Parcel Identification
- ☑ Ten (10) copies of a concept plan of the property showing all existing and proposed physical improvements and such other information as is necessary to clearly indicate to the Planning Commission and Board of Supervisors that adequate provisions shall be made for compliance with all standards for that particular use and the extent of the property to be so used on a given parcel or parcels. Such document shall be drawn to scale and shall include the following information:
  - A vicinity map at a scale of no less than one (1) inch equals two thousand (2,000) feet
  - Title of drawing
  - Date of drawing
  - Existing wood line
  - North arrow
  - Scale bar
  - Current zoning of parcel(s) to be rezoned, including tax map number(s) and owner(s)
  - Current zoning of adjacent parcel(s), including tax map number(s) and owner(s)
  - Street names including route number and width(s) of the right-of-way(s)
  - Ten (10) full size copies, with one (1) reduced 11-inch X 17-inch copy and a digital copy shall be submitted

- Please note that additional information on the site layout may be requested by the Zoning Administrator during the review process to **review the application and prepare the staff reports for the Planning Commission and Board of Supervisors more effectively**.

✓ Ten (10) copies of such supplemental material as may be necessitated by the proposal itself or the district in which located or proposed to be located, and in accordance with Section 5-5000, *Supplementary Use Regulations,* of the Isle of Wight County Zoning Ordinance.

N/A A WQIA (Water Quality Impact Assessment) if located in the Chesapeake Bay Preservation Area.

✓ All real estate taxes must be paid and current at the time of submittal; otherwise, the submittal will be refused at the counter. Proof of the most recent tax payment to the County must accompany the application.

I, the undersigned, certify that this application is complete, accurate and contains all required and requested information, documents and other submittals, and that all statements made herein are, to the best of my knowledge, true and correct. I further certify that I have exercised due diligence to obtain the most recent, complete and correct information available. I understand that any section not completed in its entirety may delay processing of this application and the date of the Planning Commission public hearing and that the submittal of a complete application does not guarantee the application will be placed on the next available Planning Commission agenda.

Ben Saunders

Printed or Typed Name

Signature

4/29/24

Date

COUNTY OF ISLE OF WIGHT
DISCLOSURE OF REAL ESTATE HOLDINGS

Applicant Sycamore Cross Solar, LLC

Address 2180 South 1300 East, Suite 600
Street

Salt Lake City — Utah — 84106
City — State — Zip

REAL ESTATE HOLDINGS TO BE AFFECTED

Location or Address	Description
See Attached	

OTHER OWNERS OF AFFECTED REAL ESTATE
(Not Required for Corporation whose stock is traded on a national or local stock exchange or having more than 500 shareholders.)

Name of Individuals Corporation/Partnership Business Association	Address
See Attached	

Does any member of the Isle of Wight County Planning Commission or governing body have any interest in such property, either individually, by ownership of stock in a corporation owning such land, partnership, as the beneficiary of a trust, or the settlor of a revocable trust, or whether a member of the immediate household of any member of the Planning Commission or governing body has any such interest? Yes[ ] No[X]
If yes, names of members:

I do solemnly swear that the foregoing statement(s) and attachments(s), if any, are complete, correct, and true.

Applicant: Ben Saunders (Printed or Typed Name) Applicant: _____ (Signature) Date: 4/29/24

Commonwealth of Virginia
County of Isle of Wight

Subscribed and sworn to before me Mary L. Hall,
A Notary Public in and for the County of Isle of Wight, Commonwealth of Virginia, this 29th day of April, 2024.

_____
Notary Public

My Commission Expires 12.31.24

MARY LEON HALL
NOTARY PUBLIC
REGISTRATION # 7858674
COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES
DECEMBER 31, 2024

April 30, 2024

Central Permitting Office
c/o Amy Ring, AICP
Director, Planning and Zoning
Department of Community Development, Isle of Wight County
17140 Monument Circle, Suite 101
Isle of Wight, VA 23397

Re: Conditional Use Permit Application for the Sycamore Cross Solar Project, Fourth Submittal for Sycamore Cross A, Creation of and First Submittal for Sycamore Cross B

Dear Ms. Ring,

At your request, the Sycamore Cross Solar Project has been split into separate project areas, each requiring its own Conditional Use Permit (CUP). These two areas are referenced as Sycamore Cross A and Sycamore Cross B, and together are the entirety of Sycamore Cross Solar, the "Project."

Please find enclosed Sycamore Cross Solar, LLC's fourth submittal for a CUP application which has been amended to represent Sycamore Cross A and the first submittal for a CUP application for Sycamore Cross B, which together comprise a photovoltaic solar generation facility of up to 240 megawatts located in Isle of Wight and Surry Counties. All documentation for Sycamore Cross A and Sycamore Cross B can be found in previous Sycamore Cross A application submittals with the exception of the documentation in this submittal.

The following list of documents have been updated and supplied with this submittal to support previously submitted CUP application components and to create the required CUP application for Sycamore Cross B:

- Project Narrative (updated to reflect 2 project areas and 2 CUPs)
- Attachment A: Conditional Use Permit Application Packages
  - Amended CUP Application Package For Sycamore Cross A: Fourth Submittal
  - CUP Application Package For Sycamore Cross B: First Submittal
- Attachment C: Revised Proposed Conditions (to reflect two project areas and to add a condition to address Unanticipated Discoveries)
- Attachment D: Updated Conceptual Plan of Development (to delineate Sycamore Cross A from Sycamore Cross B)
- Attachment J: Visual Impact Assessment: Visual Simulations

Thank you for your guidance and assistance in bringing the project to this point. We look forward to working with you and your staff further to answer questions and offer any needed clarity as you complete your review. The AES team is available to meet or talk at your convenience. I can be reached using the contact information provided in the signature below.

Sincerely,

Gregory S. Creswell

Greg Creswell
Senior Project Development Manager
804-334-9882
Gregory.Creswell@aes.com

Project Narrative

PROJECT OVERVIEW

Sycamore Cross Solar, LLC, a subsidiary of AES Clean Energy (AES), is proposing to build a photovoltaic solar generation facility of up to 240 megawatts to be located in Isle of Wight and Surry Counties, Virginia (the "Project").

The total Project study area is approximately 2,488 acres across all or portions of 18 parcels in Isle of Wight and Surry Counties. The Project study area is shown on the orthoimagery and U.S. Geological Survey Project Location Maps (Figures 1 and 2). Within Isle of Wight County, the Project study area comprises portions of 15 project parcels totaling approximately 2,036 acres of predominantly undeveloped and agricultural land zoned RAC: Rural Agricultural Conservation. The RAC zoning district allows utility-scale solar facilities with approval of a Conditional Use Permit. The adjacent and adjoining properties represent similar land use to the Project study area, including agriculture, forested, historically managed area for silviculture use and residential use. The proposed Project satisfies the goals and objectives of the Isle of Wight County Comprehensive Plan. This is further discussed in Section 3 of this application.

At the request of Isle of Wight County, the project portions located in Isle of Wight have been split into two separate applications: Sycamore Cross A and Sycamore Cross B. Sycamore Cross A consists of 13 project parcels parcel totaling 1,795 acres, includes one medium voltage easement only parcel and will account for approximately 214 MWac. Sycamore Cross B consists of two project parcels totaling 240 acres, includes six medium voltage easement only parcels and will account for approximately 6 MWac. Tables showing which parcels are included with Sycamore Cross A and Sycamore Cross B are included with each application package (Attachment A). These two applications comprise the Isle of Wight portions of the Project.

The Conditional Use Permit application packages (Attachment A) and associated fees (Attachment B) are being submitted to Isle of Wight County in accordance with Section 1-1017, Conditional Uses and Section 5-5003, Supplementary use regulations for civic use types. Additionally, a list of proposed Conditional Use Permit conditions for the Project are included in Attachment C and further detailed throughout this document.

PROJECT APPLICANT

Sycamore Cross Solar, LLC is wholly owned by AES Clean Energy (AES). Since 1981, AES has been headquartered in the Commonwealth of Virginia. Our commitment is to provide clean and reliable energy in a way that benefits every Virginian. Currently, we operate 660 megawatts (MW) of renewable energy in Virginia, with an additional 240 MW of renewable energy permitted and in a phase of construction. These projects bring extensive economic benefits to their respective communities through the creation of hundreds of construction jobs at each site, stimulus of the local economy when we provide employment and buy from area businesses, and substantial tax

revenue generation that helps fund county services such as emergency response, public education, and the deployment of broadband.

Within Virginia, renewable energy development is critical to fulfill the promise of the Virginia Clean Economy Act of 2020 to transition the Commonwealth's electric grid to 100% clean energy by 2050. AES remains committed to working with our stakeholders to co-create and deliver the smarter, greener energy solutions that meet their needs, benefiting the local community and economy.

DESIGN

The Project will consist of solar photovoltaic modules on a single axis tracker system and associated electrical equipment and materials necessary to collect the energy produced. The system will be comprised of UL-listed components and installed according to the National Electric Code. The maximum panel height will be less than 15 feet above grade at maximum tilt in accordance with Article V Sec. 5-5003 of the Isle of Wight zoning ordinance. The facility will be secured by a 6-foot-tall chain link fence with 1-foot of barbed wire. Sound from the solar panels will not exceed 60 dBA in normal circumstances in accordance with Sec. 5-5003. Setback lines will comply with Sec. 5-5003. Due to setbacks, sound at property lines will likely be much lower than 60 dBA. Areas under the panels will be planted with local grasses and forbs, non-panel areas will be planted with wildlife- and pollinator-friendly vegetation to the extent practicable, and wildlife corridors will be maintained as shown in the Conceptual Plan of Development (Attachment D).

The Project will utilize an existing substation location shared with the Cavalier Solar project, which location is identified on Attachment D. The existing substation location pad has been built as part of the Cavalier Solar project. Additional civil work is not expected to complete the project substation for the Sycamore Cross project. Further, the interconnect with the Dominion Septa substation has been approved and will also be built as part of the Cavalier Solar project.

As of this submittal of the CUP applications, no operations or maintenance buildings are contemplated in the design. If included prior to a final design, all operations and maintenance buildings and related structures will incorporate materials, colors, textures, screening, and landscaping that will blend the facilities to the natural setting and surrounding structures. No signage of any type will be placed on the facility other than notices, warnings, and identification information required by law or as approved by the Zoning Administrator. Construction parking and staging signs will be clearly placed at ingress and egress points to direct traffic to the proper location. Appropriate warning signage will be placed on all towers, electrical equipment, and Project site ingress and egress points. Signs will be clearly marked at the Project site for emergency vehicle ingress and egress.

Consideration is being made for the potential demolition of structures to accommodate the design of Sycamore Cross Solar and to use the land most efficiently within the project area. As of this submittal of the CUP applications, the only improvement anticipated to be demolished is at the address 14195 Rattlesnake Trail on parcel 27-01-003. A photo of the structure can be found in Figure 6-46 of the Cultural Resource Assessment dated August 2023. In the event additional

structures are considered for demolition, a thorough review will be completed, and the required information submitted to Isle of Wight updating this list of properties for consideration. Additionally, prior to any demolition, Sycamore Cross Solar, LLC will elicit concurrence from VDHR on our architectural survey findings. Should any buildings be found to be of significance, avoidance and mitigation measures will be taken.

INTERCONNECTION

The Project will serve the PJM wholesale market. The final interconnection service agreement identifying the transmission capacity was executed on April 3, 2023. Our maximum facility output is 240 MW, which is also referred to as the "installed capacity", and the Project has rights to inject the full 240 MW into the grid. A redacted version of the interconnection service agreement is included in Attachment E.

New 34.5kV feeder lines will interconnect the various solar generation equipment comprising the Project to the Project's collector substation. Siting of the Sycamore Cross project is using the same utility corridor as Cavalier Solar to limit any additional impact to view sheds. The project will use an existing 500 kV gen-tie line that was constructed for the Cavalier Solar Project and that will interconnect the Project's substation with the VEPCO Septa 500 kV Substation. It should be noted that no improvements will be required to the VEPCO substation or the 500 kV gen-tie. Said improvements are being completed and certificated as part of the Cavalier project.

LAND USE AND ZONING

The Project is located off Mill Swamp Road (State Rte. 621) on approximately 2,488 acres of 18 parcels in Isle of Wight and Surry Counties. Within Isle of Wight County, the Project study area comprises portions of 15 parcels totaling approximately 2,036 acres of predominantly undeveloped and agricultural land zoned RAC: Rural Agricultural Conservation. The fenced Project area will consist of 1,030 acres of the total Project study area acreage. The adjacent and adjoining properties are also zoned as RAC: Rural Agricultural Conservation and represent similar land use to the Project study area, including agriculture, forested, and land historically managed for silvicultural use (Attachment D).

The RAC zoning district allows utility-scale solar facilities with approval of a Conditional Use Permit. Furthermore, the proposed use fulfills the intent of the RAC district by preserving land which may be used in the future for additional agricultural and silvicultural activities. While in use by the proposed solar facility, the land cannot be sold for development of residential or commercial use, and the quality of the soil will likely be improved over the projected 35-year life of the Project as the land lays fallow.

Landowners for each participating parcel, as described in Attachment F, within the Project Site have provided Owner's Authority Letters (Attachment G). The Applicant has fulfilled the requirements of Section 1-1017 and 4-2003 of the Isle of Wight Zoning Ordinance by providing a copy of the property deeds for participating parcels (Attachment H) and a copy of the county tax records for the participating parcels (Attachment I).

VISUAL IMPACT

A Visual Impact Analysis was performed by Tetra Tech and is provided in Attachment J. This analysis determined that based on the proposed mitigating measures including landscaping and screening, the Project will have little to no impact on the existing viewshed. To ensure minimal viewshed impacts, the Project has implemented setbacks from adjoining parcels and residences in accordance with the County Ordinance; furthermore, the Conceptual Plan of Development (Attachment D) includes proposed landscaping and screening to be established and maintained within these buffers, as shown in the visual simulations included in Attachment I. This screening will be maintained and supplemented as necessary throughout the life of the Project.

TRAFFIC IMPACT

The Project anticipates construction of the Project to begin in Q2 2025 and is forecasted to be completed by Q4 2026. Construction will take place between the hours of 7 a.m. and 7 p.m., Monday through Saturday. Construction and decommissioning of the Project may cause temporary impacts to traffic flow in the direct vicinity of the Project site but will not adversely impact traffic during the normal operation phase of the Project.

Sycamore Cross Solar has been working in conjunction with Isle of Wight Planning and Zoning, Isle of Wight Transportation, and the VDOT Franklin Residency to develop a Construction Traffic Management Plan. Sycamore Cross has submitted three options for proposed construction traffic routes, each of which includes escorted heavy haul routes, a delivery route, and anticipated employee commuter routes. Mapping is included in Attachment K. Sycamore Cross has suggested a preferred delivery route using Route 616 to Route 621 from Ivor to a main staging area within the project site. From the staging area, deliveries will be escorted to various project areas and back to the staging area. Factors used to determine Sycamore Cross Solar's preferred routing includes traffic counts, road characterizations as defined by VDOT, bridge capacities, road widths, current road conditions, challenges based on superelevation, and proximity to residences.

Sycamore Cross Solar will refine and finalize the details of the Construction Traffic Management Plan in coordination with both the Virginia Department of Transportation (VDOT) Franklin residency and the County Transportation Department prior to Site Plan Approval. Construction activities and associated construction traffic for the Cavalier Solar project are expected to be completed and end before construction starts for the Sycamore Cross Project.

ECONOMIC IMPACT

The current zoning of the Project is RAC and the use is generally agricultural or timber. According to information obtained from participating landowners, 891 acres or 35.8% of the project site is currently used for crop production. This includes 221 acres (8.9%) that are being used for corn production, 40 acres (1.6%) used for cotton production, 433 acres (17.4%) used for soy

production, and 197 acres (7.9%) used for peanut production. No parcels are currently being used for livestock.

The Project will generate tax revenue for the County without increasing demand for public utilities or services, allowing increased investment in services and infrastructure. An Economic Impact Assessment was completed in September 2023 by Mangum Economics using the IMPLAN model. This assessment provides fiscal impacts based on taxation of capital investment and on the potential use of a Revenue Share Ordinance. Depending on the tax revenue stream the County chooses to pursue, the Project may provide between approximately $15.2 million and $20.1 million in tax revenue for Isle of Wight County. This is a 29 to 39 fold increase to County revenue versus current use revenue. Additionally, construction of the Project will create approximately 197 direct, indirect, and induced jobs during construction and 7 direct, indirect, and induced jobs during the operational phase. The Economic Impact Analysis assumes a commercial operation date of Q4 2026. A full Economic Impact Analysis is included in Attachment L.

ENVIRONMENTAL RESOURCES

The Project will avoid and mitigate any potential impacts to natural and cultural resources to the greatest extent possible. A summary of potential Project interactions with environmental resources is provided below. A full Environmental Resource Impact Analysis with further details is included in Attachment M.

Water Resources

Tetra Tech performed a wetland delineation of the Project site through several field surveys in October 2022 through June 2023. The project will minimize impacts to wetlands and floodplain to the extent reasonably possible. A 50-foot buffer area around water resources will be implemented, to the extent practicable, as shown for the majority of resources in the current Conceptual Plan of Development, Attachment B. In the event development is to occur within any wetland or floodplain, these areas will be designed and permitted to be compliant with all local, state, and federal requirements. AES acknowledges several project areas shown in the conceptual plan of development are within the FEMA 100-year floodplain. This design is conceptual and will be refined as additional studies are completed and regulatory coordination is finalized. All resources will be delineated and clearly flagged for avoidance during construction in areas where avoidance is possible.

Construction of the Project may cause temporary water quality impacts in the form of increased sediment runoff during land disturbing activities; however, best management practices will be implemented to avoid and minimize impacts to surface water features. Ultimately, the Project will likely lead to improved water quality in the area because runoff of pesticides and other inputs to or byproducts of farming will be reduced or eliminated. Soil testing will be performed prior to construction, after completion of construction, and every five years thereafter; results will be provided to the County Planning Department per Article V, Sec. 5-5003.M.4.f.

Threatened and Endangered Species

An initial desktop assessment performed by Tetra Tech identified several protected species as having the potential to occur within the Project study area. Field surveys of the Project study area were conducted in October 2022 through April 2023. These surveys identified potential presence of six protected species – the bald eagle *(Haliaeetus leucocephalus),* red-cockaded woodpecker *(Picoides borealis),* northern long-eared bat *(Myotis septentrionalis),* Rafinesque's eastern big-eared bat *(Corynorhinus rafinesquii macrotis)*, tri-color bat *(Perimyotis subflavus)*, and the yellow lance *(Elliptio lanceolata)*. Both the bald eagle and red-cockaded woodpecker were determined to be unlikely to be adversely affected by the Project. Suitable habitat was found on site for the other four species, and agency consultation was recommended. Additional presence/absence surveys have been conducted and coordination with federal and state agencies is ongoing to determine best avoidance, minimization, and mitigation measures.

Ecological Cores

Based on the current design, approximately 77 acres of very high value ecological cores, 32 acres of high value ecological cores, 3.3 acres of moderate value ecological cores, and 423.7 acres of general value ecological cores may be impacted by the Project. The Project does not intersect any outstanding value ecological cores. Ecological core data with the classification of high, very high, and outstanding have the greatest value of ecological biodiversity. Per the recommendations of the Department of Conservation and Recreation, potential impacts to ecological cores have been avoided and minimized to the extent practicable. Where unavoidable, potential impacts were limited to the edges of identified ecological cores.

HISTORICAL AND CULTURAL RESOURCES

A Phase 1A Cultural Resource Assessment and early coordination was completed by Dutton + Associates, LLC in August 2023. This analysis indicated that no National Register of Historic Places (NRHP) listed resources are present within the fenced Project area. There are three desktop mapped potential resources that are located within the fenced Project area. The Historical and Cultural Resources Report is included in Attachment N.

This report was submitted to Virginia Department of Historic Resources (VDHR) for concurrence on the predictive modeling and the proposed Phase 1b survey methodology on August 2, 2023. The VDHR provided comments regarding the proposed survey methodology August 14, 2023; to which the report was revised, finalized, and resubmitted on August 24, 2023, and the VDHR concurrence letter dated August 28, 2023 is included in Attachment Q.

The Phase 1B fieldwork, in accordance with the guidance provided by VDHR and outlined methodology in the Phase 1A assessment, was initiated in December 2023 and is ongoing at the time of this submittal of the CUP applications. The final Phase 1B will be provided to VDHR for concurrence on findings and recommendations.

AES will create an Unanticipated Discovery Plan which will be used during construction of the project to address any unexpected cultural discoveries on site. This plan will include emergency protections protocols, curation processing of cultural materials, disposition of cultural materials,

and a contact list including an on-call archaeologist, project contacts, and state/regional contacts.

LANDSCAPE STANDARDS

According to Isle of Wight County Code of Ordinances Appendix B Zoning Article VIII. Landscape and Screening Standards Section 8-1005-Landscaping Zones, there is a certain minimum number of required landscape points that vary based on the landscape zone assigned to an area, which include the: frontage zone, buffer zone, parking zone, foundation zone, and screening zone. The zone use type for the areas surveyed for this Project are likely categorized as a buffer zone, which requires the installation of a minimum of 45 points of landscaping per 500 square feet of buffer zone for civic use types. A tree canopy assessment was conducted to identify mature tree stands that would meet the requirements for tree preservation point credits. The project will provide approximately 2.8 million landscape points. The full Tree Canopy Survey Assessment is included in Attachment O.

DECOMMISSIONING

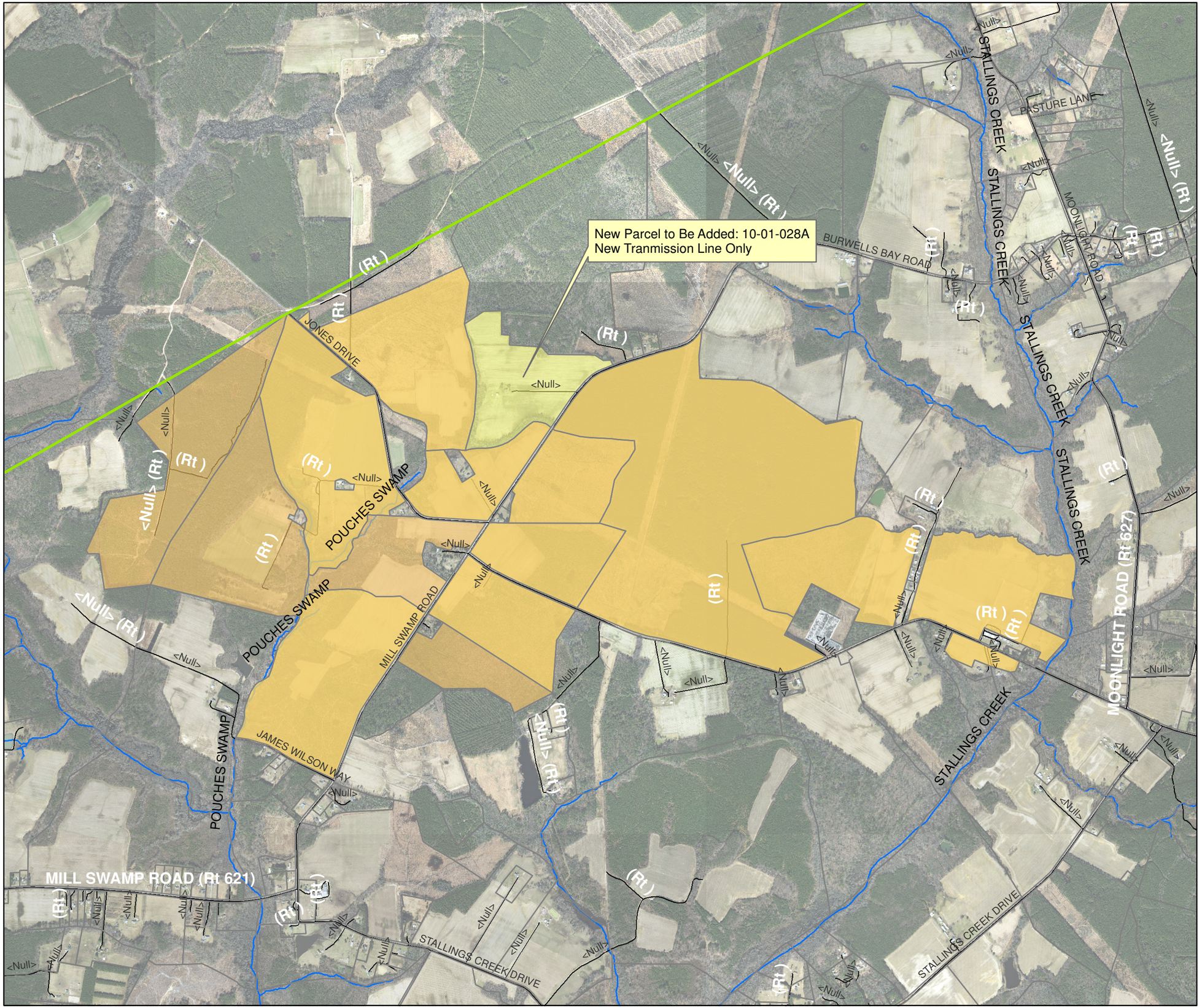
The operating period of the Project is anticipated to be approximately 35 years. At the end of the useful life of the Project, Sycamore Cross Solar, LLC, will be responsible for decommissioning the Project. Prior to final site plan approval, Sycamore Cross Solar, LLC will finalize and submit to the County a decommissioning plan and associated written agreement to decommission the Project equipment, facilities, and devices. The decommissioning security amount will be determined and posted based on an estimate provided in operational year 1 by a qualified third-party engineering firm. The decommissioning plan and associated security will not include a deduction for salvage value.

CUP-5-24
Sycamore Cross B
Solar Energy Generation Facility
Location Map

Legend

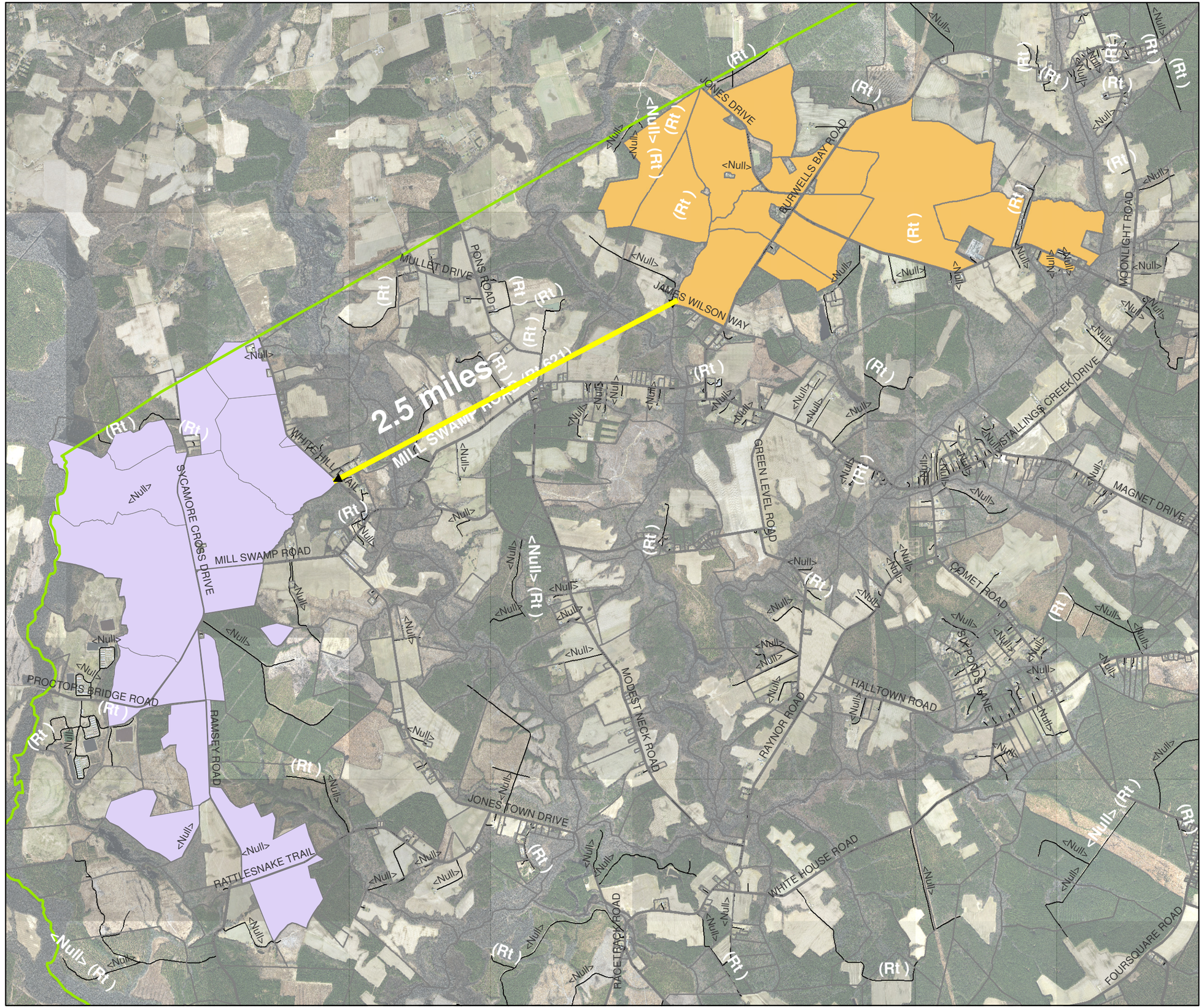
- Parcels
- Existing Cavalier Solar Parcels

N



Legend

- Sycamore Cross A
- Parcels
- Cavalier



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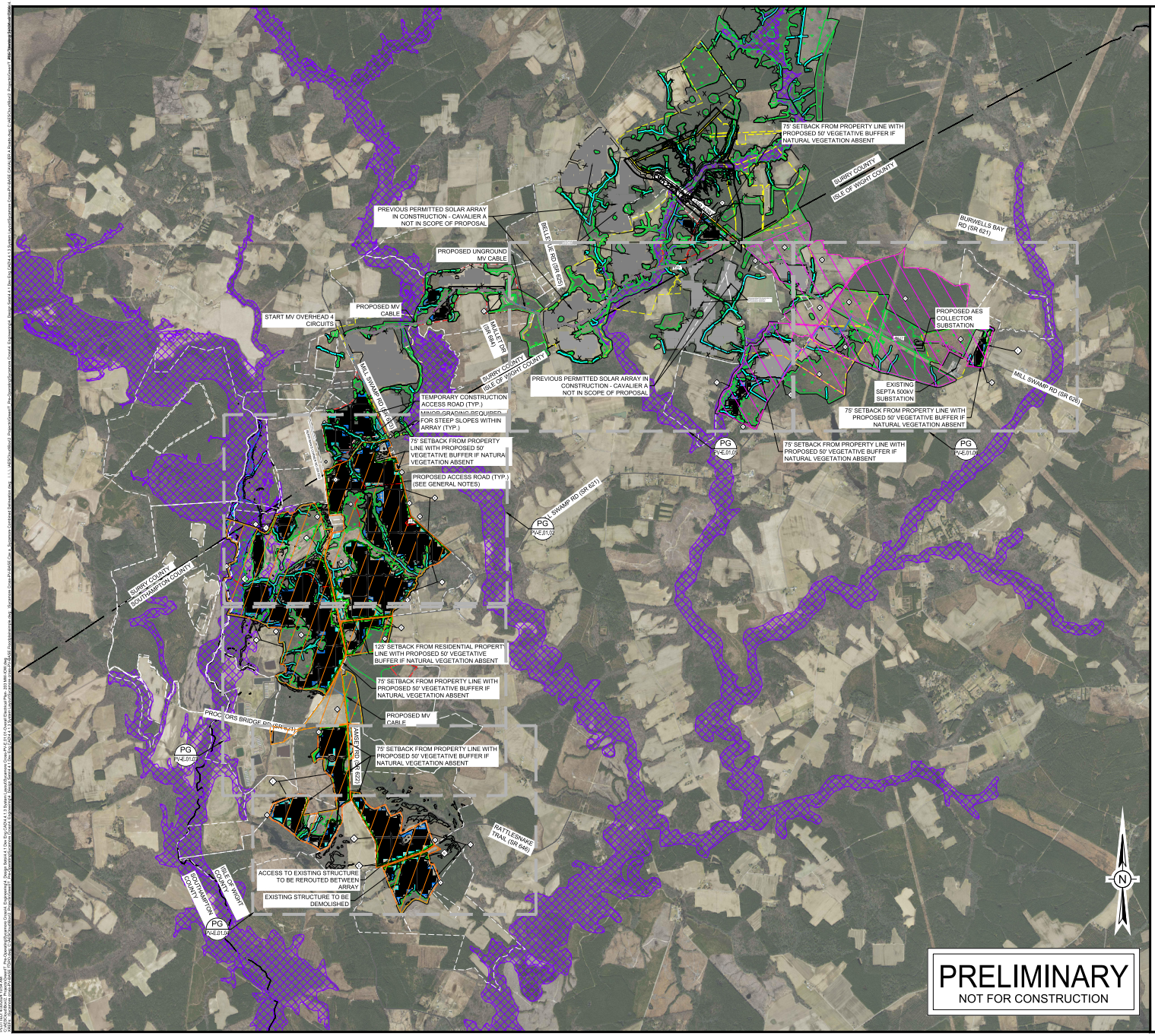

GENERAL NOTES

1. THIS DRAWING IS PRELIMINARY AND FOR ESTIMATING PURPOSES ONLY. IT IS NOT FOR CONSTRUCTION.
2. LOCATION OF ALL EXISTING ITEMS IS APPROXIMATE AND MUST BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION.
3. ALL SPECIFIED EQUIPMENT IS PRELIMINARY. FINAL EQUIPMENT SELECTION SHALL BE APPROVED BY OWNER.
4. 75' EQUIPMENT SETBACK FROM ALL PROPERTY LINES
5. 125' EQUIPMENT SETBACK FROM ALL RESIDENTIAL PARCELS
6. EXISTING WOOD LINE, EASEMENTS, ROW'S TO BE PROVIDED ONCE ALTA SURVEY COMPLETED.
7. ALL SITE ENTRANCES SHALL BE 20' WIDE AND TAPER TO 16' INTERNAL ACCESS ROADS

SHEET NOTES

- E — SITE ENTRANCE
- I — ISLE OF WIGHT COUNTY PARCELS
- C — WILDLIFE CORRIDOR
- # — PARCEL ID

LEGEND

EXISTING

- PROJECT PROPERTY LINE
- ADJACENT PROPERTY LINE
- EASEMENT PROPERTY LINE
- MAJOR PUBLIC ROAD
- ROAD RIGHT-OF-WAY
- APPROXIMATE WETLAND
- WASH / DRAINAGE
- 100 YEAR FLOOD PLAIN
- SLOPE KEEPOUT AREAS
- CAVALIER SITE FENCE
- CAVALIER SITE PV PANELS

PROPOSED

- MERGED SETBACK
- FENCE
- PROVISIONS FOR 2' DEEP WATER QUALITY MANAGEMENT
- OH-500 / OH-500 — EXISTING 500kV GEN-TIE
- OH-MV / OH-MV — 34.5kV OVERHEAD MV COLLECTION LINE
- LAYDOWN/ PARKING AREA
- PROPOSED VEGETATIVE BUFFER
- SYCAMORE CROSS SOLAR A
- SYCAMORE CROSS SOLAR B
- MV / MV / MV — MV UNDERGROUND LINE
- 60' MV LINE EASEMENT
- SYCAMORE CROSS PV PANELS

PARCELS WITHIN PROJECT BOUNDARIES

SHEET NOTE NUMBER	PARCEL TYPE	APPLICATION AREA	PARCEL ID	OWNER NAME
SYCAMORE CROSS SOLAR - A				
1	PROJECT	A	16-01-003	BLUE SKY ENDEAVORS LLC
2	PROJECT	A	27-01-003	BLUE SKY ENDEAVORS LLC
3	PROJECT	A	27-01-004	GORDON KATHLEEN H
4	PROJECT	A	16-01-009	BLUE SKY ENDEAVORS LLC
5	PROJECT	A	16-01-008	BLUE SKY ENDEAVORS LLC
6	PROJECT	A	16-01-002	EVERETS PROPERTIES INC
7	PROJECT	A	17-01-001	GORDON KATHLEEN H
8	PROJECT	A	17-01-011	HOLLEMAN WILLIAM JOSEPH
9	PROJECT	A	16-01-002A	SEWARD JEFFREY A & MELANIE D
10	PROJECT	A	09-01-001	WELLS CHRISTINE LORENZO
11	PROJECT	A	17-01-003	BLUE SKY ENDEAVORS LLC
12	PROJECT	A	17-01-003C	BLUE SKY ENDEAVORS LLC
13	EASEMENT ONLY	A	16-01-005	CARROLLS FOOD OF VIRGINIA LLC
14	PROJECT	A	17-01-002	GORDON KATHLEEN H
SYCAMORE CROSS SOLAR - B				
15	PROJECT	B	10-01-017	MILL SWAMP ROAD HOLDINGS LLC
16	PROJECT	B	11-01-015	BATTEN MITCHELL DELK
17	EASEMENT ONLY	B	11-01-005	476 LLC
18	EASEMENT ONLY	B	10-01-025	BARCROFT JEAN E SOLE TRUSTEE JEAN E BARCROFT LIVING TRUST
19	EASEMENT ONLY	B	10-01-030	MILL SWAMP ROAD HOLDINGS LLC
20	EASEMENT ONLY	B	10-01-028A	THACKER SHELTON L & ANN
21	EASEMENT ONLY	B	10-01-027	SEWARD MICHAEL A
22	EASEMENT ONLY	B	10-01-023	SEWARD MICHAEL A & EMILY B

aes
2180 South 1300 East, Suite 600
Salt Lake City, UT 84106-2749
(801) 679 - 3500

PE STAMP:

KEY PLAN:

REVISIONS:

NO.	DATE	DESCRIPTION
0	12/28/2022	INITIAL 5% LAYOUT
8	07/24/2023	REVISED 5% LAYOUT
9	12/12/2023	REVISED 5% LAYOUT
10	4/6/2023	REVISED 5% LAYOUT
4	4/17/2023	REVISED 5% LAYOUT
5	4/28/2023	REVISED 5% LAYOUT
6	5/25/2023	REVISED DC:AC RATIO
7	6/23/2023	ADDITIONAL PARCEL INVESTIGATION

PROJECT TITLE:

SYCAMORE CROSS

PROJECT LOCATION:

MILL SWAMP ROAD,
SMITHFIELD, VA 23430
37.0180,-76.7358

SHEET TITLE & DESCRIPTION:

OVERALL ELECTRICAL PLAN

UP TO 240 MWAC

PROJ NUM:	
DES:	A. PEÑAS
DWN:	F. MIRANDA
CHK:	C. SANCHEZ
APV:	
DATE:	12/28/2022

SCALE AT 24" x 36":
0 1.000' 2.000' 3.000' 4.000'
1" = 2,000'

SHEET NO: PV-E.01.01
REV: 10

Environmental Resource Impact Analysis

Sycamore Cross Solar Project
Isle of Wight and Surry Counties, Virginia

April 2023



Prepared for

AES Clean Energy Development, LLC
4200 Innslake Drive, Suite 302
Glen Allen, Virginia 23060

Prepared by

TETRA TECH
4101 Cox Road, Suite 120
Glen Allen, Virginia 23060

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Acronyms and Abbreviations

AMSL	Above Mean Sea Level
AES	AES Clean Energy Development, LLC
AJD	Approved Jurisdictional Determination
AMSL	Above Mean Sea Level
BECA	Bald Eagle Concentration Area
BGEPA	Bald and Golden Eagle Protection Act
CBPA	Chesapeake Bay Protection Area
CCB	Center for Conservation Biology
FEMA	Federal Emergency Management Act
FCV	Forest Conservation Value
FIRM	Flood Insurance Rate Map
IPaC	Information for Planning and Consultation
NHD	National Hydrography Dataset
NHDE	Natural Heritage Data Explorer
NLEB	northern long-eared bat
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PJD	Preliminary Jurisdictional Determination
Project	Sycamore Cross Solar Project
RPA	Resource Protection Area
T&E	threatened and endangered
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
SSURGO	Soil Survey Geographic Database
Tetra Tech	Tetra Tech, Inc
VaFWIS	Virginia Fish and Wildlife Information Services
VDCR	Virginia Department of Conservation and Recreation

VDEQ	Virginia Department of Environmental Quality
VDWR	Virginia Department of Wildlife Resources
VMRC	Virginia Marine Resource Commission

1.0 PROJECT DESCRIPTION

Sycamore Cross Solar, LLC, a subsidiary of AES Clean Energy (AES), is conducting due diligence for a proposed commercial solar energy project, the Sycamore Cross Solar Project (Project), on approximately 2,226 acres of agricultural and undeveloped forested land (Project study area). Sycamore Cross Solar, LLC is proposing to utilize approximately 1,195 acres of the Project study area in connection with the Project (Fenceline Area) to generate up to 240 megawatts (MWac) of solar energy. The Project is located in Isle of Wight and Surry Counties, Virginia, as shown on the orthoimagery and topographic Project location maps (Figures 1 and 2, respectively). The Project is in the Blackwater Watershed (Hydrologic Unit Code 03010202; USGS 2022).

Sycamore Cross Solar, LLC, is pursuing a Conditional Use Permit (CUP) from Isle of Wight and Surry Counties in accordance with Section 5-5003.M.4 of the Isle of Wight County, Virginia, and Section 10-122 of the Surry County, VA, Code of Ordinances. A desktop Environmental Resource Impact Analysis was conducted to identify potential impacts to environmental and wildlife resources within the Project Area and applicable buffers from the Project study area to comply with Section 5-5003.M.4.vi of the Isle of Wight County Zoning Ordinance and to help support the Surry County CUP application.

Resources considered include watershed preservation areas, forest conservation, ecological cores, floodplains, wetlands, surface water, and federal and state listed threatened and endangered species. This impact assessment was based on preliminary site plans and avoidance and minimization measures that are anticipated to be implemented.

2.0 ENVIRONMENTAL RESOURCES

2.1 Terrestrial and Aquatic Resources

2.1.1 Federal and State Protected Lands

Based on a desktop review of data provided by Virginia Department of Conservation and Recreation (VDCR), no federal or state protected lands, including national or state forests or parks, wildlife management areas or recreational areas, are located within the Fenceline Area of the Project study area. Two conservation easements are mapped within a one-mile radius of the Project study area, including one Virginia Department of Forestry/VDCR managed easement located approximately 350 feet southwest of the southwestern portion of the Project study area and one National Resources Conservation Service (NRCS) managed easement located approximately 0.20 miles north of the eastern portion of the Project study area (VDCR 2023a). Additionally two designated conservation areas were identified approximately 0.65 miles southwest of the southwestern portion of the Project study area, including one conservation area managed by The Nature Conservancy, named Blackwater River and one conservation area managed by VDCR, named Blackwater Sandhills (VDCR 2023a). No additional conservation easements or areas were identified within a one-mile radius of the Project study area.

2.1.2 Chesapeake Bay Preservation Area

Existing Conditions

The Project is located within Isle of Wight and Surry Counties, which are both considered one of Virginia's 29 coastal counties and independent cities deemed "Tidewater Virginia" as outlined in 9VAC25-830-80; however, based on Appendix B-1, Article 3 of the Isle of Wight County Code of Ordinances, the Isle of Wight County Chesapeake Bay Preservation Area (CPBA) Mapper, Section 3-1400 of the Surry County Code of Ordinances, preliminary correspondence with the Surry County Planning and Community Development Department and preliminary correspondence with the Isle of Wight Planning and Zoning department, the Project study area is located within the Albemarle-Chowan watershed. Therefore, the Project is not subject to CBPA Resource Protection Areas.

Potential Impacts

The Project is not located within the Chesapeake Bay watershed and therefore, not subject to CBPA regulations.

2.1.3 Forest Conservation Value

Existing Conditions

The Forest Conservation Value (FCV) model was designed by the Virginia Department of Forestry to identify forestland with the highest priority for conservation within Virginia with the intent to maximize the conservation efforts to the highest quality, most productive, and most vulnerable forestland within Virginia (VDCR 2021). The classifications of the values range from average to outstanding, indicating the value of forestlands for conservation (VDCR 2021). The VDCR FCV model indicated that approximately 1,254 acres of the Project study area were mapped as forest with approximately 213 acres categorized as outstanding priority for conservation, 293 acres as very high, and 384 acres categorized as high priority forestland for conservation. VDCR FCV located within the Project study area are depicted as Figure 4

Potential Impacts

Based on the current design of the Project and the Fenceline Area, approximately 32 acres of outstanding priority forestland will be impacted, approximately 63 acres of very high priority, and approximately 139 acres of high priority forestland may be impacted. A map depicting the FCV model within the Project study area is represented as Figure 4. Consultation with VDCR will be undertaken in connection with the potential impact of outstanding, very high, and high value forestland.

2.1.4 Ecological Cores

Existing Conditions

The VDCR developed ecological cores that classify lands based on environmental and species diversity, patch characteristics and context, and water quality benefits (VDCR 2018). The classifications of ecological cores range from general to outstanding based on a determination of ecological importance and characteristics (VCDR 2018). Ecological core data with the classification of high, very high, and outstanding have the greatest value of ecological biodiversity (VDCR 2018). VCDR ecological cores data indicates that approximately 357 acres of the Project study area are classified as very high, and approximately 162 acres are classified as high. No portion of the Project study area is classified as outstanding. The remaining portions of the Project study area are classified as either

general or is unclassified. Ecological cores located within the Project study area are depicted as Figure 5

Potential Impacts

Based on the current design of the Project and the Fenceline Area, approximately 94 acres of ecological cores classified as very high value will be impacted, and approximately 32 acres of high value ecological cores may be impacted. Wildlife corridors will be implemented in Project site design in order to reduce adverse impacts to these ecological cores. A map depicting the ecological core classifications within the Project study area is represented as Figure 5. Consultation with VDCR will be undertaken in connection with the potential impact of very high and high value ecological cores.

2.1.5 Floodplains

Existing Conditions

The floodplain data for the Project were obtained from Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Number 51093C00653, effective December 2, 2015; 51093C0125E, effective December 2, 2015; 51093C0050E, effective December 2, 2015 and 51181C0225E, effective April 6, 2022 (FEMA 2015a, b, c, 2022). According to the FEMA FIRMs, Blackwater River, located on the western portion of the Project study area, is mapped as Zone A, with a one-percent annual chance flood hazard. The Project is in the Blackwater River – Terrapin Swamp (12-digit Hydrologic Unit Code [HUC] 030102020301), and Rattlesnake Swamp (HUC 030102020303) watershed. FEMA floodplain data is depicted on Figure 6.

Potential Impacts

There are no anticipated impacts to floodplains based on the current design of the Project. These areas will be included in Project design considerations as design evolves and will continue to be avoided to the greatest extent practicable. Additionally, any potential impacts will be permitted through the appropriate authorities having jurisdiction.

2.1.6 Topography and Soils

Existing Conditions

The topography within the Project study area is relatively flat, ranging from 50 feet above mean sea level (amsl) to 95 feet amsl (Figure 2). Very minimal steep slopes were identified, with slopes exceeding 25 percent mapped in small areas throughout the Project study area (Figure 7).

A review of the U.S. Department of Agriculture (USDA) NRCS Web Soil Survey was conducted to determine the erosivity of soils within the Project study area. The K factor is an index which quantifies the relative susceptibility of the soil to sheet and rill erosion. Values range from 0.02 for the least erodible soils to 0.64 for the most erodible, with any K factor value equal to or greater than 0.32 being considered moderately erodible. The USDA NRCS soil survey data indicates that approximately 23.7 percent of the Project study area is composed of moderate to highly erodible soils (Appendix A). A figure depicting the USDA NRCS soil series classification within the Project study area is attached as Figure 10.

The USDA NRCS Web Soils Survey was also queried to identify soils classified as prime farmland within the Project study area. Approximately 895 acres of prime farmland soils were identified, an additional 433 acres are classified as prime farmland if drained, and approximately 109 acres of farmland of statewide importance were identified within the Project study area. The remaining portions of the Project study area were not classified as prime farmland or farmland of statewide importance (Figure 9).

Potential Impacts

Construction of the Project may result in impacts on soil resources within the facility footprint. Ground-disturbing activities would include vegetation clearing and grubbing; excavating for foundations and footings; pile driving; stockpiling excavated material for backfilling; drilling rock to set foundations and footings; drilling and installing groundwater supply wells; grading for roads and staging and laydown areas; and installing stormwater best management practices (BMPs). The construction of other facilities, such as electrical substations and storage of equipment and parts, also would have the potential to result in adverse impacts on soil resources, because they involve some degree of ground disturbance. Soil contamination could also result from the release of contaminants related to the use of trucks and mechanical equipment, from improper storage and handling, and from the application of chemical stabilizers to control fugitive dust emissions. The extent of impact would depend on the size and design of the project and on site-specific factors, such as soil properties, slope (e.g., along gullies and on alluvial fan surfaces), vegetation, weather, and distance to surface water. The implementation of erosion and sediment control BMPs would minimize soil erosion and impacts to on-site and off-site resources.

Based on the current design of the Project and the Fenceline Area, approximately 614 acres of prime farmland (26% of the Project study area), 236 acres (10%) of prime farmland if drained, and 35 acres (1.5%) of farmland of statewide importance may be impacted.

Impacts to prime farmland soils are expected from the Project, as the areas of Prime Farmland soil on the site are centrally located where development activities will be concentrated. However, these impacts will be temporary in nature and beneficial to the quality of the soil. Over the life of the Project these soils will lay fallow, allowing reaccumulation of vital nutrients and organic matter; after the Project is decommissioned, the land may be converted into cropland that would benefit from this soil resting period. However, since the Project is not being completed by a Federal agency or with assistance from a Federal agency and will not irreversibly convert farmland to a nonagricultural use, the Project will not be subject to the Farmland Protection Policy Act (FPPA). Therefore, no form AD-1006 Farmland Conversion Impact Rating will be required.

2.1.7 Wetlands, Surface Waters, and Open Waters

Existing Conditions

A field wetland delineation was performed for the Project study area in January and April 2020, October 27, 2022, November 2-4, 2022, December 2, 9, 14-15, 20-21, 27-29, 2022, January 9-13, March 22-24 and 28-30, 2023 for wetland, stream, and open water features. 30,281 linear feet of streams features, 415 acres of wetlands, and 1.08 acres of open water features, including ponds, were identified within the Project study area. A portion of the delineated features in the northwestern

portion of the Project study area were confirmed for jurisdiction in the form of a USACE Preliminary Jurisdictional Determination (PJD) and an Approved Jurisdictional Determination (AJD) (NAO-2019-01204) in 2022 The remaining delineated water features identified within the Project study area were not confirmed for jurisdiction with the U. S. Army Corps of Engineers (USACE) and the Virginia department of the Environmental Quality (VDEQ), and/or Virginia Marine Resources Commission (VMRC) at the time of submittal of this analysis report. The Project plans to confirm all delineated features within the Project study area in the form of a USACE PJD and/or AJD. A figure depicting the delineated features within the Project study area is attached as Figure 8.

Potential Impacts

A utility-scale solar project can affect surface water and groundwater in several ways, including the use of water resources, modification of the natural surface water and groundwater flow systems, alteration of the interactions between groundwater and surface waters, contamination of aquifers, wastewater treatment either on- or off-site, and water quality degradation by runoff or excessive withdrawals, as well as from leaks and spills of chemicals used for the project. While some impacts on water resources (e.g., water use) are dependent upon the solar technologies themselves, impacts on water resources associated with land disturbance and construction activities would be expected to occur regardless of the type of solar technology used.

There are 2,281 linear feet of streams, 36 acres of wetlands, and 0.39 acres of open water features located within the Fenceline Area. Through continued engineering and site design, the Project will avoid and minimize impacts to wetlands, surface waters, and open waters to the greatest extent practicable. Any impacts to wetlands, surface waters, and open waters will be permitted through the appropriate authorities having jurisdiction.

The Project has been designed to avoid and minimize impacts to wetlands and streams as they are currently mapped within the Fenceline Area and Project study area to the greatest extent practicable. A portion of the Project study area's delineated water resources delineation results have been confirmed by the USACE and VDEQ in the northeastern portion of the Project study area in the form of a Preliminary Jurisdictional Determination and an Approved Jurisdictional Determination (NAO-2019-01204) in 2022. The remaining water resources delineated within the Project study area have not yet been confirmed by the USACE, VDEQ, and/or the VMRC and are subject to change. Federal and state confirmation of the remaining unconfirmed water resources within the Project will be planned in the form of a USACE jurisdictional determination. Pending any changes to mapped features, impacts to jurisdictional features will be permitted through the USACE, VDEQ, and/or VMRC, and any requisite mitigation measures will be incorporated into the project.

Through the use of stormwater BMPs and erosion and sedimentation controls during construction, as well as routine stormwater inspections, no impacts to adjacent water resources are expected from the Project.

2.2 Wildlife Resources

Field visits at the Project study area were conducted on October 27, 2022; November 2–4, 2022; December 2, 9, 14–15, 20-21, 27–29, 2022; January 9–13, 2023; March 22–24, 28–30, 2023; and April 3, 2023. The results of this evaluation identified the potential presence of the following:

- One species protected by BGEPA and a listed bird species: bald eagle (*Haliaeetus leucocephalus*) and red-cockaded woodpecker (*Picoides borealis)*;
- Three species of bats: NLEB, Rafinesque's eastern big-eared bat *(Corynorhinus rafinesquii macrotis),* and tri-colored bat *(Perimyotis subflavus)*; and
- One mollusk species: yellow lance *(Elliptio lanceolata)*.

Potential impacts to these species as a result of implementation of the Project are discussed below.

2.2.1 Bald Eagle

Existing Conditions

The bald eagle is protected under the Bald and Golden Eagle Protection Act (BGEPA). Bald eagles prefer to nest in mature or old growth trees, snags, or cliffs near rivers, coastlines, lakes, and streams large enough to serve as a substantial food supply (USFWS 2007).

Several large bodies of water were identified on the USGS topographic map, specifically in the USFWS NWI and USGS NHD layers in the surrounding areas of the Project study area, and were noted during the site visit within the surrounding areas of the Project study area. Areas noted included Blackwater River, Mill Swamp, and an unnamed pond located in the western, eastern, and center portions of the Project study area, respectively (Figures 2 and 3).

Based on a review of the CCB Bald Eagle Nest Locator, the closest known bald eagle nest is approximately 7.1 miles south of the Project study area A, and 3.03 miles away from Project study area B. The USFWS BECA map did not indicate a bald eagle concentration area within the Project study area. During the January 2023 field survey, two adult bald eagles and one juvenile were observed feeding on carrion adjacent to the pond located in the northwestern portion of the Project study area.

Potential Impacts

Based on the observation of bald eagles, a "may effect-not likely to adversely affect" status was determined for the bald eagle in connection with the Project study area. Consultation with USFWS and VDEQ will be initiated; a subsequent bald eagle nest survey will be conducted if construction is anticipated to be conducted during the breeding season (October 1 through May 15). The appropriate buffers will be provided per the USFWS 2007 National Bald Eagle Management Guidelines (USFWS 2007).

2.2.2 Red-Cockaded Woodpecker

Existing Conditions

IPaC indicates that the red-cockaded woodpecker, which is a federally endangered and state endangered species, has the potential to occur within the Project study area (USFWS 2023a). The red-

cockaded woodpecker commonly inhabits mature pine trees that are generally 80 years old or older and are devoid of underbrush (USFWS 2023d).

Upon a review of aerial orthoimagery presented in Figure 1 and field verification of habitat, forested communities within the Project study area consist of mostly silviculture with pine plantations that are younger than 80 years old, as well as deciduous hardwood forests in riparian areas. During the January and March field surveys, pine trees were observed within the Project study area, however, the trees were observed to be less than 80 years of age.

Potential Impacts

Given the lack of suitable habitat, red-cockaded woodpecker constitutes a "no effect" status in connection with the Project study area.

2.2.3 Northern Long Eared Bat

Existing Conditions

The IPaC database (USFWS 2023a) indicated that the NLEB, a federally endangered and state-threatened species, has the potential to occur within the Project study area. The NLEB spend winters hibernating in caves and mines; during the summer, they roost singly or in colonies underneath bark, in cavities, or in crevices of trees both live and dead (USFWS 2023e). Foraging occurs on forested hillsides and ridges, occasionally over forest clearings, over water, and along tree-lined corridors. Mature forests may be an important habitat type for foraging. The VDWR NLEB mapping application shows that there are no known NLEB winter hibernacula or roost trees in the vicinity of the Project study area (VDWR 2023a). The nearest winter hibernacula and roosting habitat is located approximately 43.7 miles southeast of the Project study area and 40.1 miles southeast of Project study area B (VDWR 2023a). However, forested areas within the Project study area, especially along riparian corridors, provide potential suitable roosting and foraging habitat for the NLEB. Suitable trees were identified within forested areas in the Project study area during the field survey.

Potential Impacts

Given the suitable habitat on site, consultation with USFWS and VDWR will be initiated, and additional bat presence/absence surveys will be conducted (i.e., acoustic or mist netting) prior to tree clearing for construction activities if deemed necessary by agencies.

2.2.4 Rafinesque's Eastern Big-eared Bat

Existing Conditions

The VDWR VaFWIS indicated that there are confirmed occurrences of the Rafinesque's eastern big-eared bat, which is a state endangered species, within the Project study area and a ±2-mile radius from the Project study area boundary (VDWR 2023c). The Rafinesque's eastern big-eared bat is known to roost in hollow trees and old buildings in the southeastern United States along the coast and in caves and mines within the Appalachian Mountains (VDWR 2022a) Additionally, the VDCR NHDE identified this species as possibly occurring within the following Project study area watersheds:

Blackwater River – Terrapin Swamp (12-digit Hydrologic Unit Code [HUC] 030102020301), and Rattlesnake Swamp (HUC 030102020303) (VDCR 2023b).

Potential Impacts

Given the suitable habitat on site, consultation with VDWR and VDCR will be initiated, and additional bat presence/absence surveys will be conducted (i.e., acoustic or mist netting) prior to tree clearing for construction activities if deemed necessary by agencies.

2.2.5 Tri-colored Bat

Existing Conditions

The VDWR VaFWIS indicated that there are confirmed occurrences of the state endangered tri-colored bat within the Project study area and a ±2-mile radius from the Project study area boundary (VDWR 2023b). It should be noted that the tri-colored bat was proposed on September 14, 2022 by the USFWS to be federally reclassified as endangered however, the rule has yet to be finalized at the completion of this report (87 FR 56381)(USFWS 2023f). The tri-colored bat is known to inhabit caves but is also known to inhabit hollow trees during the summer (VDWR 2022b). VDWR mapping shows that the nearest winter hibernacula and roosting habitat are located approximately 133.1 miles northwest of the western Project study area and 136.4 miles northwest of eastern Project study area. The wooded areas located within the Project study area, however, could provide suitable foraging and roosting habitat for the tri-colored bat between summer and fall.

Potential Impacts

Given the suitable habitat on site, consultation with VDWR and VDCR will be initiated, and additional bat presence/absence surveys will be conducted (i.e., acoustic or mist netting) prior to tree clearing for construction activities if deemed necessary by agencies.

2.2.6 Yellow Lance

Existing Conditions

The VDWR VaFWIS indicated confirmed occurrences of the yellow lance, which is a state threatened species, within the Project study area and a ±2-mile radius from the Project study area boundary (VDWR 2023c). The yellow lance is known to inhabit clean, coarse to medium-sized sandy substrate but can occasionally be located within gravel substrate; can be found in waters from main channels down to small streams (North Carolina Wildlife Resources Commission 2022). Based on a review of NHD and NWI data, depicted in Figure 3, Terrapin Swamp, Blackwater River, Mill Swamp, Stallings Creek, Pouches Swamp, and several unnamed tributaries were identified within the Project study area, which could be potential habitat for yellow lance.

Potential Impacts

Given the suitable habitat on site, consultation with VDWR and VDCR will be initiated, and additional species presence/absence surveys will be conducted prior to construction activities if deemed necessary by agencies.

2.2.7 Candidate Listed Species

Existing Conditions

The IPaC system identified the monarch butterfly (*Danaus plexippus*), a candidate species at the federal level, as having the potential to occur within the Project study area. Monarch butterflies migrate to temperate climates in eastern and western North America during the fall and breed at overwintering sites in February to March. Additionally, VaFWIS identified the Spotted Turtle (*Clemmys guttata*), a federal candidate species, as having the potential to occur within the Project study area. Spotted Turtles are found in shallow aquatic areas with vegetation (USFWS 2023d). Suitable habitat was observed on site, and a spotted turtle was observed in the Project study area- photos of which are included in the photolog (Attachment C).

Potential Impacts

At time of this analysis, both species above are listed as candidate species. As candidate species are not subject to review under the Endangered Species Act, presence of these species is not anticipated to be a constraint to the Project. Impacts to potential habitat, such as streams and riparian corridors, will be avoided to the greatest practicable extent. Should the two species be listed as state or federally threatened or endangered in the future, further measures to avoid or mitigate potential impacts to the two species will be enacted.

No federally listed critical habitat was documented on the USFWS Critical Habitat for Threatened and Endangered Species Mapper as occurring within the proposed Project study area or the vicinity. The western Project study area is approximately 44.5 miles southeast of the closest mapped critical habitat. The eastern Project study area is approximately 50.4 miles southeast of the closest mapped critical habitat.

2.3 Cultural and Aesthetic Resources

2.3.1 Cultural and Historic Resources

Existing Conditions

Dutton + Associates, LLC (Dutton) prepared a Phase IA Cultural Resource Assessment report dated March 2023 and a Phase I Cultural Resources Survey dated September 2019 for and area which includes the Project study area and Fenceline Area in which Dutton utilized desktop resources and limited field reconnaissance to identify potential resources and areas of historic and cultural potential within the Project study area and the adjacent properties. One previously identified archaeological site is present on a southwestern parcel within the Project study area, and seven dilapidated buildings and complexes remain extant in the Project study area but have not been assessed for eligibility for listing on the National Register of Historic Places (NRHP) or on the Virginia Landmark Register. Based on the information from the desktop assessment and field reconnaissance conducted by Dutton, areas of historic resource potential were identified within the Project study area. Approximately 123 acres were determined to be areas with high potential for historic resources; an additional 272 acres were identified as areas with moderate potential.

Additional information on cultural resources is included in the Desktop Cultural Resources Report.

Potential Impacts

Based on the preliminary review of cultural resources, coordination with VDHR will be conducted prior to Project construction activities (e.g. ground clearing or leveling) to determine the significance of dilapidated buildings and sensitive archaeological areas within the Project study area. Implementation of the Project would not have an adverse impact on any archaeological or architectural resources that are eligible or potentially eligible for listing on the NRHP; and no further work is expected to be necessary within the Project area. Many of the extant buildings and building complexes are excluded from the Project area with carve-out parcels, and the previously identified archaeological site will be avoided in Project design and construction. Consultation with the VDHR will be conducted to confirm that no additional archaeological or historic investigation are required for the Project.

2.3.2 Aesthetic Resources

Existing Conditions

The landscape surrounding the Project site is characterized by broad plains of terraces, sandy ridges, and broad but shallow valleys. The elevation within the Project site averages around 80 feet, and local relief is less than 30 feet. Mixed forest vegetation covers most undeveloped or non-agricultural areas, often limiting views to the immediate foreground (i.e., within half a mile of the viewer). Land use is primarily small agricultural fields and rural residences interspersed with large, forested areas. Views surrounding the Project area are dominated by cultivated open agricultural fields, dense woodlands, and scattered residences and agricultural buildings.

Additional detail is provided in the Conditional Use Permit application as Attachment J.

Potential Impacts

The Project would introduce low vertical, geometric elements that are gray in color (e.g., solar panels, fencing) into a rolling terrain landscape dominated by green vegetation and large patches of dense trees. Visual impacts would vary depending on several factors, such as the distance of the viewer from the Project and whether views toward the Project are unobstructed or screened by vegetation, terrain, or development. The views can be vastly different from one location to another, even in proximity, because of the rolling terrain and dense vegetation. Viewers in proximity to the Project may have unobstructed or partially screened views (primarily along Sycamore Cross Drive, Mill Swamp Road, and Beechland Road). The solar arrays and fencing would be installed in both existing cultivated and open fields, as well as within areas currently covered by pine timber lands which would be cleared for the Project. Therefore, tree removal would be a noticeable effect of the Project, in addition to direct views of Project components. Large-scale silviculture harvest is assumed to be a frequent occurrence in the area, and viewers are assumed to be familiar with the changes to views resulting from a timber stand being cleared.

No visual impacts would occur to identified designated scenic resources, and although the Sycamore Cross Solar facility would introduce new views of solar infrastructure from public roadways and a small number of private residents immediately adjacent to the Project site, visual effects are not expected to occur from viewpoints away from the immediate Project area. Additionally, the Project

will install landscape buffers consisting of trees and shrubs along rights of way and abutting residential parcels, per the Isle of Wight zoning code Section B. Article V. § 5-5003 Part 4e.

3.0 CONCLUSIONS

This Environmental Resource Impact Assessment identified the following environmental resources and associated potential impacts:

- 2,281 linear feet of streams, 36 acres of wetlands, and 0.39 acres of open water features may be impacted by the are located within the Fenceline Area, however, no impacts to wetlands, streams or waterbodies are anticipated with the current Project design. These features will be included in the Project site plan and will be avoided to the greatest extent practicable. Any unavoidable impacts will be permitted through the proper regulators prior to construction.
- The western portion of the Project study area, along Blackwater River, is located within a FEMA flood zone with a one percent chance annual flood hazard. No impacts to floodplains are anticipated based on current Project design.
- Based on the current design of the Project and the Fenceline Area, approximately 32 acres of outstanding priority forestland will be impacted, approximately 63 acres of very high priority, and approximately 139 acres of high priority forestland may be impacted.
- Based on the current design of the Project and the Fenceline Area, approximately 94 acres of ecological cores classified as very high value will be impacted, and approximately 32 acres of high value ecological cores will be impacted. Wildlife corridors will be implemented in Project design to mitigate potential habitat fragmentation.
- Based on the current design of the Project and the Fenceline Area, approximately 614 acres (26%) of prime farmland, 236 acres (10%) of prime farmland if drained, and 35 acres (1.5%) of farmland of statewide importance may be temporarily impacted. However, following decommissioning of the Project, the land may be returned to agricultural use with improved soil quality due to the resting of these soils over the life of the Project.
- Bald eagles were identified as potentially present within the Project study area and were observed during site visits; however, no recorded nests were identified within the Project study area or direct vicinity. Additional nest surveys will be conducted if construction is anticipated to occur within the breeding season, and appropriate buffers will be implemented as necessary.
- No suitable habitat is present within the Project study area for the red cockaded woodpecker, and no impacts to this species are anticipated.
- Suitable habitat is present within the Project study area for three listed bat species- NLEB, Rufinesque's bat, and tricolor bat. Agency coordination will be conducted; additional species presence surveys, such as acoustic surveys or mist-net surveys, will be conducted if deemed necessary prior to any tree-clearing activities.
- The yellow lance mussel is potentially present within the Project study area and direct vicinity in stream channels. Avoidance of streams will be implemented to the greatest extent

practicable; if any impacts to streams are unavoidable, agency coordination will be initiated and additional species presence surveys will be conducted prior to construction activities.

- Approximately 23.7 percent of the Project study area contains moderate to highly erodible soils. The implementation of erosion and sediment control BMPs would minimize soil erosion and impacts to on-site and off-site resources.

Additionally, the Environmental Resources Impact Analysis identified NLEB as federally-listed endangered and state-listed threatened, red-cockaded woodpecker as federally-listed endangered, eastern big-eared as state-listed endangered, tri-colored bat as state-listed endangered and federally proposed endangered, and yellow lance as federally-listed threatened and state-listed threatened species that have the potential to occur within and in the vicinity of the Project study area.

Potential impacts to threatened and endangered species and their habitats will be reduced by avoiding and minimizing Project impacts, including but not limited to excavation, tree removal, and fill activities, to potential habitat areas including wetlands, forested areas, streams, and riparian corridors. The Project plans to avoid these resources to the maximum extent possible and coordinate with USFWS, VDWR, and VDCR to determine the potential for further site-specific surveys.

The Project plans to avoid and minimize impacts to aquatic features to the greatest practicable extent. Coordination and permitting with the U.S. Army Corps of Engineers, Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission will be undertaken for planned potential impacts to aquatic features. Methods including utilizing temporary matting, staging of equipment in upland areas, and using best management practices during construction will be planned to avoid and minimize potential impacts to aquatic features.

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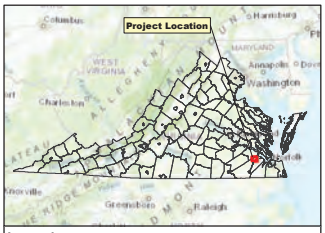
FIGURES





Legend

- Project Study Area
- Outside Project Study Area
- County Boundary

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Figure 1
Orthoimagery Project Location Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/12/2023

Source: Esri, et. al., 2022; AES, 2022; Virginia Open Data Portal, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

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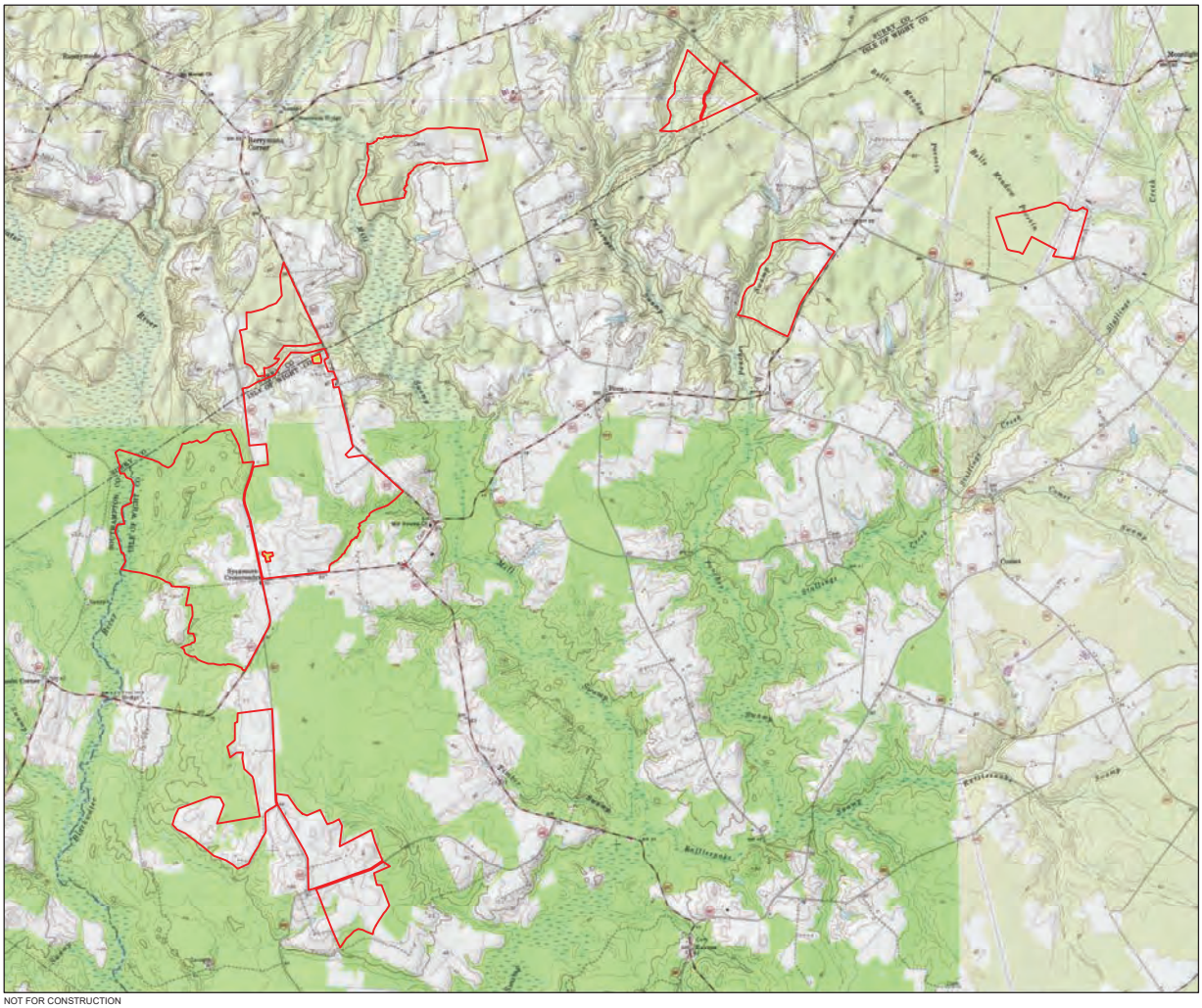

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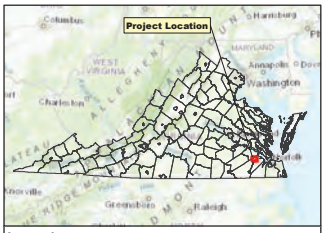

Legend

- Project Study Area
- Outside Project Study Area

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Figure 2
Topographic Project Location Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/12/2023

Source: Esri, et. al., 2022; AES, 2022; Virginia Open Data Portal, 2022; USGS Topo Quads - Dendron, Runnymede, Ivor, Raynor, 2023.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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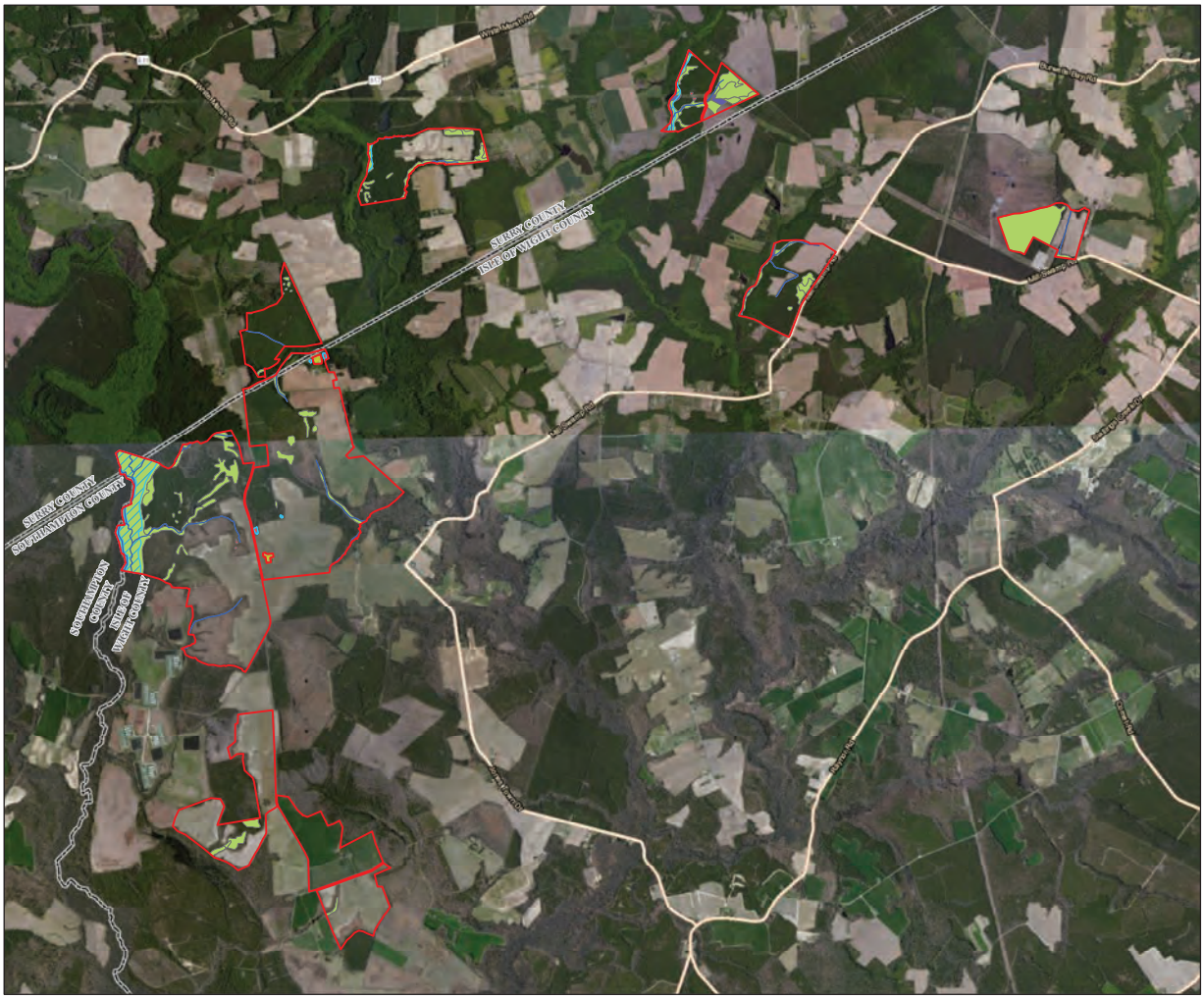

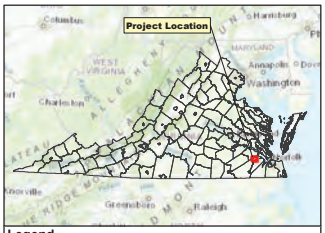

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- NHD Flowlines
- NHD Waterbodies

NWI Wetland Type

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

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Figure 3
NHD and NWI Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/12/2023

Source: Esri, et. al., 2022; AES, 2022; NHD, 2022; NWI; 2022; Virginia Open Data Portal, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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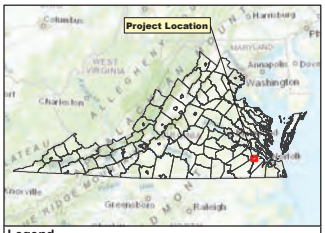

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary

Forest Conservation Value

- 1: Average
- 2: Moderate
- 3: High
- 4: Very High
- 5: Outstanding

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Figure 4
VDCR Forest Conservation Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; VDCR, 2020.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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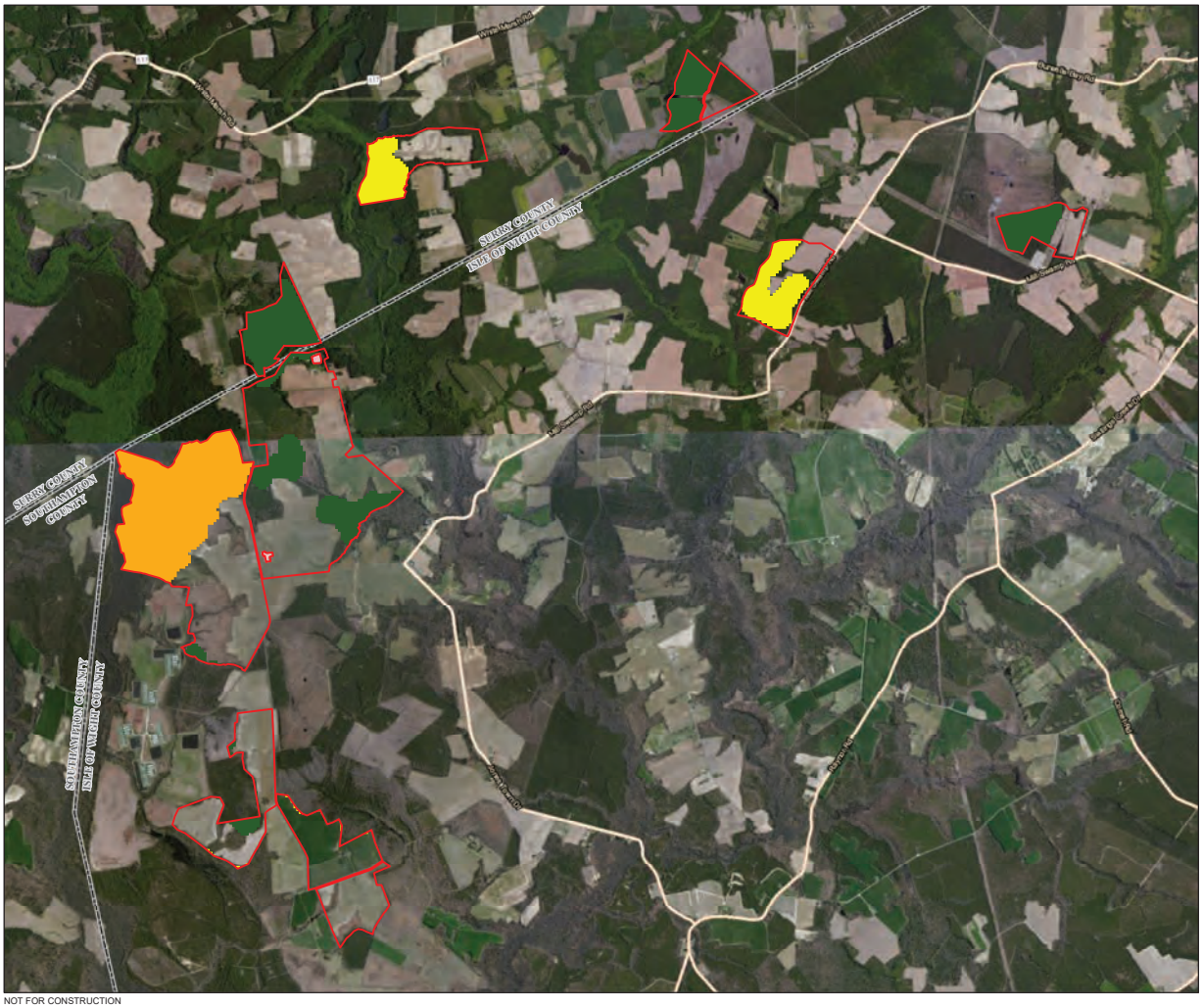

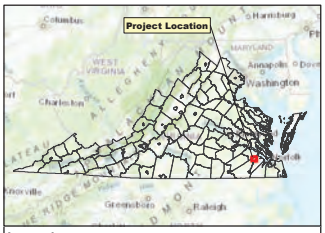

Legend

- Project Study
- Outside Project Study
- County Boundary

Core Rank

- C2: Very High
- C3: High
- C5: General

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Figure 5
VDCR Ecological Cores Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; VDCR, 2017.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

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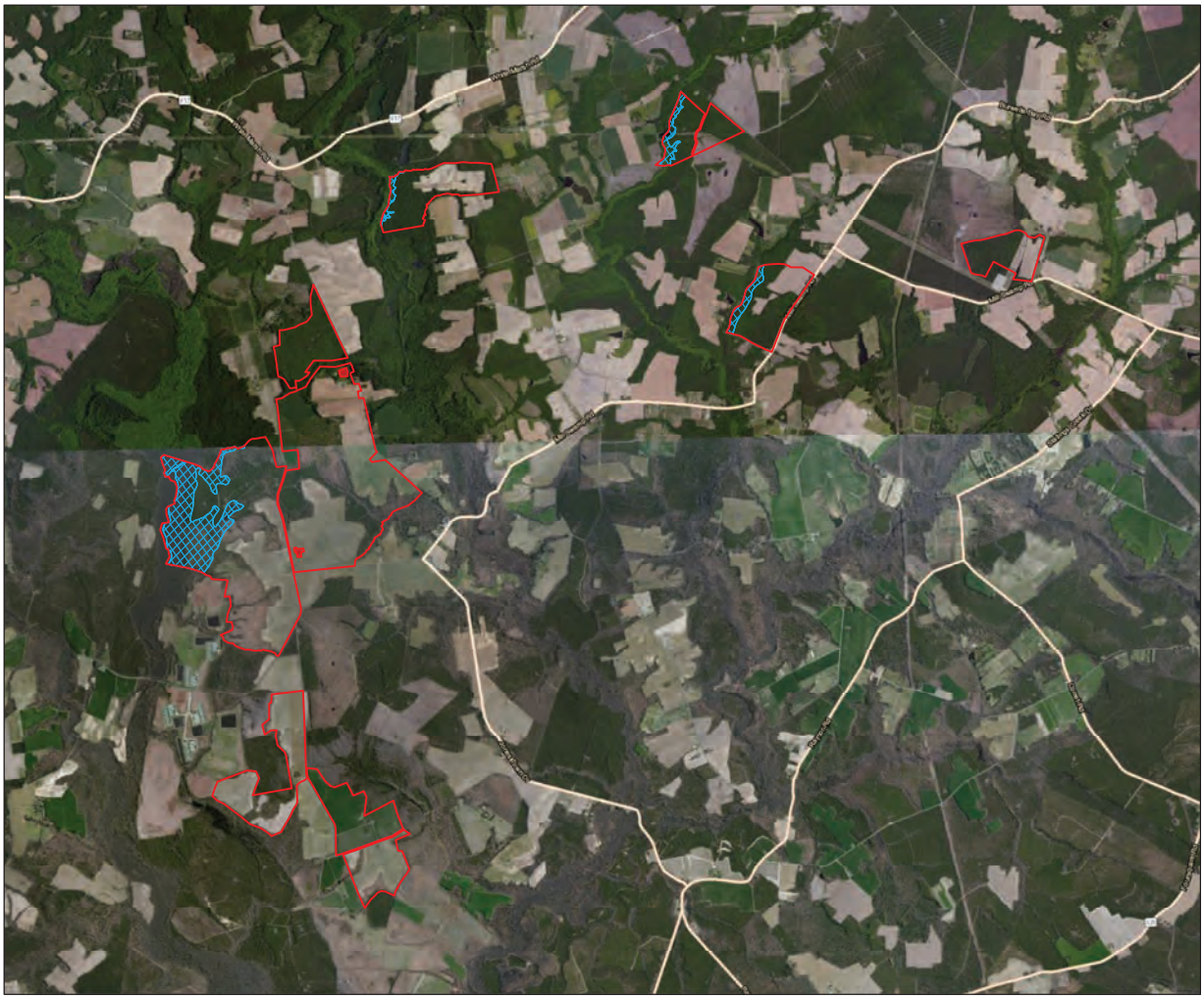

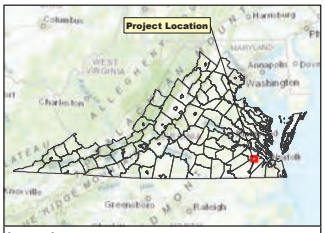

Legend

- Project Study Area
- Outside Project Study Area

FEMA Flood Risk

- 100-year Floodplain, 1% annual chance of flooding

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Figure 6
FEMA Flood Hazard Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/14/2023

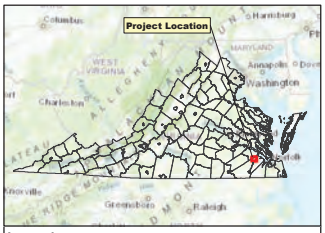
Source: Esri, et. al., 2022; AES, 2022; FEMA, 2022; FEMA FIRM number (FEMA FIRM Number 51093C0125E, effective December 2, 2015; 51093C0050E, effective December 1, 2015; and 51181C0225E, effective April 5, 2022); Virginia Open Data Portal, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

I:\ES\Sycamore_Cross_Solar\GIS\Solar\MXD\20230412_Envir_Resource_Impact_Report\Figure_6_Sycamore_Cross_Solar_FEMA_Flood_Hazard_Map.mxd





Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Steep Slope (>25%)

N
W E
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0 0.25 0.5 1 Miles

Figure 7
Steep Slopes Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Virginia Open Data Portal, 2022, USGS, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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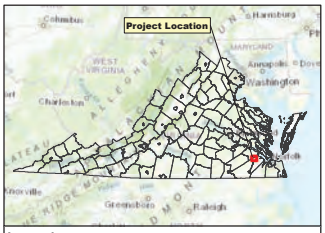
NOT FOR CONSTRUCTION



NOT FOR CONSTRUCTION



Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Detail Map Page

N
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0 0.25 0.5 1 Miles

Figure 8

Delineated Aquatic Resources Features Map Overview Map

Sycamore Cross Solar Project

Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia Open Data Portal, 2022; Virginia GIS Clearinghouse, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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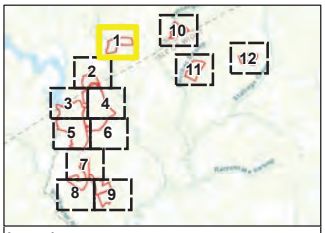


Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N W E S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 1 of 12

Prepared For: aes

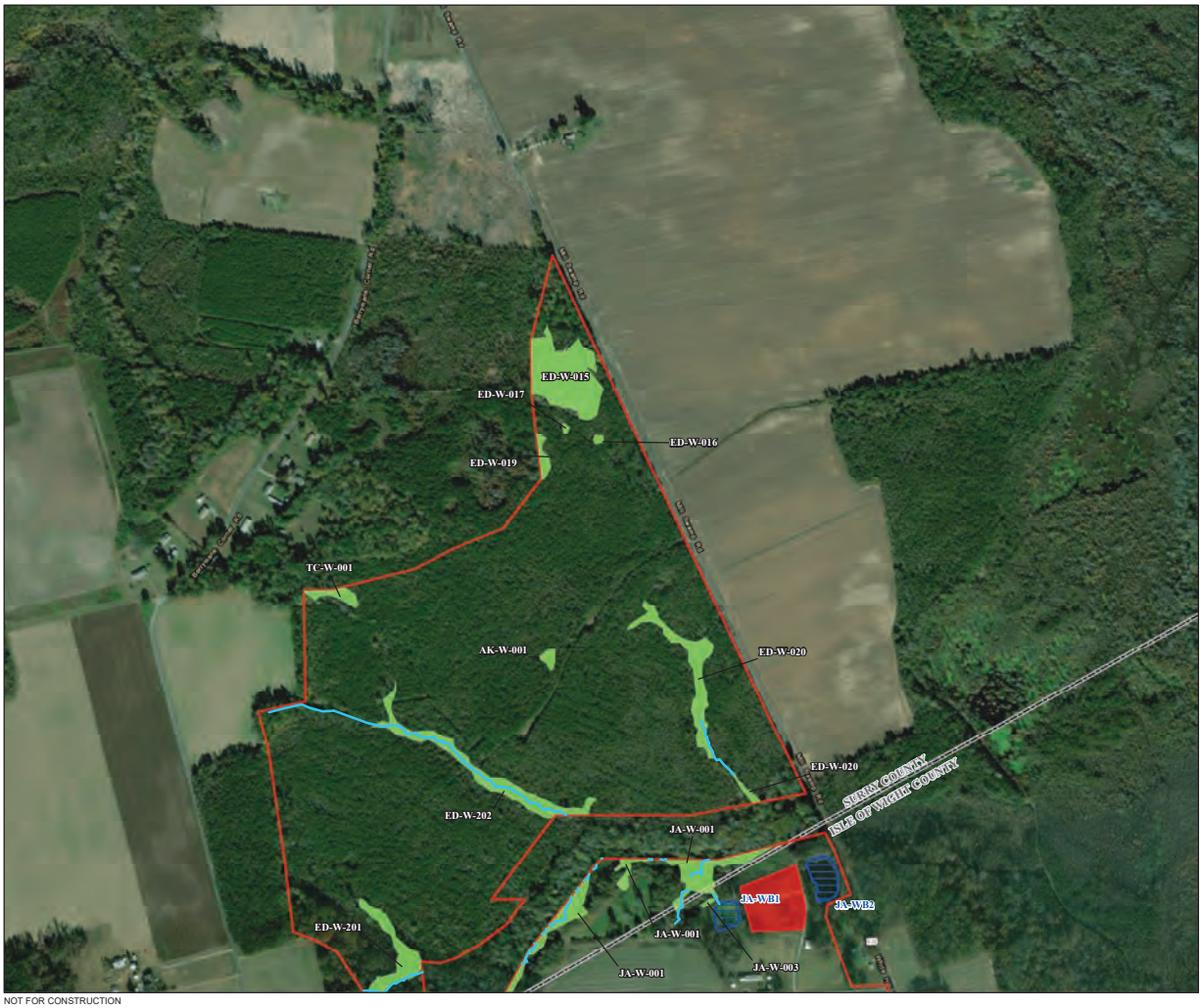
Prepared By: TETRA TECH

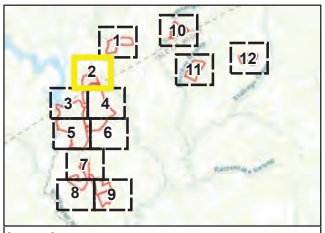
Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

\GIS\AES\Sycamore_Cross_Solar\GIS\Spatial\MXD\20200412_Envir_Resource_Impact_Report\Figure_8_Sycamore_Cross_Solar_Delineated_Aquatic_Resources_Features_Detail.mxd





Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N W E S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 2 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

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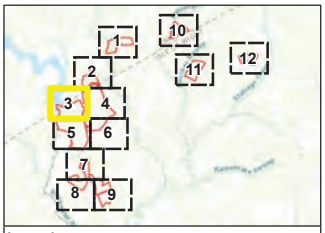

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

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0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 3 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

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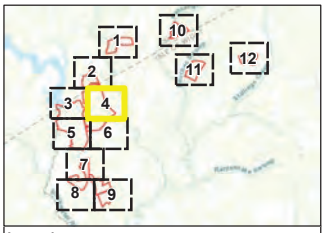

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

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0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 4 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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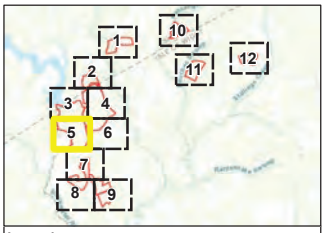

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N
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S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 5 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

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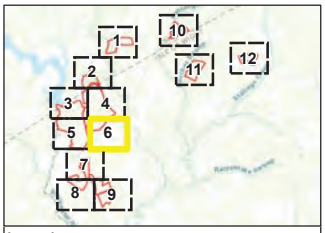


Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N W E S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 6 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

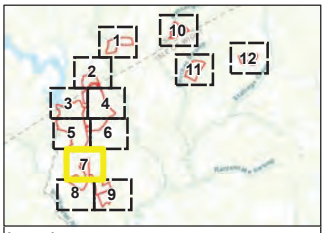
Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

\GIS\AES\Sycamore_Cross_Solar\GIS\Spatial\MXD\20200412_Envir_Resource_Impact_Report\Figure_8_Sycamore_Cross_Solar_Delineated_Aquatic_Resources_Features_Detail.mxd





Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N W E S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 7 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

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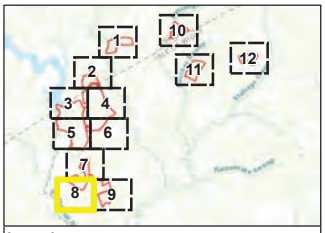

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N W E S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 8 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

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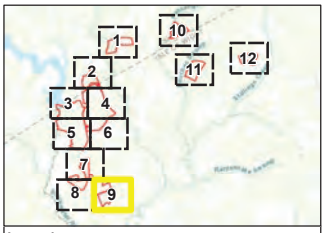

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

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0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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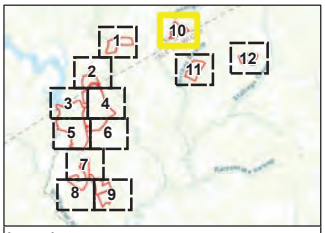

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N W E S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 10 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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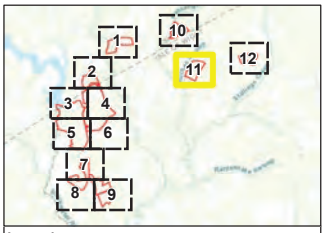

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N W E S

0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 11 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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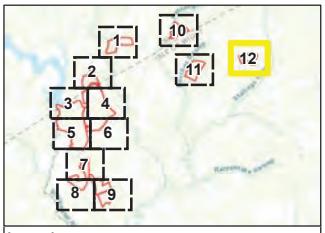

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Field Delineated Stream
- Field Delineated Wetland
- Open Water

Disclaimer: Project study area/county boundary spatial data may have some accurary discrepencies.

N
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0 250 500 1,000 Feet

Figure 8

Delineated Aquatic Resources Features Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Page 12 of 12

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; Tetra Tech, 2023; Virginia GIS Clearinghouse, 2022; Virginia Open Data Portal, 2022;

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

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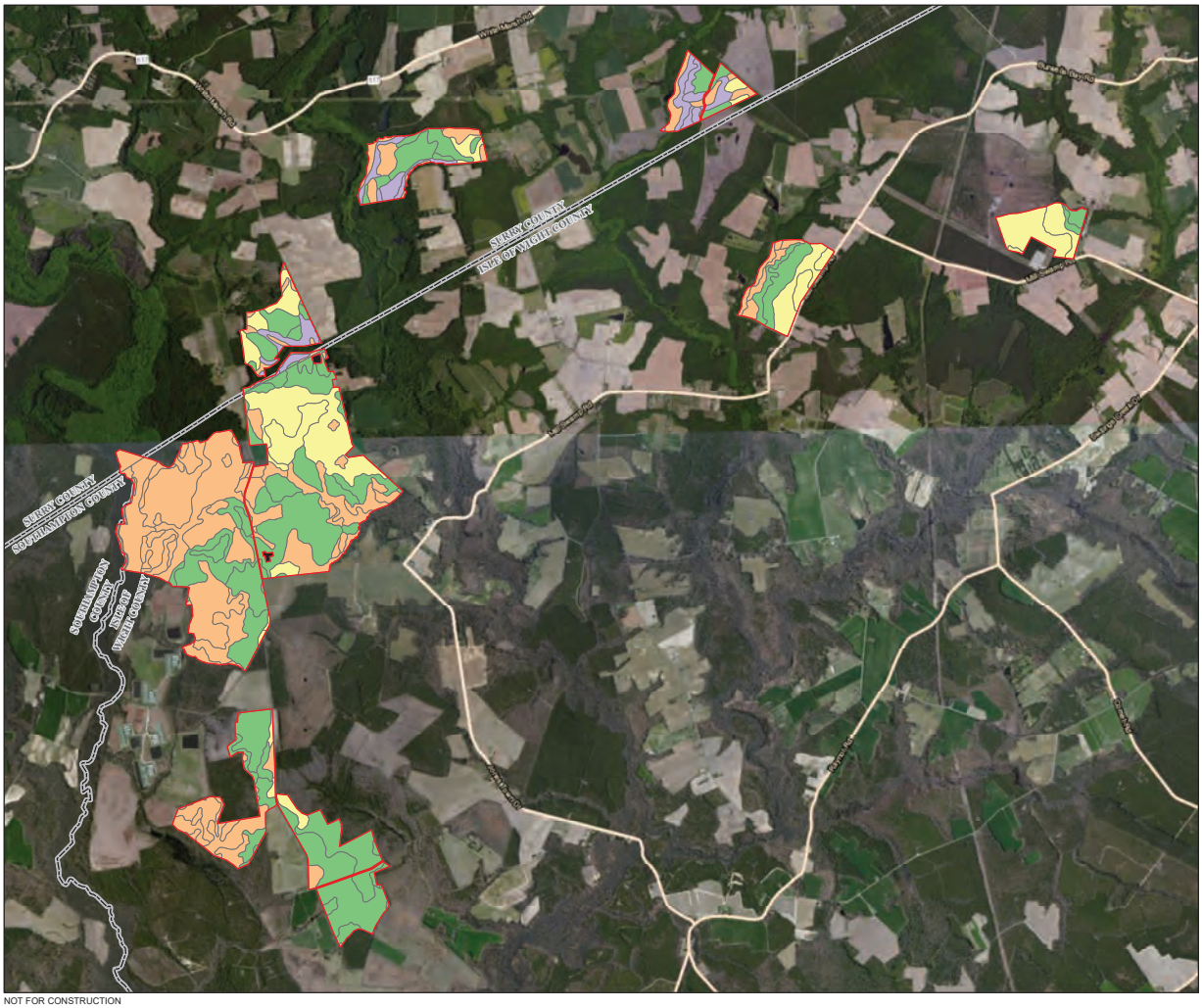

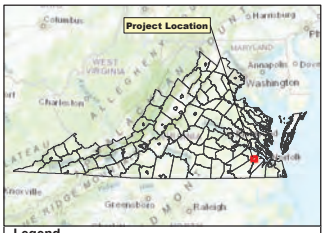

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary

Farmland Class

- All areas are prime farmland
- Farmland of statewide importance
- Not prime farmland
- Prime farmland if drained

N
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0 0.25 0.5 1 Miles

Figure 9
Prime Farmland Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; NHD, 2022; NWI; 2022; USDA, 2022; NRCS, 2022; SSURGO, 2022; Virginia Open Data Portal, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

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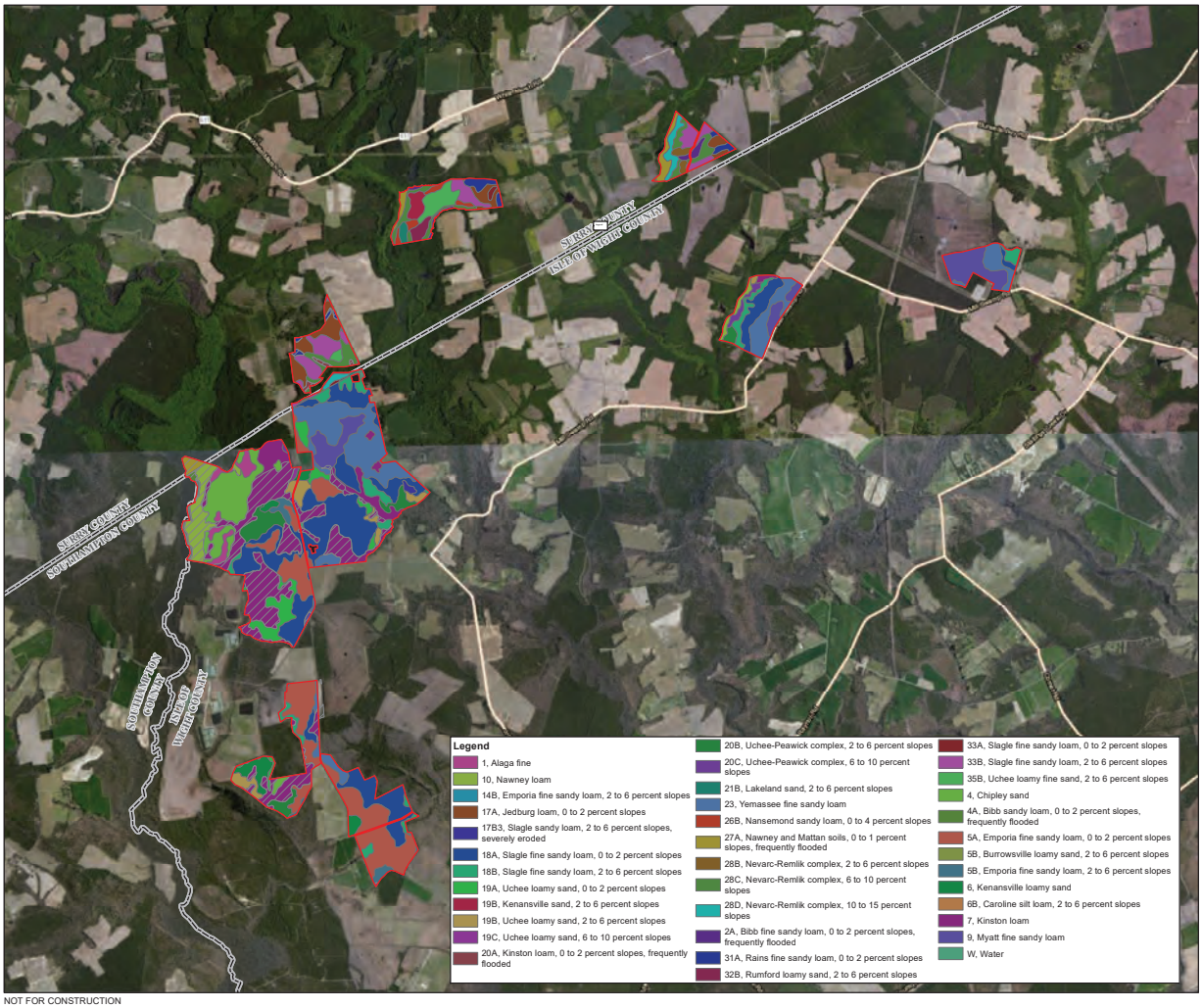

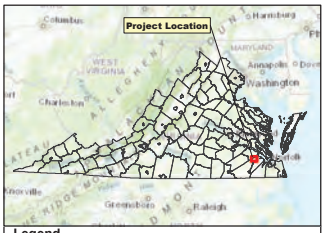

Legend

- Project Study Area
- Outside Project Study Area
- County Boundary
- Hydric Soil

N
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0 0.25 0.5 1 Miles

Figure 10
USDA-NRCS Soil Map
Sycamore Cross Solar Project
Surry and Isle of Wight Counties, VA

Prepared For: aes

Prepared By: TETRA TECH

Date: 4/13/2023

Source: Esri, et. al., 2022; AES, 2022; NHD, 2022; NWI; 2022; USDA, 2022; NRCS, 2022; SSURGO, 2022; Virginia Open Data Portal, 2022.

Coordinate System: North America Datum, 1983, State Plane, Virginia South, Feet

NOT FOR CONSTRUCTION

GIS\AES\Sycamore_Cross_Solar\GIS\Spatial\MXD\20230412_Envir_Resource_Impact_Report\Figure_10_Sycamore_Cross_Solar_Soils_Map.mxd

APPENDIX A: USDA-NRCS SOIL REPORT

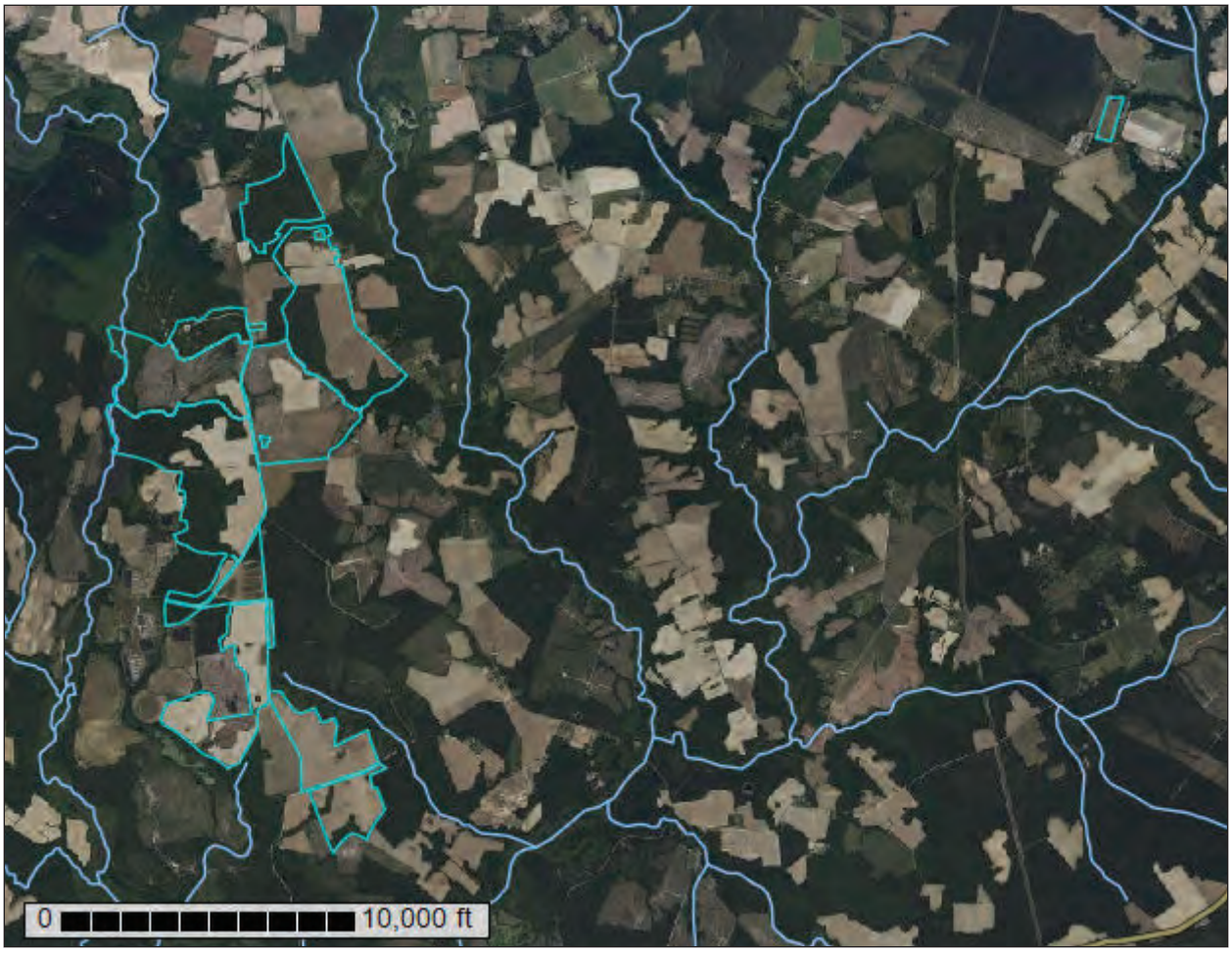
United States Department of Agriculture

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 Isle of Wight County, Virginia, Southampton County, Virginia, and Surry County, Virginia



March 31, 2023

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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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.

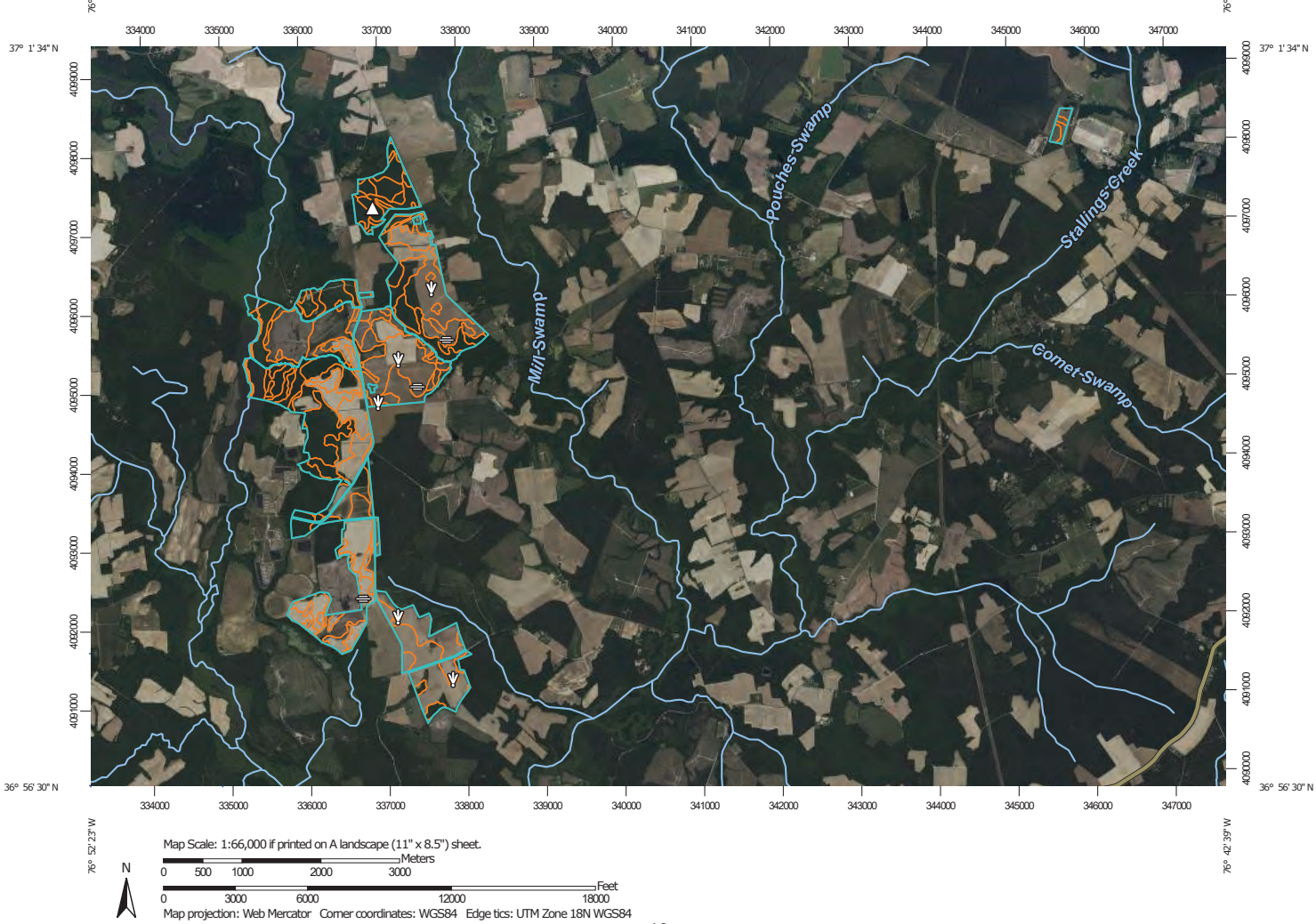
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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 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 scales ranging from 1:15,800 to 1:24,000.

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: Isle of Wight County, Virginia
Survey Area Data: Version 18, Aug 29, 2022

Soil Survey Area: Southampton County, Virginia
Survey Area Data: Version 21, Aug 22, 2022

Soil Survey Area: Surry County, Virginia
Survey Area Data: Version 19, Aug 22, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: May 18, 2022—Jul 13, 2022

MAP LEGEND

MAP INFORMATION

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
1	Alaga fine sand	29.3	1.6%
4	Chipley sand	116.0	6.2%
5A	Emporia fine sandy loam, 0 to 2 percent slopes	274.8	14.6%
5B	Emporia fine sandy loam, 2 to 6 percent slopes	21.0	1.1%
6	Kenansville loamy sand	41.6	2.2%
7	Kinston loam	367.5	19.5%
9	Myatt fine sandy loam	38.4	2.0%
10	Nawney loam	55.9	3.0%
17B3	Slagle sandy loam, 2 to 6 percent slopes, severely eroded	3.7	0.2%
18A	Slagle fine sandy loam, 0 to 2 percent slopes	401.3	21.3%
18B	Slagle fine sandy loam, 2 to 6 percent slopes	58.5	3.1%
19A	Uchee loamy sand, 0 to 2 percent slopes	61.1	3.2%
19B	Uchee loamy sand, 2 to 6 percent slopes	40.0	2.1%
19C	Uchee loamy sand, 6 to 10 percent slopes	2.1	0.1%
20B	Uchee-Peawick complex, 2 to 6 percent slopes	57.2	3.0%
20C	Uchee-Peawick complex, 6 to 10 percent slopes	9.3	0.5%
23	Yemassee fine sandy loam	155.4	8.3%
W	Water	4.1	0.2%
Subtotals for Soil Survey Area		**1,737.1**	**92.3%**
Totals for Area of Interest		**1,881.1**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4A	Bibb sandy loam, 0 to 2 percent slopes, frequently flooded	3.9	0.2%
W	Water	3.4	0.2%
Subtotals for Soil Survey Area		**7.3**	**0.4%**
Totals for Area of Interest		**1,881.1**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5B	Burrowsville loamy sand, 2 to 6 percent slopes	0.1	0.0%
6B	Caroline silt loam, 2 to 6 percent slopes	0.0	0.0%
14B	Emporia fine sandy loam, 2 to 6 percent slopes	0.5	0.0%
17A	Jedburg loam, 0 to 2 percent slopes	40.2	2.1%
20A	Kinston loam, 0 to 2 percent slopes, frequently flooded	6.9	0.4%
21B	Lakeland sand, 2 to 6 percent slopes	1.7	0.1%
27A	Nawney and Mattan soils, 0 to 1 percent slopes, frequently flooded	9.4	0.5%
28B	Nevarc-Remlik complex, 2 to 6 percent slopes	0.2	0.0%
28C	Nevarc-Remlik complex, 6 to 10 percent slopes	23.9	1.3%
28D	Nevarc-Remlik complex, 10 to 15 percent slopes	5.7	0.3%
31A	Rains fine sandy loam, 0 to 2 percent slopes	5.3	0.3%
33A	Slagle fine sandy loam, 0 to 2 percent slopes	1.1	0.1%
33B	Slagle fine sandy loam, 2 to 6 percent slopes	37.3	2.0%
35B	Uchee loamy fine sand, 2 to 6 percent slopes	4.2	0.2%
Subtotals for Soil Survey Area		**136.5**	**7.3%**
Totals for Area of Interest		**1,881.1**	**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.

Isle of Wight County, Virginia

1—Alaga fine sand

Map Unit Setting

National map unit symbol: 404h
Elevation: 10 to 350 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Alaga and similar soils: 85 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alaga

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 3 inches: fine sand
H2 - 3 to 60 inches: loamy fine sand

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Leon

Percent of map unit: 5 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Nawney

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

4—Chipley sand

Map Unit Setting

National map unit symbol: 4058
Elevation: 10 to 300 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Chipley and similar soils: 85 percent
Minor components: 14 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chipley

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy marine deposits

Typical profile

H1 - 0 to 6 inches: sand
H2 - 6 to 60 inches: sand

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Kinston
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Leon
Percent of map unit: 4 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

5A—Emporia fine sandy loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 4059
Elevation: 20 to 150 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Emporia and similar soils: 85 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Emporia

Setting
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 15 inches: fine sandy loam
H2 - 15 to 33 inches: sandy clay loam
H3 - 33 to 60 inches: sandy 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 (0.20 to 1.98 in/hr)
Depth to water table: About 36 to 54 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): 1
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Nawney

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

5B—Emporia fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 405b
Elevation: 20 to 150 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Emporia and similar soils: 85 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Emporia

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 15 inches: fine sandy loam
H2 - 15 to 33 inches: sandy clay loam
H3 - 33 to 60 inches: sandy loam

Properties and qualities

Slope: 2 to 6 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 (0.20 to 1.98 in/hr)
Depth to water table: About 36 to 54 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
Hydric soil rating: No

Minor Components

Nawney

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

6—Kenansville loamy sand

Map Unit Setting

National map unit symbol: 405c
Elevation: 0 to 300 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days

Farmland classification: Not prime farmland

Map Unit Composition

Kenansville and similar soils: 80 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kenansville

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 28 inches: loamy sand
H2 - 28 to 41 inches: sandy loam
H3 - 41 to 60 inches: sand

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 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: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 8 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

7—Kinston loam

Map Unit Setting

National map unit symbol: 405d
Elevation: 50 to 300 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Kinston

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 4 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 12 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

9—Myatt fine sandy loam

Map Unit Setting

National map unit symbol: 405g
Elevation: 0 to 100 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Myatt and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Myatt

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 15 inches: fine sandy loam
H2 - 15 to 51 inches: sandy clay loam
H3 - 51 to 60 inches: sandy clay 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 (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

10—Nawney loam

Map Unit Setting

National map unit symbol: 404j
Elevation: 0 to 80 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Nawney and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nawney

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 44 inches: loam
H3 - 44 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very 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 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

17B3—Slagle sandy loam, 2 to 6 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 404t
Elevation: 50 to 350 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Slagle and similar soils: 85 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Slagle

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 4 inches: sandy loam
H2 - 4 to 25 inches: sandy clay loam
H3 - 25 to 60 inches: sandy clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 7 percent
Landform: Flood plains

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

18A—Slagle fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 404v
Elevation: 50 to 350 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Slagle and similar soils: 85 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Slagle

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 13 inches: fine sandy loam
H2 - 13 to 25 inches: sandy clay loam
H3 - 25 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 7 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

18B—Slagle fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2sgy1
Elevation: 70 to 330 feet
Mean annual precipitation: 32 to 51 inches
Mean annual air temperature: 47 to 70 degrees F
Frost-free period: 158 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Slagle and similar soils: 83 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Slagle

Setting

Landform: Marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Riser, tread, rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bt - 8 to 51 inches: sandy clay loam
C - 51 to 70 inches: sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Myatt

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

19A—Uchee loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 404y
Elevation: 50 to 700 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Uchee and similar soils: 85 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Uchee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 28 inches: loamy sand
H2 - 28 to 52 inches: sandy clay loam
H3 - 52 to 60 inches: sandy 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 (0.20 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 7 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

19B—Uchee loamy sand, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 404z
Elevation: 50 to 700 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Uchee and similar soils: 85 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Uchee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 28 inches: loamy sand
H2 - 28 to 52 inches: sandy clay loam
H3 - 52 to 60 inches: sandy loam

Properties and qualities

Slope: 2 to 6 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 (0.20 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Nawney

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Kinston

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

19C—Uchee loamy sand, 6 to 10 percent slopes

Map Unit Setting

National map unit symbol: 4050
Elevation: 50 to 700 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Uchee and similar soils: 85 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Uchee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 28 inches: loamy sand
H2 - 28 to 52 inches: sandy clay loam
H3 - 52 to 60 inches: sandy loam

Properties and qualities

Slope: 6 to 10 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 (0.20 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

20B—Uchee-Peawick complex, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 4052
Elevation: 20 to 700 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Uchee and similar soils: 45 percent
Peawick and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Uchee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 28 inches: loamy sand
H2 - 28 to 52 inches: sandy clay loam
H3 - 52 to 60 inches: sandy loam

Properties and qualities

Slope: 2 to 6 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 (0.20 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Peawick

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 70 inches: clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
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 18 to 36 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
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

20C—Uchee-Peawick complex, 6 to 10 percent slopes

Map Unit Setting

National map unit symbol: 4053
Elevation: 20 to 700 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Uchee and similar soils: 45 percent
Peawick and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Uchee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 28 inches: loamy sand
H2 - 28 to 52 inches: sandy clay loam
H3 - 52 to 60 inches: sandy loam

Properties and qualities

Slope: 6 to 10 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 (0.20 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Peawick

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 70 inches: clay loam

Properties and qualities

Slope: 6 to 10 percent
Depth to restrictive feature: More than 80 inches
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 18 to 36 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): 3e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Kinston

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

23—Yemassee fine sandy loam

Map Unit Setting

National map unit symbol: 4056
Elevation: 0 to 40 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Yemassee and similar soils: 85 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Yemassee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 10 inches: fine sandy loam
H2 - 10 to 52 inches: sandy clay loam
H3 - 52 to 60 inches: fine sandy 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 12 to 18 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): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Myatt

Percent of map unit: 7 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

W—Water

Map Unit Setting

National map unit symbol: 405h
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 66 to 73 degrees F
Frost-free period: 165 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Southampton County, Virginia

4A—Bibb sandy loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: rnwb
Elevation: 0 to 110 feet
Mean annual precipitation: 42 to 54 inches
Frost-free period: 180 to 208 days
Farmland classification: Not prime farmland

Map Unit Composition

Bibb and similar soils: 95 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bibb

Setting

Landform: Flood plains, drainageways
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy and/or loamy alluvium

Typical profile

H1 - 0 to 8 inches: sandy loam
H2 - 8 to 50 inches: sandy loam
H3 - 50 to 84 inches: loamy sand

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 12 inches
Frequency of flooding: NoneFrequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Chastain, frequently flooded

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear
Across-slope shape: Linear

Hydric soil rating: Yes

Myatt

Percent of map unit: 1 percent
Landform: Depressions on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Riser, tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: Yes

W—Water

Map Unit Setting

National map unit symbol: rnxs
Mean annual precipitation: 42 to 54 inches
Frost-free period: 180 to 208 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform: Swamps, lakes, perenial streams

Surry County, Virginia

5B—Burrowsville loamy sand, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 43fs
Elevation: 60 to 100 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Burrowsville

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine sediments

Typical profile

H1 - 0 to 11 inches: loamy sand
H2 - 11 to 32 inches: fine sandy loam
H3 - 32 to 59 inches: fine sandy loam
H4 - 59 to 70 inches: sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 18 to 36 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Low
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 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

6B—Caroline silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 43ft
Elevation: 90 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Caroline

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey marine sediments

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 14 inches: silt loam
H3 - 14 to 70 inches: clay
H4 - 70 to 80 inches: clay

Properties and qualities

Slope: 2 to 6 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 low to moderately high (0.14 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

14B—Emporia fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 43gz
Elevation: 60 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Emporia

Setting

Landform: Marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine sediments

Typical profile

H1 - 0 to 6 inches: fine sandy loam
H2 - 6 to 14 inches: loamy fine sand
H3 - 14 to 18 inches: fine sandy loam
H4 - 18 to 41 inches: sandy clay loam
H5 - 41 to 54 inches: sandy clay
H6 - 54 to 72 inches: stratified sandy loam to sandy clay loam

Properties and qualities

Slope: 2 to 6 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 (0.20 to 1.98 in/hr)
Depth to water table: About 36 to 54 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

17A—Jedburg loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 43h4
Elevation: 60 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Jedburg and similar soils: 85 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Jedburg

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy marine sediments

Typical profile

H1 - 0 to 5 inches: loam
H2 - 5 to 57 inches: loam
H3 - 57 to 72 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Rains

Percent of map unit: 6 percent
Landform: Marine terraces

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

20A—Kinston loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 43h9
Elevation: 0 to 130 feet
Mean annual precipitation: 25 to 59 inches
Mean annual air temperature: 46 to 70 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Kinston and similar soils: 75 percent
Minor components: 21 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kinston

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvial sediments

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 52 inches: sandy clay loam
H3 - 52 to 74 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly 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 0 to 12 inches
Frequency of flooding: NoneFrequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Bibb

Percent of map unit: 8 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nawney

Percent of map unit: 3 percent
Landform: Swamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Rains

Percent of map unit: 3 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Bohicket

Percent of map unit: 2 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Levy

Percent of map unit: 2 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Lawnes

Percent of map unit: 2 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Mattan

Percent of map unit: 1 percent
Landform: Swamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

21B—Lakeland sand, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 43hd
Elevation: 10 to 70 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Lakeland

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy eolian sediments

Typical profile

H1 - 0 to 5 inches: sand
H2 - 5 to 74 inches: sand

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 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: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Hydric soil rating: No

27A—Nawney and Mattan soils, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 43hm
Elevation: 0 to 130 feet
Mean annual precipitation: 25 to 59 inches
Mean annual air temperature: 46 to 70 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Nawney and similar soils: 50 percent
Mattan and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nawney

Setting

Landform: Swamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvial sediments

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 44 inches: loam
H3 - 44 to 70 inches: loamy sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
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 6 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Description of Mattan

Setting

Landform: Swamps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Organic and loamy alluvial sediments

Typical profile

Oa1 - 0 to 14 inches: muck
Oa2 - 14 to 40 inches: muck
H3 - 40 to 48 inches: loamy sand
H4 - 48 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
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 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Bibb

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Kinston

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Bohicket

Percent of map unit: 1 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear

Across-slope shape: Linear
Hydric soil rating: Yes

Lawnes

Percent of map unit: 1 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Levy

Percent of map unit: 1 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

28B—Nevarc-Remlik complex, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 43hx
Elevation: 50 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Nevarc and similar soils: 36 percent
Remlik and similar soils: 34 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nevarc

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey alluvial and marine sediments

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 50 inches: clay loam
H3 - 50 to 74 inches: fine sandy loam

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: 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 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Remlik

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy and sandy alluvial and marine sediments

Typical profile

H1 - 0 to 22 inches: loamy fine sand
H2 - 22 to 39 inches: fine sandy loam
H3 - 39 to 74 inches: sand

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 48 to 79 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

28C—Nevarc-Remlik complex, 6 to 10 percent slopes

Map Unit Setting

National map unit symbol: 43j0
Elevation: 50 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Nevarc and similar soils: 36 percent
Remlik and similar soils: 34 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nevarc

Setting

Landform: Marine terraces
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey alluvial and marine sediments

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 50 inches: clay loam
H3 - 50 to 74 inches: fine sandy loam

Properties and qualities

Slope: 6 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well 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 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Remlik

Setting

Landform: Marine terraces
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy and sandy alluvial and marine sediments

Typical profile

H1 - 0 to 22 inches: loamy fine sand
H2 - 22 to 39 inches: fine sandy loam
H3 - 39 to 74 inches: sand

Properties and qualities

Slope: 6 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 48 to 79 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Hydric soil rating: No

28D—Nevarc-Remlik complex, 10 to 15 percent slopes

Map Unit Setting

National map unit symbol: 43j1
Elevation: 10 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Nevarc and similar soils: 40 percent
Remlik and similar soils: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nevarc

Setting

Landform: Marine terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Clayey alluvial and marine sediments

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 50 inches: clay loam
H3 - 50 to 74 inches: fine sandy loam

Properties and qualities

Slope: 10 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well 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 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Remlik

Setting

Landform: Marine terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy and sandy alluvial and marine sediments

Typical profile

H1 - 0 to 22 inches: loamy fine sand
H2 - 22 to 39 inches: fine sandy loam
H3 - 39 to 74 inches: sand

Properties and qualities

Slope: 10 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 48 to 79 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Hydric soil rating: No

31A—Rains fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 43j8
Elevation: 70 to 110 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Rains

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy marine sediments

Typical profile

H1 - 0 to 12 inches: fine sandy loam
H2 - 12 to 72 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
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 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

33A—Slagle fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 43jg
Elevation: 60 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Slagle and similar soils: 80 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Slagle

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy marine sediments

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 41 inches: sandy clay loam
H3 - 41 to 70 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Rains

Percent of map unit: 2 percent
Landform: Marine terraces

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

33B—Slagle fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2sgy1
Elevation: 70 to 330 feet
Mean annual precipitation: 32 to 51 inches
Mean annual air temperature: 47 to 70 degrees F
Frost-free period: 158 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Slagle and similar soils: 83 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Slagle

Setting

Landform: Marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Riser, tread, rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bt - 8 to 51 inches: sandy clay loam
C - 51 to 70 inches: sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Myatt

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

35B—Uchee loamy fine sand, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 43jp
Elevation: 50 to 130 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Uchee

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine sediments

Typical profile

H1 - 0 to 34 inches: loamy fine sand
H2 - 34 to 72 inches: sandy clay loam

Properties and qualities

Slope: 2 to 6 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 (0.20 to 0.57 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

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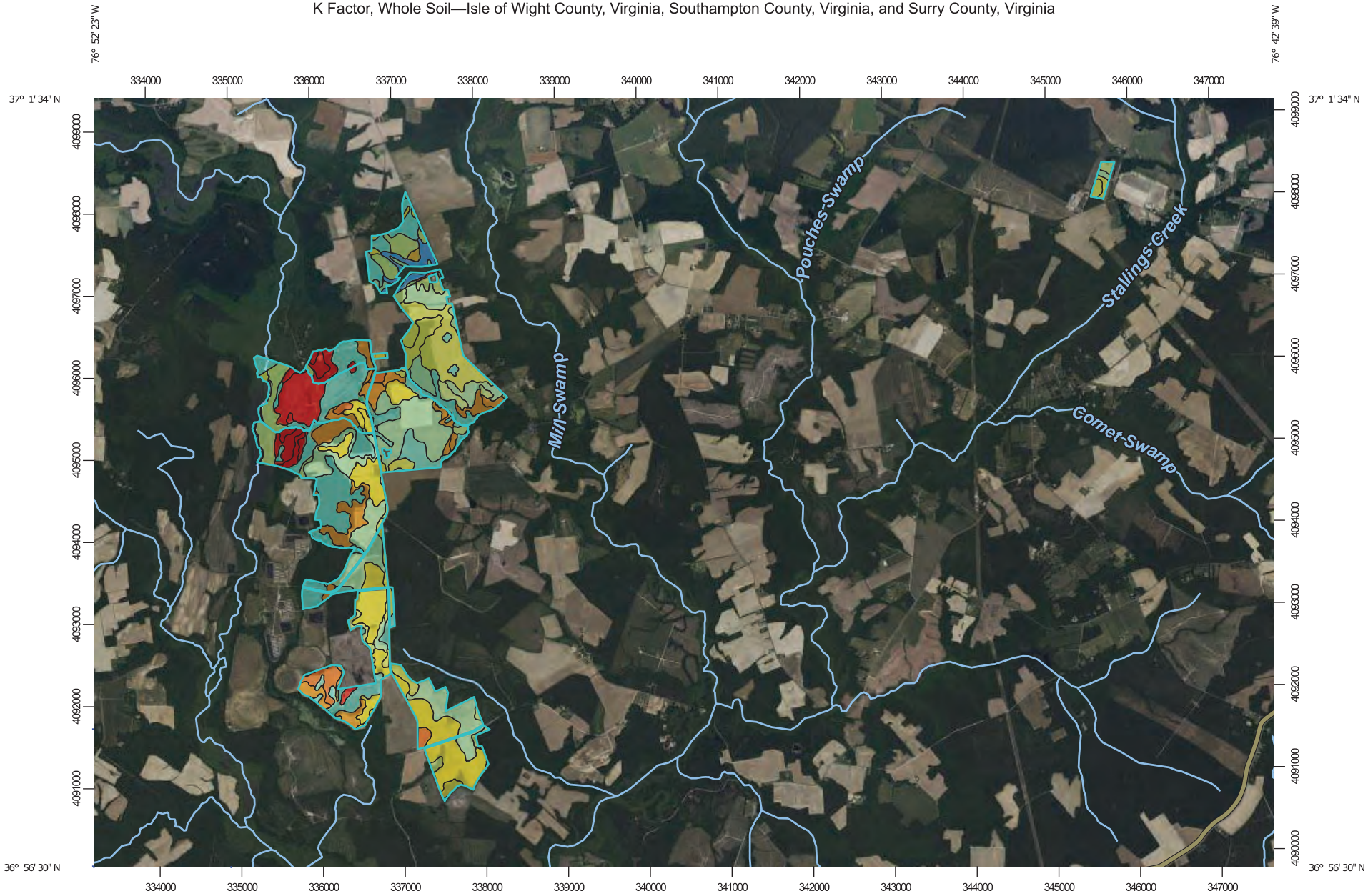

Map Scale: 1:66,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 500 1000 2000 3000

Feet
0 3000 6000 12000 18000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Lines

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Points

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

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 scales ranging from 1:15,800 to 1:24,000.

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: Isle of Wight County, Virginia
Survey Area Data: Version 18, Aug 29, 2022

Soil Survey Area: Southampton County, Virginia
Survey Area Data: Version 21, Aug 22, 2022

Soil Survey Area: Surry County, Virginia
Survey Area Data: Version 19, Aug 22, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: May 18, 2022—Jul 13, 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.

K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Alaga fine sand	.02	29.3	1.6%
4	Chipley sand	.02	116.0	6.2%
5A	Emporia fine sandy loam, 0 to 2 percent slopes	.17	274.8	14.6%
5B	Emporia fine sandy loam, 2 to 6 percent slopes	.17	21.0	1.1%
6	Kenansville loamy sand	.05	41.6	2.2%
7	Kinston loam	.32	367.5	19.5%
9	Myatt fine sandy loam	.20	38.4	2.0%
10	Nawney loam	.24	55.9	3.0%
17B3	Slagle sandy loam, 2 to 6 percent slopes, severely eroded	.24	3.7	0.2%
18A	Slagle fine sandy loam, 0 to 2 percent slopes	.28	401.3	21.3%
18B	Slagle fine sandy loam, 2 to 6 percent slopes	.24	58.5	3.1%
19A	Uchee loamy sand, 0 to 2 percent slopes	.10	61.1	3.2%
19B	Uchee loamy sand, 2 to 6 percent slopes	.10	40.0	2.1%
19C	Uchee loamy sand, 6 to 10 percent slopes	.10	2.1	0.1%
20B	Uchee-Peawick complex, 2 to 6 percent slopes	.10	57.2	3.0%
20C	Uchee-Peawick complex, 6 to 10 percent slopes	.10	9.3	0.5%
23	Yemassee fine sandy loam	.20	155.4	8.3%
W	Water		4.1	0.2%
Subtotals for Soil Survey Area			**1,737.1**	**92.3%**
Totals for Area of Interest			**1,881.1**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
4A	Bibb sandy loam, 0 to 2 percent slopes, frequently flooded	.20	3.9	0.2%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
W	Water		3.4	0.2%
Subtotals for Soil Survey Area			**7.3**	**0.4%**
Totals for Area of Interest			**1,881.1**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5B	Burrowsville loamy sand, 2 to 6 percent slopes	.10	0.1	0.0%
6B	Caroline silt loam, 2 to 6 percent slopes	.43	0.0	0.0%
14B	Emporia fine sandy loam, 2 to 6 percent slopes	.24	0.5	0.0%
17A	Jedburg loam, 0 to 2 percent slopes	.32	40.2	2.1%
20A	Kinston loam, 0 to 2 percent slopes, frequently flooded	.28	6.9	0.4%
21B	Lakeland sand, 2 to 6 percent slopes	.02	1.7	0.1%
27A	Nawney and Mattan soils, 0 to 1 percent slopes, frequently flooded	.32	9.4	0.5%
28B	Nevarc-Remlik complex, 2 to 6 percent slopes	.43	0.2	0.0%
28C	Nevarc-Remlik complex, 6 to 10 percent slopes	.43	23.9	1.3%
28D	Nevarc-Remlik complex, 10 to 15 percent slopes	.43	5.7	0.3%
31A	Rains fine sandy loam, 0 to 2 percent slopes	.17	5.3	0.3%
33A	Slagle fine sandy loam, 0 to 2 percent slopes	.24	1.1	0.1%
33B	Slagle fine sandy loam, 2 to 6 percent slopes	.24	37.3	2.0%
35B	Uchee loamy fine sand, 2 to 6 percent slopes	.15	4.2	0.2%
Subtotals for Soil Survey Area			**136.5**	**7.3%**
Totals for Area of Interest			**1,881.1**	**100.0%**

Description

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Factor K does not apply to organic horizons and is not reported for those layers.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

APPENDIX B: USFWS IPAC AND FEDERAL-LISTED SPECIES INFORMAL REVIEW

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To:
Project Code: 2023-0061833
Project Name: Sycamore Cross

March 29, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

PROJECT SUMMARY

Project Code: 2023-0061833
Project Name: Sycamore Cross
Project Type: Power Gen - Solar
Project Description: Sycamore Cross
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@36.985725,-76.84112557757788,14z



Counties: Isle of Wight , Southampton , and Surry counties, Virginia

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

BIRDS

NAME	STATUS
Red-cockaded Woodpecker *Picoides borealis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7614	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Brown-headed Nuthatch *Sitta pusilla* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Jul 15
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

NAME	BREEDING SEASON
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12

(0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

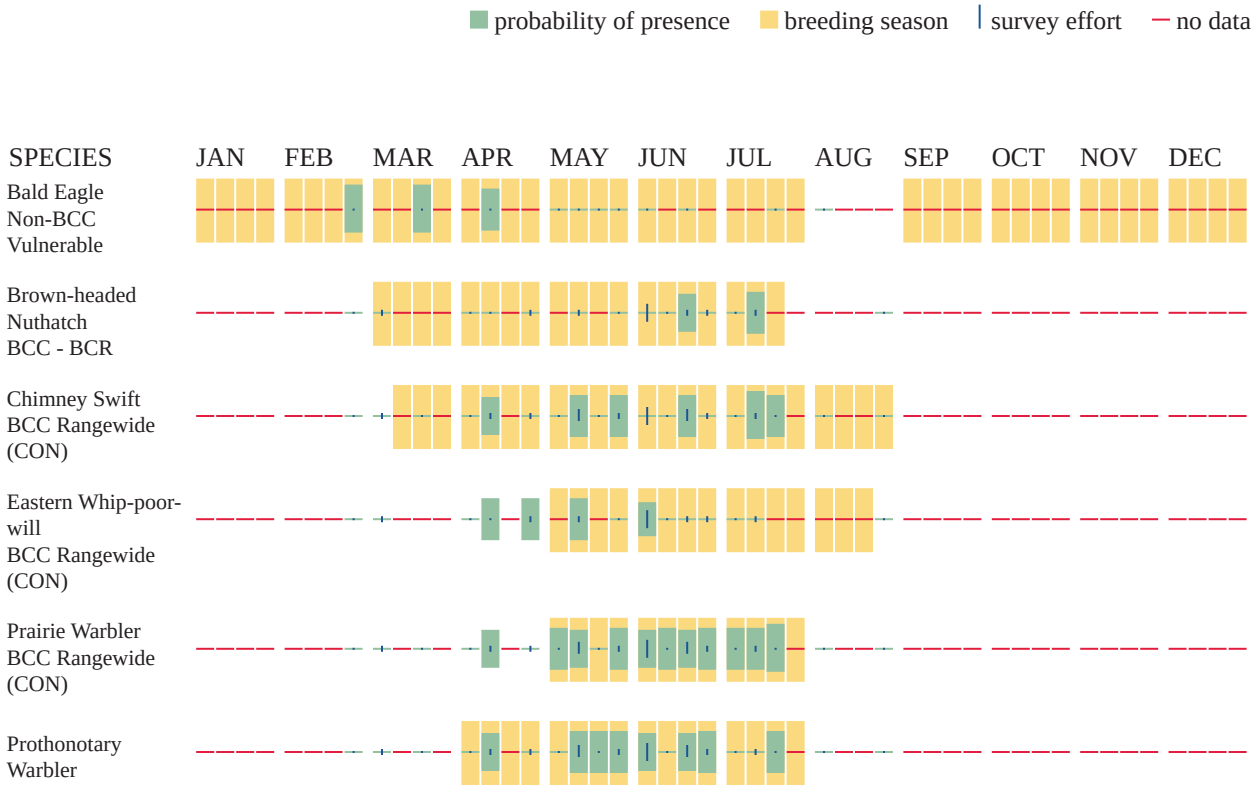
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

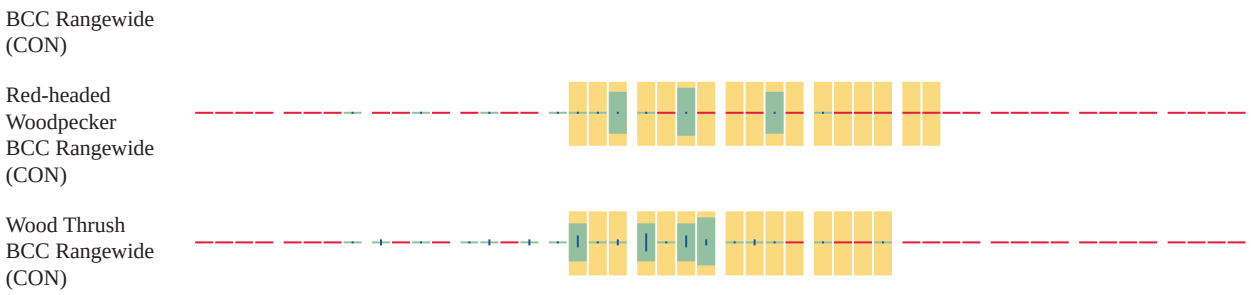
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list

of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical

Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

IPAC USER CONTACT INFORMATION

Agency:	Tetra Tech
Name:	Justin Ahn
Address:	4101 Cox Road
Address Line 2:	Suite 120
City:	Glen Allen
State:	VA
Zip:	23060
Email	justin.ahn@tetratech.com
Phone:	6105730764

Area A

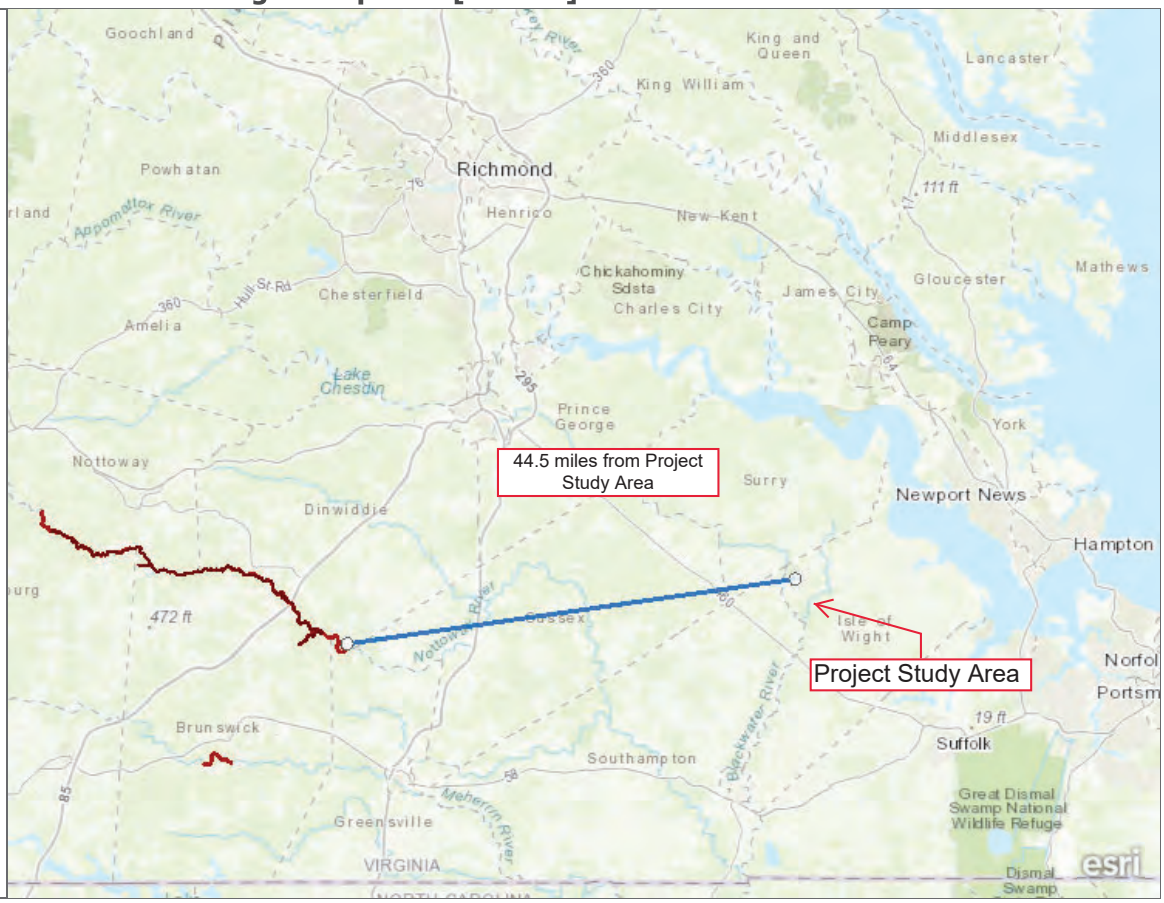
Critical Habitat for Threatened & Endangered Species [USFWS]

Final Polygon Features

Final Linear Features

Proposed Polygon Features

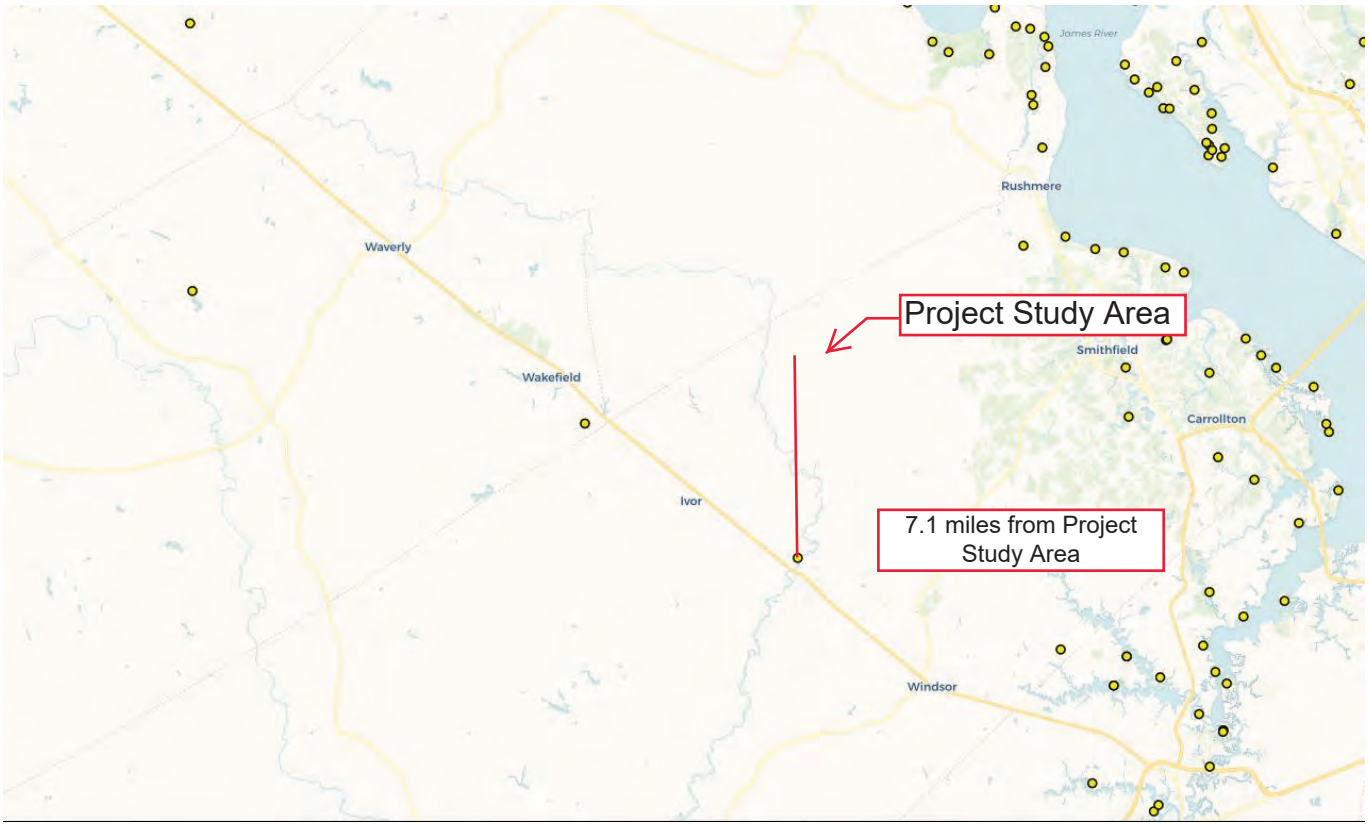
Proposed Linear Features



A specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

Esri, HERE, Garmin, FAO, USGS, NGA, EPA, NPS

CCB Mapping Portal



Layers: VA Eagle Nest Buffers, VA Eagle Nest Locator

Map Center [longitude, latitude]: [-76.83631896972655, 36.933702217046296]

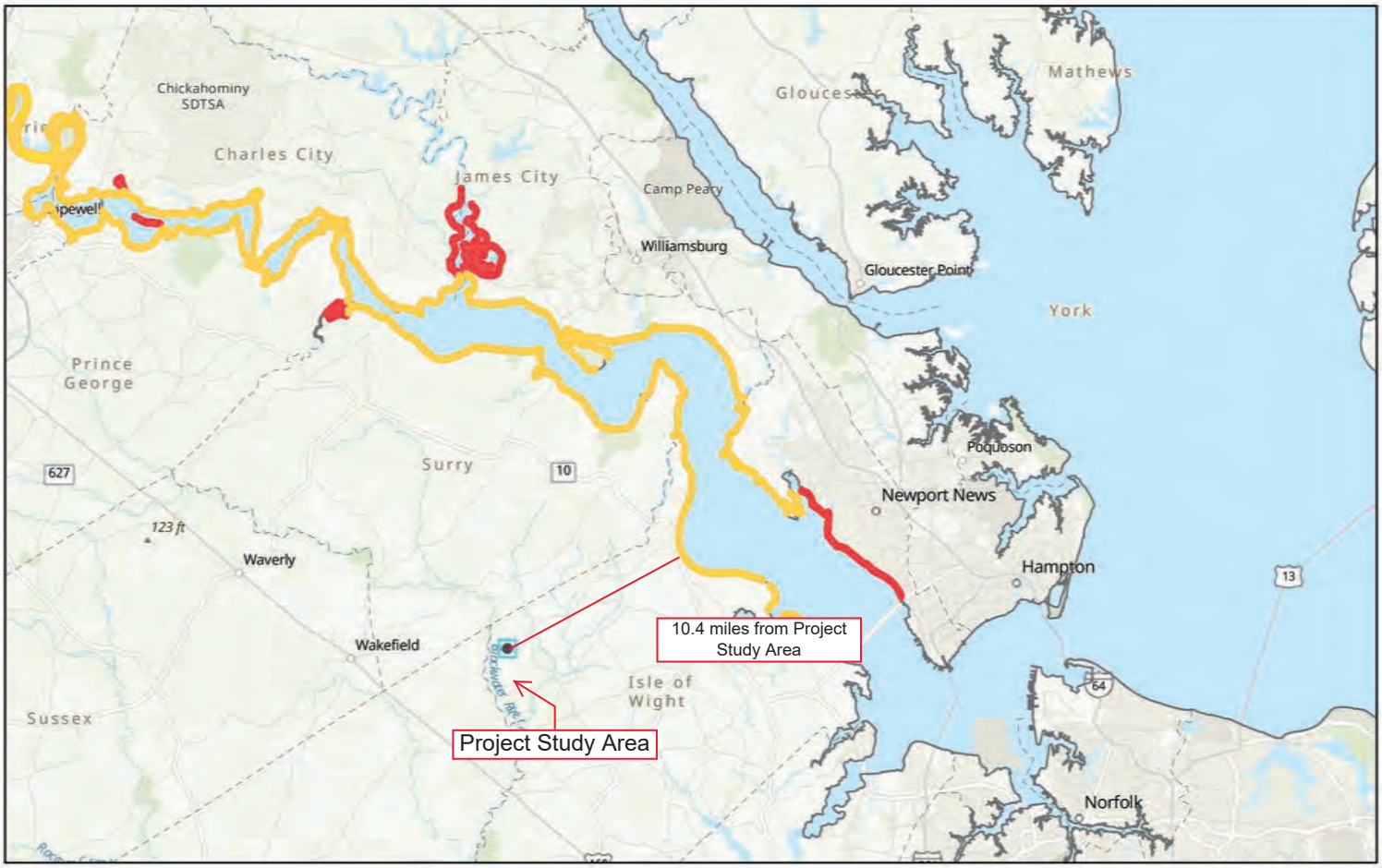
Map Link:
https://www.ccbbirds.org/maps/#layer=VA+Eagle+Nest+Buffers&layer=VA+Eagle+Nest+Locator&zoom=11&lat=36.933702217046296&lng=-76.83631896972655&legend=legend_tab_7c321b7e-e523-11e4-aaa0-0e0c41326911&base=Street+Map+%28OSM%2FCarto%29

Report Generated On: 03/27/2023

The Center for Conservation Biology (CCB) provides certain data online as a free service to the public and the regulatory sector. CCB encourages the use of its data sets in wildlife conservation and management applications. These data are protected by intellectual property laws. All users are reminded to view the Data Use Agreement to ensure compliance with our data use policies. For additional data access questions, view our Data Distribution Policy, or contact our Data Manager, Marie Pitts, at mlpitts@wm.edu or 757-221-7503.

Area A

BECA



March 27, 2023

1:577,791

0 4 8 16 mi

0 5 10 20 km

Esri, CGIAR, USGS, VGIN, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

APPENDIX C: STATE-LISTED SPECIES INFORMAL REVIEW

Site Location

37,00,52.7 -76,49,49.6
is **the Search Point**

Show Position Rings
(•) Yes ( ) No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
(•) Yes ( ) No
2 Search distance miles buffer

Display at center | **Search Point** is not at map center

Base Map Choices
Topography

Map Overlay Choices
Current List: Position, Search, BECAR, BAEANests, TEWaters, TierII, Habitat, Trout, Anadromous

Map Overlay Legend

T & E Waters
Federal
State

Predicted Habitat WAP Tier I & II
Aquatic
Terrestrial

Trout Waters
Class I - IV
Class V - VI

Anadromous Fish Reach
Confirmed
Potential

Impediment

Position Rings
1 mile and 1/4 mile at the Search Point

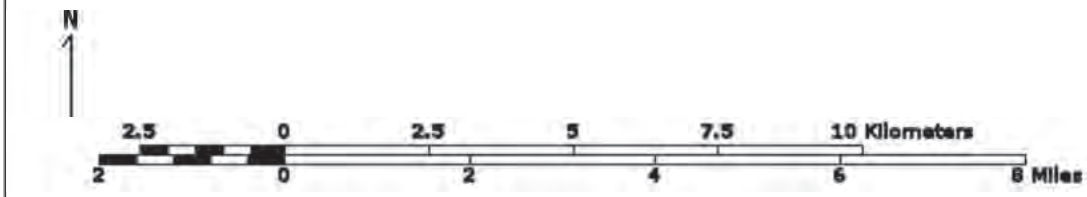
2 mile radius Search Area

Bald Eagle Concentration Areas and Roosts

Refresh Browser Page

Map Click Pan Id M Map Scale In Zoom Out Screen Size Small Size Big Help





Point of Search 37,00,52.7 -76,49,49.6
Map Location 36,58,55.9 -76,50,04.8

Select **Coordinate System:**
(•) Degrees,Minutes,Seconds Latitude - Longitude
( ) Decimal Degrees Latitude - Longitude
( ) Meters UTM NAD83 East North Zone
( ) Meters UTM NAD27 East North Zone

Base Map source: USGS 1:250,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 327114 and top 4104072. Pixel size is 23. . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 19200 meters east to west by 19200 meters north to south for a total of 368.6 square kilometers. The map display represents 63002 feet east to west by 63002 feet north to south for a total of 142.3 square miles.

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2023-03-29 10:45:27 (qa/qc March 21, 2016 12:20 - tn=1469798.0 dist=3218 I)
$poi=37.0146500 -76.8304699

| DGIF | Credits | Disclaimer | Contact vafwis_support@dgif.virginia.gov |Please view our privacy policy |
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VaFWIS Search Report Compiled on 3/29/2023, 10:45:04 AM

Known or likely to occur within a **2 mile buffer around polygon; center 37.0146500 -76.8304699** in **093 Isle of Wight County, 175 Southampton County, 181 Surry County, VA**

View Map of Site Location

593 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 39) (39 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
040228	FESE	Ia	Woodpecker, red-cockaded	Picoides borealis		BOVA
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
010214	FESE	IIa	Logperch, Roanoke	Percina rex		BOVA
030071	FTST	Ia	Turtle, loggerhead sea	Caretta caretta		BOVA
040144	FTST	Ia	Knot, red	Calidris canutus rufa		BOVA,HU6
040110	FTSE	Ia	Rail, eastern black	Laterallus jamaicensis jamaicensis		BOVA
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
060029	FTST	IIa	Lance, yellow	Elliptio lanceolata	Yes	BOVA,TEWaters,SppObs,HU6
010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Potential	BOVA,Habitat,HU6
030064	SE	Ia	Turtle, eastern chicken	Deirochelys reticularia reticularia		BOVA
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050034	SE	Ia	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis	Yes	BOVA,SppObs,HU6
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus	Yes	BOVA,SppObs,HU6
020052	SE	IIa	Salamander, eastern tiger	Ambystoma tigrinum		BOVA
030013	SE	IIa	Rattlesnake, canebrake	Crotalus horridus	Potential	Habitat,HU6
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
040385	ST	Ia	Sparrow, Bachman's	Peucaea aestivalis		BOVA,HU6
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Potential	BOVA,Habitat,HU6
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100079	FC	IIIa	Butterfly, monarch	Danaus plexippus		BOVA
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Potential	BOVA,Habitat
030063	CC	IIIa	Turtle, spotted	Clemmys guttata	Yes	BOVA,SppObs,HU6
030031	CC	IIIc	Kingsnake, scarlet	Lampropeltis elapsoides		BOVA
010174		Ia	Bass, Roanoke	Ambloplites cavifrons		BOVA
010077		Ia	Shiner, bridle	Notropis bifrenatus		BOVA
070131		Ic	Isopod, Phreatic	Caecidotea phreatica		BOVA
020063		IIa	Toad, oak	Anaxyrus quercicus	Yes	BOVA,Habitat,SppObs,HU6
020002		IIa	Treefrog, barking	Hyla gratiosa		BOVA,HU6
040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6
040033		IIa	Egret, snowy	Egretta thula		BOVA

040029		IIa	Heron, little blue	Egretta caerulea caerulea		BOVA
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040181		IIa	Tern, common	Sterna hirundo		BOVA,HU6
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140		IIa	Woodcock, American	Scolopax minor		BOVA,HU6
060071		IIa	Lampmussel, yellow	Lampsilis cariosa		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii		BOVA,HU6

To view **All 593 species** View 593

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.; b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.; c - No on the grou

View Map of All Query Results from All Observation Tables

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Impediments to Fish Passage

N/A

Colonial Water Bird Survey (3 records)

View Map of All Query Results Colonial Water Bird Survey

Colony_Name	N Obs	Latest Date	N Species			View Map
			Different Species	Highest TE*	Highest Tier**	
Sycamore Crossroads	1	Jun 2 2003	1			Yes
Blackwater River at Surry	1	Jun 1 1993	1			Yes
Rattlesnake Swamp	1	Jun 1 1993	1			Yes

Displayed 3 Colonial Water Bird Survey

Threatened and Endangered Waters (13 Reaches)

View Map of All Threatened and Endangered Waters

Stream Name	T&E Waters Species							View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name						
Terrapin Swamp (0283664)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0285385)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0287738)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0289129)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0289623)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0290117)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0291410)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0291935)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0293016)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0294529)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0298333)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0302220)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes
Terrapin Swamp (0302289)	FTST	060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		Yes

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Species Observations (56 records - displaying first 20 , 6 Observations with Threatened or Endangered species) View Map of All Query Results Species Observations

obsID	class	Date Observed	Observer	N Species	
				Different Species	Highest TE
55516	SppObs	May 7 1998	BEATY, AND ZEYTOONIAN, VIRGINIA COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT.	3	FTST
55237	SppObs	May 7 1998	BRAVEN B. BEATY AND RICHARD J. NEVES, DEPARTMENT OF FISHERIES AND WILDLIFE AT VA TECH	3	FTST
635308	SppObs	Aug 18 2021	Shane Brodnick	1	SE
58094	SppObs	Aug 7 1997	Steven M. Roble, Ph. D. , Staff Zoologist	1	SE
53381	SppObs	Aug 8 1996	Steven M. Roble, Ph. D. , DCR	2	FPSE
9410	SppObs	Apr 5 1988	Mitchell D. Norman, VDGIF	3	CC
614290	SppObs	Jun 26 2007	John; Kleopfer| Robert ; Clontz	1	
375284	Aquatics	Oct 12 2007	B. T. Watson, M. E. Bradley	7	
426929	SppObs	May 17 2005	VCU - INSTAR	14	
62424	SppObs	Aug 11 1999	Ryan Smith, DGIF	12	
11331	SppObs	Sep 6 1985	NORMAN	19	
426934	SppObs	Sep 6 1985	VCU - INSTAR	19	
426951	SppObs	Sep 6 1984	VCU - INSTAR	10	
10425	SppObs	Sep 6 1984	Norman	10	
10433	SppObs	Aug 29 1984	Norman	23	
338036	SppObs	Jan 1 1984	MDN-B-NORMAN	23	
338051	SppObs	Jan 1 1984	MDN-B-NORMAN	10	
15411	SppObs	May 5 1962	R D ROSS	4	
332815	SppObs	Jan 1 1962	VPI-B-VA. POLY. INST.	4	
426942	SppObs	May 12 2005	VCU - INSTAR	5	

Displayed 20 Species Observations

Selected 56 Observations View all 56 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species (5 Reaches) View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

Stream Name	Tier Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Hickaneck Swamp (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes
Mill Swamp (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes
Rattlesnake Swamp (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes
Terrapin Swamp (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes
tributary (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes
tributary (03010202)	SE	010347	SE	Ia	Sunfish, blackbanded	Enneacanthus chaetodon	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species (4 Species) View Map of Combined Terrestrial Habitat Predicted for 4 WAP Tier I & II Species Listed Below

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
030013	SE	IIa	Rattlesnake, canebrake	Crotalus horridus	Yes
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Yes
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Yes
020063		IIa	Toad, oak	Anaxyrus quercicus	Yes

Virginia Breeding Bird Atlas Blocks (2 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
55056	Dendron, SE	43		III	Yes
56056	Runnymede, SE	65		III	Yes

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
093	Isle of Wight	421	FESE	I
175	Southampton	402	FESE	I
181	Surry	445	FESE	I

USGS 7.5' Quadrangles:
Ivor
Dendron
Raynor
Runnymede

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
CU59	Blackwater River-Terrapin Swamp	99	FTSE	I
CU60	Mill Swamp-Moores Swamp	89	FTSE	I
CU61	Rattlesnake Swamp	88	FTSE	I
CU62	Blackwater River-Antioch Swamp	92	FTSE	I

Compiled on 3/29/2023, 10:45:05 AM I1469798.0 report=all searchType= P dist= 3218 poi= 37.0146500 -76.8304699 siteDD= 37.0146550 -76.8304718;37.0066990 -76.8254288;37.0001450 -76.8230508;36.9967600 -76.8213098;36.9930180 -76.8166158;36.9852540 -76.8256298;36.9847270 -76.8336928;36.9804500 -76.8326788;36.9788090 -76.8335 -76.8324618;36.9563430 -76.8367528;36.9612070 -76.8454438;36.9632160 -76.8392578;36.9610180 -76.8391648;36.9615850 -76.8345228;36.9685120 -76.8383148;36.9712350 -76.8373848;36.9696540 -76.8447548;36.9730630 -76.8446968;36.9763590 -76.8378158;36.9781580 -76.8437688;36.9839170 -76.8427458;36.9859910 -76.8507688;36.9910220 -76.8303698;37.0146550 -76.8304718;.

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| 3/29/2023, 10:45:05 AM | DGIF | Credits | Disclaimer | Please view our privacy policy |
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I 1469798

If you have difficulty reading or accessing documents, please Contact Us for assistance.

Natural Heritage Resources

Your Criteria

Taxonomic Group: Select All

Global Conservation Status Rank: Select All

State Conservation Status Rank: Select All

Federal Legal Status: Select All

State Legal Status: Select All

County: Isle of Wight,Surry

Physiographic Province: Select All

Watershed (8 digit HUC): 03010202 - Blackwater River

Subwatershed (12 digit HUC): CU59 - Blackwater River-Terrapin Swamp,CU60 - Mill Swamp-Moores Swamp,CU61 - Rattlesnake Swamp

Planning District: Select All

Virginia Coastal Zone: Select All

Search Run: 3/27/2023 15:27:24 PM

Result Summary

Total Species returned: 3

Total Communities returned: 0

Click scientific names below to go to NatureServe report.

Click column headings for an explanation of species and community ranks.

Common Name/Natural Community	Scientific Name	Scientific Name Linked	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status	Statewide Occurrences	Virginia Coastal Zone
Isle of Wight								
Southern Coastal Plain Blackwater Blackwater River-Terrapin Swamp								

Common Name/Natural Community	Scientific Name	Scientific Name Linked	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status	Statewide Occurrences	Virginia Coastal Zone
Hampton Roads								
MAMMALS								
Eastern Big-eared Bat	Corynorhinus rafinesquii macrotis	Corynorhinus rafinesquii macrotis	G3G4T3	S2	None	LE	44	Y
Rattlesnake Swamp								
Hampton Roads								
MAMMALS								
Eastern Big-eared Bat	Corynorhinus rafinesquii macrotis	Corynorhinus rafinesquii macrotis	G3G4T3	S2	None	LE	44	Y

Surry

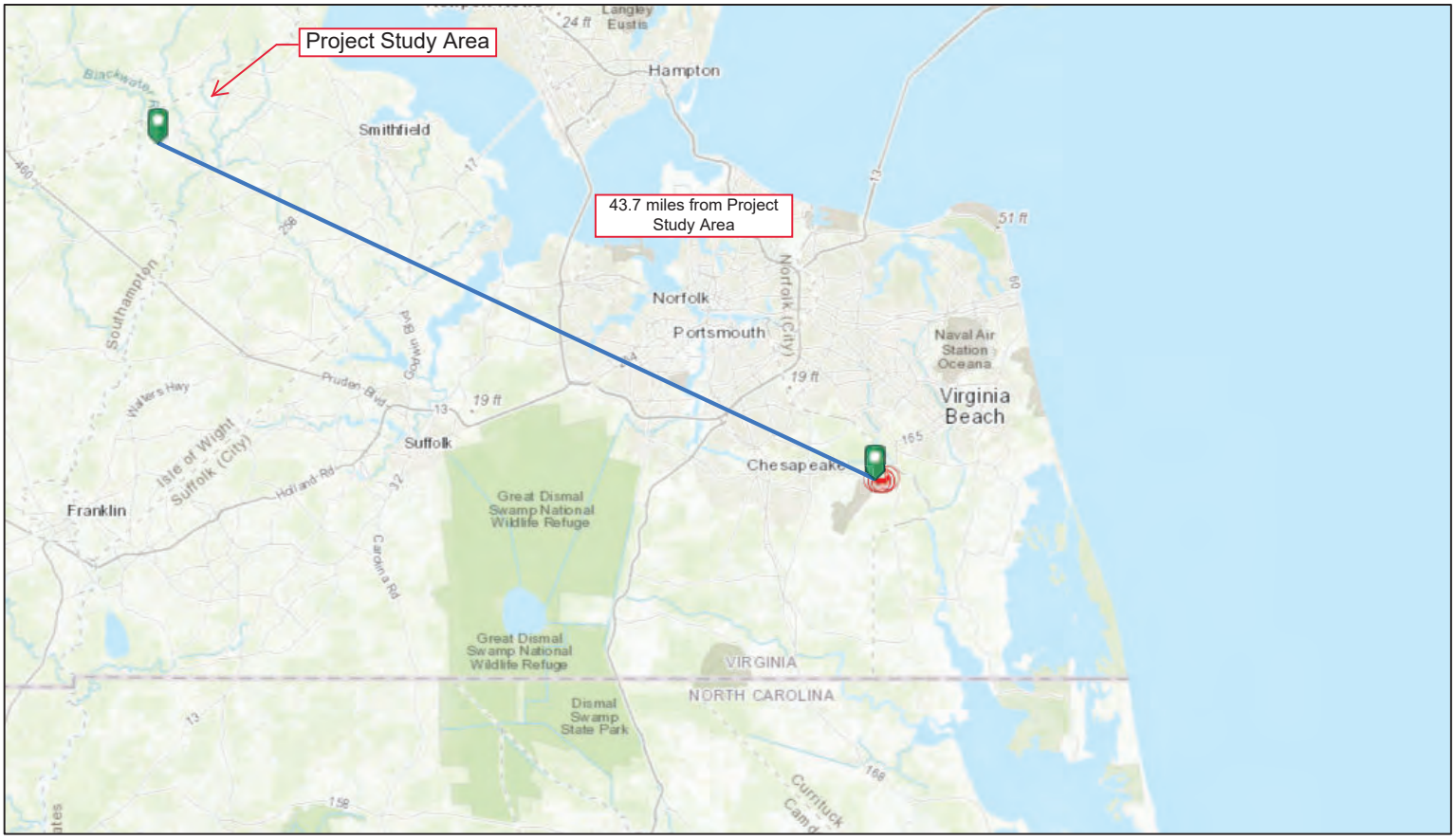
Southern Coastal Plain								
Blackwater								
Rattlesnake Swamp								
Crater								
MAMMALS								
Eastern Big-eared Bat	Corynorhinus rafinesquii macrotis	Corynorhinus rafinesquii macrotis	G3G4T3	S2	None	LE	44	Y

Note: On-line queries provide basic information from DCR's databases at the time of the request. They are NOT to be substituted for a project review or for on-site surveys required for environmental assessments of specific project areas.

For Additional Information on locations of Natural Heritage Resources please submit an information request.

To Contribute information on locations of natural heritage resources, please fill out and submit a rare species sighting form.

NLEB Locations and Roost Trees



3/27/2023, 2:38:01 PM

NLEB Known Occupied Maternity Roost (Summer Habitat)

1:577,791

0 4 8 16 mi

0 5 10 20 km

Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

VA Dept. Game & Inland Fisheries

Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS |

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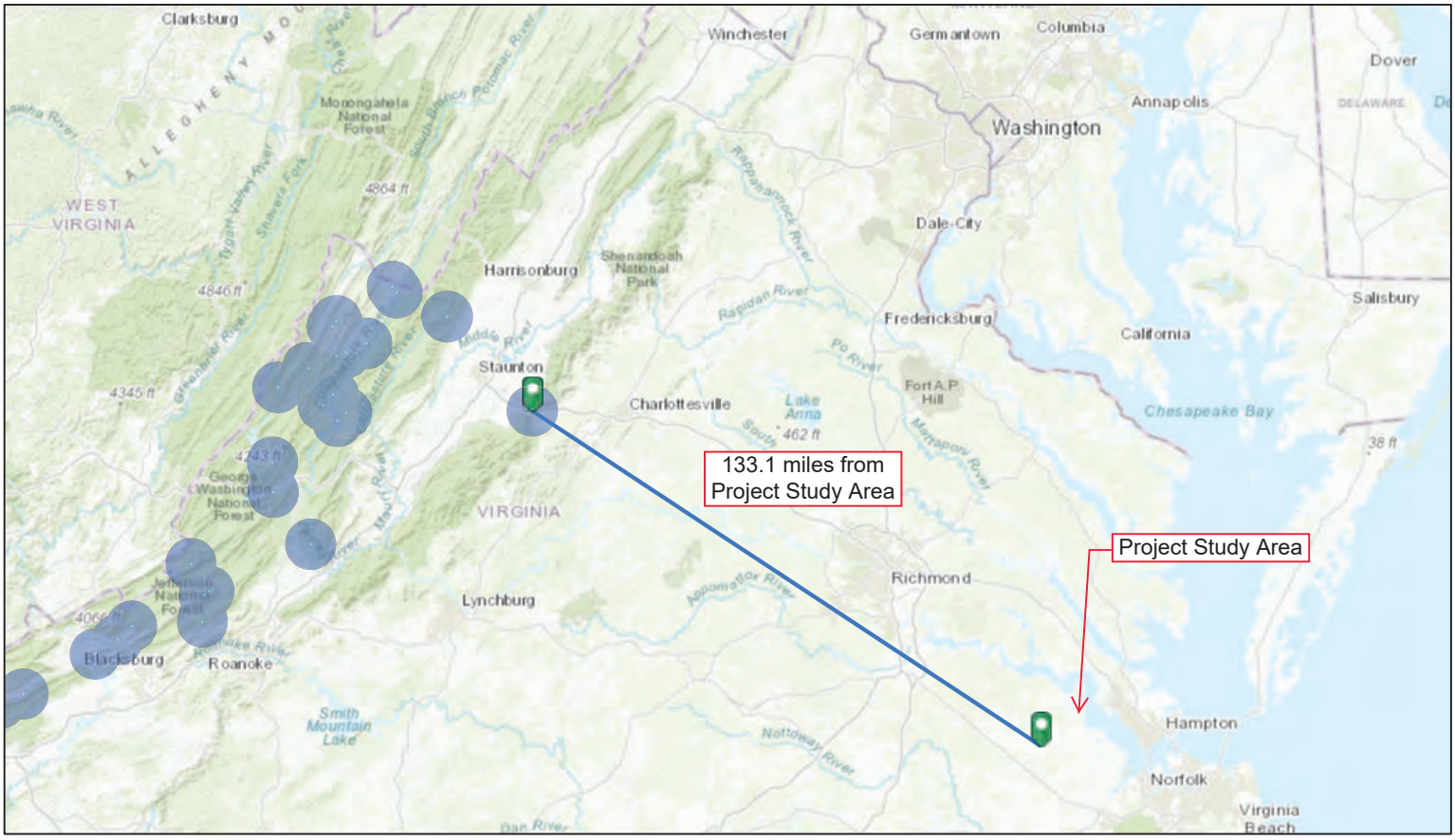

3/27/2023, 2:55:31 PM

Tri-colored and Little Brown Hibernaculum Half Mile Buffer

Tri-colored and Little Brown Hibernaculum 5.5 Mile Buffer

1:2,311,162

0 15 30 60 mi

0 20 40 80 km

Esri, HERE, Garmin, FAO, USGS, EPA, NPS

Dept. Game and Inland Fisheries

Esri, HERE, Garmin, FAO, USGS, EPA, NPS |

Attachment N
Historical and Cultural Resources Report

REPORT >

Phase IA Cultural Resource Assessment of the ±817.46 Hectare (2,020 Acre) Sycamore Cross Solar Project Area

DATE > August 2023

LOCATION > Isle of Wight and Surry Counties, Virginia

PREPARED FOR >
AES Clean Energy



PREPARED BY >
Dutton + Associates, LLC

Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

PHASE IA CULTURAL RESOURCES ASSESSMENT OF THE ±817.46 Hectare (2,020 Acre) SYCAMORE CROSS SOLAR STUDY AREA

ISLE OF WIGHT AND SURRY COUNTIES, VIRGINIA

PREPARED FOR:
AES CLEAN ENERGY
4200 INNSLAKE DRIVE
SUITE 302
GLEN ALLEN, VIRGINIA 23060

***PREPARED BY*:**
DUTTON + ASSOCIATES, LLC
1115 CROWDER DRIVE
MIDLOTHIAN, VIRGINIA 23113
804.897.1960

PRINCIPAL INVESTIGATOR:
ROBERT J. TAYLOR, JR., M.A.

PROJECT ARCHAEOLOGIST:
HOPE SMITH, PH.D.

AUGUST 2023

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ABSTRACT

In August 2023 Dutton +Associates, LLC (D+A) completed a Phase IA cultural resource assessment of the ±817.46-Hectare (2,020-Acre) Sycamore Cross Solar study area in Isle of Wight and Surry counties, Virginia. The assessment was conducted for planning purposes in order to confirm existing conditions of the study area, note surface evidence of cultural activity, and identify recommended survey methods based upon the results of the background research and field reconnaissance. The study area is located near the border of Isle of Wight and Surry counties generally along Sycamore Cross Road, Ramsey Road, Mill Swamp Road, Rattlesnake Trail, and White Hill Trail. The study area consists of multiple parcels and tracts of land that may not correspond precisely with the boundaries chosen for the final development of the project. Rather, the study area represents the maximum extent of the parcels being considered for development.

Analysis of historic maps and aerial photographs from the mid-nineteenth to early-twentieth century reveal a well-established network of roads and a number of dwellings scattered across the study area during that period. Previous cultural resource survey has recorded a number of buildings from that period, although many have since been demolished and the study area is now sparsely developed. Just seven (7) building/building complexes remain extant within the study area, although they range from good condition and occupied to ruinous and abandoned. Several additional homes and building complexes are within or bordering the overall study area limits but are in carve-out parcels excluded from development. Buildings/complexes within the study area include two ruinous early-nineteenth century dwellings, three late-nineteenth century dwellings, a vacant early-twentieth century dwelling, and a mid-twentieth century dwelling. Field inspection revealed evidence of two additional map projected buildings that remain only as sites.

The study area is bordered by Blackwater River and Mill Swamp and crossed by numerous swamps, drainages, and pocosins. These natural resources would have been attractive to prehistoric hunters and gatherers, but the terrain within the study was not likely to have supported large, permanent settlements. The primary prehistoric resources that are likely to be present are small, temporary procurement camps located above the wetlands, however, no such sites have been previously recorded within the study area limits.

Although the study area contains a number of site-predictive factors, such as the natural resources, a historic road network, and mapped buildings, land use throughout the twentieth and twenty-first centuries has negatively impacted the stratigraphic integrity of the soils. Much of the study area has been used to produce timber for an extended period of time and multiple harvests resulting in multiple episodes of clearcutting, planting, and regrowth. Most of the regrowth has been in the form of trees planted in steeply-banked rows interspersed with deep furrows, and in most cases the topsoil and eluviated layers have been destroyed or displaced. Areas not put to use for timber have been used agriculturally and therefore subject to regular plow and tilling.

Based on the above observations, the locations of the map-projected buildings that were field verified as well as previously recorded architectural resources should be considered high potential for historic sites. Together, these account for an area covering about ***34 hectares (85 acres)*** *total. The map-projected locations of buildings that were not visible through surface reconnaissance but reveal evidence of prior disturbance from logging should be considered moderate potential for*

historic sites. Landforms bordering Blackwater River should likewise be considered moderate potential for prehistoric sites, in addition to open, well-drained fields that have not be previously disturbed by logging. Together, the moderate potential area covers an area of about ***365 hectares (901 acres)*** *total. A 25% sample of the moderate potential areas should be subjected to targeted subsurface testing. This sample should include the least disturbed landforms that correspond to or share similar characteristics as the locations of buildings depicted on historic maps. The remainder of the study area that does not lie in wetland should be considered low potential for archaeological resources. A sample constituting 10% of the low-potential area should be subjected to subsurface testing. This 10% should include the least-disturbed terraces overlooking wetlands and intersections of streams to test for prehistoric resources; along the edges of roads and field depicted on Civil War-era maps to test for early historic sites; and any other areas that appear to be less disturbed in the field. The total low probability area is about* ***170 hectares (421 acres)****. A large tract of land at the northern end of the study area has been subject to recent, approved phase I survey and that area will not require further investigation as part of this effort The table below details these areas.*

Potential	***Reason***	***STP Sample***	***Total Area***	***STP Area***
High	*Yard space around extant and map-projected architectural resources*	*100%*	*34 hectares 85 acres*	*34 hectares 85 acres*
Moderate	*Yard space around map-projected architectural resources in areas of documented disturbance. Finger ridges and terraces overlooking Blackwater River and confluences.*	*25%, chosen based on field conditions, pedestrian survey of remainder*	*365 hectares 901 acres*	*91 hectares 225 acres*
Low	*Areas with no site predictors*	*10%, chosen based on field conditions, pedestrian survey of remainder*	*170 hectares 421 acres*	*17 hectares 42 acres*
No Subsurface Testing	*Wetlands, water-saturated soils, slopes greater than 15%, previously surveyed areas*	*Pedestrian survey where possible*	*248 hectares 613 acres*	*Pedestrian survey where possible*
Total			***817.46 hectares 2,020 acres***	***142 hectares 352 acres***

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1. INTRODUCTION

In July 2023 Dutton +Associates, LLC (D+A) completed a Phase IA cultural resource assessment of the ±817.46-Hectare (2,020-Acre) Sycamore Cross Solar study area in Isle of Wight and Surry counties, Virginia. Fieldwork for the study was conducted January 4th and 5th, and June 28th and 29th, 2023. The D+A effort is intended to provide a comprehensive archival study that will include a complete listing and discussion of previously recorded historic properties located within and in the vicinity of the study area, a historical map review of the study area in order to better understand the development and use of the properties and their role in the larger community, provide a basis for interpreting previously recorded historic properties, define potential locations where historic resources (above and below ground) are present or likely to be present, as well as delineate areas where consideration of archaeological resources is not necessary to assist in the development of a strategy for addressing historic resource issues going forward in the Certificate of Public Convenience and Need (CPCN) process.

Robert J. Taylor, Jr., M.A. served as the Principal Investigator, oversaw all project tasks, and co-authored the report. Hope Smith, Ph.D., served as the Project Archaeologist, coauthored the report, and was assisted in the field by Rebecca Mattson and Courtney Roark. Dara Friedberg, M.S., conducted background research for the project and coauthored the report. Copies of all field notes, maps, correspondence, and research materials are on file at D+A's main office in Midlothian, Virginia.

STUDY AREA

The study area is located near the border of Isle of Wight and Surry counties generally along Sycamore Cross Road, Ramsey Road, Mill Swamp Road, Rattlesnake Trail, and White Hill Trail (Figure 1-1). The study area consists of multiple parcels and tracts of land that may not correspond precisely with the boundaries chosen for the final development of the project. Rather, the study area represents the maximum extent of the parcels being considered for development, and the final project area may be smaller than the current study area.

As part of the effort, field reconnaissance to document existing conditions was limited to those parcels where access was expressly granted while the rest of the study area was limited to desktop review only (Figure 1-2).



Figure 1-1: General location of the study area. Source: USGS

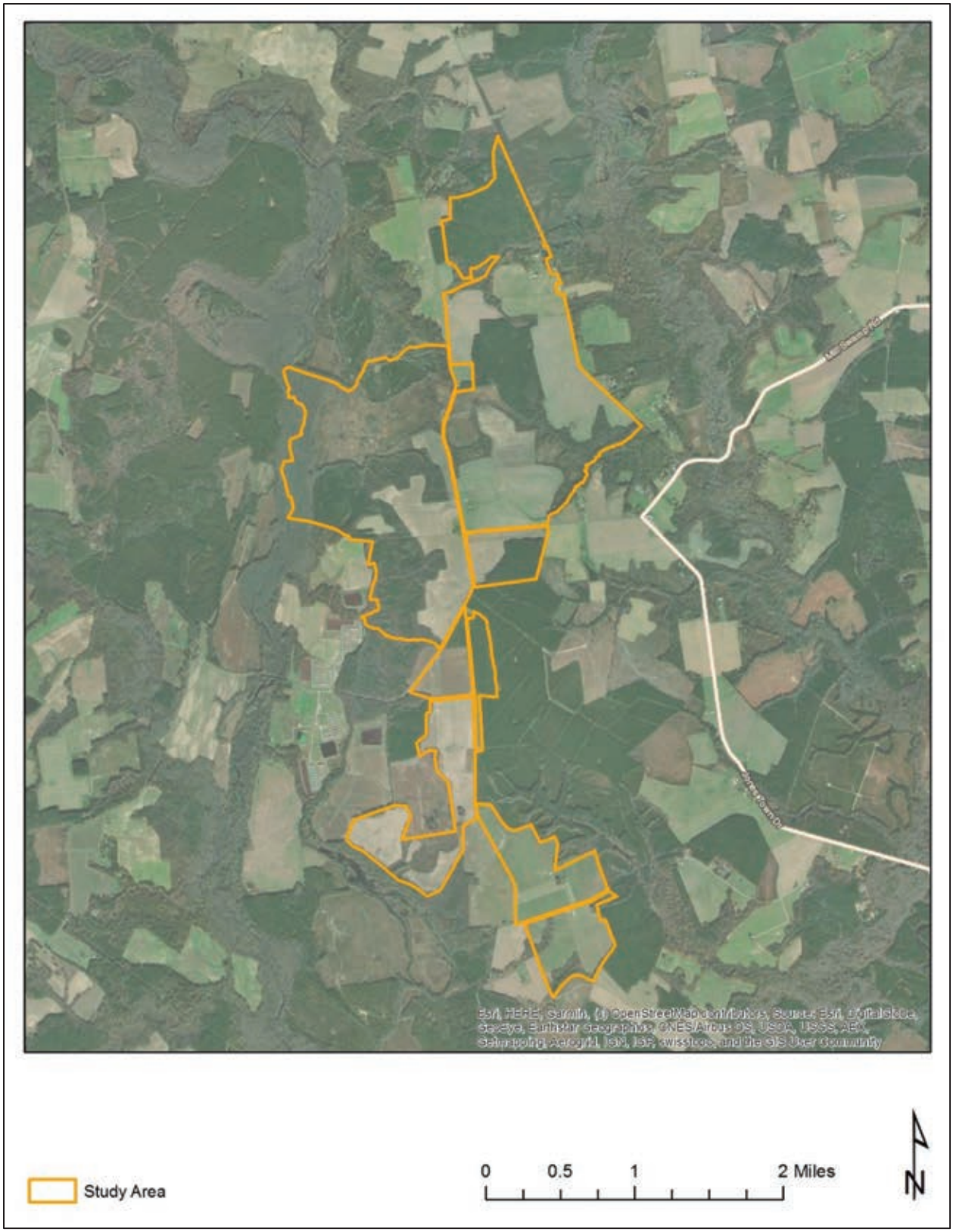

Figure 1-2: Aerial view of study area depicting parcels subject to full assessment as well as desktop-only.

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2. RESEARCH DESIGN

The Phase IA cultural resource assessment of the Sycamore Cross Solar study area was undertaken to provide a comprehensive archival study of previous cultural resource investigations in the study area, a historical map review to understand the land-use and development of properties within the study area, and define potential locations within the study area where historic resources (above and below ground) are present or likely to be present. Limited field reconnaissance was also conducted to verify existing conditions and note visible evidence of cultural resources, previous disturbance, or other pertinent landscape features. The background research, field reconnaissance, and field survey methodologies are summarized below.

ARCHIVAL RESEARCH

In January 2023, D+A conducted background research with the goal of identifying all previously recorded historic properties located within and in the vicinity of the study area in accordance with VDHR's guidance document titled *Guidelines for Conducting Cultural Resources Survey in Virginia* (Revised October 2017). Background research was conducted at the VDHR and on the internet and including the following sources:

- VDHR V-CRIS site files; and
- National Park Service, American Battlefield Protection Program, maps and related documentation.

In further preparation for the Phase IA survey, D+A conducted additional review of the following documents and sources for information relative to unrecorded historic property locations in the study area:

- County Tax Assessors records;
- USDA Historic Aerial Imagery;
- U.S. Geological Survey Topographic Maps;
- Previous historic resource survey documents; and
- Local historical society archives.

ARCHAEOLOGICAL FIELD SURVEY

For those parcels within the study area where field access was granted, a limited pedestrian survey was conducted to document existing conditions and to note surface evidence of cultural activity or material. In addition, a limited number of judgmentally placed shovel tests were excavated in order to assess and document soil conditions throughout the project area. For any newly encountered archaeological resources identified during the reconnaissance, photographs were taken of the general vicinity and of any visible features. A field map was prepared showing feature locations, permanent landmarks, topographic and vegetation variation, as well as sources of disturbance. Sufficient information was included on the map to permit easy re-identification of the resources.

REPORT AND RECORD PREPARATION

The results of the background research and field reconnaissance were synthesized and summarized in this report accompanied by maps and photographs as appropriate. All research material and documentation generated by this project are on file at D+A's office in Midlothian, Virginia.

QUALIFICATIONS AND STANDARDS

The D+A personnel who directed and conducted this survey meet the professional qualification standards of the Department of the Interior (48 FR 44738-9). All work was conducted in accordance with the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (Federal Register 48:44716-44742, September 29, 1983), and VDHR's *Guidelines for Conducting Historic Resource Survey in Virginia* (rev. 2017).

3. ENVIRONMENTAL CONTEXT

PHYSICAL DESCRIPTION AND LOCATION

The Sycamore Cross Solar study area consists of ±817.46-Hectare (2,020 Acres) of land divided into multiple contiguous and discontiguous parcels. The study area is located along the border of Isle of Wight and Surry counties within a primarily rural area of the Coastal Plain of Southside Virginia. The landscape within and bordering the study area is a mix of cultivated agricultural field, planted timber stands, and native woodland, particularly bordering the numerous drainages and swamps that dissect the area (Figure 3-1).

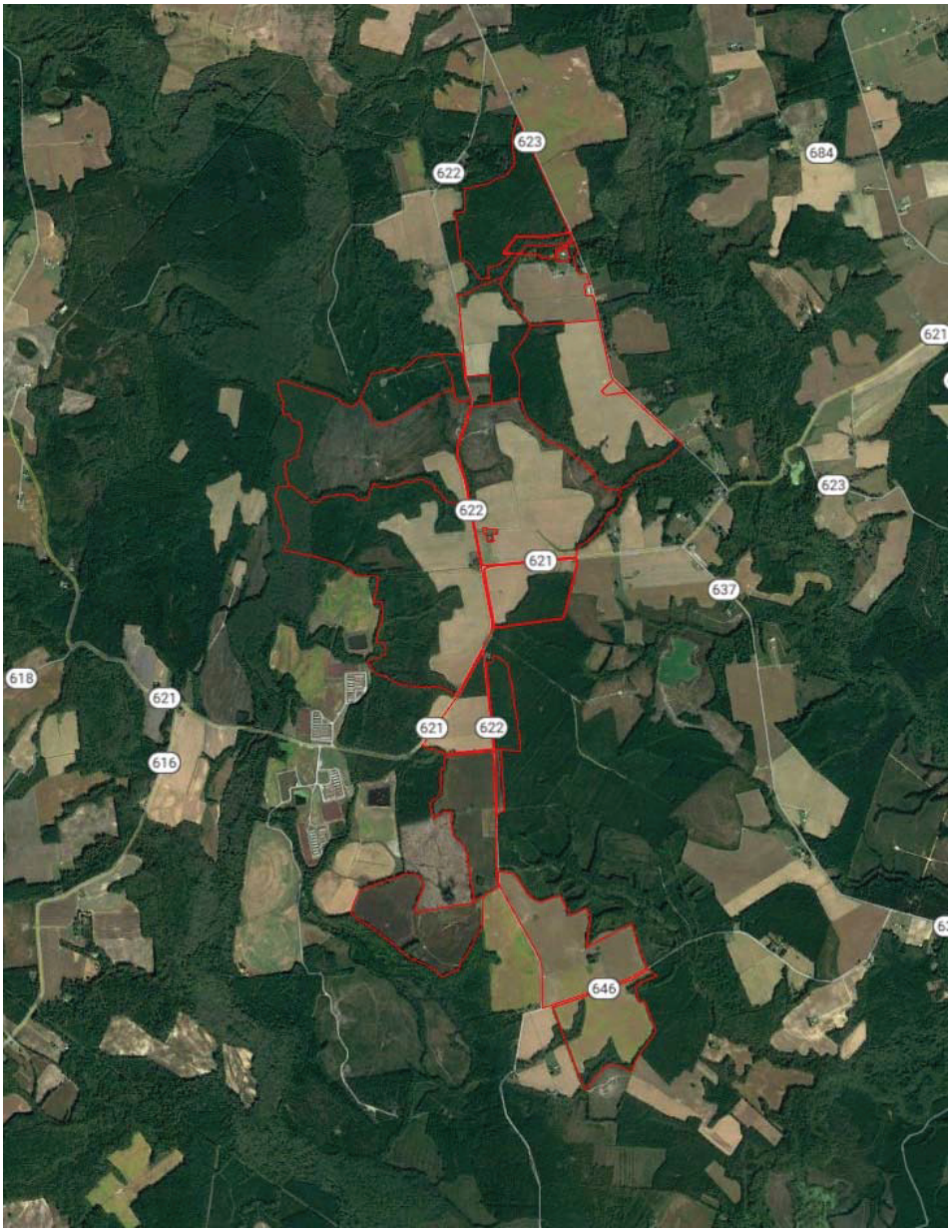

Figure 3-1. Aerial view of study area illustrating existing conditions.

GEOLOGY AND TOPOGRAPHY

The study area topography is characterized by primarily flat level terrain associated with the Lowland subprovince of the Coastal Plain region. The area is underlain by a thick wedge of sediments resting on an eroded surface of Precambrian to early Mesozoic rock. Generally, a lightly dissected, dendritic drainage pattern occurs throughout this region with broad, low landforms and shallow, sluggish drainageways. The elevation of the study area ranges from approximately ±7.9 meters (26 feet) to ±27.4 meters (90 feet) above mean sea level with the highest elevations located along the crest of a broad ridge along the eastern edge of the study area and the lowest elevations bordering the Blackwater River along the western edge.

HYDROLOGY

Most of the study area drains west into Blackwater River, although portions of the eastern edge drain eastward into Mill Swamp which flows into Rattlesnake Swamp and ultimately into Blackwater River. This flows south into North Carolina where it empties into the Chowan River, which flows into Albemarle Sound, which empties into the Currituck Sound before ultimately draining into the Atlantic Ocean.

PEDOLOGY

The study area is dominated by sandy loams and sandy clay loams formed from marine sediments. The most prominent soil type is Slagel fine sandy loam which is moderately well drained and covers about 25% of the study area. The second most prominent soil type is Kinston loam, which represents about 17.8% of the study area and is considered poorly drained. Well-drained Emporia fine sandy loam are the only other soils types that account for a significant portion of the study area at 15.2%. The rest of the study area is comprised of assorted sandy loams and complexes. Approximately 39.7% of the soils within the study area are classified as poorly to somewhat poorly drained (Figure 3-2 and Table 3-1).

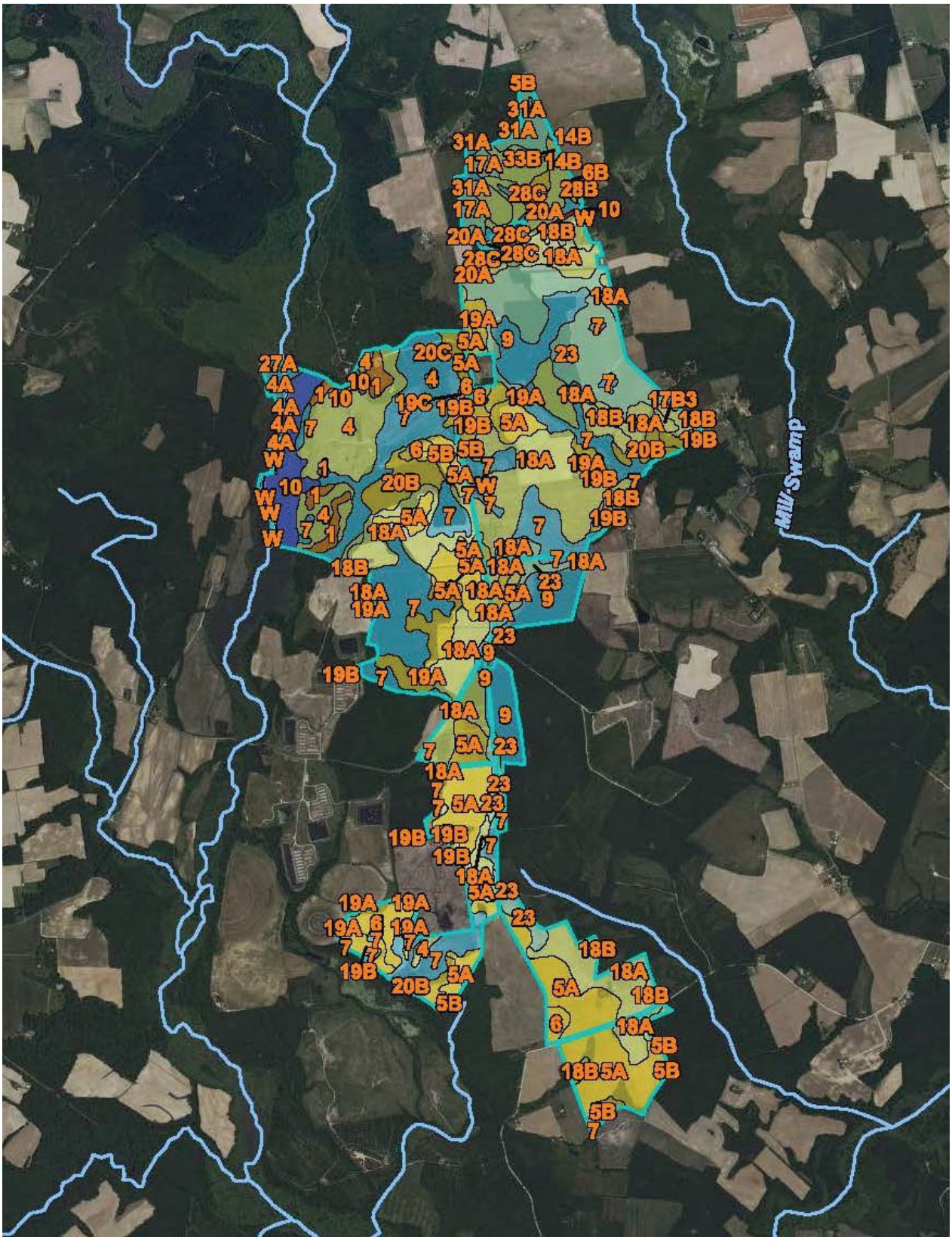

Figure 3-2: Soil survey of the Sycamore Cross study area showing drainage class (USDA 2023).

Table 3-1: Soil survey data for study area parcel cluster, showing drainage rating. Source: USDA.

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Alaga fine sand	Somewhat excessively drained	29.3	1.5%
4	Chipley sand	Moderately well drained	116.0	5.7%
5A	Emporia fine sandy loam, 0 to 2 percent slopes	Well drained	286.6	14.2%
5B	Emporia fine sandy loam, 2 to 6 percent slopes	Well drained	21.0	1.0%
6	Kenansville loamy sand	Well drained	41.6	2.1%
7	Kinston loam	Poorly drained	347.0	17.2%
9	Myatt fine sandy loam	Poorly drained	119.0	5.9%
10	Nawney loam	Very poorly drained	55.9	2.8%
17B3	Slagle sandy loam, 2 to 6 percent slopes, severely eroded	Moderately well drained	3.7	0.2%
18A	Slagle fine sandy loam, 0 to 2 percent slopes	Moderately well drained	401.5	19.9%
18B	Slagle fine sandy loam, 2 to 6 percent slopes	Moderately well drained	56.9	2.8%
19A	Uchee loamy sand, 0 to 2 percent slopes	Well drained	66.8	3.3%
19B	Uchee loamy sand, 2 to 6 percent slopes	Well drained	40.1	2.0%
19C	Uchee loamy sand, 6 to 10 percent slopes	Well drained	2.1	0.1%
20B	Uchee-Peawick complex, 2 to 6 percent slopes	Well drained	57.3	2.8%
20C	Uchee-Peawick complex, 6 to 10 percent slopes	Well drained	9.2	0.5%
23	Yemassee fine sandy loam	Somewhat poorly drained	205.4	10.2%
W	Water		4.1	0.2%
Subtotals for Soil Survey Area			**1,863.4**	**92.2%**
Totals for Area of Interest			**2,020.4**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
4A	Bibb sandy loam, 0 to 2 percent slopes, frequently flooded	Poorly drained	3.9	0.2%

Table 3-1 (cont.): Soil survey data for primary study area parcel cluster, showing drainage rating. Source: USDA.

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
W	Water		3.4	0.2%
Subtotals for Soil Survey Area			**7.3**	**0.4%**
Totals for Area of Interest			**2,020.4**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5B	Burrowsville loamy sand, 2 to 6 percent slopes	Moderately well drained	0.1	0.0%
6B	Caroline silt loam, 2 to 6 percent slopes	Well drained	0.0	0.0%
14B	Emporia fine sandy loam, 2 to 6 percent slopes	Well drained	0.5	0.0%
17A	Jedburg loam, 0 to 2 percent slopes	Somewhat poorly drained	40.1	2.0%
20A	Kinston loam, 0 to 2 percent slopes, frequently flooded	Poorly drained	13.0	0.6%
21B	Lakeland sand, 2 to 6 percent slopes	Excessively drained	1.7	0.1%
27A	Nawney and Mattan soils, 0 to 1 percent slopes, frequently flooded	Poorly drained	9.4	0.5%
28B	Nevarc-Remlik complex, 2 to 6 percent slopes	Moderately well drained	0.5	0.0%
28C	Nevarc-Remlik complex, 6 to 10 percent slopes	Moderately well drained	28.4	1.4%
28D	Nevarc-Remlik complex, 10 to 15 percent slopes	Moderately well drained	5.7	0.3%
31A	Rains fine sandy loam, 0 to 2 percent slopes	Poorly drained	5.3	0.3%
33A	Slagle fine sandy loam, 0 to 2 percent slopes	Moderately well drained	1.1	0.1%
33B	Slagle fine sandy loam, 2 to 6 percent slopes	Moderately well drained	39.7	2.0%
35B	Uchee loamy fine sand, 2 to 6 percent slopes	Well drained	4.2	0.2%
Subtotals for Soil Survey Area			**149.6**	**7.4%**
Totals for Area of Interest			**2,020.4**	**100.0%**

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4. PREVIOUS INVESTIGATIONS

This section includes a summary of all the cultural resource management events that have taken place within the study area registered at VDHR through July 2023. It also lists all previously identified architectural resources and archaeological sites located within the study area, as well as within one mile of the study area.

PREVIOUS SURVEYS RELEVANT TO THE STUDY AREA

VCRIS reveals that three Phase I cultural resource surveys have been conducted within one mile of the study area, one of which included portions of the study area (Table 4-1 and Figure 4-1). These surveys are archaeological in nature, although some include architectural resource investigations as well. The three surveys were conducted as part of assorted utility and infrastructure projects.

Table 4-1: Previously conducted Phase I surveys within one mile of the study area. Orange highlight denotes survey including portions of the study area.

Report Number	Survey Title	Author/ Affiliation	Year	VDHR Review File
IW-105	Phase I Cultural Resources Survey for the Align RNG Virginia – Waverly Renewable Natural Gas Project, Isle of Wight County, Virginia	TRC	2022	2021-0097
SY-079	Phase I Cultural Resource Survey of the ±2,106.02-Hectare (±5,204.1-Acre) Cavalier Solar Study Area, Isle of Wight and Surry Counties, Virginia	DUTTON	2020	2020-0521
VA-176	Phase I Archaeological Survey, Virginia Reliability Project, Cities of Chesapeake and Suffolk, and Greensville, Isle of Wight, Prince George, Southampton, Surry, and Sussex Counties, Virginia	ERM	2022	2021-0026

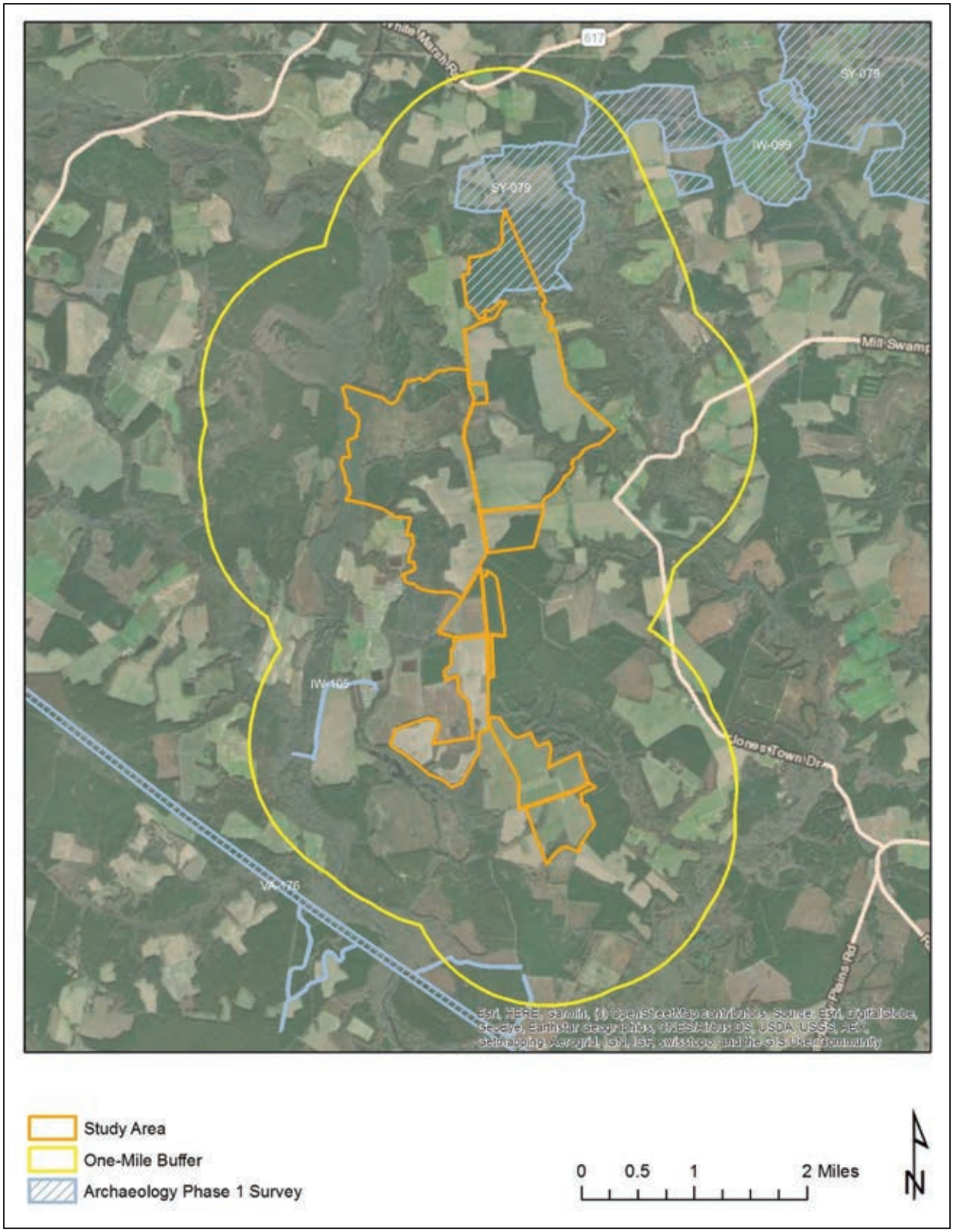

Figure 4-1: Previous Phase I surveys conducted within one mile of the study area Source: V-CRIS

PREVIOUSLY IDENTIFIED ARCHAEOLOGICAL SITES WITHIN ONE MILE

There are ten (10) previously recorded archaeological sites located within one mile of study area, two of which are located within the study area (Table 4-2 and Figure 4-2). The sites within one mile include prehistoric lithic scatters and camps; as well as historic period domestic sites and refuse scatters. Of the sites within one mile, eight (8) have been determined not eligible and two (2) have not been formally evaluated by the VDHR. Of the two sites within the study area, both are historic period artifact scatters that have been determined not eligible for listing in the NRHP.

Table 4-2: Table detailing all archaeological resources within one mile of study area. Orange highlight denotes site is within the limits of the study area.

VDHR #	Site Type	Cultural Designation	Temporal Association	NRHP Status
44IW0327	Camp	Native American	Early Archaic Period (8500 - 6501 B.C.E), Middle Archaic Period (6500 - 3001 B.C.E), Late Archaic Period (3000 - 1201 B.C.E), Early Woodland (1200 B.C.E - 299 C.E), Middle Woodland (300 - 999 C.E)	Not Evaluated
44IW0336	Lithic scatter	Native American	Pre-Contact	DHR Staff: Not Eligible
44SY0128	Dwelling, single	Indeterminate	Historic/Unknown	Not Evaluated
44SY0316	Dwelling, single	Indeterminate	World War I to World War II (1917 - 1945)	DHR Staff: Not Eligible
44SY0317	Artifact scatter	Indeterminate	Reconstruction and Growth (1866 - 1916)	DHR Staff: Not Eligible
44SY0318	Dwelling, single	Indeterminate	Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945)	DHR Staff: Not Eligible
44SY0319	Artifact scatter	Indeterminate	Reconstruction and Growth (1866 - 1916)	DHR Staff: Not Eligible
44SY0320	Dwelling, single	Indeterminate	World War I to World War II (1917 - 1945)	DHR Staff: Not Eligible
44SY0321	Outbuilding	Indeterminate	Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945)	DHR Staff: Not Eligible
44SY0322	Artifact scatter, Lithic scatter	Indeterminate	Pre-Contact, Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945), The New Dominion (1946 - 1991)	DHR Staff: Not Eligible

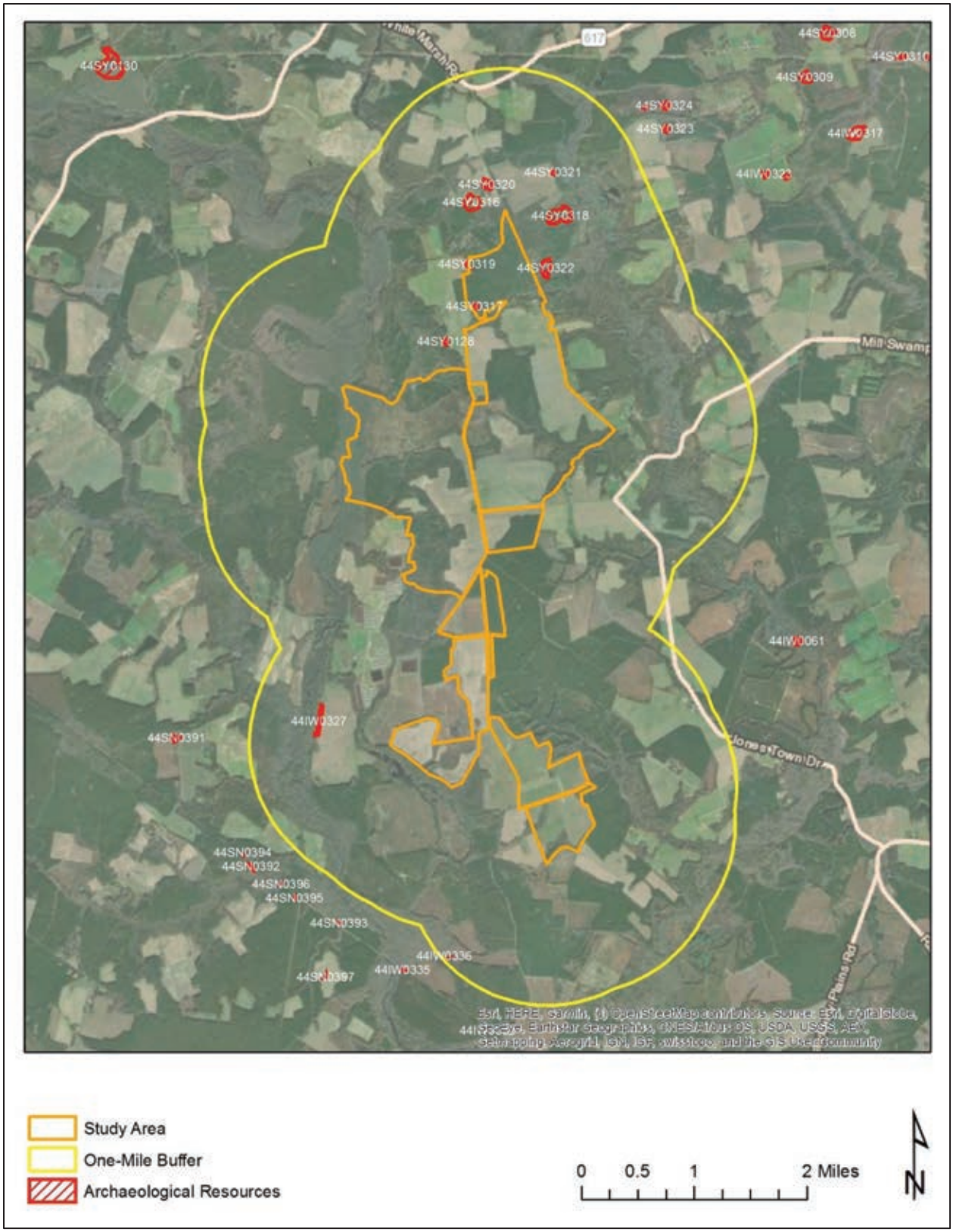

Figure 4-2: Previously recorded archaeological sites located within one mile of the study area. Source: V-CRIS

PREVIOUSLY IDENTIFIED ARCHITECTURAL RESOURCES WITHIN ONE MILE

There are thirty-two (32) previously recorded architectural resources located one mile of the study area, nine (9) of which are located within the study area (Table 4-3 and Figure 4-3). The resources within one mile include single-family homes from the mid-eighteenth to mid-twentieth century, a commercial building from the turn-of-the-twentieth century, a church from the early-twentieth century, and a family cemetery from the early-twentieth century. Thirteen of the resources have been determined not eligible for listing in the NRHP by the VDHR and the rest have not been formally evaluated. Of the nine resources within the study area, nine are dwellings with four from the early-nineteenth century, four from the late-nineteenth century, and one from the early-twentieth century; and one is a late-nineteenth century commercial building. One late-nineteenth and one early-twentieth century dwelling have been determined not eligible for listing in the NRHP and the rest have not been formally evaluated.

Table 4-3: Previously identified architectural resources located within one mile of the study area. Orange highlight denotes resource is located within the study area.

VDHR ID#	Resource Name	Type	Year	NRHP Status
046-0029	House, Route 622 (Function/Location)	Single Dwelling	c.1800	Not Evaluated
046-0030	Betts House (Historic)	Single Dwelling	c.1802	Not Evaluated
046-0032	Dudley House and Outbuildings (Historic)	Single Dwelling	c.1820	Not Evaluated
046-0055	Tenant House, Sycamore Crossroads (Historic/Current)	Secondary Dwelling	c.1800	Not Evaluated
046-0056	Grays' Brick House (Historic/Current)	Single Dwelling	c.1825	Not Evaluated
046-0057	Brick House (Descriptive)	Single Dwelling	c.1825	Not Evaluated
046-0068	Wilson Hollemon House, Mill Swamp Rd (Rt 621) (Historic/Location)	Single Dwelling	c.1830	Not Evaluated
046-5147	Farmhouse, 14537 Rattlesnake Trail (Function/Location)	Single Dwelling	1850	Not Evaluated
046-5148	Farmhouse, 13407 Ramsey Road (Function/Location)	Single Dwelling	1880	Not Evaluated
046-5149	Store, Intersection of Mill Swamp Road and Sycamore Cross Drive (Function/Location)	Commercial Building	1899	Not Evaluated
046-5150	Farmhouse, 11356 Proctors Bridge Road (Function/Location)	Single Dwelling	1899	Not Evaluated
046-5151	Mill Swamp Baptist Church & Cemetery (Historic/Current)	Church/Chapel	1928	Not Evaluated
046-5152	Store, 6159 Jones Town Road (Function/Location)	Service Station	c.1930	Not Evaluated
046-5234	William Gray House (Historic/Current)	Single Dwelling	c.1825	Not Evaluated
046-5260	House, 6330 Mill Swamp Road (Function/Location), Mill Swamp Baptist Church Parsonnage (Historic)	Single Dwelling	c.1900	Not Evaluated
046-5550	Dwelling, 10126 White Hill Trail (Function/Location)	Single Dwelling	1890	DHR Staff: Not Eligible
046-5551	Dwelling, 10106 White Hill Trail (Function/Location)	Single Dwelling	1944	DHR Staff: Not Eligible
046-5552	Dwelling, 10088 White Hill Trail (Function/Location)	Single Dwelling	c.1930	DHR Staff: Not Eligible
087-0003	Binford House (Historic)	Single Dwelling	c.1750	Not Evaluated

VDHR ID#	Resource Name	Type	Year	NRHP Status
087-5328	Brantley Home (Historic), Pretlow Farm (Historic)	Single Dwelling	c.1900	Not Evaluated
087-5509	1760 Henley Pretlow House (Historic), Captain Pretlow House (Historic), House 4071 Proctor's Bridge Road (Function/Location)	Single Dwelling	1760	Not Evaluated
090-0051	Stratman House (Historic/Current)	Single Dwelling	c.1750	Not Evaluated
090-5160	Dwelling, 9091 White Marsh Road (Function/Location)	Single Dwelling	1905	DHR Staff: Not Eligible
090-5161	Dwelling, 9100 White Marsh Road (Function/Location)	Single Dwelling	1949	DHR Staff: Not Eligible
090-5162	Dwelling, 274 Berrymans Corner Road (Function/Location)	Single Dwelling	c.1890	DHR Staff: Not Eligible
090-5163	Dwelling, 337 Berrymans Corner Road (Function/Location)	Single Dwelling	1942	DHR Staff: Not Eligible
090-5164	Dwelling, 285 Berrymans Corner Road (Function/Location)	Single Dwelling	c.1900	DHR Staff: Not Eligible
090-5165	Simmons and Brown Cemetery (Current Name)	Cemetery	c.1900	DHR Staff: Not Eligible
090-5166	Dwelling, 1122 Berrymans Corner Road (Function/Location)	Single Dwelling	c.1930	DHR Staff: Not Eligible
090-5167	Dwelling, 1097 Berrymans Corner Road (Function/Location)	Single Dwelling	c.1965	DHR Staff: Not Eligible
090-5168	Dwelling, 1676 Berrymans Corner Road (Function/Location)	Single Dwelling	1870	DHR Staff: Not Eligible
090-5174	House, Berrymans Corner Road (Function/Location)	Single Dwelling	c.1920	DHR Staff: Not Eligible

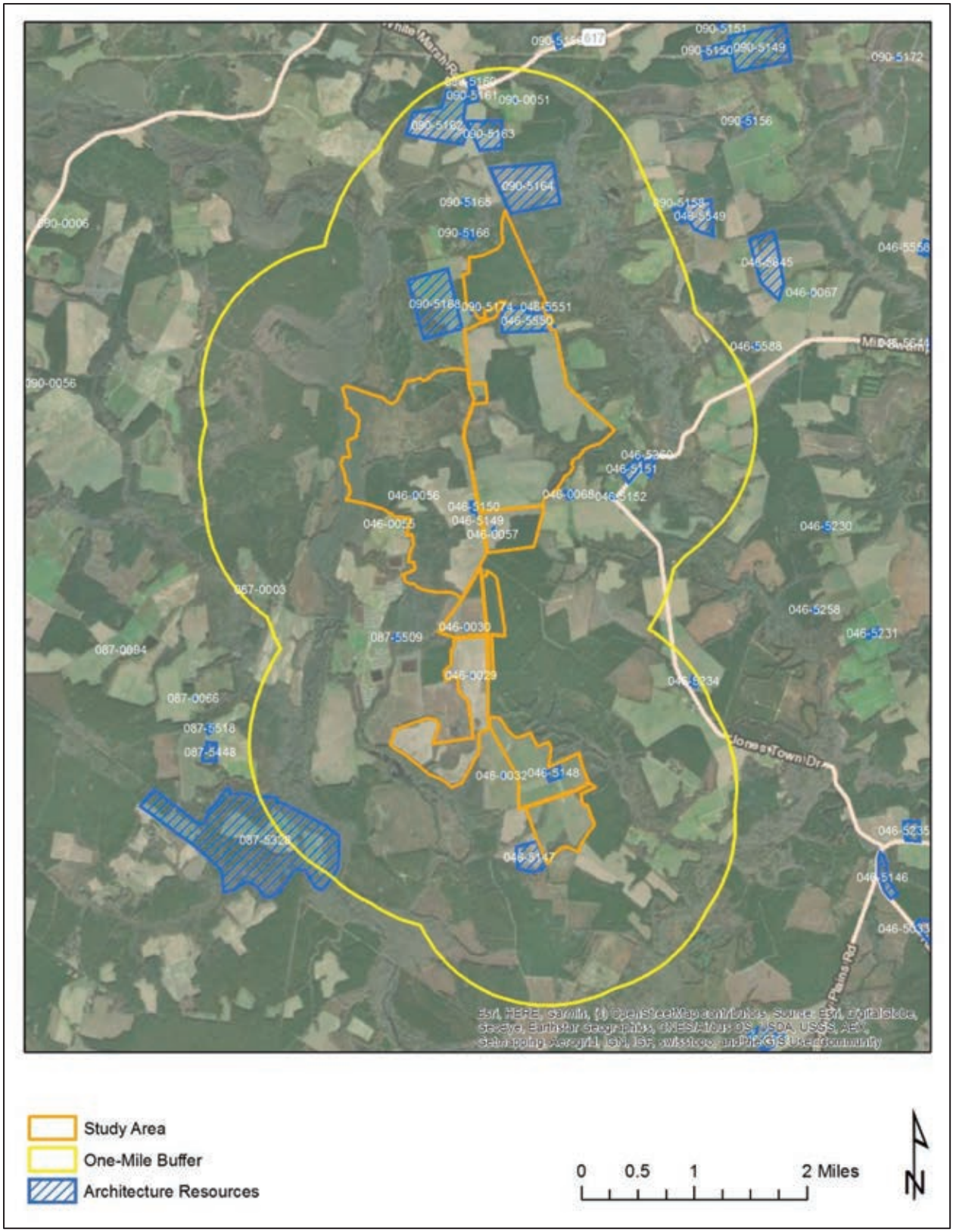

Figure 4-3: Previously recorded architectural resources within one mile of the study area. Source: V-CRIS

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5. HISTORIC MAP REVIEW

The Sycamore Cross Solar study area is located at the northwestern corner of Isle of Wight County, spanning the county line into Surry County. Prior to English arrival to Virginia, the region was home to the Warraskoyak living in the two major villages of Mathomank, near present-day Burwell's Bay, and Mokete, at Pagan Point. Though the tribes' primary villages were along the James River, they used interior lands up to at least 20 miles inland (King 1993:1). As early as 1608, the English crossed the James River to what is now Isle of Wight County though it would not be until 1619 when the first permanent English settlement was initiated in the future county (Morrison and Gwaltney 2006). While the south side of the James River was rich, the lands were fringed by swamps and the harbors were fewer and shallower making the region a bit less desirable (Rouse 1968:17).

The study area would have remained the frontier as settlement was focused along the James River. By 1634, the population of the Virginia Colony had grown to the point that King Charles I directed the formation of eight shires (counties). James City County spanned both sides of the James River and encompassed Surry County. To the east of it was Warroaquyoake, later renamed Isle of Wight (Rouse 1969:67).

Despite unrest between European settlers and American Indians, land continued to be granted. Land was first settled along the James River and its tributaries after which colonists were forced to move farther inland into the more swampy land. In the vicinity of the study area are Blackwater River and Mill Swamp.

By the mid-eighteenth century, the population increasingly moved inland from the James River and the farms in Isle of Wight County were typically between 500 to 1,700 acres (David 2007:9). According to V-CRIS records, several mid- to late eighteenth century homes were constructed less than two miles of the study area. During the American Revolution, though the British passed through Isle of Wight and Surry counties, closer to the James River, the war did not impact this region as it did nearby port towns, like Norfolk and Portsmouth (Figure 5-1).

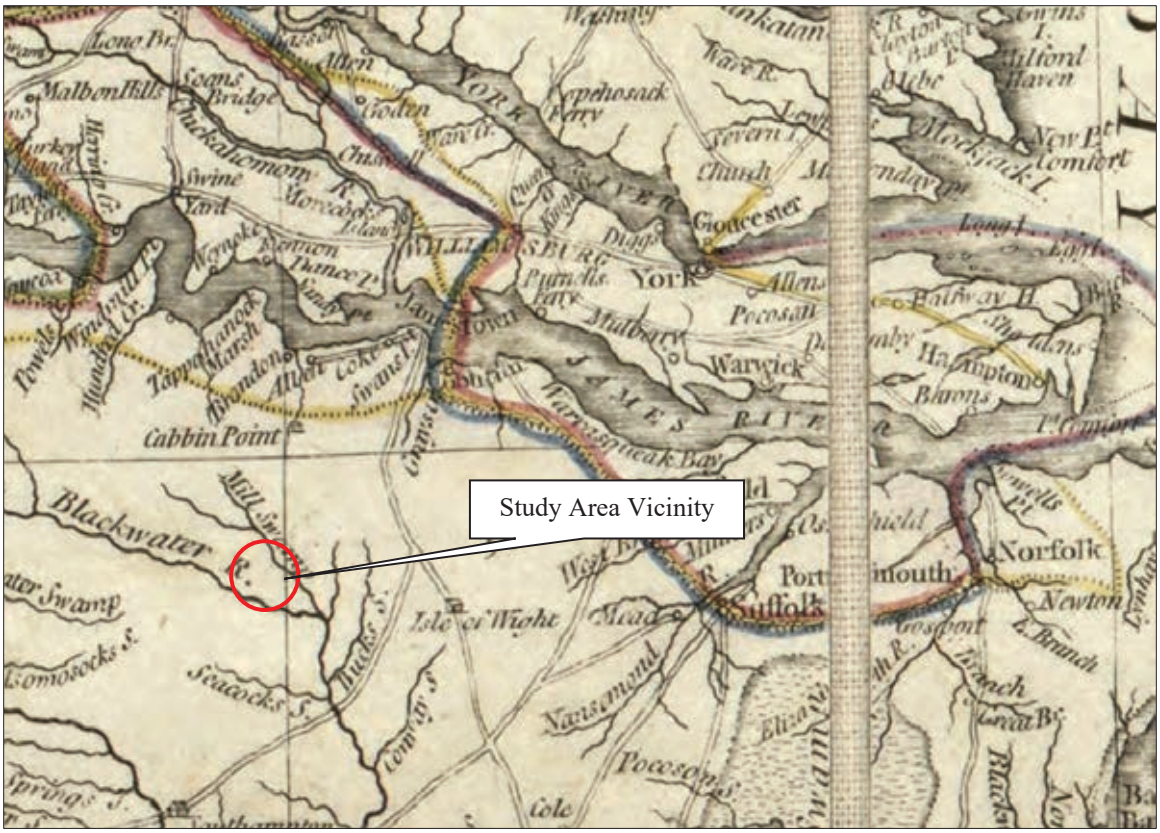

Figure 5-1: Detail of *The marches of Lord Cornwallis in the Southern Provinces*, 1787, depicting general vicinity of the study area. Source: Library of Congress

As time passed, the almost exclusively agrarian society was beginning to accommodate urban centers and small hamlets, although farming continued to be the primary means of livelihood. While the population remained relatively steady, there was a shift to the southern half of the county as people were enticed by the open lands and inland roadways. Roads began to increasingly cross the county and homesteads continued to be erected, including within the study area and the general vicinity (Figure 5-2).

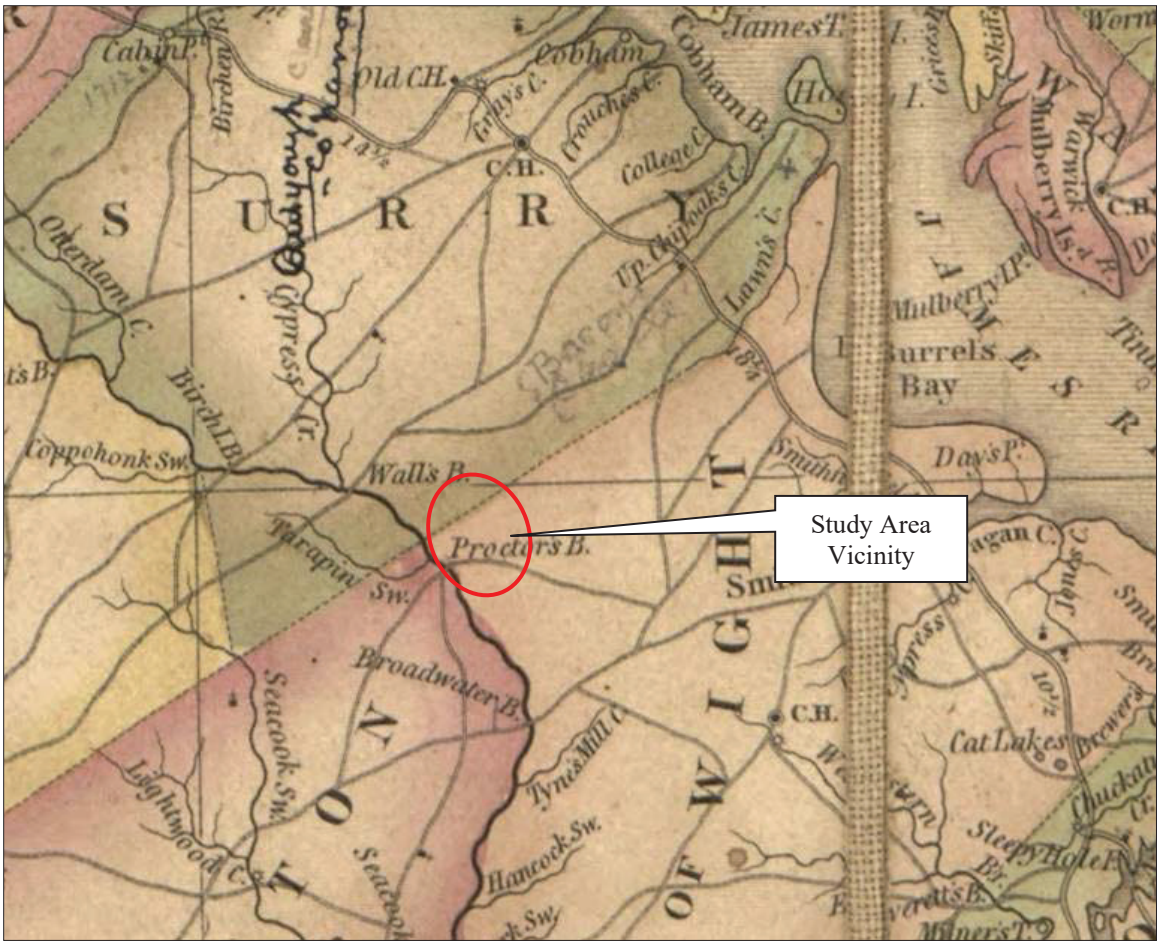

Figure 5-2: Detail of *A map of the state of Virginia*, 1827, depicting the vicinity of the study area. Source: Library of Congress

By the 1830s, a lasting migration from older settled regions of Virginia to lands opening in the west and an agricultural depression affected area's commerce and population. Between 1830 and 1850, the population of Isle of Wight County decreased 11 percent and that of Surry County fell by more than 13 percent (USCB). Despite the drop in population, the enslaved and free black population remained about 50 percent of the total population. Approximately 90 percent of the total population was involved in agriculture and identified as farmers (David 2007:10).

Despite the number of marshes crossing the study area, structures within it and in the vicinity were common by the mid-nineteenth century as evidenced by mid-nineteenth century maps. In Surry County, the study area appears to have been completed wooded (Figure 5-3). Mapping illustrates several buildings within or adjacent to the study area in Isle of Wight County, however (Figure 5-4). This includes homes related to the Bell, Betts, and Barlow families. According to a Works Progress Administration survey of Virginia's historical inventory, there was a small family cemetery associated with the Betts House that may be within the study area (Jordan 1937). The cemetery is not identified in Find-a-Grave or on topographic maps. Major roads crossed through the study area in Isle of Wight County, including that connecting to Proctor's Bridge over the Blackwater River. Also located in Isle of Wight County, on Rattlesnake Road (now Sycamore Cross Drive, Route 622) were a store and a schoolhouse.



Figure 5-3: Detail of *Map of Surry Sussex and Southampton counties, Virginia*, 1863, depicting the portion of the study area in Surry County. Source: Library of Congress



Figure 5-4: Detail of *Map of Isle of Wight and part of Nansemond*, 1864, depicting the primary study area parcel cluster in Isle of Wight County. Source: Library of Congress

During the Civil War, no major battles took place in the county, although a skirmishes did occur. The products of the countryside were depleted in service of the Confederate cause. Following the War Between the States, the longstanding agricultural economy of Tidewater Virginia began to recover and the production of peanuts increased. In addition to peanuts, the county produced oats, potatoes, fruits, vegetables, and oysters (Morrison and Gwaltney 2006). Timbering also prospered, as did the bacon and ham industry. As population increased, commerce also grew, particularly along the intersections of major inland roadways in the form crossroad stores. With improved

inland transportation corridors, crossroads stores became more common, within the study area was Sycamore Crossroads.

As the twentieth century continued, the number of farms steadily increased. Additionally, during this time many farms were subdivided and new single family homes were constructed or new dwellings replaced older homes on farms (David 2007:18). Topographic maps from this period illustrate the increase of buildings within and around the study area as well as a lumber railroad in the study area in Surry County (Figure 5-5).



Figure 5-5: Detail of the 1919 and 1920 topographic maps, *Surry* and *Ivor,* depicting the primary study area parcel cluster. Source: USGS

The end of World War II brought with it a building boom that would begin to change the character of the earlier farmsteads within counties, particularly Isle of Wight. With its proximity to Newport News, Portsmouth, and Norfolk, the county began to become a bedroom community. As the twentieth century continued and transitioned in the twenty-first, the study area remained much as it had historically, as a mixture of forested land and agricultural fields with some farmsteads (Figure 5-6 through Figure 5-10). Buildings previously depicted in the study area in Surry County, were no longer illustrated by the mid-twentieth century. Sycamore Crossroads remained, though it was referred as McClelland on the 1944 topographic map. On the same map, south of McClelland, McClelland School was depicted within the study area. This was a small school that served black students (Locations n.d.). The study area continues to show evidence of agriculture and timbering on its land.

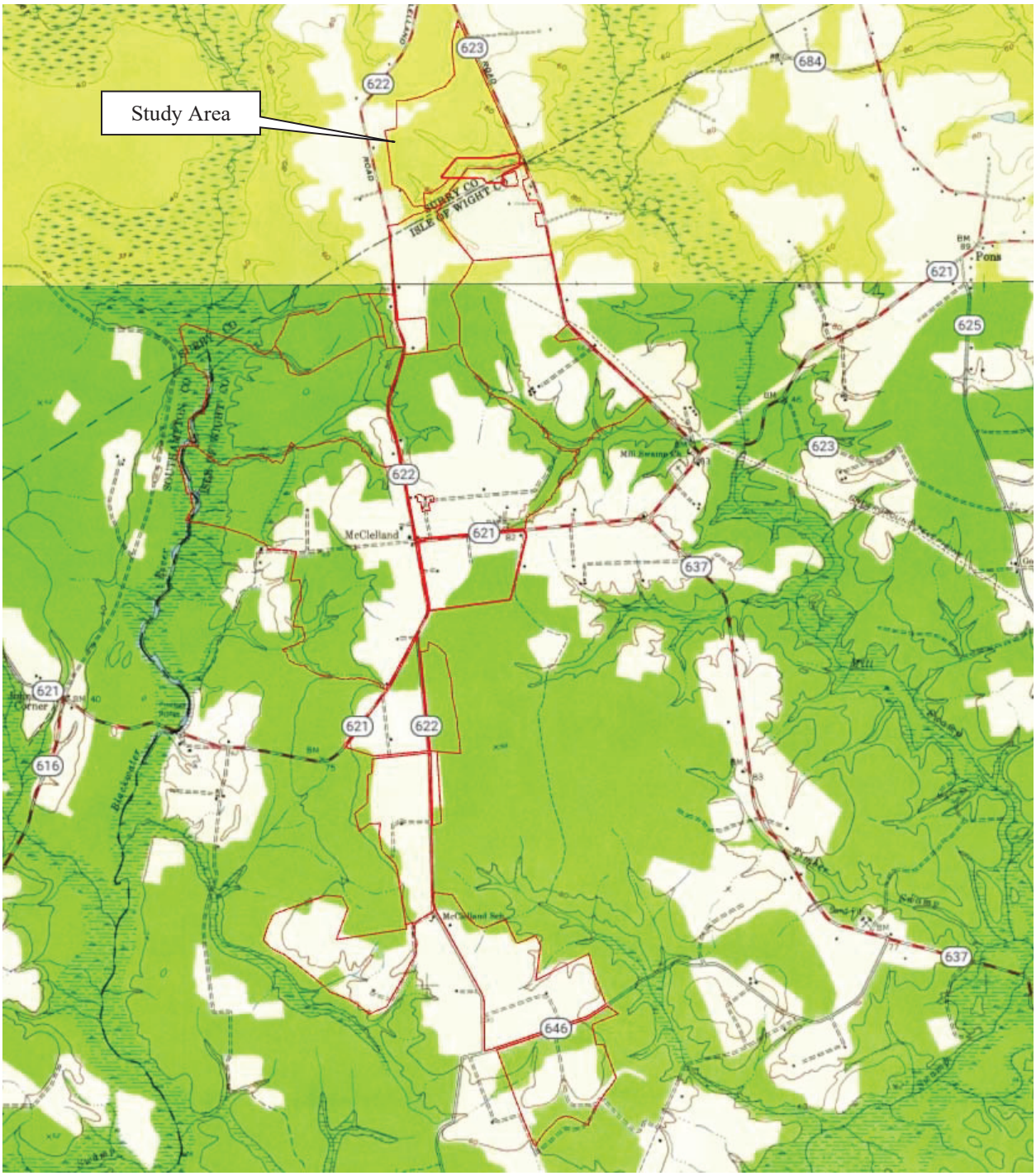

Figure 5-6: Detail of the 1944 and 1954 topographic maps, *Raynor* and *Runnymeade*, depicting the primary study area parcel cluster. Source: USGS

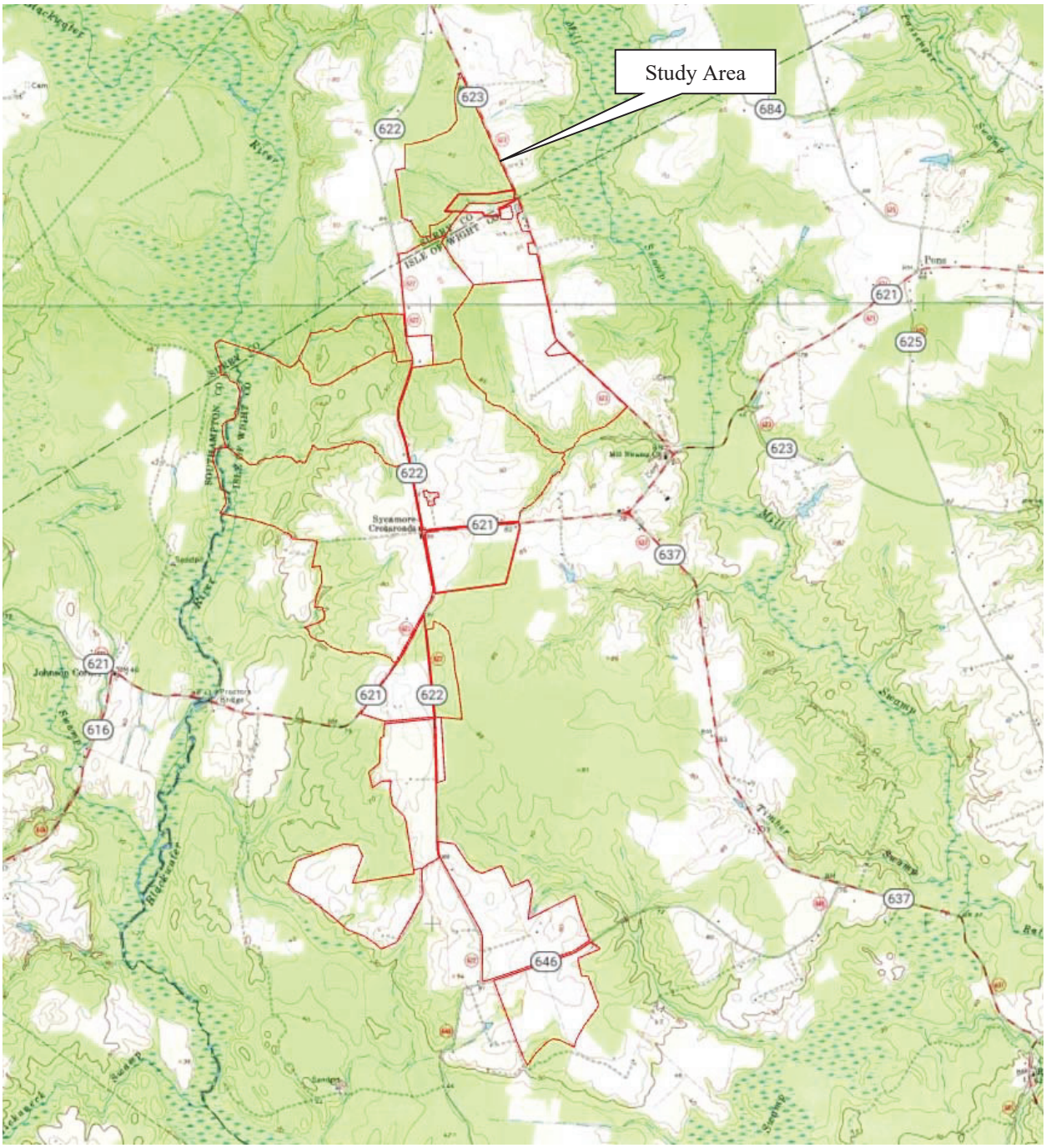

Figure 5-7: Detail of the 1968 and 1971 topographic maps, *Raynor* and *Runnymeade*, depicting the primary study area parcel cluster. Source: USGS

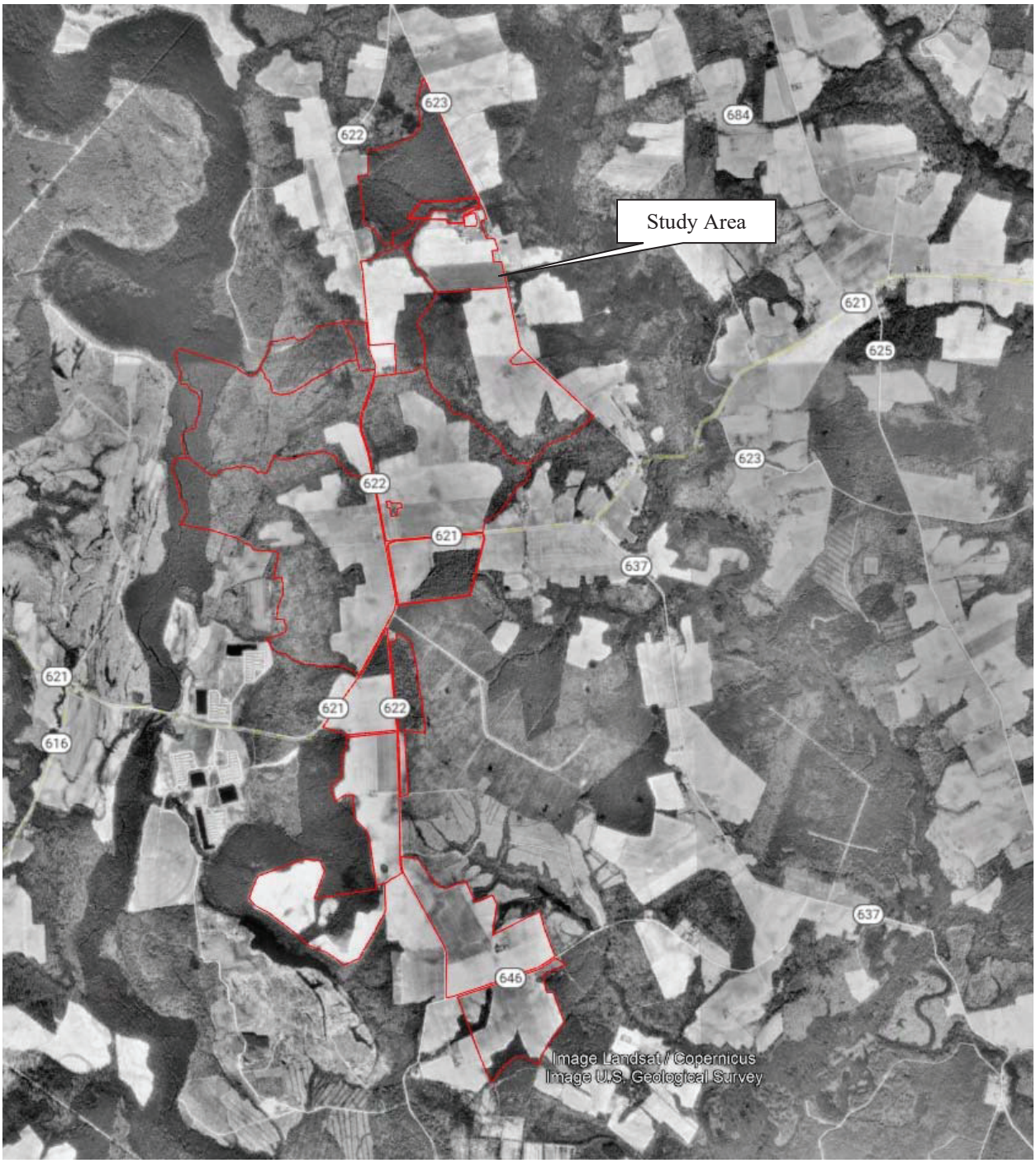

Figure 5-8: Detail of a 1990 aerial depicting the primary study area parcel cluster. Source: Google Earth



Figure 5-9: Detail of a 2003 aerial depicting the study area. Source: Google Earth

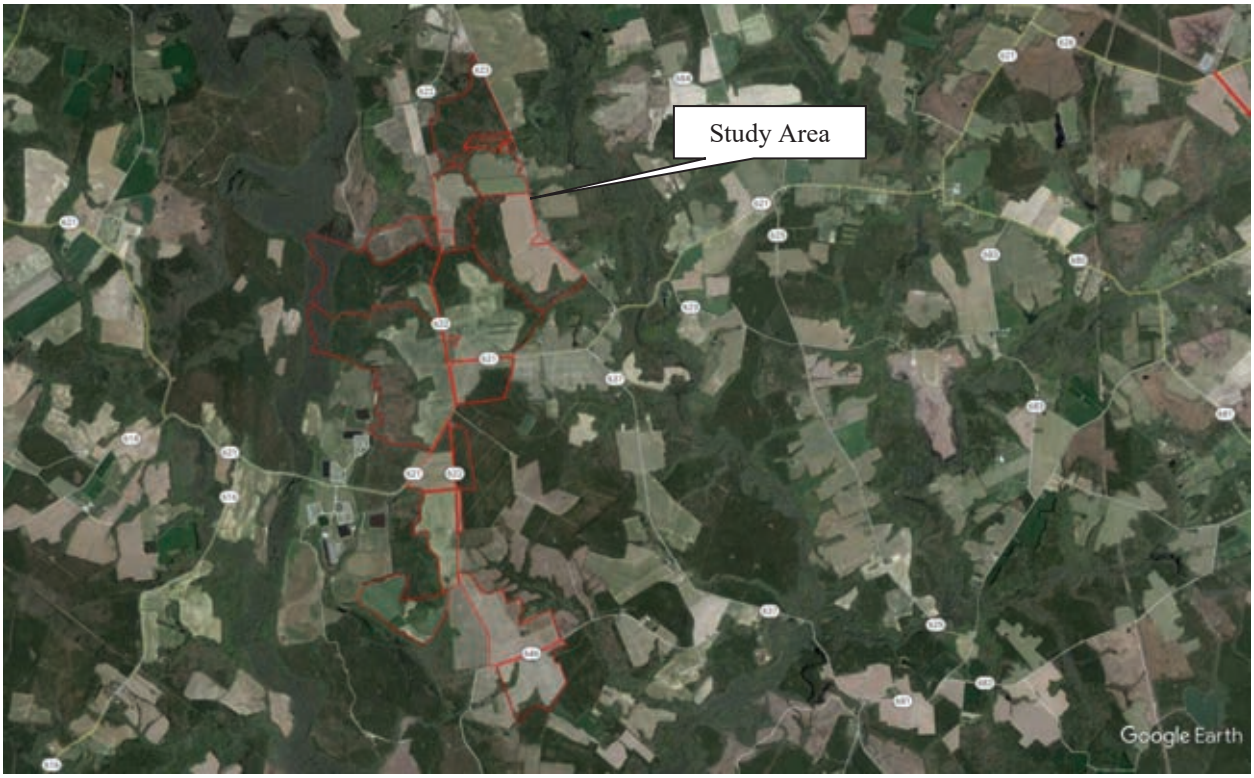

Figure 5-10: Detail of a 2017 aerial depicting the study area. Source: Google Earth

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6. ASSESSMENT RESULTS

On January 4th and 5th and June 28th and 29th, 2023, D+A performed field reconnaissance for the Phase IA cultural resources assessment of the Sycamore Cross Solar study area in Isle of Wight and Surry counties, Virginia. The field investigations involved a walkover reconnaissance of the study area tracts, as well as the excavation of nine (9) judgmental shovel test pits in order to determine soil stratigraphy within them. To organize the field investigations, the study area was divided into three sections, including the northern, central, and southern parcels (Figure 6-1). The results of the assessment are summarized below.



Figure 6-1: Sycamore Cross Study Area depicting Field Reconnaissance Areas.

NORTHERN PARCELS

The Northern Parcels area consists of six tracts of land at the northern edge of the overall study area. The parcels are generally located between Berrymans Corner Road to the west and Mill Swamp Road to the east, and north of an unnamed tributary to Mill Swamp (Figure 6-2).

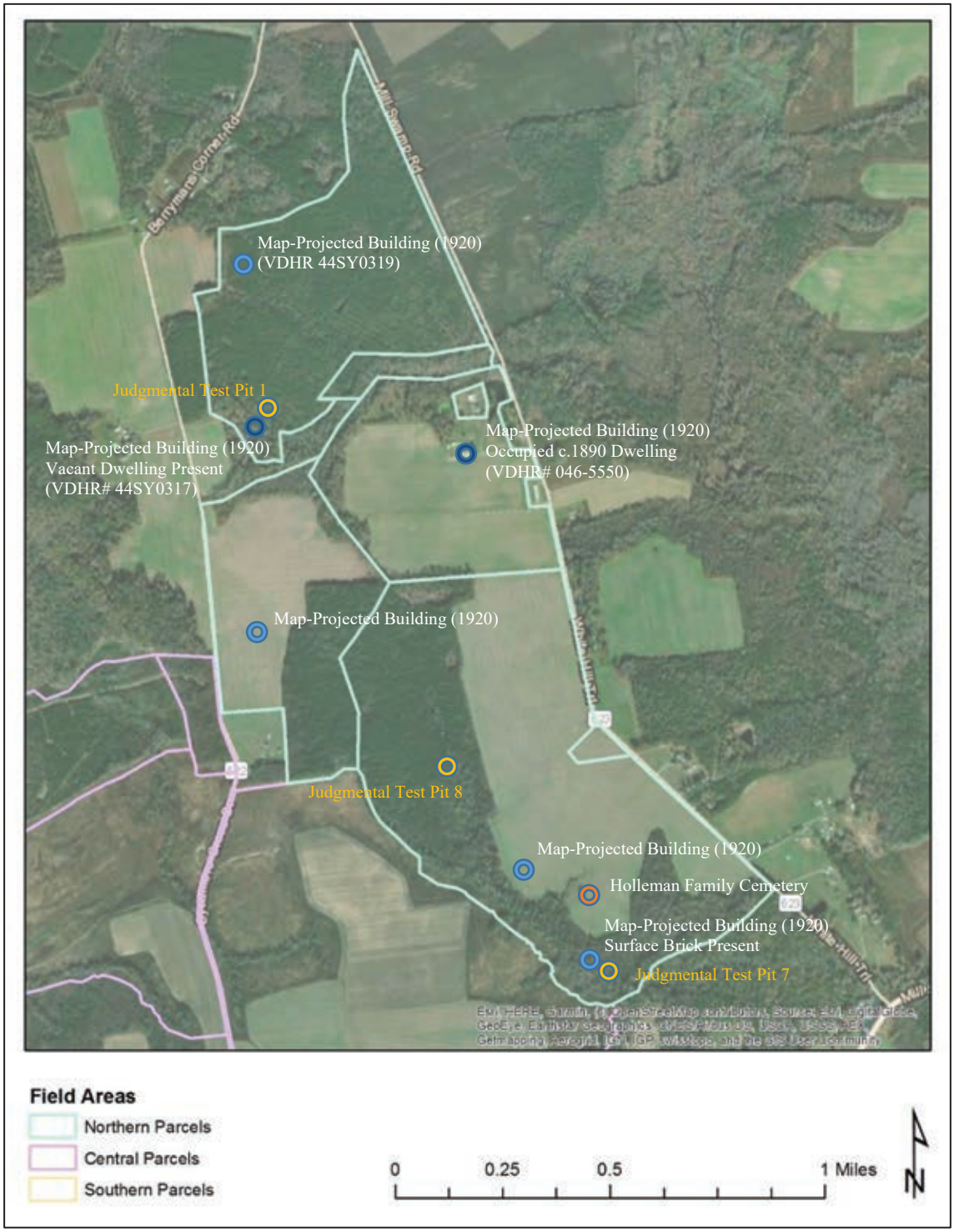


Figure 6-2: Northern parcels map.

At present time, the northernmost two parcels are completely wooded, while the lower parcels are a mix of open agricultural field, primarily occupying the portions of the area along the road while the central areas along the Mill Swamp tributary are wooded. Vegetation in the northern parcels consisted of mature planted pine with scrub understory (Figure 6-3) while the vegetation within the lower areas is a mix of native woodland along the drainage and mature planted pine (Figure 6-4 and Figure 6-5). The agricultural fields were fallow at the time of inspection in January and planted with corn as of June (Figure 6-6). The terrain of the area is generally flat, except along the drainages that cross through the lower edge of the northernmost parcel and centrally through the lower parcels, enroute towards Mill Swamp to the east.

One occupied dwelling and farm complex is located near the northern edge of this area just south of a drainage leading into Mill Swamp. This building appears to coincide with one labeled as "Turner" on Civil War-era maps and has been previously recorded as a circa 1890 dwelling (VDHR# 046-5550) (Figure 6-7). Two additional previously recorded dwellings from the early- to mid-twentieth century are located along the road to the front of this house (VDHR# 046-5551 and 046-5552), but both are excluded from the project study area.

One abandoned dwelling with an associated outbuilding was observed in the western edge of the northernmost parcel (Figure 6-8). This building is located within the limits of previously recorded site VDHR# 44SY0317, recorded as a Reconstruction and Growth (1866-1916) era site that has been determined not eligible. Civil War-era maps reveal what is now Sycamore Cross Road was present along the western edge of the area, but suggests the area remained wooded and undeveloped at that time. However, a 1920 topographic map reveals a building present by that time in generally the same location as the abandoned home. A driveway off Berrymans Corner Road (SR 622) leads to the home.

The 1920s topographic map also reveals several additional buildings scattered throughout the northern parcel area, none of which remain extant, although evidence of several remain. One in the northwestern corner of the area coincides with site 44SY0319 but no surface evidence was observed. This site has been recorded as a Reconstruction and Growth (1866-1916) era site that was determined not eligible for listing in the NRHP by the VDHR. A relic farm lane from Sycamore Cross Drive in the western most parcel leads to the location of one of the map-projected buildings although field inspection did not reveal surface evidence of the building. The 1920 map projects two additional buildings along the drainage in the southernmost parcel of this area of which a brick was observed on the surface in the vicinity of one (Figure 6-9) but no evidence was observed of the second. A family cemetery associated with the Holleman family was observed within a copse of trees set between the map-projected locations of these buildings (Figure 6-10).



Figure 6-3: Planted pine forest of northernmost Parcel, looking South from Judgmental 1



Figure 6-4: Field edge within southernmost Parcel, looking northeast from near Judgmental 7



Figure 6-5: Wooded area along drainage in southernmost parcel, looking northwest from Judgmental 8



Figure 6-6: Corn planted within southernmost parcel, looking southeast



Figure 6-7: Occupied dwelling along Mill Swamp Road generally coinciding with "Turner" on Civil War-era maps and previously recorded as circa 1890 VDHR# 046-5550.



Figure 6-8: Vacant dwelling in the northernmost parcel coinciding with Site 44SY0317.



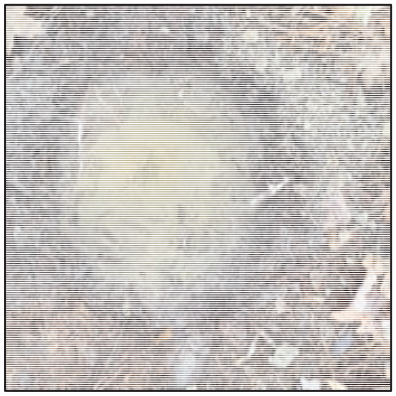
Figure 6-9: Brick on surface in the vicinity of a 1920 map projected building

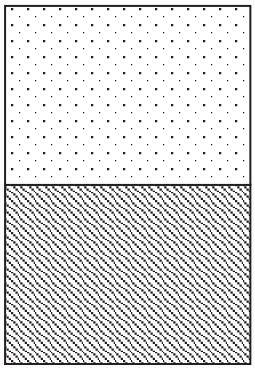


Figure 6-10: Headstone within family cemetery, looking east.

Three judgmental shovel tests were excavated throughout the northern parcel assessment area, including one in the northwestern portion of the area near a standing home in the vicinity of Site 44SY0317 (STP 1), one within a wooded area bordering the drainage that extends through the central portion of the area (STP 2), and one in the southern portion of the area in the vicinity of a 1920 map projected home where a brick was encountered on the surface (STP 3).

Judgmental STP 1 confirmed disturbed topsoil in what appears to be a previously logged area and was negative for cultural material. Soils consisted of a topsoil layer of 2.5Y 5/4 silty clay loam topsoil (A horizon) over top of 2.5Y 5/6 silty clay subsoil (B horizon) (Figure 6-11). The shovel test pit was highly disturbed, with little historic integrity remaining.





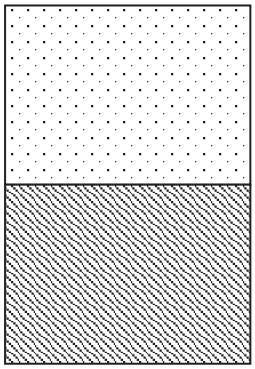
2.5Y 5/4 silty clay loam
0-33 cm

2.5Y 5/6 silty clay
33-40 cm

Figure 6-11: Soil profile of Judgmental 1.

Judgmental STP 8 confirmed disturbed topsoil in what appears to be a previously logged area and was negative for cultural material. Soils consisted of a topsoil layer of 2.5Y 5/6 sandy clay loam topsoil (A horizon) over top of 2.5Y 6/6 sandy clay subsoil (B horizon) (Figure 6-12).





2.5Y 5/6 sandy clay loam
0-41 cm

2.5Y 6/6 sandy clay
41-51 cm

Figure 6-12: Soil profile of Judgmental 8.

Judgmental STP 7 revealed natural soil stratigraphy within an area of native vegetation bordering a drainage and was negative for cultural material. Soils consisted of a topsoil layer of 10YR 7/4

sandy loam topsoil (A horizon) overlying 2.5Y 7/3 sandy clay loam, over top of 5Y 6/4 sandy clay subsoil (B horizon) (Figure 6-13).

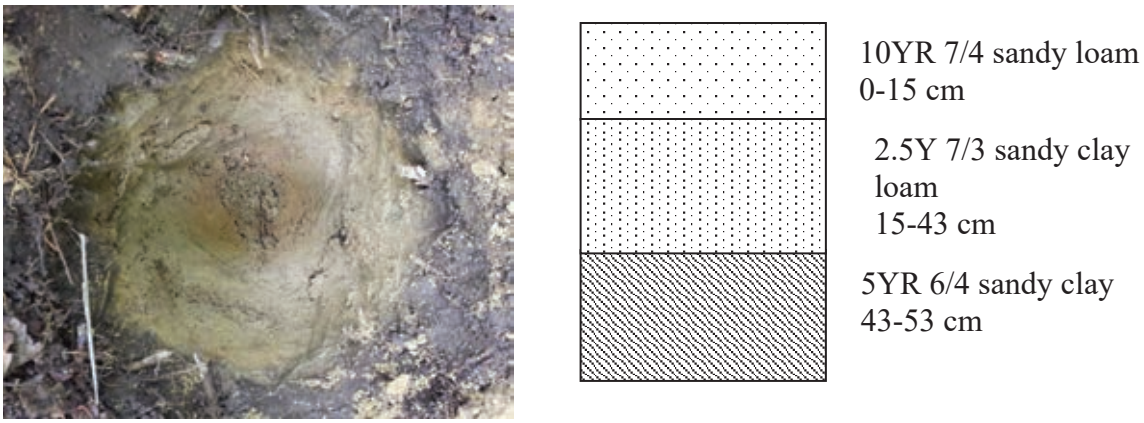


Figure 6-13: Soil profile of Judgmental 7.

CENTRAL PARCELS

The Central Parcels area consists of six tracts of land sited centrally within the overall study area. The area spans Sycamore Cross Drive/Proctors Bridge Road (State Rte 622) and borders Blackwater River to the west and an offshoot of Mill Swamp to the east (Figure 6-14).

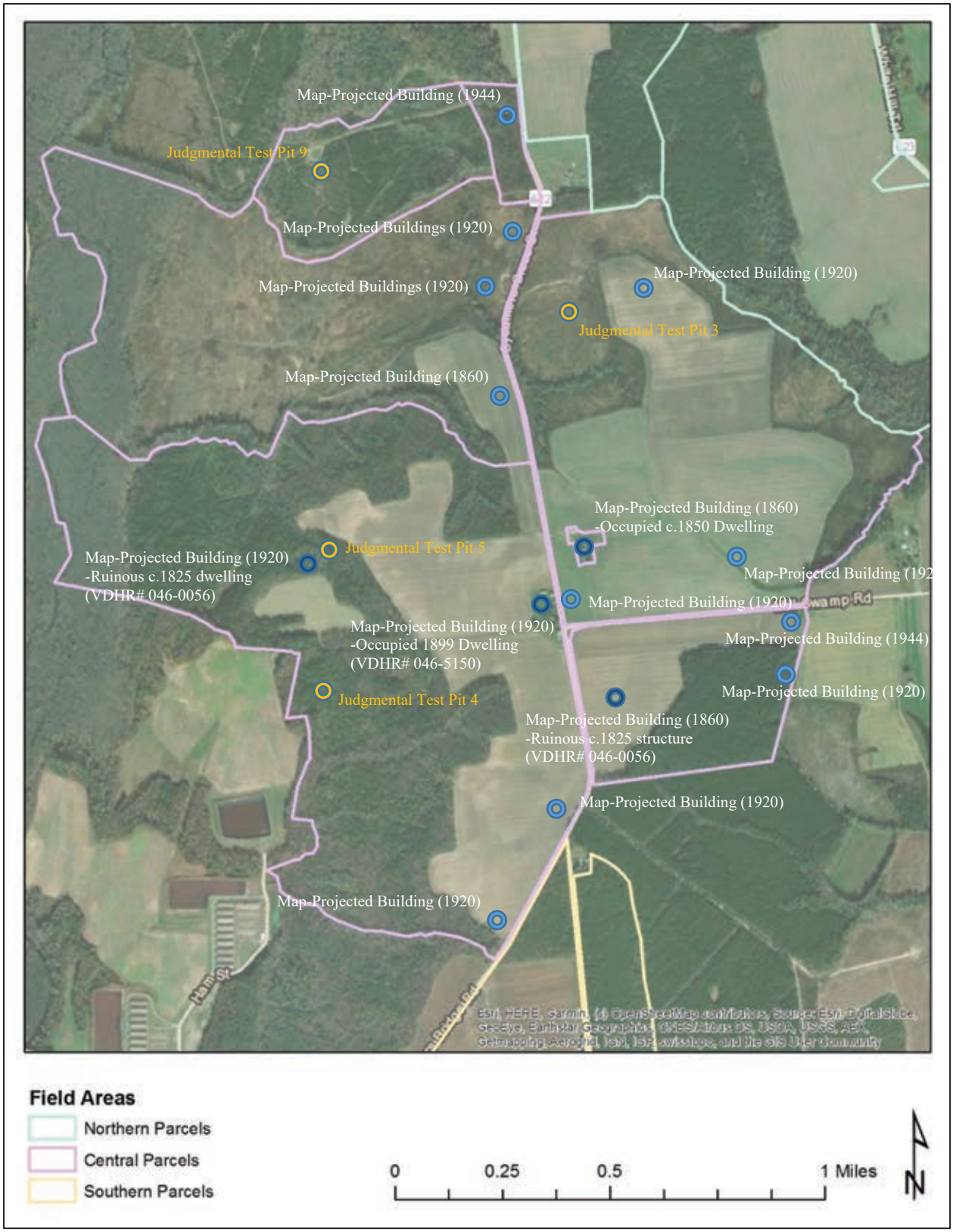


Figure 6-14: Central parcels map.

At present time, the area is a mix of open agricultural field and woodland, including both native forest and planted pine. The terrain in the crop fields of the central area parcels is generally flat while the forested and timbered areas to the rear of the parcels are slightly more rolling down to the bordering rivers and swampy areas. Most of the two parcels east of Sycamore Cross Drive are cleared as agricultural fields that are currently in crop. The northern field is bordered by a planted pine stand that has been logged within the last three years (Figure 6-15), although a narrow drainage extends through the front of the parcel along and crossing Sycamore Cross Road (Figure 6-16). The entrances to the timbered areas do not appear well maintained or easily accessible but there are farm roads in the crop fields that provide access to the properties. The southern field is bordered by a large patch of deciduous forest (Figure 6-17). Of the tracts on the west side of Sycamore Cross Road, the front portions (nearest the road) are cleared field while the rear portions nearer Blackwater River are wooded. The majority of the woodland in the southern tract is a mix of young-growth pine interspersed with native hardwood and swampy wetland vegetation along a network of drainages leading into the river (Figure 6-18). The large middle parcel was planted timber that was harvested within the last three years leaving just narrow lines of native vegetation along a drainage at the front of the tract and along Blackwater River to the rear. The northernmost two tracts on the west side of Sycamore Cross Road is a mix of native hardwood, young pine, and scrub brush (Figure 6-19 and Figure 6-20).

There were four standing buildings observed within the Central parcels area, one of which is located within a small parcel excluded from the study area footprint, while the other three are within the study area limits. Two of the extant buildings appear to coincide with structures depicted on Civil War-era maps and a third is also believed to be Antebellum but is not illustrated on maps from that period. At that time, two buildings were shown in proximity to the intersection of Sycamore Cross Road and Mill Swamp Drive including one on the northeast corner that was labeled as a "store" and an unlabeled building was mapped across the road to the south. The mapped location of the store coincides with the location of the standing building that is located within an exclusion parcel (Figure 6-21). This building functions as a dwelling, but may historically have operated as a tavern or "store". The building mapped on the south side of the intersection appears to coincide with a ruinous structure that remains within an agricultural field that is recorded as VDHR# 046-0057 (Figure 6-22 through Figure 6-24). A third building believed to be Antebellum was observed near the western edge of the assessment area, but does not appear to be depicted on Civil War-era maps. The structure has been previously recorded as the circa 1825 "Gray's House" (VDHR# 046-0056). The dwelling remains in ruinous condition, however, a variety of materials and evidence of other features, including brick fall, and subsurface pits were observed in the vicinity of the house (Figure 6-25 through Figure 6-30). Civil War-era maps do depict a building on the west side of Sycamore Cross Drive north of Gray's House and therefore may represent the same building with a mapping discrepancy. Field investigation did not reveal any surface evidence of a structure in the map-projected location of this building, however, there were artifacts such as whiteware, terracotta drainpipe, solarized glass, and brick fragments observed in the plowed field where the building was map-projected. In the trees to the west of the field, there was a push pile with a large stone and some modern detritus but no indications of extant structures or foundations (Figure 6-31).

The 1920 topographic map also reveals eight additional buildings present by that time, one of which coincides with the fourth standing buildings observed in the area. This building has been previously recorded as an 1899 dwelling (VDHR# 046-5150) (Figure 6-32). Field inspection did

not reveal surface evidence of any of the other map-projected buildings. None of the previously recorded buildings have been formally evaluated for NRHP-eligibility.



Figure 6-15: Recently timbered terrain and vegetation around Judgmental 3, looking East.



Figure 6-16: Drainage between Berrymans Corner Rd and timbered field, looking East.



Figure 6-17: Debris pile within wooded area along southeastern edge of area, looking southwest.



Figure 6-18: Planted pine and wetland vegetation, looking west from Judgmental 4.



Figure 6-19: Deciduous vegetation and scrub in northern tract on west side of Sycamore Cross Road, looking south.



Figure 6-20: Planted pine in northern tract on west side of Sycamore Cross Road, looking southeast.



Figure 6-21: Intersection of Sycamore Cross Drive and Mill Swamp Road showing Civil War-era "store" to the right (within exclusion parcel) and c.1899 farmhouse (VDHR# 046-5150) to the left, looking north.



Figure 6-22: Ruinous c.1825 structure (VDHR# 046-0057) located southeast of Sycamore Cross Road and Mill Swamp Drive, looking east.



Figure 6-23: View of ruinous c.1825 structure (VDHR# 046-0057), looking north.



Figure 6-24: Interior view of ruinous c.1825 structure (VDHR# 046-0057), looking southeast



Figure 6-25: Circa 1825 "Gray's Brick House" (VDHR# 046-0056) in western portion of assessment area, looking northeast.



Figure 6-26: Depression near Gray's Brick House, looking west.



Figure 6-27: Second depression near Gray's Brick House, looking north.



Figure 6-28: Brick pile near Gray's Brick House, looking southeast.



Figure 6-29: Gray's Brick House setting, looking north.



Figure 6-30: Swampy area at rear of western parcel, looking northeast.



Figure 6-31: Push-pile and stone in treeline near Civil War-era map-projected building site in western parcel, looking southwest.



Figure 6-32: View of c.1899 farmhouse (VDHR# 046-5150), looking west.

Four judgmental shovel test pits were excavated throughout this testing area including one near the standing c.1825 Grays Brick House (Judgmental STP 5), one within an area of native woodland (Judgmental STP 4), one within an area of young, mixed vegetation (Judgmental STP 9), and one

within a recently timbered area (Judgmental STP 3). Soils in these parcels vary drastically based on location. Soils near the Gray's House were undisturbed, primarily consisting of 10YR 4/3 sandy loam topsoil over top of 2.5Y 5/4 sandy clay subsoil (Figure 6-33). The shovel test pit in the native woodland area had similar stratigraphy; dry, although with wetland qualities, consisting of 10YR 3/2 Silty loam over 10YR 6/1 Sandy clay (Figure 6-34). The judgmental tests in the recently timbered areas were considerably deeper and disturbed. The soils in STP 3 consisted of a 2.5Y 5/6 Sandy clay loam (A horizon) over 10YR 5/6 Sandy clay (B horizon) (Figure 6-35).



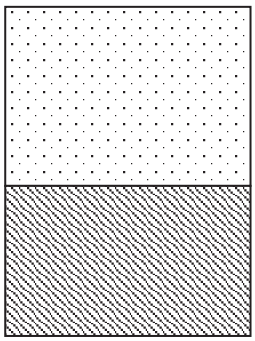


Figure 6-33: Soil Profile of Judgmental 5.



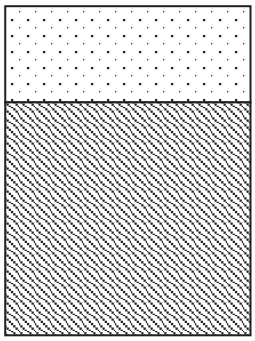
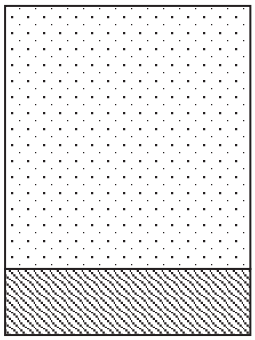


Figure 6-34: Soil Profile of Judgmental 4.





2.5Y 5/6 Sandy clay loam
0-68 cm

10YR 5/6 Sandy clay
68-80 cm

Figure 6-35: Soil Profile of Judgmental 3.

SOUTHERN PARCELS

The Southern Parcels area consists of seven tracts of land sited at the southern end of the overall study area. The area spans Ramsey Road (State Rte 622) with three parcels on the west side of the road and three on the east side, as well as one on the south side of Rattlesnake Trail. The parcels generally back up to small drainages that dissect the area (Figure 6-36).

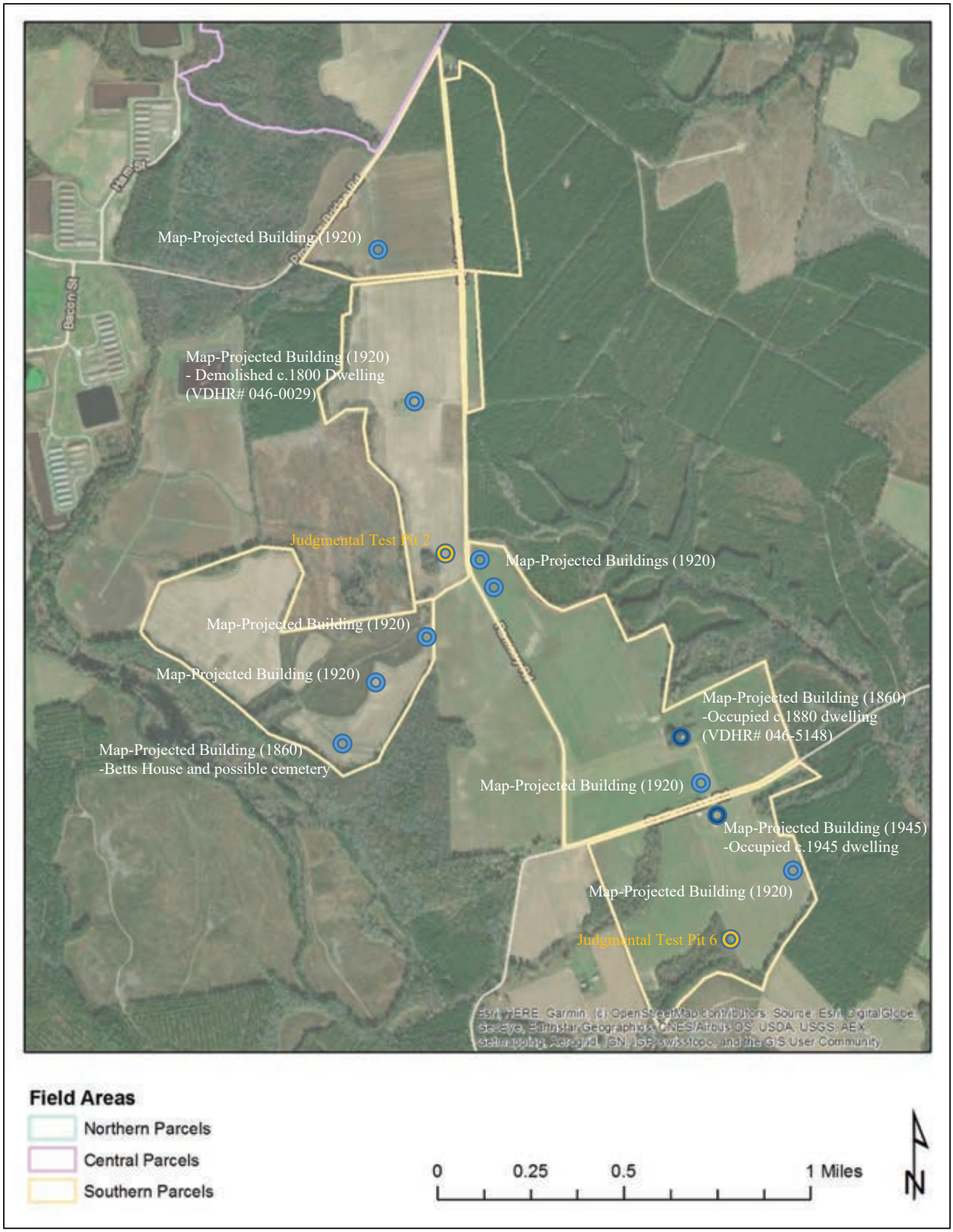


Figure 6-36: Southern parcels map.

At present time, this area is primarily open agricultural field with just small patches of planted and recently harvested timber, as well as smaller patches of vegetated native woodland. The timber harvested area is limited to the southwestern-most parcel abutting a drainage leading to Blackwater River that was harvested within the last three years. A network of logging roads leads through this parcel and beyond the timbered area to an agricultural field at the rear. Another large patch of planted pine is situated on the east side of Ramsay Road at the northeastern edge of this area. The native woodlands are limited to treelines bordering two low drainages that cross through the southeastern-most parcel and a larger patch of woodland in the northernmost parcel (Figure 6-37 and Figure 6-38). Vegetation in these areas consists of a mix of deciduous trees and some evergreens. The remaining portions of the southern parcel area are primarily agricultural fields that are currently in crop (Figure 6-39 through Figure 6-41). Terrain of this area is nearly flat, particularly within the crop field areas, while the edges and rear of the parcels slopes gently towards the short, low drainages that cross through the southernmost two parcels (Figure 6-42).

There were two standing building complexes observed within the Southern Parcels area, including a single-family home and associated outbuilding set near the road in the front of the southernmost parcel along Rattlesnake Road and a farm complex across the road to the north. The building on the north side of Rattlesnake Road appears to coincide with a Civil War-era map projected building, however, the home is previously recorded as a c.1880 dwelling (VDHR# 046-5148) (Figure 6-43 through Figure 6-45). The extant building on the south side of Rattlesnake Road coincides with a building depicted on a 1945 topographic map. The small frame building appears to date from the second-quarter of the twentieth century (Figure 6-46). Civil War-era maps reveal what is now Ramsey Road was present, as was Rattlesnake Trail, although this road was depicted at that time as secondary route. Another road crossing the area was also depicted and coincides with what is now a private farm lane along the lower edge of the southwestern-most parcel. In addition to the extant home on the north side of Rattlesnake Road that coincides with a Civil War map-projected building but is recorded as a c.1880 dwelling, another home labeled as "Betts" was depicted west of Ramsay Road. That building continues to be depicted on a 1920 topographic map of the area and was inventoried in the 1930s as part of a WPA project. That documentation noted the home as a frame structure and mentioned a family burial in the vicinity, however, no evidence of the structure or cemetery was observed at this time. The 1920 map depicts a number of additional buildings throughout the area as well, including two along the west side of Ramsay Road in the northwestern two parcels, two more set further back from Ramsay Road in the southwestern parcel, two set immediately along the east side of Ramsay Road, and two spanning Rattlesnake Road. Field investigation revealed evidence of one building projected on the west side of Ramsay Road on the 1920 topographic map, but none of the other map-projected buildings from the Civil War-era or 1920 topo map. The building site on the west side of Ramsay Road verified through field inspection was also previously recorded in 1973 as a c.1800 dwelling frame dwelling. At that time, it was noted as remaining in ruinous condition and was updated to demolished by 2005 (VDHR# 046-0029). Field inspection at this time confirmed the building is no longer extant, but the site is still evident as a grassy patch with relic hardwood vegetation at the end of a dirt lane within the center of an otherwise plowed and cultivated agricultural field. Located south of this homesite within the same parcel is a small patch of trees that is not depicted on maps until a 1960s aerial that reveals it as a ring of trees. Inspection at this time revealed a ring of hardwood trees with scrub brush and greenbriers throughout the interior (Figure 6-47). Several fence posts remain around the ring, and the soils were soft and uneven. A surface scatter of cultural materials included iron scrap and a twentieth century bottle dump (Figure 6-48 and Figure 6-49).



Figure 6-37: Wooded area in northern parcel, looking east.



Figure 6-38: View of treeline in vicinity of Judgmental 6, looking north.



Figure 6-39: Landscape within southeastern parcel, looking north.



Figure 6-40: View towards map-project building site (VDHR# 046-0029) within northwestern parcel, looking north.



Figure 6-41: Crops within fields bordering Ramsay Road, looking north.



Figure 6-42: Terrain at edge of field in southernmost parcel, looking south.



Figure 6-43: Extant building on the north side of Rattlesnake Road coinciding with a Civil War map project and previously recorded as a c.1880 dwelling (VDHR# 046-5148), looking northeast.



Figure 6-44: Barn in the vicinity of the previously recorded c.1880 dwelling (VDHR# 046-5148), looking north.



Figure 6-45: Shed in the vicinity of the previously recorded c.1880 dwelling (VDHR# 046-5148), looking northeast.



Figure 6-46: Extant twentieth century dwelling along south side of Rattlesnake Road, looking southwest.



Figure 6-47: Tree ring in northwestern parcel, looking north.



Figure 6-48: Vegetation within tree ring, looking north.



Figure 6-49: Iron scrap within tree ring, looking west.

Two judgmental shovel test pits were excavated in the southern parcels area, including one within an agricultural field in the northwestern parcel in the vicinity of the tree ring, and the other within the southwestern parcel near the edge of a field just inside the deciduous treeline. The shovel test within the field revealed a 28-cm deep 2.5Y 4/4 plow zone over a 2.5Y 5/6 A Horizon that extended to 44 cm deep resting on a 10YR 5/6 sandy clay subsoil (Figure 6-50). The shovel test within the treeline revealed a more natural soil profile consisting of a 2.5Y 4/2 sandy loam layer over 2.5YR 5/6 sandy clay loam (Figure 6-51).

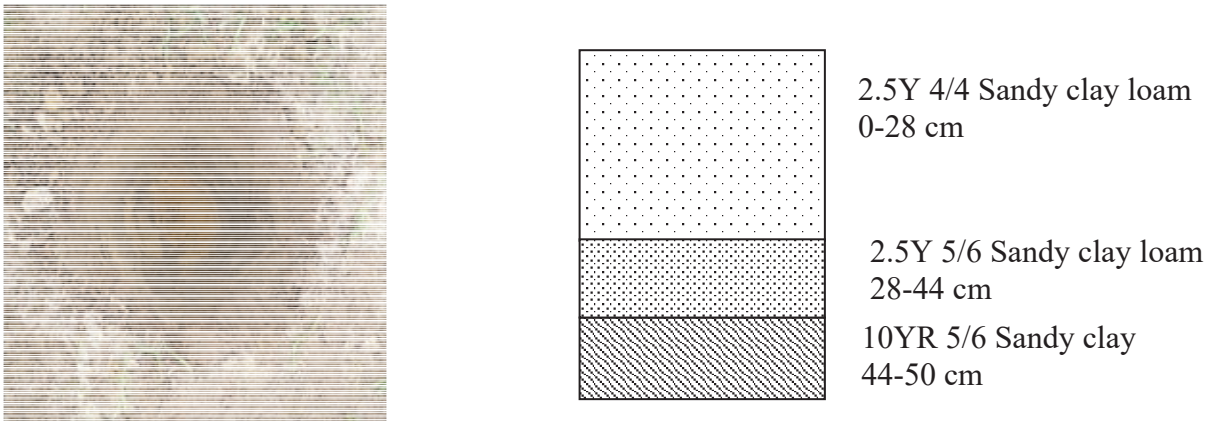
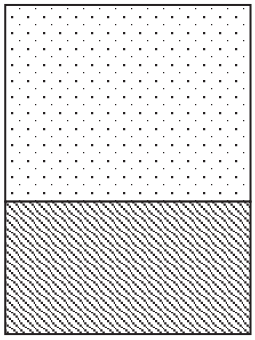


Figure 6-50: Soil Profile of Judgmental 2.





2.5Y 4/2 Sandy loam
0-24 cm

2.5Y 5/6 Sandy clay loam
24-37 cm

Figure 6-51: Soil Profile of Judgmental 6.

7. CONCLUSIONS AND RECOMMENDATIONS

In August 2023 Dutton +Associates, LLC (D+A) completed a Phase IA cultural resource assessment of the ±817.46-Hectare (2,020-Acre) Sycamore Cross Solar study area in Isle of Wight and Surry counties, Virginia. The assessment was conducted for planning purposes in order to confirm existing conditions of the study area, note surface evidence of cultural activity, and identify recommended survey methods based upon the results of the background research and field reconnaissance. The study area is located near the border of Isle of Wight and Surry counties generally along Sycamore Cross Road, Ramsey Road, Mill Swamp Road, Rattlesnake Trail, and White Hill Trail. The study area consists of multiple parcels and tracts of land that may not correspond precisely with the boundaries chosen for the final development of the project. Rather, the study area represents the maximum extent of the parcels being considered for development.

Analysis of historic maps and aerial photographs from the mid-nineteenth to early-twentieth century reveal a well-established network of roads and a number of dwellings scattered across the study area during that period. Previous cultural resource survey has recorded a number of buildings from that period, although many have since been demolished and the study area is now sparsely developed. Just seven (7) building/building complexes remain extant within the study area, although they range from good condition and occupied to ruinous and abandoned. Several additional homes and building complexes are within or bordering the overall study area limits but are in carve-out parcels excluded from development. Buildings/complexes within the study area include two ruinous early-nineteenth century dwellings, three late-nineteenth century dwellings, a vacant early-twentieth century dwelling, and a mid-twentieth century dwelling. Field inspection revealed evidence of two additional map projected buildings that remain only as sites.

The study area is bordered by Blackwater River and Mill Swamp and crossed by numerous swamps, drainages, and pocosins. These natural resources would have been attractive to prehistoric hunters and gatherers, but the terrain within the study was not likely to have supported large, permanent settlements. The primary prehistoric resources that are likely to be present are small, temporary procurement camps located above the wetlands, however, no such sites have been previously recorded within the study area limits.

Although the study area contains a number of site-predictive factors, such as the natural resources, a historic road network, and mapped buildings, land use throughout the twentieth and twenty-first centuries has negatively impacted the stratigraphic integrity of the soils. Much of the study area has been used to produce timber for an extended period of time and multiple harvests resulting in multiple episodes of clearcutting, planting, and regrowth. Most of the regrowth has been in the form of trees planted in steeply-banked rows interspersed with deep furrows, and in most cases the topsoil and eluviated layers have been destroyed or displaced. Areas not put to use for timber have been used agriculturally and therefore subject to regular plow and tilling.

Based on the above observations, the locations of the map-projected buildings that were field verified as well as previously recorded architectural resources should be considered high potential for historic sites. Together, these account for an area covering about **34 hectares (85 acres)** total. The map-projected locations of buildings that were not visible through surface reconnaissance but reveal evidence of prior disturbance from logging should be considered moderate potential for

historic sites. Landforms bordering Blackwater River should likewise be considered moderate potential for prehistoric sites, in addition to open, well-drained fields that have not be previously disturbed by logging. Together, the moderate potential area covers an area of about **365 hectares (901 acres)** total. A 25% sample of the moderate potential areas should be subjected to targeted subsurface testing. This sample should include the least disturbed landforms that correspond to or share similar characteristics as the locations of buildings depicted on historic maps. The remainder of the study area that does not lie in wetland should be considered low potential for archaeological resources. A sample constituting 10% of the low-potential area should be subjected to subsurface testing. This 10% should include the least-disturbed terraces overlooking wetlands and intersections of streams to test for prehistoric resources; along the edges of roads and field depicted on Civil War-era maps to test for early historic sites; and any other areas that appear to be less disturbed in the field. The total low probability area is about **170 hectares (421 acres).** A large tract of land at the northern end of the study area has been subject to recent, approved phase I survey and that area will not require further investigation as part of this effort (Table 7-1 and Figure 7-1 and Figure 7-2).

Table 7-1: Summary of archaeological potential within the study area.

Potential	Reason	STP Sample	Total Area	STP Area
High	Yard space around extant and map-projected architectural resources	100%	34 hectares 85 acres	34 hectares 85 acres
Moderate	Yard space around map-projected architectural resources in areas of documented disturbance. Finger ridges and terraces overlooking Blackwater River and confluences.	25%, chosen based on field conditions, pedestrian survey of remainder	365 hectares 901 acres	91 hectares 225 acres
Low	Areas with no site predictors	10%, chosen based on field conditions, pedestrian survey of remainder	170 hectares 421 acres	17 hectares 42 acres
No Subsurface Testing	Wetlands, water-saturated soils, slopes greater than 15%, previously surveyed areas	Pedestrian survey where possible	248 hectares 613 acres	Pedestrian survey where possible
Total			**817.46 hectares 2,020 acres**	**142 hectares 352 acres**

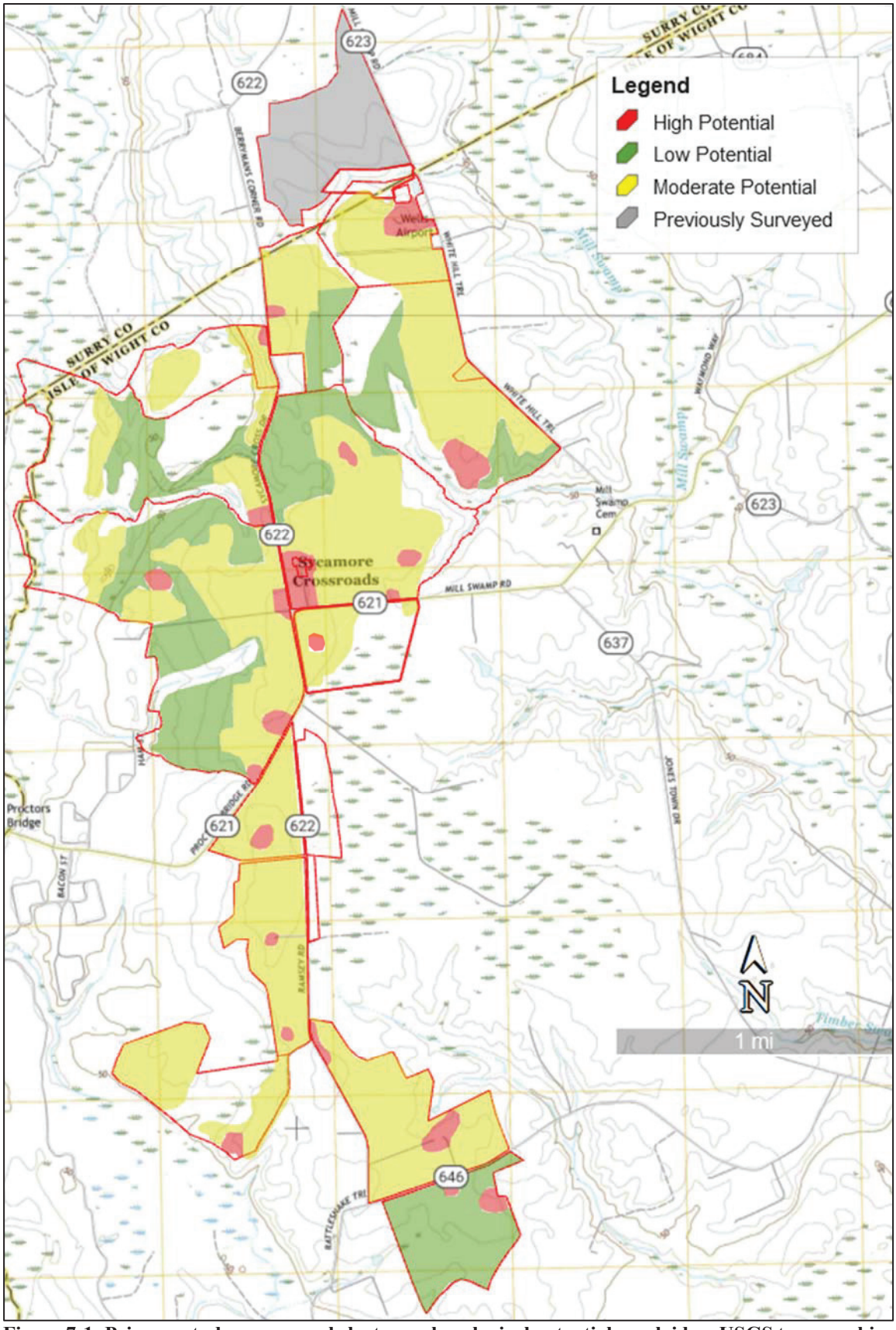


Figure 7-1: Primary study area parcel cluster archaeological potential overlaid on USGS topographic map.

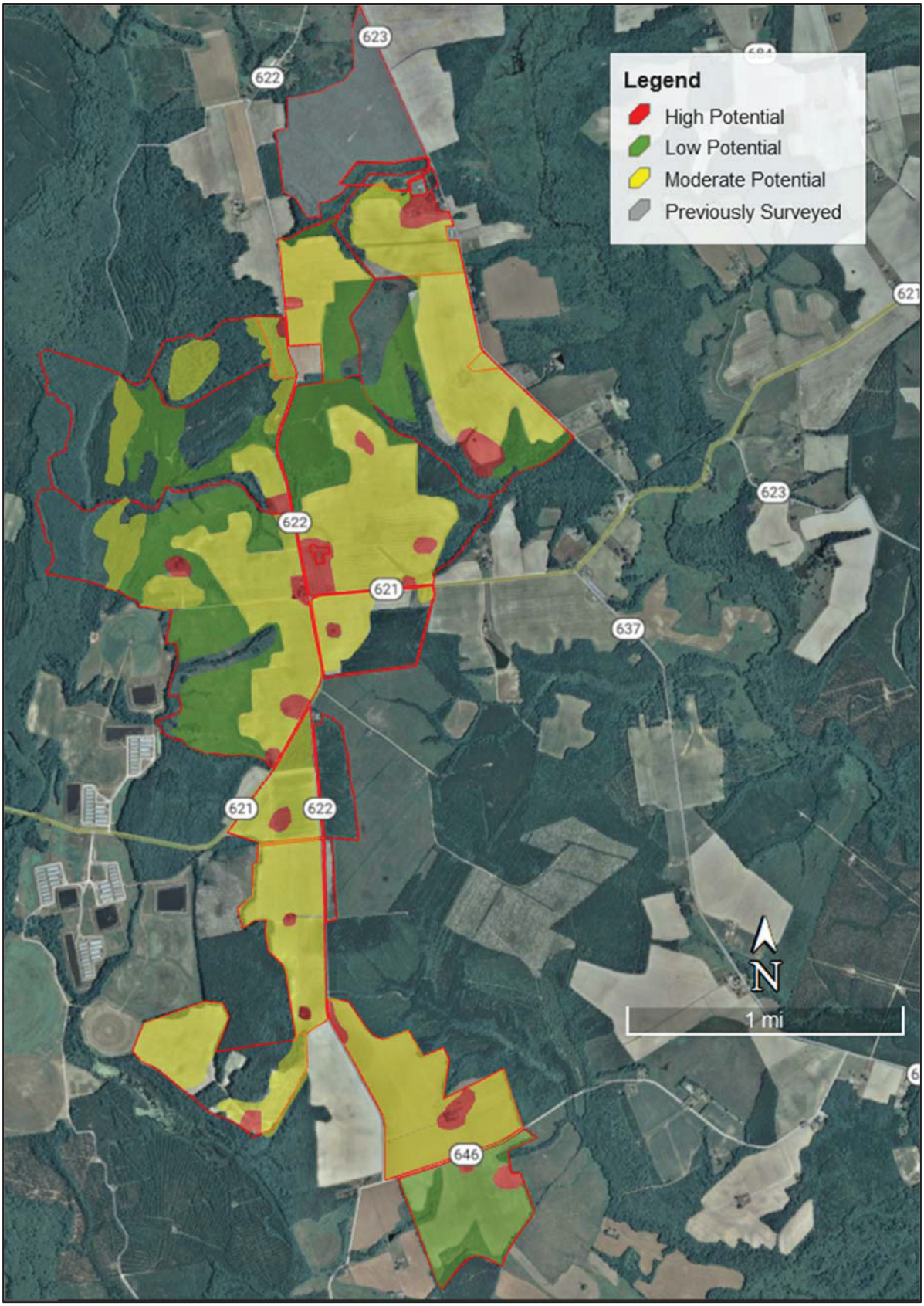


Figure 7-2: Primary study area parcel cluster archaeological potential overlaid on aerial photography.

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1944 *Raynor, VA Quadrangle*. 7.5 Minute Series Topographical Map, Scale 1:24000.

1968 *Raynor, VA Quadrangle*. 7.5 Minute Series Topographical Map, Scale 1:24000.

1954 *Runnymeade, VA Quadrangle*. 7.5 Minute Series Topographical Map, Scale 1:24000.

1971 *Runnymeade, VA Quadrangle*. 7.5 Minute Series Topographical Map, Scale 1:24000.

1919 *Surry, VA Quadrangle*. Topographical Map, Scale 1:62500.

APPENDIX A: RESUMES

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DAVID H. DUTTON
Managing Partner

Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT



Education

Master of Arts, 1990
Archaeological Studies
Boston University
Boston, Massachusetts

Bachelor of Science, 1986
Anthropology and Sociology
Virginia Commonwealth University
Richmond, Virginia

Appointments

Historic Advisory Committee, Woodrow Wilson Bridge Design Competition, 1998

Dept. of the Army Counterpart Regulations Task Force, NCSHPO, 1999

Virginia Department of Historic Resources Archaeology Advisory Group, 2000

Historic Preservation Committee Chesterfield County, Virginia 2011

Dominion Historic, Scenic, and Cultural Advisory Group, 2017

Mr. Dutton has over 25 years of professional historic preservation experience throughout the East Coast, with a focus on Section 106 coordination and review. He directed the Virginia Department of Historic Resources Division of Project Review where he managed all federal and state environmental reviews, rehabilitation tax credit project certification, historic preservation easements, covenants, and archaeological permits. Prior to his work at the state, Mr. Dutton served as a project review archaeologist for the President's Advisory Council on Historic Preservation. His geographic responsibility was the southeastern United States.

Mr. Dutton has managed the successful completion of multiple cultural resource projects for public and private clients including identification, evaluation, and data recovery efforts for archaeological and architectural properties, HABS documentation, Battlefield Cultural Heritage Plans, Interpretive Concept Plans, and Integrated Cultural Resource Management Plans (ICRMP). In addition, he has negotiated successful agreements under Section 106 for a wide variety of projects. Specific examples include a memorandum of agreement for the Dominion Surry-Skiffes-Whealton transmission line project and a programmatic agreement for the closure of Fort Monroe, a National Historic Landmark District.

Mr. Dutton brings clients both experience and expertise ensuring cultural resource requirements are successfully and efficiently integrated into project planning and construction.

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Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

DAVID H. DUTTON
Managing Partner

Professional Experience

Dutton + Associates, LLC, Managing Partner, Richmond, Virginia, 2005 – Present. Directs the firm's technical services which include review of projects pursuant to federal and state historic preservation regulations, cultural resource plan development, field investigations, laboratory processing and analyses, and report preparation.

American Civil War Center *at Historic Tredegar*, Chief Operating Officer, Richmond, Virginia, 2002 – 2006. Managed the Tredegar Iron Works site, the financial performance of the Foundation and construction of the Foundation's new exhibition facility and exhibit *In the Cause of Liberty*.

Cultural Resources Inc., President and Principal Investigator, Williamsburg, Virginia, 1999 – 2002. Managed the firm's financial and technical performance. Directed and authored several cultural resource management studies including identification, evaluation, and data recovery efforts.

Virginia Department of Historic Resources, Director, Division of Project Review; Richmond, Virginia, 1994-1999. Managed all federal and state review and compliance programs; generated policies, specifications, and standards; directed the state historic preservation easement program; interfaced with federal and state executives, elected officials, developers, architects, and engineers on project development and implementation; managed the review and certification of plans for federal and state rehabilitation tax credits; and commented on proposed federal and state legislation and regulations as well as on national and regional historic preservation issues.

Virginia Department of Historic Resources, Archaeologist Planner; Richmond, Virginia, 1992-1994. Planned, coordinated, and supervised the statewide program in archaeological preservation planning; developed and implemented historic preservation plans; and managed, monitored, and evaluated grantee performance for departmental grants awarded in preservation planning.

Advisory Council on Historic Preservation, Historic Preservation Specialist, Staff Archaeologist; Washington, D.C. 1989 – 1992. Reviewed federal projects under Section 106 of the National Historic Preservation Act for the southeast United States; consulted with Congressional offices, federal and state agencies, local governments, and members of the general public; developed and reviewed historic property management plans; and assisted in development of federal policy for the identification and treatment of historic property.

Example Projects and Publications

2007 Project Management of cultural resource team for King William Reservoir Archaeological Services Contract.

2008 Programmatic Agreement for the Closure of Fort Monroe and the Management of Historic Properties.

2017 Regulatory assistance for the Surry-Skiffes-Whealton Transmission Line Project, Surry and James City Counties and the City of Newport News.

2017 Regulatory assistance for the Atlantic Coast Pipeline project, North Carolina, Virginia, West Virginia, and Penssylvania.

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Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

J. HOPE SMITH
PRINCIPAL INVESTIGATOR



Education

PhD, 2017
Anthropology
University of Tennessee
Knoxville, Tennessee

Bachelor of Arts, 2005
Historic Preservation
University of Mary Washington
Fredericksburg, Virginia

Memberships

Register of Professional Archaeologists

Society for Historical Archaeology

Hope Smith holds a PhD in Anthropology, concentrating in Historical Archaeology, from the University of Tennessee and a B.A. in Historic Preservation from the University of Mary Washington. Her area of focus is eighteenth and nineteenth-century Virginia, and her research interests include material culture studies, artifacts of personal adornment, and the intersection of race and gender in plantation archaeology. She has over 12 years of experience in archaeology and has participated in both historic and prehistoric projects at all levels of investigation.

Her experience in Cultural Resource Management includes supervising fieldwork, analyzing field and artifact data, and authoring reports.

Prior to working at Dutton + Associates, she was employed as a Teaching Associate at the University of Tennessee, where she taught archaeology field schools and courses in archaeology, including a course on Cultural Resource Management law and practice.

As a project archaeologist for Dutton + Associates, Dr. Smith collaborates on all aspects of archaeological work, including supervising field work, and authoring project reports.

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Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

J. HOPE SMITH
PRINCIPAL INVESTIGATOR

Professional Experience

Dutton+Associates, LLC, Project Archaeologist
Richmond, Virginia, 2017
Conducts archaeological investigations (Phase I, II, III and monitoring), prepares research designs, manages and directs archaeological field crew, analyzes artifacts, writes reports.

University of Tennessee, Knoxville, Graduate Teaching Associate
Knoxville, Tennessee, 2011-2017
Supervised fieldwork during two archaeological field schools; taught undergraduate-level archaeology courses.

James Madison's Montpelier Crew Chief
Montpelier Station, Virginia 2008-2011
Performed fieldwork and supervised students and interns in excavation and survey projects; drew maps and coauthored site reports.

The Louis Berger Group Field Technician, Richmond, Virginia, 2005-2007.
Performed fieldwork at all levels of excavation on a wide variety of projects.

The Ottery Group Field Technician, Silver Springs, Maryland, 2005.
Performed fieldwork on a complex multi-component historic Phase III in Gloucester, Virginia.

Example Projects and Publications

Phase I Surveys
Mecklenburg Timber and Prison sites, Mecklenburg Co
Dranesville Rd. Development, Fairfax Co
Pavilion Development, Prince William Co
Dry Mill, Loudoun Co
Remington to Gordonsville Transmission Line
Montebello Farm, Loudoun Co.
Arbordale, York Co.
Spotsylvania Town Center, City of Fredericksburg
Palmer's Creek, Spotsylvania Co.

Phase II Evaluations
44LD1244, Loudoun Co
44WM0312, Westmoreland Co

Museum Technical Reports
Object Report and Museum Purchasing Recommendations, The Montpelier Foundation, Orange Co
Report of Archaeological Testing at Mount Pleasant, The Montpelier Foundation, Orange Co
Archaeological Dataset and Context, Digital Archaeological Archive of Comparative Slavery

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DARA FRIEDBERG
Architectural Historian

Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT



Education

Master of Science, 2004
Historic Preservation
University of Pennsylvania
Philadelphia, Pennsylvania

Bachelor of Arts, 1999
Historic Preservation
Mary Washington College
Fredericksburg, Virginia

Ms. Friedberg holds a M.S. in Historic Preservation, concentrating in Architectural Conservation, from University of Pennsylvania and a B.A. in Historic Preservation from Mary Washington College. She has worked in historic preservation and conservation since 1999 and has taken part in projects in Virginia, Maryland, Pennsylvania, Washington, D.C., South Carolina, Georgia, Connecticut, New York, Illinois, Ohio, and Tennessee.

Her experience in Cultural Resource Management includes conducting field surveys, researching and documenting historic resources, preparing National Register of Historic Places nominations, performing archival research, assisting in Federal Tax Credit projects, and completing material analyses of historic mortar and paint.

Prior to working at Dutton + Associates, she was employed as a conservator. This allowed her to conduct multiple conditions assessments of architecture, monuments, and sculptures as well as provide treatment recommendations and project specifications. She has also physically worked on the conservation of stone, metal, and decorative painting. At the completion of each project she provided thorough documentation of each process undertaken.

As an Architectural Historian for Dutton + Associates, Ms. Friedberg collaborates on all aspects of historic and architectural projects including performing field work, conducting project research, and authoring project reports.

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Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

DARA FRIEDBERG
Architectural Historian

Professional Experience

Dutton + Associates, LLC, Architectural Historian, Midlothian, Virginia, 2013-Present
Conducts historic resources surveys, performs background research, develops historic contexts, writes National Register nominations, and authors and formats project reports

Kreilick Conservation, LLC, Conservator, Oreland, Pennsylvania, 2006-2012
Completed conditions assessments and treatment recommendations for stone and metal projects, conserved stone and metal architectural elements, monuments, and sculptures, and authored conservation reports.

Powers & Company, Inc., Preservation Associates, Philadelphia, Pennsylvania, 2002-2006
Conducted historic resources surveys, performed background research, assisted with Federal Historic Preservation Tax Credit projects, completed mortar and historic paint analyses, completed conditions assessments and recommendations for buildings, produced reports for large scale restoration projects, and created project specifications.

Albert Michaels Conservation, Inc., Conservation Technician, Harrisburg, Pennsylvania, 2001-2002
Conserved decorative paintings and refinished ornate wood, and authored conservation reports.

KCI Technologies, Inc., Cultural Resource Specialist, Hunt Valley, Maryland, 2000-2001
Conducted historic resources surveys, performed background research, and authored project reports.

Restoration Concepts, Restoration Intern, Burlington, Vermont, 1999
Assisted in the restoration of a building.

Example Projects

National Register of Historic Places Nominations
- Tower Building, Richmond
- Lee Medical Building, Richmond
- Fuqua Farm, Chesterfield

Preliminary Information Forms
- North Thompson Street Historic District, Richmond
- Virginia Avenue Elementary School, Petersburg

Interpretive Signs
- Skiffes Creek Interpretive Signs, multiple counties
- Spring Hill Plantation Interpretive Signs, Chesterfield Co.

Viewshed Analyses
- Viewshed Assessment for Fort Evans, Loudoun Co.
- Viewshed Analysis for Ellerslie, Surry Co.

Military Analyses and Landscape Studies
- Phase IA Assessment and Military Terrain Analysis of the Plantation Woods Property, Spotsylvania Co.
- Phase I, Viewshed Assessment, and Military Terrain Analysis for the Potato Run Mitigation Bank, Culpeper Co.
- Assessment of Two Core Areas of the Battle of Buckland Mills, Prince William Co.

Cultural Resource Survey and Compliance Reports
- Cultural Context and Thematic Study for the Proposed Revitalize RVA Project, Richmond
- Assessment of Fulton Gas Works, Richmond
- Documentary Study of the Cromley Row Project Area, Alexandria
- Study of Washington Boundary Ditches, Fairfax Co.
- Intensive Level Survey for Warehouse No. 3 of the Richmond Intermediate Terminal, Richmond
- Economic Context of Middlesex County and the Palmer House, Middlesex Co.
- Phase I Survey for the Remington-Gordonsville Transmission Line Rebuild Project, multiple counties
- Phase II Archaeological Evaluation of Site 44LD1244, Loudoun Co.

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Attachment Q

Department of Historic Resources Concurrence Letter on Survey Methodology

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COMMONWEALTH of VIRGINIA

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Travis A. Voyles
Secretary of Natural and Historic Resources

Julie V. Langan
Director
Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

August 28, 2023

Julia Wellman
Dept. of Environmental Quality
Office of Environmental Impact Review
P.O. Box 1105
Richmond, VA 23218

RE- Application of Sycamore Cross Solar, LLC, PUR-2023-00126
Isle of Wight and Surry Counties, VA
DEQ #23-108S
DHR File No. 2023-4691

Dear Ms. Wellman

We have received your request for comments on the project referenced above. Our comments are provided as assistance to the Department of Environmental Quality (DEQ) and the State Corporation Commission (SCC) in the review of this application. In general, the SCC application does not reflect the full record of consultation on this project, nor does it sufficiently identify potential impacts to historic properties that may be eligible for listing in the Virginia Landmarks Register (VLR)/National Register of Historic Places (NRHP).

On August 2, 2023, DHR received the OEIR review request. The application includes a Phase IA desktop analysis and proposed survey strategy for the Sycamore Cross Solar project area. Typically, DHR does not consider desktop analyses to be sufficient for identifying historic properties that may be eligible for the listing in the VLR/NRHP. Furthermore, the proposed survey strategy included in the application for the Sycamore Cross Solar project is, in our opinion, inadequate for identifying archaeological resources within the project area.

In a letter dated August 14, 2023, DHR provided comments to the applicant's consultants, Dutton and Associates (D+A) regarding the proposed survey strategy in the Phase IA desktop analysis report. DHR recommended revising the probability map to more accurately reflect previous disturbance and site probability. On August 24, 2023, DHR received a revised Phase IA report from D+A. The newly revised survey strategy is generally sufficient for identifying archaeological resources within the project area; however, this revised Phase IA is not included in the SCC application. The application should be amended to include the revised Phase IA report.

As stated earlier, desktop analyses are typically not considered sufficient for identifying historic resources that are eligible for listing in the VLR/NRHP and assessing the full impacts of a project on historic resources. Without a sufficient identification of historic properties, it is difficult for DHR to provide meaningful comments about potential adverse impacts. The desktop analysis does state that there are areas with moderate to high potential

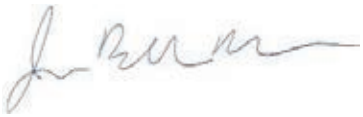
for archaeological resources. These areas should be adequately surveyed, and any identified sites should be evaluated for eligibility for listing in the VLR/NRHP and assessed for impacts. The desktop analysis also listed previously identified architectural resources within the study area that have not been evaluated for the VLR/NRHP. Moderate to severe impacts to VLR/NRHP-eligible/listed resources should be avoided, minimized or mitigated in consultation with DHR and other stakeholders.

While DHR often supports the phased review of electric transmission line projects regulated by the SCC, solar projects often have much larger footprints and more extensive impacts on historic resources. We are concerned that any approval by the SCC at this time would be made with insufficient information to make an informed decision regarding the potential impact of this project on significant historic resources. That said, in order to fully identify and address impacts to historic resources, we recommend the following:

1. The SCC application must be updated to include the revised Phase IA report and amended survey plan.
2. Any project approval should allow for sufficient flexibility in design to accommodate avoidance of significant archaeological sites and minimization of visual impacts to adjacent properties and construction should not commence until the studies and analyses listed below and completed.
3. Archaeological and architectural surveys should be completed by qualified professionals in accordance with DHR's *Survey Guidelines* and the revised Phase IA report prior to any significant project-related ground disturbance. All identified resources should be evaluated for listing in the VLR/NRHP.
4. The results of the archaeological and architectural surveys should be submitted to DHR for review and comment.
5. Potential direct and indirect impacts to all VLR/NRHP-eligible/listed resources, including previously inaccessible properties, should be assessed in consultation with DHR.
6. All moderate to severe impacts to VLR/NRHP-eligible/listed resources should be avoided, minimized, and/or mitigated by the applicant in consultation with DHR and other stakeholders.

If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,



Jenny Bellville-Marrion
Project Review Archaeologist
Review and Compliance Division

Cc: Robert Taylor, Dutton and Associates

COMMONWEALTH of VIRGINIA

Travis A. Voyles
Secretary of Natural and Historic Resources

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If you have any questions regarding these comments, please contact me at 804-482-8091 or via email, jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,



Jenny Bellville-Marrion
Project Review Archaeologist
Review and Compliance Division

Cc: Robert Taylor, Dutton and Associates

ISLE of WIGHT COUNTY MUSEUM

MEMORANDUM

TO: Amy Ring, Director of Community Development, Isle of Wight County

FROM: Jennifer England
Director, Isle of Wight County Museum
Historic Resources Manager, Isle of Wight County

RE: Sycamore Cross Solar Energy Generation Facility
Conditional Use Permit (CUP-8-23) – Third Submittal Tax Map Numbers 09-01-001, 10-01-017, 11-01-015, 16-01-002, 16-01- 002A, 16-01-003, 16-01-008, 16-01-009, 17-01-003, 17-01-003C, 17-01- 001, 17-01-002, 27-01-003, and 27-01-004

DATE: March 26, 2024

After reviewing the **Updated Historical and Cultural Resources Report Dated August 2023** as prepared by Dutton + Associates for AES Clean Energy and sPower with reference to Conditional Use Permit (CUP-8-23), the Isle of Wight County Museum/Isle of Wight County Department of Historic Resources acknowledges that much of the acreage to be developed as a solar energy facility has been plowed, logged and utilized as farmland for many years. However, there are still a few notable concerns, and some of them are noted here as they were in a previous memorandum.

The report's study area includes multiple parcels and tracts of land--some of these span Isle of Wight County's border to cross into Surry County. Within the project area, there are multiple recorded archaeological and architectural resources. These sites as well as their boundaries are considered high potential for archaeological discovery. Expanding the project area by one mile adds other resources to this list. Vegetative cover may be required for the varied project locations within the viewshed of some of these historic resources.

103 Main Street
Smithfield, VA 23430
(757) 356-1014
(757) 357-0114 FAX

ISLE of WIGHT COUNTY MUSEUM

Of particular note are these sites. Avoidance with a 100-foot buffer is recommended. In the event that is not possible, a Phase II evaluation should be required.

- Site 44SYO309, farmstead
- Site 44SY0310, archaeological materials with a single grave
- Cemeteries in areas D2 and D3

There are nine previously recorded architectural resources located within the study area. Only two have been formally evaluated by Virginia Department of Historic Resources staff for eligibility on the National Register of Historic Places. Before proceeding with the project, the remaining resources should be formally evaluated. Additionally, these dwellings may or may not have associated cemeteries which will require avoidance.

Overall, the proposed project will certainly impact – both directly and indirectly - archaeological, cultural or architectural historic resources in Isle of Wight County. Determining the full extent of the project's archaeological history may not be possible because of size; however, if the project proceeds, an on-site archaeologist during site preparation and construction should be considered.

The potential on the project site for archaeological artifacts is highly likely. As the project proceeds, the Isle of Wight County Museum should be the repository for discovered artifacts and future finds on this site as they will further the interpretation or discovery of Isle of Wight County history.

103 Main Street
Smithfield, VA 23430
(757) 356-1014
(757) 357-0114 FAX

SYCAMORE CROSS SOLAR
ECONOMIC & FISCAL CONTRIBUTION TO THE COUNTIES OF SURRY AND ISLE OF WIGHT, VIRGINIA



Prepared for

aes

MANGUM economics

4198 COX ROAD, SUITE 104
GLEN ALLEN, VIRGINIA 23060
804-322-7777

MANGUMECONOMICS.COM

SEPTEMBER 2023

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About Mangum Economics, LLC

Mangum Economics is a Glen Allen, Virginia based firm that was founded in 2003. Since then, we have become known as a leader in industry analysis, economic impact assessment, policy and program evaluation, and economic and workforce strategy development. The Mangum Team specializes in producing objective and actionable quantitative economic research that our clients use for strategic decision making in a variety of industries and environments. We know that our clients are unique, and that one size does not fit all. As a result, we have a well-earned reputation for tailoring our analyses to meet the specific needs of specific clients, with a specific audience.

Most of our research falls into four general categories:

- **Economic Development and Special Projects:** The Mangum Team has performed hundreds of analyses of proposed economic development projects. One recent example was an analysis of the proposed $2.3 billion Green City "net-zero eco district." The Mangum Team has also authored multiple economic development plans, including identifying industry recruitment opportunities created by the high-speed MAREA and BRUSA sub-sea cable landings in Virginia Beach.
- **Energy:** The Mangum Team has produced analyses of the economic and fiscal impact of over 23 GW of proposed solar, wind, battery, and hydro projects spanning twenty states. Among those projects was Dominion Energy's 2.6 GW Coastal Virginia Offshore Wind project off of Virginia Beach. In addition, the Mangum Team has also performed economic and fiscal impact analyses for the natural gas, nuclear, oil, and pipeline industries.
- **Information Technology:** Working with some of the largest names in the industry, to date the Mangum Team has produced analyses of the economic and fiscal impact of the data center industry in multiple states. Among those, were studies conducted in IL, MD, and VA that were instrumental in the passage of industry-specific legislation.
- **Policy Analysis:** The Mangum Team also has extensive experience in identifying and quantifying the intended and unintended economic consequences of proposed legislative and regulatory initiatives.

The Project Team

Rebecca Kyle, *Senior Research Analyst*

Martina Arel, M.B.A., *Director – Economic Development & Energy Research*

A. Fletcher Mangum, Ph.D., *Founder and CEO*

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Executive Summary

This report assesses the economic and fiscal contribution that the proposed Sycamore Cross Solar project would make to the counties of Surry and Isle of Wight, Virginia. The primary findings from that assessment are as follows:

1) **Sycamore Cross Solar is a proposed 240-megawatt (MW) alternating current (AC) solar photovoltaic power generating facility. The project would be located northeast of US Highway 460 and west of Route 10 in the counties of Surry and Isle of Wight, Virginia. The total acreage leased and purchased for the project would be approximately 1,156 acres of timberland and agricultural land.**
    - The actively used, fenced-in portion of the project site would encompass approximately 125 acres located in Surry County and approximately 1,030 acres located in Isle of Wight County.
    - The project would involve an investment of $437.1 million in capital equipment and improvements to the existing property. Approximately $34.6 million of that total would be located in Surry County and approximately $402.5 million would be located in Isle of Wight County.[1]

2) **The proposed Sycamore Cross Solar project would make a significant economic contribution to the counties of Surry and Isle of Wight:**
    - The proposed Sycamore Cross Solar project would provide an estimated one-time pulse of economic activity to the counties of Surry and Isle of Wight during its construction phase supporting approximately:
        - 197 direct, indirect, and induced job years.
        - $9.9 million in associated wages and benefits.
        - $91.6 million in economic output.
    - The proposed Sycamore Cross Solar project would provide an estimated annual economic impact to the counties of Surry and Isle of Wight during its ongoing operational phase supporting approximately:
        - 7 direct, indirect, and induced jobs.
        - $0.6 million in associated wages and benefits.
        - $1.6 million in economic output.

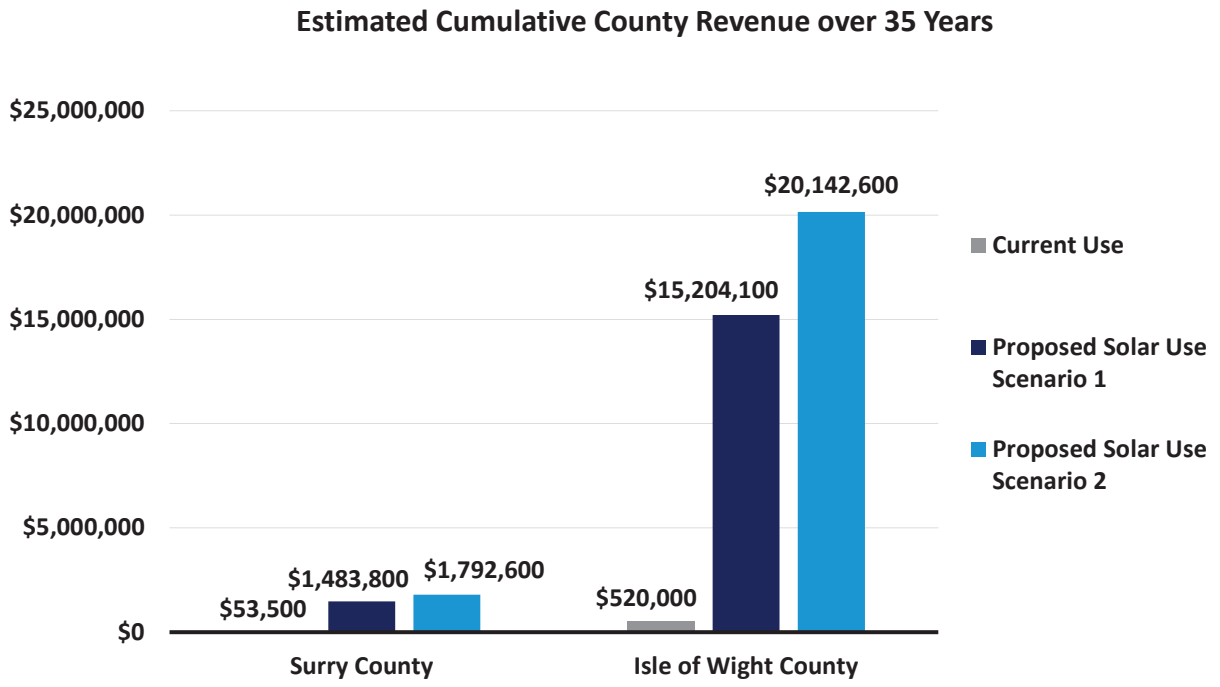
3) **The proposed Sycamore Cross Solar project would also make a significant fiscal contribution to the counties of Surry and Isle of Wight. The proposed project would generate approximately:**
    - $1.4 million in state and local tax revenue from the one-time pulse of economic activity associated with the project's construction.

[1] Data Source: AES Corporation. Allocation of generation capacity and investment subject to change based on final design.

- Surry County:
  - $1.5 million in cumulative county revenue over the facility's anticipated 35-year operational life assuming revenues are generated from the reassessment of the real property and the taxation of the associated capital investments, (Scenario 1); or
  - $1.8 million in cumulative county revenue over the facility's anticipated 35-year operational life assuming revenues are generated from the reassessment of the real property and payments associated with a locally adopted revenue share ordinance. The payments would be based on the project's generation capacity and would include a 10 percent escalator every five years (Scenario 2).
- Isle of Wight County:
  - $15.2 million in cumulative county revenue over the facility's anticipated 35-year operational life assuming revenues are generated from the reassessment of the real property and the taxation of the associated capital investments, (Scenario 1); or
  - $20.1 million in cumulative county revenue over the facility's anticipated 35-year operational life assuming revenues are generated from the reassessment of the real property and payments associated with a locally adopted revenue share ordinance. The payments would be based on the project's generation capacity and would include a 10 percent escalator every five years (Scenario 2).

4) **The proposed Sycamore Cross Solar project would have a significantly greater fiscal impact on The counties of Surry and Isle of Wight than the property generates in its current use:**

- Surry County: The proposed Sycamore Cross Solar project would generate approximately $1.5 million (from taxation on capital investments) or $1.8 million (from a revenue share ordinance) in cumulative county revenue over the facility's anticipated 35-year operational life, as compared to approximately $53,500 in cumulative county revenue in the property's current use – that's a 28- to 34-fold increase over the current use revenues.
- Isle of Wight County: The proposed Sycamore Cross Solar project would generate approximately $15.2 million (from taxation on capital investments) or $20.1 million (from a revenue share ordinance) in cumulative county revenue over the facility's anticipated 35-year operational life, as compared to approximately $520,000 in cumulative county revenue in the property's current use – that's a 29- to 39-fold increase over current use revenues.



The estimates provided in this report are based on the best information available and all reasonable care has been taken in assessing the quality of that information. However, because these estimates attempt to foresee the consequences of circumstances that have not yet occurred, it is not possible to be certain that they will be representative of actual events. These estimates are intended to provide a good indication of likely future outcomes and should not be construed to represent a precise measure of those outcomes.

Introduction

This report assesses the economic and fiscal contribution that the proposed Sycamore Cross Solar project would make to the Counties of Surry and Isle of Wight, Virginia. This report was commissioned by AES Clean Energy (AES) and produced by Mangum Economics.

The Project

Sycamore Cross Solar is a proposed 240-megawatt (MW) alternating current (AC) solar photovoltaic power generating facility. The project would be located northeast of US Highway 460 and west of Route 10 in the counties of Surry and Isle of Wight, Virginia. The total acreage leased and purchased for the project would be approximately 1,156 acres of timberland and agricultural land. The estimated actively used, fenced-in solar site encompasses approximately 125 acres in Surry County and 1,030 acres in Isle of Wight County.

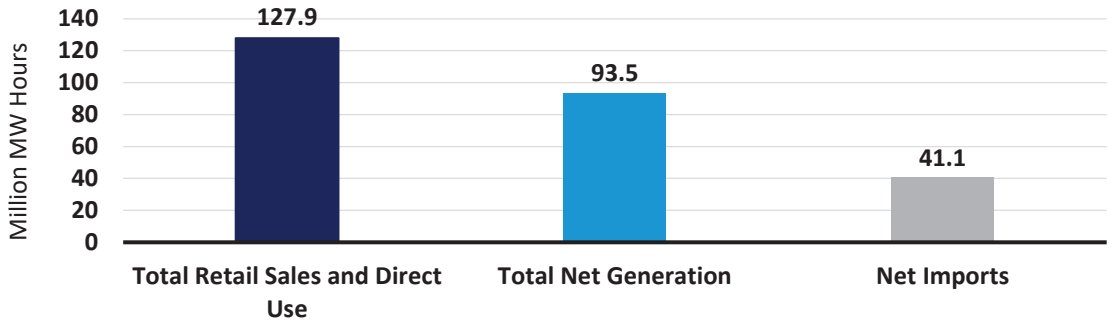
Electricity Production in Virginia

This section provides a backdrop for the proposed Sycamore Cross Solar project by profiling Virginia's electricity production sector and the role that solar energy could play in that sector.

Overall Market

As shown in Figure 1, in 2021 electricity sales and direct use in Virginia totaled 127.9 million megawatt hours, ranking the state 10th among the fifty states in terms of electricity consumption. However, only 73 percent of that demand was met by in-state utilities, independent producers, and other sources. As a result, Virginia had to import the remaining electricity it consumed from producers in other states. As with all imports, this means that the jobs, wages, and economic output created by that production went to localities in those states, not to localities in Virginia.

Figure 1: Demand and Supply of Electricity in Virginia in 2021 (in millions of megawatt-hours)[2]



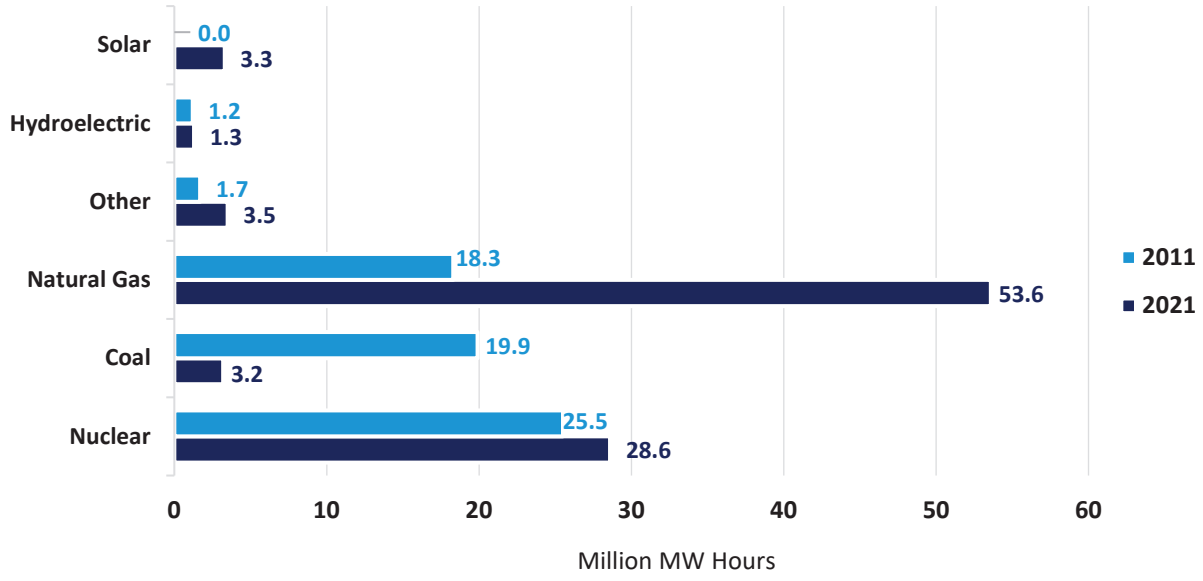
[2] Data Source: U.S. Energy Information Administration. In this chart, "Net Imports" also takes into account losses during transmission. As a result, it does not directly equal the residual of "Total Net Generation" minus "Total Retail Sales and Direct Use."

Sources of Production

Between 2011 and 2021, the total amount of electricity produced in Virginia increased from 66.7 to 93.5 million megawatt hours, while retail and direct consumption of electricity increased from 112.1 to 127.9 million megawatt hours. Consequently, imports of electricity decreased by 11.8 million megawatt hours (or 22 percent) during this time.[3] Figure 2 provides a comparison of the energy sources that were used to produce electricity in Virginia in each of those years. As these data show, the most significant change between 2011 and 2021 was a decrease in the use of coal and an increase in the use of natural gas. Where coal was the state's second largest source of electricity in 2011, accounting for 19.9 million megawatt hours (or 29.9 percent) of production, by 2021 production had fallen by 16.7 million megawatt hours, making coal a distant fifth place source of electricity with only 3.4 percent of production.

In contrast, the share of electricity produced using cleaner-burning low-emissions energy sources increased over the period. Where natural gas accounted for only 18.3 million megawatt hours (or 27.5 percent) of Virginia's electricity production in 2011, by 2021 that proportion had almost tripled to 53.6 million megawatt hours (or 57.3 percent of production), making natural gas the state's largest source of electricity. In addition, solar, which entered the Virginia electricity production market in 2016, increased its share to 3.3 million megawatt hours in 2021.

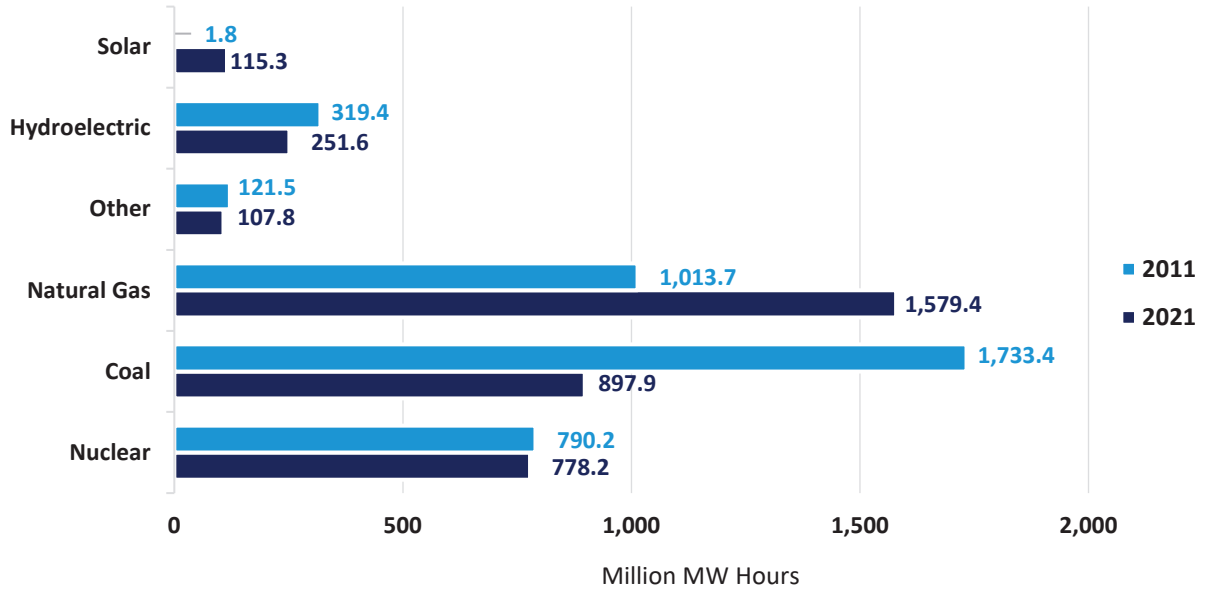
Figure 2: Electricity Generation in Virginia by Energy Source in 2011 and 2021 (in millions of megawatt-hours)[4]



[3] Imports also takes into account losses during transmission. As a result, totals do not equal sum of components.
[4] Data Source: U.S. Energy Information Administration. The "Other" category includes battery, wood, wind, petroleum, other biomass, "other", and pumped storage.

Figure 3 provides similar data for the U.S. as a whole. A quick comparison of Figures 2 and 3 shows that although the degree of reliance on specific energy sources for electricity production is quite different between the U.S. and Virginia, the trend toward lower-emissions energy sources is the same. Nationally, between 2011 and 2021 the amount of electricity produced using coal declined by 835.5 million megawatt hours from 42 to 22 percent of production, while in contrast the amount of electricity produced using natural gas increased by 565.7 million megawatt hours from 25 to 38 percent of production. Nationwide, as in Virginia, the reliance on renewable energy sources such as solar increased during this time but at a slower pace than in Virginia. Between 2011 and 2021, the amount of electricity produced using solar increased by 113.5 million megawatt hours to 2.8 percent of total electricity production in the nation compared to 3.5 percent of total electricity production in Virginia.

Figure 3: Electricity Generation in the United States by Energy Source in 2011 and 2021 (in millions of megawatt-hours)[5]

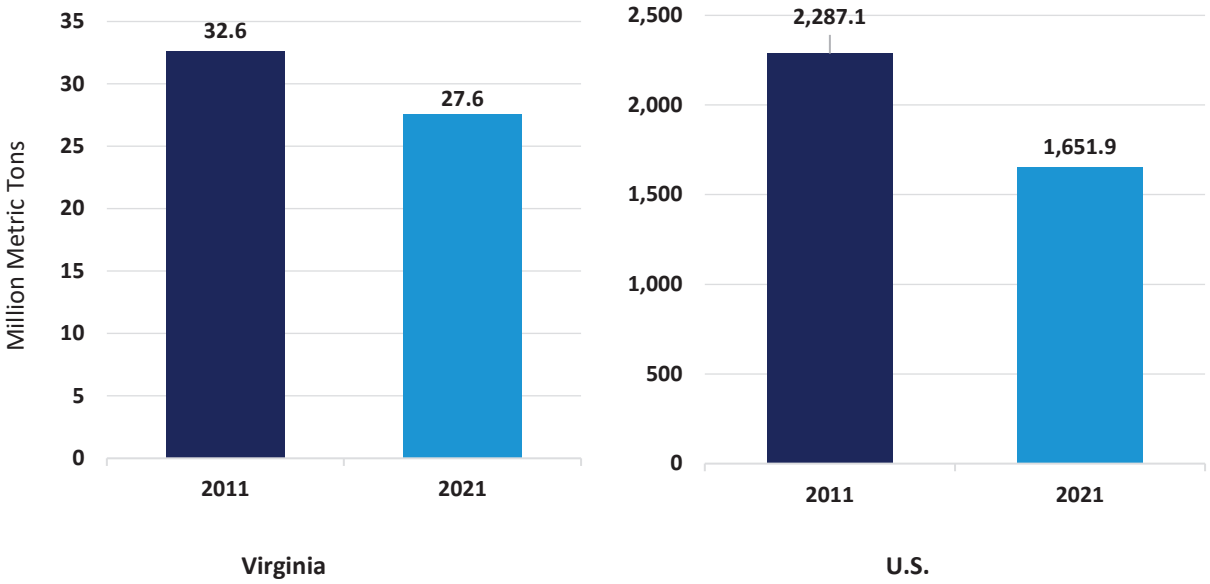


Impact on the Environment

In discussing the impact of these trends on the environment, it is important to realize that electricity production is one of the U.S.'s largest sources of greenhouse gas emissions. Figure 4 depicts carbon dioxide emissions from electricity production in 2011 and 2021 for both Virginia and the U.S. As these data indicate, between 2011 and 2021, as the share of electricity produced in Virginia by coal fell from 29.9 to 3.4 percent, carbon dioxide emissions from electricity production fell from 32.6 to 27.6 million metric tons. Where at the national level, as the share of electricity produced by coal fell from 42 to 22 percent, carbon dioxide emissions from electricity production fell from 2,287.1 to 1,651.9 million metric tons.

[5] Data Source: U.S. Energy Information Administration. "Other" includes battery, geothermal, hydroelectric, other, other biomass, other gas, petroleum, pumped storage, wind, and wood.

Figure 4: Carbon Dioxide Emissions from Electricity Production (millions of metric tons)[6]



[6] Data Source: U.S. Energy Information Administration.

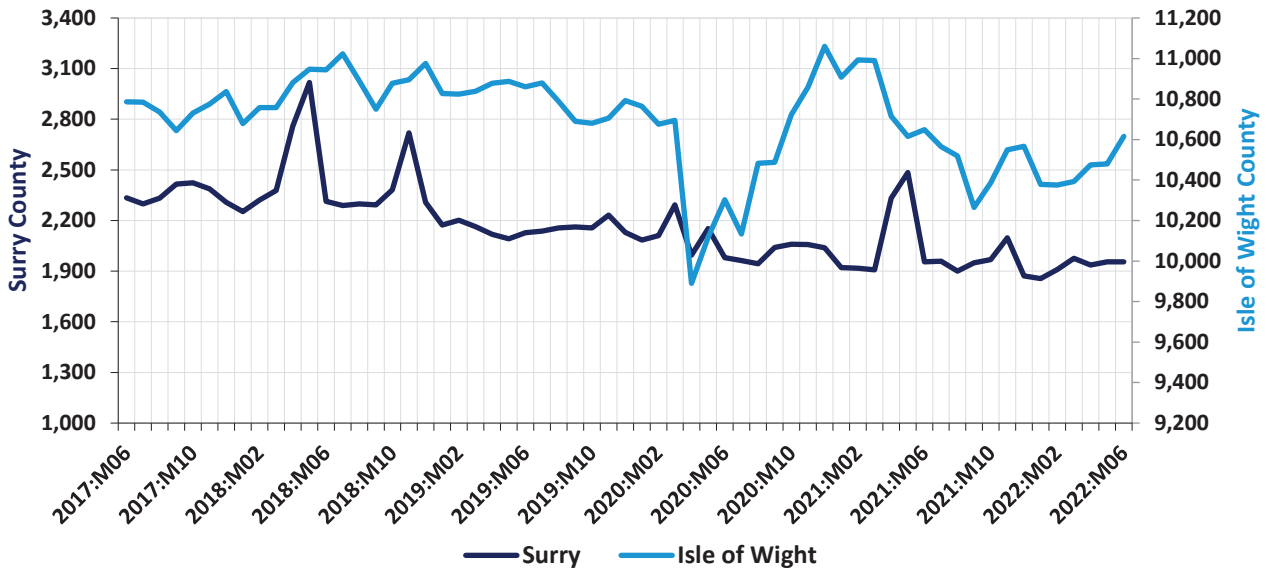
Local Economic Profile

This section provides context for the economic and fiscal impact assessments to follow by profiling the local economies of the counties of Surry and Isle of Wight.

Total Employment

Figure 5 depicts the trend in total employment in the counties of Surry and Isle of Wight from June 2017 through June 2022. As these data show, employment in Surry County generally declined through the five-year period. Employment in Isle of Wight County remained generally stable until the decrease in economic activity associated with the COVID-19 pandemic led to a steep employment decline in Isle of Wight County in April 2020. Since then, employment has rebounded back to pre-pandemic levels. As of June 2022, county employment stood at 1,956 jobs in Surry County and 10,616 jobs in Isle of Wight County. This represents an overall decrease in employment of 16.2 percent (or 379 jobs) in Surry County and 1.6 percent (or 170 jobs) in Isle of Wight County over the five-year period. To put this number in perspective, over this same period, total statewide employment in Virginia increased by 1.5 percent.[7]

Figure 5: Total Employment in the Counties of Surry and Isle of Wight– June 2017 to June 2022[8]

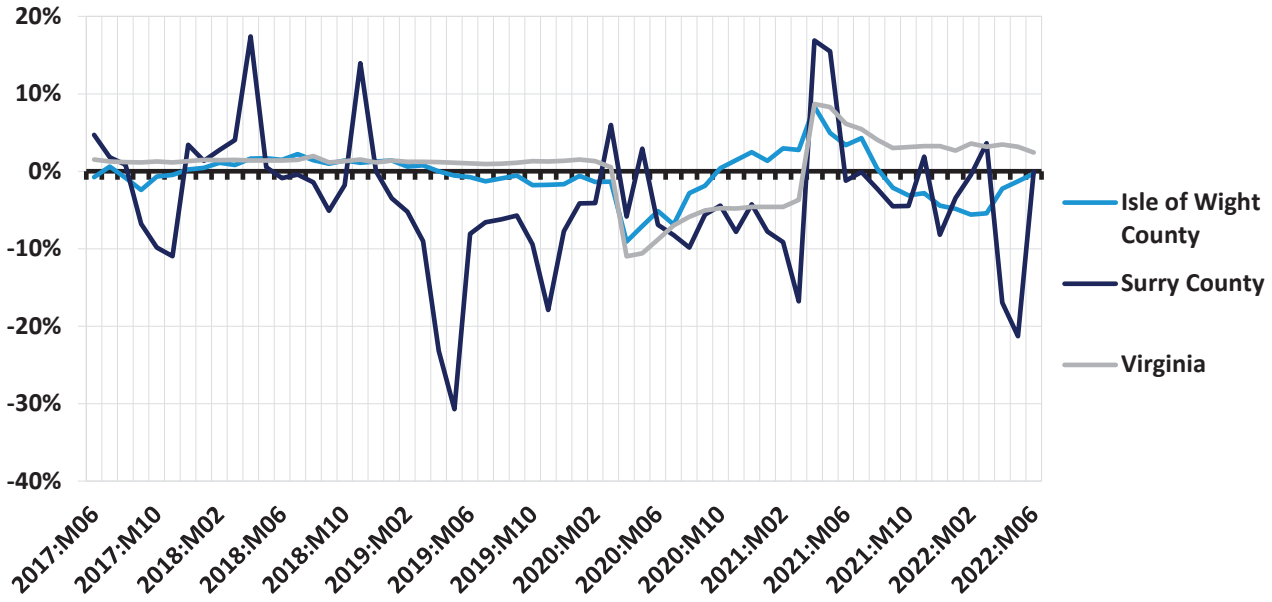


To control for seasonality and provide a point of reference, Figure 6 compares the year-over-year change in total employment in the counties of Surry and Isle of Wight to that of the state of Virginia over the same five-year period. Any point above the zero line in this graph indicates an increase in employment, while any point below the zero line indicates a decline in employment. As these data show, Surry County experienced periods of high employment growth and high employment loss throughout the period. Isle of Wight County tracked closely with the statewide trend throughout the

[7] Data Source: U.S. Bureau of Labor Statistics.
[8] Data Source: U.S. Bureau of Labor Statistics.

five-year period. As of June 2022, the year-over-year change in total employment was 0 percent in Surry County and minus 0.3 percent in Isle of Wight County as compared to 2.4 percent statewide in Virginia.

Figure 6: Year-Over-Year Change in Total Employment – June 2017 to June 2022[9]



Employment and Wages by Industry Supersector

To provide a better understanding of the underlying factors motivating the total employment trends depicted in Figures 5 and 6, Figures 7 through 9 provide data on private employment and wages in the counties of Surry and Isle of Wight by industry supersector.[10]

Figure 7 provides an indication of the distribution of private sector employment across industry supersectors in the counties of Surry and Isle of Wight in the second quarter of 2022. As these data indicate, the largest industry sector that quarter in Surry County was Trade, Transportation, and Utilities (873 jobs). In Isle of Wight County, the largest industry sector that quarter was Manufacturing (2,646 jobs).

Figure 8 provides a similar ranking for average private sector weekly wages by industry supersector in the counties of Surry and Isle of Wight in the second quarter of 2022. As these data show, the highest paying industry sector that quarter in Surry County was Trade, Transportation and Utilities ($2,088 per week). In Isle of Wight County, the highest paying sector was Information ($2,089 per week).

[9] Data Source: U.S. Bureau of Labor Statistics.
[10] A "supersector" is the highest level of aggregation in the coding system that the Bureau of Labor Statistics uses to classify industries.

Figure 7: Private Employment by Industry Supersector in the Counties of Surry and Isle of Wight– 2nd Qu. 2022[11]

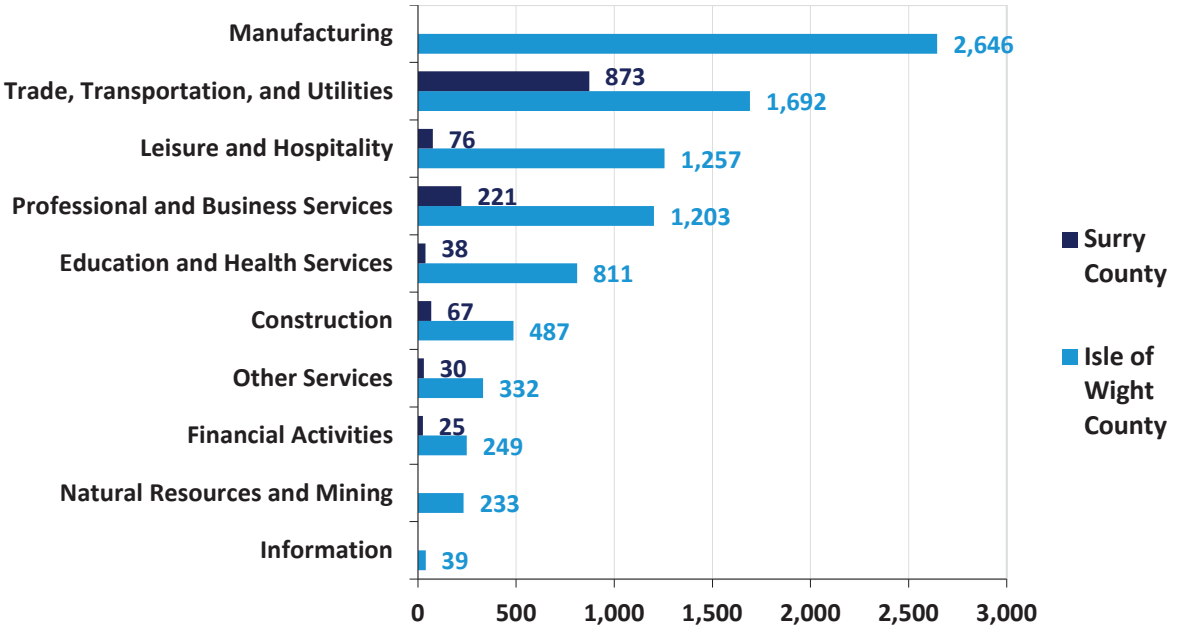
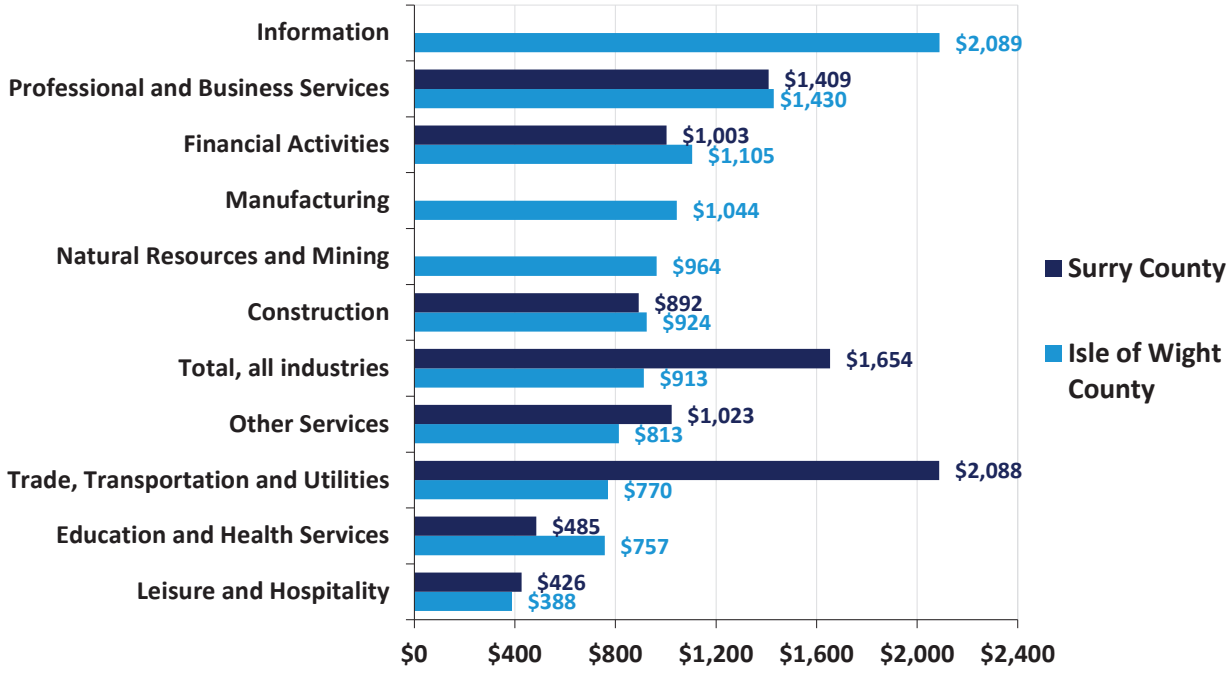


Figure 8: Average Private Weekly Wages by Industry Supersector in the Counties of Surry and Isle of Wight – 2nd Qu. 2022[12]

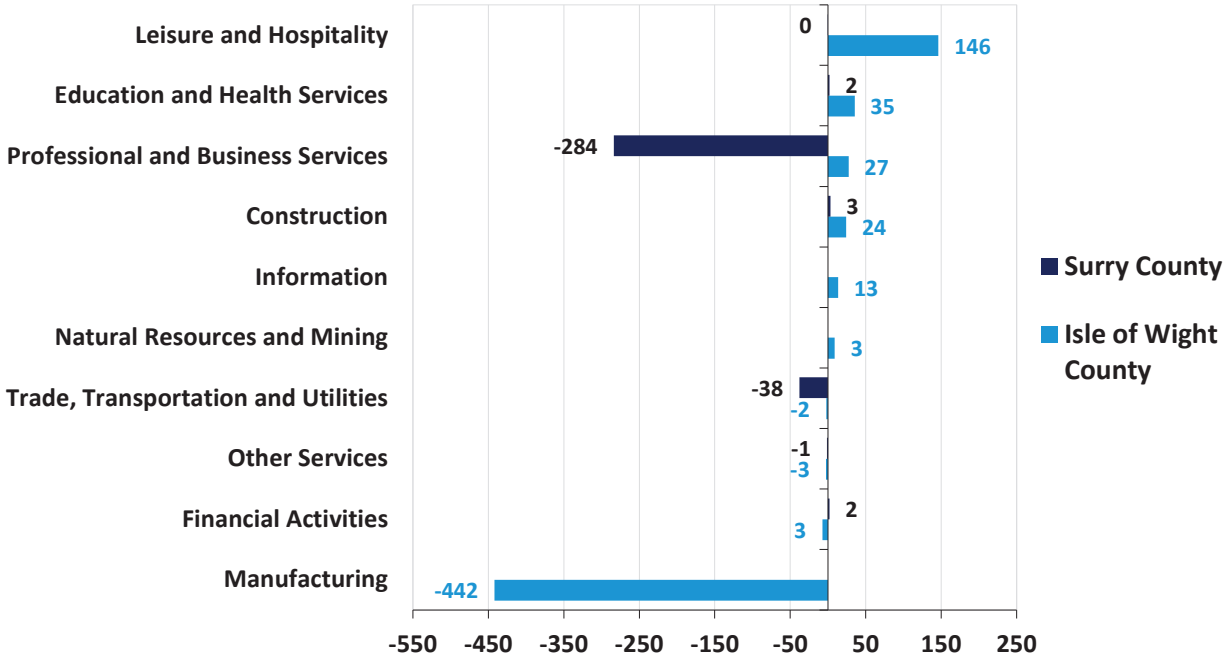


[11] Data Source: U.S. Bureau of Labor Statistics. Data on the Natural Resources and Mining, Manufacturing, and Information sectors in Surry County have been suppressed due to data confidentiality.

[12] Data Source: U.S. Bureau of Labor Statistics. Data on the Natural Resources and Mining, Manufacturing, and Information sectors in Surry County have been suppressed due to data confidentiality.

Figure 9 details the year-over-year change in private sector employment from the second quarter of 2021 to the second quarter of 2022 in the counties of Surry and Isle of Wight by industry supersector. Over this period, the largest employment gains in Surry County occurred in the Construction (up 3 jobs) sector, and the largest employment loss occurred in the Professional and Business Services (down 284 jobs) sector. The largest employment gain in Isle of Wight County occurred in the Leisure and Hospitality (up 146 jobs) sector, and the largest employment loss occurred in the Manufacturing (down 442 jobs) sector.

Figure 9: Change in Private Employment by Industry Supersector in the Counties of Surry and Isle of Wight from 2nd Qu. 2021 to 2nd Qu. 2022[13]

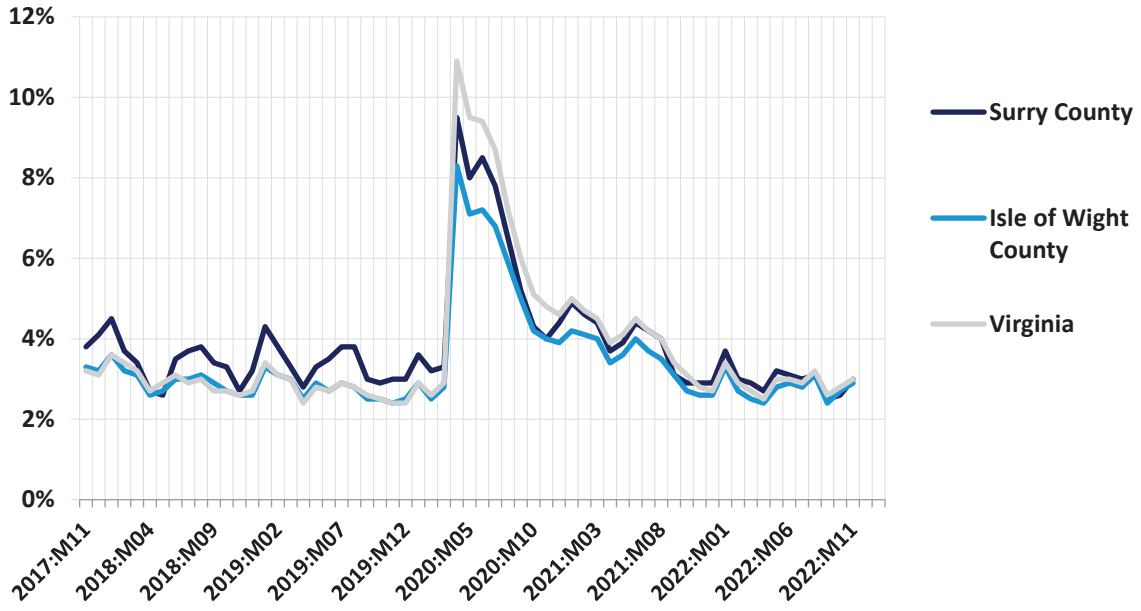


Unemployment

Figure 10 illustrates the unemployment trend in the counties of Surry and Isle of Wight over the five-year period from November 2017 through November 2022 and benchmarks those data against the statewide trend for Virginia. As these data show, unemployment rates in the counties of Surry and Isle of Wight generally tracked closely to the statewide norm. In April 2020 unemployment in both the counties and the state significantly rose as a result of the labor dislocations caused by the COVID-19 pandemic. The counties' unemployment rates did not peak as high as the statewide rate. As of November 2022, unemployment stood at 3.0 percent in Surry County, 2.9 percent in Isle of Wight County, and 3.0 percent in Virginia as a whole.

[13] Data Source: Bureau of Labor Statistics. Data on the Natural Resources and Mining, Manufacturing, and Information sectors in Surry County have been suppressed due to data confidentiality.

Figure 10: Unemployment Rate – November 2017 to November 2022[14]



[14] Data Source: Bureau of Labor Statistics.

Economic and Fiscal Impact

This section quantifies the economic and fiscal contribution that the proposed Sycamore Cross Solar project would make to the counties of Surry and Isle of Wight. The analysis separately evaluates the one-time pulse of economic activity that would occur during the construction phase of the project, as well as the annual economic activity that the project would generate during its ongoing operations phase.

Method

To empirically evaluate the likely local economic impact attributable to the proposed Sycamore Cross Solar project, the analysis employs a regional economic impact model called IMPLAN.[15] The IMPLAN model is one of the most commonly used economic impact simulation models in the U.S., and in Virginia is used by UVA's Weldon Cooper Center, the Virginia Department of Planning and Budget, the Virginia Employment Commission, and other state agencies and research institutes. Like all economic impact models, the IMPLAN model uses economic multipliers to quantify economic impact.

Economic multipliers measure the ripple effects that an expenditure generates as it makes its way through the economy. For example, as when the Sycamore Cross Solar project purchases goods and services – or when contractors hired by the facility use their salaries and wages to make household purchases – thereby generating income for someone else, which is in turn spent, thereby becoming income for yet someone else, and so on, and so on. Through this process, one dollar in expenditures generates multiple dollars of income. The mathematical relationship between the initial expenditure and the total income generated is the economic multiplier.

One of the primary advantages of the IMPLAN model is that it uses regional and national production and trade flow data to construct region-specific and industry-specific economic multipliers, which are then further adjusted to reflect anticipated actual spending patterns within the specific geographic study area that is being evaluated. As a result, the economic impact estimates produced by IMPLAN are not generic. They reflect as precisely as possible the economic realities of the specific industry, and the specific study area, being evaluated.

In the analysis that follows, these impact estimates are divided into three categories. First round direct impact measures the direct economic contribution of the entity being evaluated (e.g., own employment, wages paid, goods and services purchased by the Sycamore Cross Solar project). Second round indirect and induced impact measures the economic ripple effects of this direct impact in terms of business to business, and household (employee) to business, transactions. Total impact is simply the sum of the preceding two. These categories of impact are then further defined in terms of employment (the jobs that are created), labor income (the wages and benefits associated with those jobs), and economic output (the total amount of economic activity that is created in the economy).

[15] IMPLAN is produced by IMPLAN Group, LLC.

Construction Phase

This portion of the section assesses the economic and fiscal impact that the one-time pulse of activity associated with construction of the proposed Sycamore Cross Solar project would have on the counties of Surry and Isle of Wight.

Inputs and Assumptions

The analysis is based on the following inputs and assumptions:

- Total investment in the Sycamore Cross Solar project is estimated to be approximately $437.1 million.[16]
- Of that total:
    - Architecture, engineering, site preparation, and other construction and development costs are estimated to be approximately $253.1 million.[17]
    - Capital equipment costs are estimated to be approximately $184.0 million.[18] It is anticipated that no capital equipment would be purchased from vendors in the counties of Surry and Isle of Wight.[19]
- For ease of analysis, all construction expenditures are assumed to take place in a single year.

Economic Impact

Applying these inputs in the IMPLAN model results in the following estimates of one-time economic and fiscal impact. As shown in Table 1, construction of the proposed Sycamore Cross Solar project would directly provide a one-time pulse supporting approximately: 1) 102 job years, 2) $5.3 million in wages and benefits, and 3) $75.9 million in economic output to the counties of Surry and Isle of Wight.

Taking into account the economic ripple effects that direct investment would generate, the total estimated one-time impact on the counties of Surry and Isle of Wight would support approximately: 1) 197 job years, 2) $9.9 million in wages and benefits, 3) $91.6 million in economic output, and 4) $1.4 million in state and local tax revenue.

[16] Data Source: AES.
[17] Data Source: AES.
[18] Data Source: AES.
[19] Data Source: IMPLAN Group LLC.

Table 1: Estimated One-Time Economic and Fiscal Impact on the Counties of Surry and Isle of Wight from Construction of the Sycamore Cross Solar Project[20,21]

Economic Impact	Employment (Job Years)[22]	Wages and Benefits	Output
1st Round Direct Economic Activity	102	$5,253,400	$75,938,700
2nd Round Indirect and Induced Economic Activity	95	$4,671,900	$15,708,700
Total Economic Activity	**197**	**$9,925,300**	**$91,647,400**
Fiscal Impact			
State and Local Tax Revenue			**$1,431,500**

**Totals may not sum due to rounding.*

Ongoing Operations Phase

This portion of the section assesses the annual economic and fiscal impact that the proposed Sycamore Cross Solar project would have on the counties of Surry and Isle of Wight during its anticipated 35-year operational phase.

Economic Impact Inputs

The analysis is based on the following inputs:

- The Sycamore Cross Solar project would employ approximately five individuals and spend approximately $1.3 million each year for maintenance and repair, vegetative control, and other operational expenditures.[23]

Economic Impact

Applying these inputs in the IMPLAN model results in the following estimates of annual economic impact. As shown in Table 2, annual operation of the proposed Sycamore Cross Solar project would on average directly support approximately: 1) 5 jobs, 2) $0.5 million in wages and benefits, and 3) $1.3 million in economic output to the counties of Surry and Isle of Wight.

[20] It is important to note that construction sector jobs are not necessarily new jobs, but the investments made can also support an existing job during the construction of the project. Due to preliminary nature of the project, the analysis is based on industry averages. Actual spending patterns may vary based on vendor contracts and final design.
[21] A construction sector job, also referred to as a job year, is equal to one job over one year. It is used to denote employment on construction projects where the construction schedule extends beyond one year and to account for the fact that actual on-site employment may vary over the period.
[22] Please note that it is not possible to determine how much of the economic impact would take place in specifically Isle of Wight County or Surry County. That level of granularity is not available for a regional analysis.
[23] Data Source: AES.

Taking into account the economic ripple effects that direct impact would generate, the total estimated annually supported impact on the counties of Surry and Isle of Wight would be approximately: 1) 7 jobs, 2) $0.6 million in wages and benefits, and 3) $1.6 million in economic output.

Table 2: Estimated Annual Economic Impact on the Counties of Surry and Isle of Wight from the Ongoing Operation of the Sycamore Cross Solar Project[24]

Economic Impact	Employment	Wages and Benefits	Output
1st Round Direct Economic Activity	5	$501,200	$1,250,000
2nd Round Indirect and Induced Economic Activity	2	$82,900	$302,700
Total Economic Activity	**7**	**$584,100**	**$1,552,700**

**Totals may not sum due to rounding.*

Fiscal Impact Inputs and Assumptions

The analysis is based on the following inputs and assumptions:

- The Sycamore Cross Solar project would involve an investment of approximately $437.1 million in capital equipment and improvements to the existing property. Approximately $34.6 million of that total would be invested in Surry County and approximately $402.5 million in Isle of Wight County.[25]
- The Sycamore Cross Solar project would be situated on approximately 125 acres in Surry County and on approximately 1,030 acres in Isle of Wight County.[26]
- The actively used, fenced-in acreage in Surry County would be reassessed at $13,000 per acre.[27]
- The actively used, fenced-in acreage in Isle of Wight County would be removed from the land use program and reassessed at $15,000 per acre.[28]
- Tax rates and locality ratios remain constant throughout the analysis.
- The initial interconnection request for Sycamore Cross Solar was filed in March 2017.[29]
- The Sycamore Cross Solar project's total generation capacity would be 240 MW AC, of which approximately 19 MW would be located in Surry County and approximately 221 MW would be located in Isle of Wight County.[30]
- The Sycamore Cross Solar project would become operational in the fourth quarter of 2026.[31]

[24] Please note that it is not possible to determine how much of the economic impact would take place in specifically Isle of Wight County or Surry County. That level of granularity is not available for a regional analysis.
[25] Data Source: AES.
[26] Data Source: AES.
[27] Data Source: Surry County Commissioner of Revenue's Office. Current assessment value of existing solar farm in the county.
[28] Data Source: Isle of Wight County Commissioner of Revenue's Office. Current assessment value of existing solar farm in the county.
[29] Data Source: AES.
[30] Data Source: AES.
[31] Data Source: AES.

Fiscal Impact – Surry County

This portion of the section quantifies the direct fiscal contribution that the proposed Sycamore Cross Solar project would make to Surry County. The analysis considers two scenarios. Both scenarios include the additional revenue that the Sycamore Cross Solar project would generate for Surry County over a 35-year period from the increased property assessments associated with reassessing the site as solar use property. Scenario 1 then describes the additional revenue Sycamore Cross Solar would generate for Surry County from taxes levied on the capital investment, while Scenario 2 assumes tax revenue generated from the capital investment will be replaced with revenue associated with a locally adopted revenue share ordinance and based on the project's total generation capacity.

Reassessment of Property

Table 3 details the increased property assessments associated with reassessing the 125-acre fenced-in site as solar use property. The county real estate tax revenue from the project after reassessment is estimated to be approximately $11,600 per year, for a cumulative total of approximately $404,600 over the project's anticipated 35-year operational life expectancy.[32] In contrast, the property currently generates approximately $1,530 per year in real estate tax revenue for the county, for a cumulative total of approximately $53,500 over 35 years.[33]

Table 3: Estimated Surry County Revenue Generated by the Proposed Sycamore Cross Solar Project over 35 Years from Real Estate Taxes

Estimated Increased Appraised Value of Property under Solar Use[34]	$1,628,100
Surry County Real Estate Tax Rate	0.0071
Annual County Real Estate Tax – Solar Use	$11,600
Cumulative Revenue over 35 Years	**$404,600**

**Totals may not sum due to rounding.*

Scenario 1: Taxation of Capital Investment

Table 4 separately details the additional annual revenue that the proposed Sycamore Cross Solar project would generate for Surry County over a 35-year period from taxes levied on capital investment. This calculation is based on: 1) the taxable portion of capital investments pursuant to the 80 percent local tax exemption pursuant to Virginia Code §58.1-3660[35], times 2) the State Corporation Commission's utility assessment ratio for taxation of public utilities in Surry County, times 4) the State Corporation

[32] Assumes property will be reassessed at $13,000 per acre once it is under solar use.
[33] Derived from Surry County's Real Estate Assessment database. Includes value of existing structures.
[34] Calculated as 125 acres times $13,000.
[35] The Virginia Code §58.1-3660 stipulates that solar facilities over 20MW for which an interconnection request was filed between January 1, 2015 and June 30, 2018 are subject to an 80 percent exemption from local property taxes.

Commission's depreciation guidelines for solar facilities, times 5) Surry County's real property tax rate of $0.71 per $100 of assessed value pursuant to Virginia Code §58.1-2606.

As the data in Table 4 indicate, based on these calculations the estimated additional county revenue from taxation of capital investments associated with the proposed Sycamore Cross Solar project would be approximately $43,600 in the project's first year of operation, with that figure projected to decline to approximately $4,800 in the project's 34th year of operation and thereafter, as the value of the proposed capital investments is depreciated, for a cumulative total of approximately $1.1 million.

Table 4: Estimated Surry County Revenue by Proposed Solar Investment Over 35 Years

Year	Total Capital Investment subject to Exemption[36]	Depreciated Value of Taxable Capital Investment[37]	Additional Annual County Tax Revenue Solar Investment[38]
1	$34,602,325	$6,141,221	$43,600
2	$34,602,325	$6,141,221	$43,600
3	$34,602,325	$6,141,221	$43,600
4	$34,602,325	$6,141,221	$43,600
5	$34,602,325	$6,141,221	$43,600
6	$34,602,325	$6,141,221	$43,600
7	$34,602,325	$6,141,221	$43,600
8	$34,602,325	$6,141,221	$43,600
9	$34,602,325	$6,120,068	$43,500
10	$34,602,325	$6,016,349	$42,700
11	$34,602,325	$5,906,490	$41,900
12	$34,602,325	$5,790,489	$41,100
13	$34,602,325	$5,667,664	$40,200
14	$34,602,325	$5,536,652	$39,300
15	$34,602,325	$5,398,133	$38,300
16	$34,602,325	$5,251,426	$37,300
17	$34,602,325	$5,095,848	$36,200
18	$34,602,325	$4,931,400	$35,000
19	$34,602,325	$4,756,034	$33,800
20	$34,602,325	$4,571,115	$32,500
21	$34,602,325	$4,374,596	$31,100
22	$34,602,325	$4,166,477	$29,600
23	$34,602,325	$3,946,075	$28,000

[36] Data Source: AES.
[37] Accounts for the State Corporation Commission's depreciation guidelines for solar facilities and the utility assessment ratio for taxation of public utilities in Surry County. Also accounts for the 80 percent exemption from local property taxes pursuant to Virginia Code §58.1-3660 for projects over 20 MW with an interconnection request between January 1, 2015 and June 30, 2018.
[38] Calculated pursuant to Virginia Code §58.1-2606 which stipulates that capital equipment owned by utilities is taxed as real property and the local tax rate on that capital equipment would be capped at Surry County's real property tax rate of $0.72 per $100 of assessed value.

Year	Total Capital Investment subject to Exemption[36]	Depreciated Value of Taxable Capital Investment[37]	Additional Annual County Tax Revenue Solar Investment[38]
24	$34,602,325	$3,712,027	$26,400
25	$34,602,325	$3,464,331	$24,600
26	$34,602,325	$3,200,941	$22,700
27	$34,602,325	$2,922,539	$20,800
28	$34,602,325	$2,627,078	$18,700
29	$34,602,325	$2,314,558	$16,400
30	$34,602,325	$1,982,250	$14,100
31	$34,602,325	$1,630,835	$11,600
32	$34,602,325	$1,258,268	$8,900
33	$34,602,325	$863,183	$6,100
34	$34,602,325	$682,358	$4,800
35	$34,602,325	$682,358	$4,800
Estimated Cumulative Total			**$1,079,200**

**Totals may not sum due to rounding.*

Scenario 1: Total Fiscal Impact

Table 5 combines the results from the calculations depicted in Tables 3 and 4 to provide an estimate of the cumulative fiscal contribution that the proposed Sycamore Cross Solar project would make to Surry County over its 35-year anticipated operational life under Scenario 1. As these data indicate, that cumulative total is approximately $1.5 million.

Table 5: Estimated Cumulative Surry County Revenue from the Proposed Sycamore Cross Solar Project over 35 Years under Scenario 1

County Real Estate Tax	$404,600
County Revenue from Taxation of Capital Investments	$1,079,200
Total Cumulative Revenue over 35 Years	**$1,483,800**

**Totals may not sum due to rounding.*

Scenario 2: Revenue Share Ordinance

The following section describes the additional annual revenue that the proposed Sycamore Cross Solar project would generate for Surry County assuming the county adopts an energy revenue share ordinance under Virginia Code §58.1-2636 in lieu of taxes on capital investment. This statute currently stipulates that a locality may assess an annual revenue share of up to $1,400 per megawatt (MW) alternating current (AC) generation capacity of a solar facility. However, legislation that was passed in the 2021 General Assembly (SB 1201/HB 2006) and went into effect July 1, 2021, allows a 10 percent escalator to be applied to the $1,400 per MW revenue share every five years, beginning in 2026.

Table 6 details the revenue generated from a revenue share ordinance including the 10 percent escalator. Based on a total generation capacity of 19 MW AC and an assumed commissioning date in the fourth quarter of 2026, a revenue share ordinance would generate approximately $1.4 million over the anticipated 35-year operational life of the project.

Table 6: Estimated Surry County Revenue Generated from a Revenue Share Ordinance over 35 Years

Year	MW	Revenue Share per MW with Escalator	Annual County Revenue
1	19	$1,540	$29,300
2	19	$1,540	$29,300
3	19	$1,540	$29,300
4	19	$1,540	$29,300
5	19	$1,540	$29,300
6	19	$1,694	$32,200
7	19	$1,694	$32,200
8	19	$1,694	$32,200
9	19	$1,694	$32,200
10	19	$1,694	$32,200
11	19	$1,863	$35,400
12	19	$1,863	$35,400
13	19	$1,863	$35,400
14	19	$1,863	$35,400
15	19	$1,863	$35,400
16	19	$2,050	$38,900
17	19	$2,050	$38,900
18	19	$2,050	$38,900
19	19	$2,050	$38,900
20	19	$2,050	$38,900
21	19	$2,255	$42,800
22	19	$2,255	$42,800
23	19	$2,255	$42,800
24	19	$2,255	$42,800
25	19	$2,255	$42,800
26	19	$2,480	$47,100
27	19	$2,480	$47,100
28	19	$2,480	$47,100
29	19	$2,480	$47,100
30	19	$2,480	$47,100
31	19	$2,728	$51,800
32	19	$2,728	$51,800
33	19	$2,728	$51,800
34	19	$2,728	$51,800
35	19	$2,728	$51,800
Cumulative Total			**$1,388,000**

Scenario 2: Total Fiscal Impact

Table 7 combines the results from the calculations depicted in Tables 3 and 6 to provide an estimate of the cumulative fiscal contribution that the proposed Sycamore Cross Solar project would make to Surry County over its 35-year anticipated operational life under Scenario 2. As these data indicate, that cumulative total is approximately $1.8 million.

Table 7: Estimated Cumulative Surry County Revenue from the Proposed Sycamore Cross Solar Project over 35 Years under Scenario 2

	Total Revenue
County Real Estate Tax	$404,600
County Revenue from Revenue Share Ordinance	$1,388,000
Total Cumulative Revenue over 35 Years	**$1,792,600**

Fiscal Impact – Isle of Wight County

This portion of the section quantifies the direct fiscal contribution that the proposed Sycamore Cross Solar project would make to Isle of Wight County. The analysis considers two scenarios. Both scenarios include the additional revenue that the Sycamore Cross Solar project would generate for Isle of Wight County over a 35-year period from the increased property assessments associated with reassessing the site as solar use property. Scenario 1 then describes the additional revenue Sycamore Cross Solar would generate for Isle of Wight County from taxes levied on the capital investment, while Scenario 2 assumes tax revenue generated from the capital investment will be replaced with revenue associated with a locally adopted revenue share ordinance and based on the project's total generation capacity.

Reassessment of Property

Table 8 details the increased property assessments associated with removing the affected acreage from the land use program and reassessing the 1,030-acre fenced-in site as solar use property. The county real estate tax revenue from the project after reassessment is estimated to be approximately $109,700 per year, for a cumulative total of approximately $3.8 million over the project's anticipated 35-year operational life expectancy.[39] Adding one-time rollback taxes of approximately $157,700 increases that cumulative total to approximately $4.0 million. In contrast, the property currently generates approximately $14,900 per year in real estate tax revenue for the county, for a cumulative total of approximately $520,000 over 35 years.[40]

Table 8: Estimated Isle of Wight County Revenue Generated by the Proposed Sycamore Cross Solar Project over 35 Years from Real Estate Taxes

Estimated Increased Appraised Value of Property under Solar Use[41]	$15,455,300
Isle of Wight County Real Estate Tax Rate	0.0071
Annual County Real Estate Tax – Solar Use	$109,700
Cumulative Revenue over 35 Years	**$3,840,600**
One-time Rollback Taxes[42]	**$157,700**
Cumulative Revenue over 35 Years	**$3,998,300**

**Totals may not sum due to rounding.*

[39] Assumes property will be reassessed at $15,000 per acre once it is under solar use.
[40] Derived from Isle of Wight County's Real Estate Assessment database. Includes value of existing structures.
[41] Calculated as 1,030 acres times $15,000.
[42] Rollback taxes are computed as the difference between the land use value assessment tax and the tax on the fair market value for the affected acreage for five complete tax years plus the current year, including simple interest. Does not account for changes in assessment values.

Scenario 1: Taxation of Capital Investment

Table 9 separately details the additional annual revenue that the proposed Sycamore Cross Solar project would generate for Isle of Wight County over a 35-year period from taxes levied on capital investment. This calculation is based on: 1) the taxable portion of capital investments pursuant to the 80 percent local tax exemption pursuant to Virginia Code §58.1-3660[43], times 2) the State Corporation Commission's utility assessment ratio for taxation of public utilities in Isle of Wight County, times 4) the State Corporation Commission's depreciation guidelines for solar facilities, times 5) Isle of Wight County's real property tax rate of $0.71 per $100 of assessed value pursuant to Virginia Code §58.1-2606.

As the data in Table 9 indicate, based on these calculations the estimated additional county revenue from taxation of capital investments associated with the proposed Sycamore Cross Solar project would be approximately $452,700 in the project's first year of operation, with that figure projected to decline to approximately $50,300 in the project's 34th year of operation and thereafter, as the value of the proposed capital investments is depreciated, for a cumulative total of approximately $11.2 million.

Table 9: Estimated Isle of Wight County Revenue by Proposed Solar Investment Over 35 Years

Year	Total Capital Investment subject to Exemption[44]	Depreciated Value of Taxable Capital Investment[45]	Additional Annual County Tax Revenue Solar Investment[46]
1	$402,479,675	$63,767,270	$452,700
2	$402,479,675	$63,767,270	$452,700
3	$402,479,675	$63,767,270	$452,700
4	$402,479,675	$63,767,270	$452,700
5	$402,479,675	$63,767,270	$452,700
6	$402,479,675	$63,767,270	$452,700
7	$402,479,675	$63,767,270	$452,700
8	$402,479,675	$63,767,270	$452,700
9	$402,479,675	$63,547,627	$451,200
10	$402,479,675	$62,470,669	$443,500
11	$402,479,675	$61,329,943	$435,400
12	$402,479,675	$60,125,450	$426,900
13	$402,479,675	$58,850,105	$417,800

[43] The Virginia Code §58.1-3660 stipulates that solar facilities over 20MW for which an interconnection request was filed between January 1, 2015 and June 30, 2018 are subject to an 80 percent exemption from local property taxes.
[44] Data Source: AES.
[45] Accounts for the State Corporation Commission's depreciation guidelines for solar facilities and the utility assessment ratio for taxation of public utilities in Isle of Wight County. Also accounts for the 80 percent exemption from local property taxes pursuant to Virginia Code §58.1-3660 for projects over 20 MW with an interconnection request between January 1, 2015 and June 30, 2018.
[46] Calculated pursuant to Virginia Code §58.1-2606 which stipulates that capital equipment owned by utilities is taxed as real property and the local tax rate on that capital equipment would be capped at Isle of Wight County's real property tax rate of $0.71 per $100 of assessed value.

Year	Total Capital Investment subject to Exemption[44]	Depreciated Value of Taxable Capital Investment[45]	Additional Annual County Tax Revenue Solar Investment[46]
14	$402,479,675	$57,489,736	$408,200
15	$402,479,675	$56,051,430	$398,000
16	$402,479,675	$54,528,101	$387,100
17	$402,479,675	$52,912,663	$375,700
18	$402,479,675	$51,205,118	$363,600
19	$402,479,675	$49,384,208	$350,600
20	$402,479,675	$47,464,104	$337,000
21	$402,479,675	$45,423,552	$322,500
22	$402,479,675	$43,262,550	$307,200
23	$402,479,675	$40,974,013	$290,900
24	$402,479,675	$38,543,772	$273,700
25	$402,479,675	$35,971,825	$255,400
26	$402,479,675	$33,236,918	$236,000
27	$402,479,675	$30,346,135	$215,500
28	$402,479,675	$27,278,221	$193,700
29	$402,479,675	$24,033,175	$170,600
30	$402,479,675	$20,582,658	$146,100
31	$402,479,675	$16,933,753	$120,200
32	$402,479,675	$13,065,205	$92,800
33	$402,479,675	$8,962,844	$63,600
34	$402,479,675	$7,085,252	$50,300
35	$402,479,675	$7,085,252	$50,300
Estimated Cumulative Total			**$11,205,800**

**Totals may not sum due to rounding.*

Scenario 1: Total Fiscal Impact

Table 10 combines the results from the calculations depicted in Tables 8 and 9 to provide an estimate of the cumulative fiscal contribution that the proposed Sycamore Cross Solar project would make to Isle of Wight County over its 35-year anticipated operational life under Scenario 1. As these data indicate, that cumulative total is approximately $15.2 million.

Table 10: Estimated Cumulative Isle of Wight County Revenue from the Proposed Sycamore Cross Solar Project over 35 Years under Scenario 1

County Real Estate Tax	$3,998,300
County Revenue from Taxation of Capital Investments	$11,205,800
Total Cumulative Revenue over 35 Years	**$15,204,100**

Scenario 2: Revenue Share Ordinance

The following section describes the additional annual revenue that the proposed Sycamore Cross Solar project would generate for Isle of Wight County assuming the county adopts an energy revenue share ordinance under Virginia Code §58.1-2636 in lieu of taxes on capital investment. This statute currently stipulates that a locality may assess an annual revenue share of up to $1,400 per megawatt (MW) alternating current (AC) generation capacity of a solar facility. However, legislation that was passed in the 2021 General Assembly (SB 1201/HB 2006) and went into effect July 1, 2021, allows a 10 percent escalator to be applied to the $1,400 per MW revenue share every five years, beginning in 2026.

Table 11 details the revenue generated from a revenue share ordinance including the 10 percent escalator. Based on a total generation capacity of 221 MW AC and an assumed commissioning date in the fourth quarter of 2026, a revenue share ordinance would generate approximately $16.1 million over the anticipated 35-year operational life of the project.

Table 11: Estimated Isle of Wight County Revenue Generated from a Revenue Share Ordinance over 35 Years

Year	MW	Revenue Share per MW with Escalator	Annual County Revenue
1	221	$1,540	$340,300
2	221	$1,540	$340,300
3	221	$1,540	$340,300
4	221	$1,540	$340,300
5	221	$1,540	$340,300
6	221	$1,694	$374,400
7	221	$1,694	$374,400
8	221	$1,694	$374,400
9	221	$1,694	$374,400
10	221	$1,694	$374,400
11	221	$1,863	$411,800
12	221	$1,863	$411,800
13	221	$1,863	$411,800
14	221	$1,863	$411,800
15	221	$1,863	$411,800
16	221	$2,050	$453,000
17	221	$2,050	$453,000
18	221	$2,050	$453,000
19	221	$2,050	$453,000
20	221	$2,050	$453,000
21	221	$2,255	$498,300
22	221	$2,255	$498,300
23	221	$2,255	$498,300
24	221	$2,255	$498,300
25	221	$2,255	$498,300
26	221	$2,480	$548,100

Year	MW	Revenue Share per MW with Escalator	Annual County Revenue
27	221	$2,480	$548,100
28	221	$2,480	$548,100
29	221	$2,480	$548,100
30	221	$2,480	$548,100
31	221	$2,728	$602,900
32	221	$2,728	$602,900
33	221	$2,728	$602,900
34	221	$2,728	$602,900
35	221	$2,728	$602,900
Cumulative Total			**$16,144,300**

Scenario 2: Total Fiscal Impact

Table 12 combines the results from the calculations depicted in Tables 8 and 11 to provide an estimate of the cumulative fiscal contribution that the proposed Sycamore Cross Solar project would make to Isle of Wight County over its 35-year anticipated operational life under Scenario 2. As these data indicate, that cumulative total is approximately $20.1 million.

Table 12: Estimated Cumulative Isle of Wight County Revenue from the Proposed Sycamore Cross Solar Project over 35 Years under Scenario 2

	Total Revenue
County Real Estate Tax	$3,998,300
County Revenue from Revenue Share Ordinance	$16,144,300
Total Cumulative Revenue over 35 Years	**$20,142,600**

Current Agricultural Use

This section provides a benchmark for the previous estimates of the economic contribution that the proposed Sycamore Cross Solar project would make to the counties of Surry and Isle of Wight by estimating the economic and fiscal contribution that the site makes to the counties in its current use.

Economic Impact Inputs and Assumptions

The analysis is based on the following inputs and assumptions:

- The proposed Sycamore Cross Solar project would be situated on an approximately 1,156-acre tract of land, of which approximately 125 acres are located in Surry County and 1,030 acres are located in Isle of Wight County.[47]
- The land currently is timberland and agricultural land used to produce corn, soybeans, cotton, and peanuts.[48]

Economic Impact

Applying these inputs to the IMPLAN model results in the following estimates of annual economic impact. As shown in Table 13, in its current use, the proposed Sycamore Cross Solar project site directly supports approximately: 1) 1 job, 2) $0.1 million in wages and benefits, and 3) $0.4 million in economic output to the counties of Surry and Isle of Wight.

Taking into account the economic ripple effects that direct impact generates, on average, the total annually supported impact on the counties of Surry and Isle of Wight is approximately: 1) 2 jobs, 2) $0.2 million in wages and benefits, and 3) $0.5 million in economic output.

Table 13: Total Estimated Annual Economic Impact of the Sycamore Cross Solar Project Site on the Counties of Surry and Isle of Wight– Current Use[49]

Economic Impact	Employment	Wages and Benefits	Output
1st Round Direct Economic Activity	1	$111,400	$382,200
2nd Round Indirect and Induced Economic Activity	1	$56,700	$163,800
Total Economic Activity	**2**	**$168,100**	**$546,000**

**Totals may not sum due to rounding.*

[47] Data Source: AES.
[48] Data Source: AES.
[49] Calculations based data from the U.S. Department of Agriculture and IMPLAN Group, LLC for Isle of Wight County, Surry County, and Virginia.

Fiscal Impact Inputs and Assumptions

The analysis is based on the following inputs and assumptions:

- The proposed Sycamore Cross Solar project would be situated on an approximately 1,156-acre tract of land, of which approximately 125 acres would be located in Surry County and 1,030 acres would be located in Isle of Wight County.[50]
- The current assessment value of the affected acreage in Surry County is approximately $0.2 million.[51]
- The current assessment value of the affected acreage in Isle of Wight County is approximately $2.1 million.[52]

Fiscal Impact – Surry County

Table 14 details the estimated tax revenue that the proposed Sycamore Cross Solar site generates for Surry County in its current use. As the data in Table 14 indicate, the current county real estate tax revenue from the project site is estimated to be approximately $1,530 per year, for a cumulative total of approximately $53,500 over 35 years.

Table 14: Estimated Surry County Revenue Generated by the Proposed Sycamore Cross Solar Project Site over 35 Years from Real Estate Taxes – Current Use

Estimated Assessed Value of Property – Current Use	$215,300
Surry County Current Real Estate Tax Rate	0.0071
Estimated Annual County Real Estate Tax – Current Use	$1,530
Total Cumulative Revenue over 35 Years	**$53,500**

**Totals may not sum due to rounding.*

Fiscal Impact – Isle of Wight County

Table 15 details the estimated tax revenue that the proposed Sycamore Cross Solar site generates for Isle of Wight County in its current use. As the data in Table 15 indicate, the current county real estate tax revenue from the project site is estimated to be approximately $14,900 per year, for a cumulative total of approximately $520,000 over 35 years.

[50] Data Source: AES.
[51] Data Source: Derived from Surry County's Real Estate Assessment database. Includes value of existing structures.
[52] Data Source: Derived from Isle of Wight County's Real Estate Assessment database. Includes value of existing structures.

Table 15: Estimated Isle of Wight County Revenue Generated by the Proposed Sycamore Cross Solar Project Site over 35 Years from Real Estate Taxes – Current Use

Estimated Assessed Value of Property – Current Use	$2,092,500
Isle of Wight County Current Real Estate Tax Rate	0.0071
Estimated Annual County Real Estate Tax – Current Use	$14,900
Total Cumulative Revenue over 35 Years	**$520,000**

The estimates provided in this report are based on the best information available and all reasonable care has been taken in assessing the quality of that information. However, because these estimates attempt to foresee the consequences of circumstances that have not yet occurred, it is not possible to be certain that they will be representative of actual events. These estimates are intended to provide a good indication of likely future outcomes and should not be construed to represent a precise measure of those outcomes.

COUNTY OF ISLE OF WIGHT

OFFICE OF THE COMMISSIONER OF THE REVENUE
Post Office Box 107
Isle of Wight, Virginia 23397
(757) 365-6222

Gerald H. Gwaltney
Commissioner of the Revenue

MEMORANDUM

TO: Amy M. Ring
Community Development Director

FROM: Gerald H. Gwaltney,
Commissioner of the Revenue

DATE: May 16, 2024

RE: **Sycamore Cross Solar Project**
Conditional Use Permit (CUP-8-23), Third Submittal

I have completed the review of the Sycamore Cross Solar Project Third Submittal. The solar project's initial interconnection request for Sycamore Cross Solar was filed in March 2017. This date is important because it occurs within the period (Jan. 1, 2015 – June 30, 2018) in which all solar equipment related to the application received an 80% exemption. No other category of taxable property in Isle of Wight receives such an exemption.

Below are several deficiencies in their submittal relating to the tax revenue analysis.

- **Real Estate**

  Rollback Taxes – the third submittal incorrectly calculates the rollback taxes. The amount of rollback taxes is overstated because "simple interest" is not applied in Isle of Wight County. This error indicates Sycamore Cross Solar, LLC did not review the County's land use ordinance.

  The study did not provide the worksheet detailing the rollback taxes by year for each parcel subject to the rollback tax, making it impossible to confirm the calculations.

- **Equipment**

  The State Corporation Commission will assess the solar equipment. Table 9 lists the "Depreciated Value of Taxable Capital Investment" as $63,767,270 for years 1 through 8. The study defines the formula used to arrive at the value. This formula includes the "SCC utility assessment ratio for taxation of public utilities in Isle of Wight County." If the 2023 sales ratio was used, then the capital investment taxes are overstated.

  The study did not provide the worksheet detailing the rates used to determine the taxes on the equipment, making it impossible to confirm the calculations.

Please let me know if you have any questions.

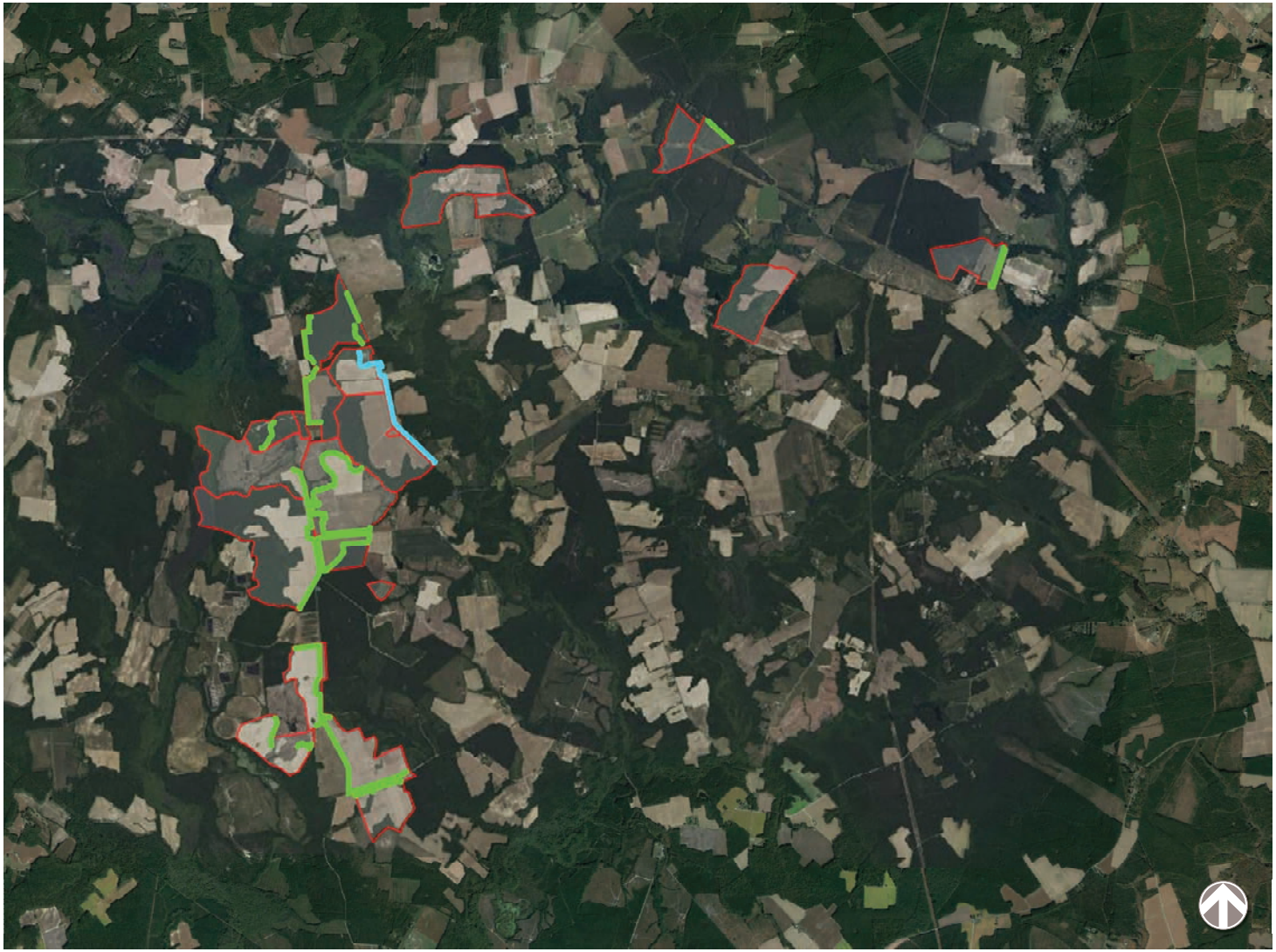
SYCAMORE CROSS SOLAR PROJECT

Isle of Wight and Surry Counties, Virginia

CONCEPTUAL LANDSCAPE

FEBRUARY 2024

LANDSCAPE SCREENING BY ZONE



LEGEND

FRONTAGE ZONE

BUFFER ZONE

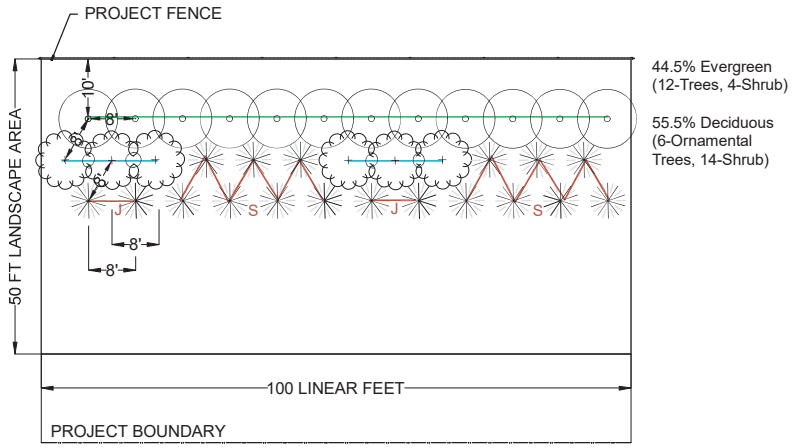
SCREENING ZONE - EXISTING VEGETATION TO REMAIN AND NEW VEGETATION TO BE PLANTED WHERE NECESSARY

SYCAMORE CROSS SOLAR FACILITY

LANDSCAPE SCREENING - PLANT SCHEMATICS AND CONCEPTUAL PLANT LISTS

FRONTAGE ZONE LANDSCAPE

Apply to landscape screening areaalong public roadways with ROW greater than 50 feet

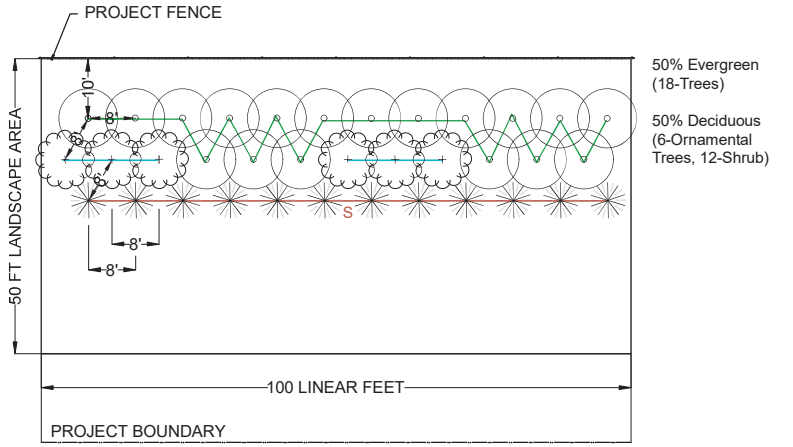


44.5% Evergreen (12-Trees, 4-Shrub)

55.5% Deciduous (6-Ornamental Trees, 14-Shrub)

BUFFER ZONE LANDSCAPE - ABUTTING RESIDENTIAL PARCELS

Apply to Abutting Residential Parcels where the existing vegetation not present



50% Evergreen (18-Trees)

50% Deciduous (6-Ornamental Trees, 12-Shrub)

CONCEPTUAL PLANT LIST

CONCEPT PLANT LIST				
Botanical Name	**Common Name**	**Height at Planting**	**Mature height**	**Mature Spread**
EVERGREEN				
Ilex X 'Conap' oakleaf	Red Holly/ Oakleaf Holly	6 FT	15 FT	9 FT
Ilex X mary nell	Mary Nell Holly	6 FT	20 FT	10 FT
Juniperus virginiana 'Brodie'	Eastern Red Cedar	6 FT	15 FT	6 FT
Myrica cerifera	Southern Wax Myrtle	6 FT	15 FT	20 FT
Thuja Occidentalis 'techny'	Eastern Arborvitae	6 FT	15 FT	10 FT
ORNAMENTAL				
Amelanchier canadensis	Shadblow serviceberry	6 FT	25 FT	15 FT
Chionanthus virginicus	Fringetree	6 FT	20 FT	20 FT
Magnolia Virginiana	Sweetbay Magnolia	6 FT	20 FT	20 FT
SHRUB				
Juniperus communis var. depressa	Juniper	1.5 FT	4 FT	10 FT
Lindera benzion	Spicebush	1.5 FT	10 FT	10 FT

J

S

SCREENING ZONE - EXISTING VEGETATION TO REMAIN AND NEW VEGETATION TO BE PLANTED WHERE NECESSARY

SYCAMORE CROSS SOLAR FACILITY

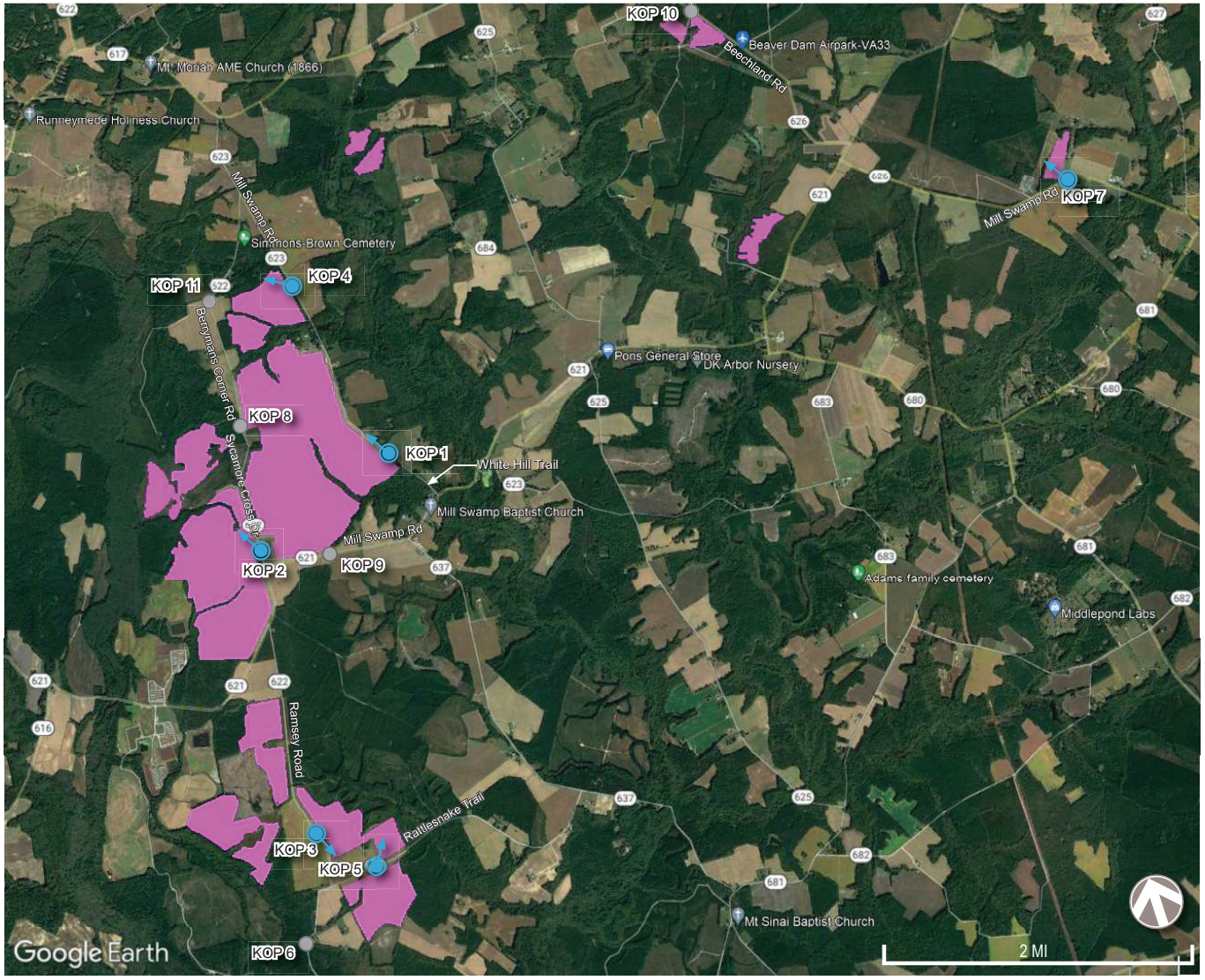
LANDSCAPE SCREENING - PLANT SCHEMATICS AND CONCEPTUAL PLANT LISTS

SYCAMORE CROSS SOLAR PROJECT

Isle of Wight and Surry Counties, Virginia

PHOTO SIMULATIONS

APRIL 2024

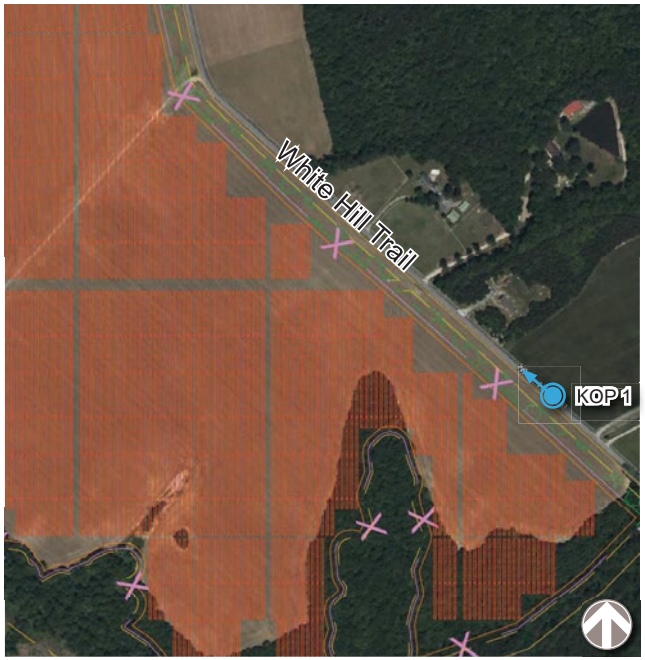


LEGEND

- Photo Simulation / Viewing Direction
- Project Area
- Candidate KOP Location

SYCAMORE CROSS SOLAR FACILITY

KEY OBSERVATION POINT LOCATION MAP



KOP 1:
WHITE HILL TRAIL



KOP 2:
SYCAMORE CROSS DRIVE



KOP 3:
RAMSEY RD

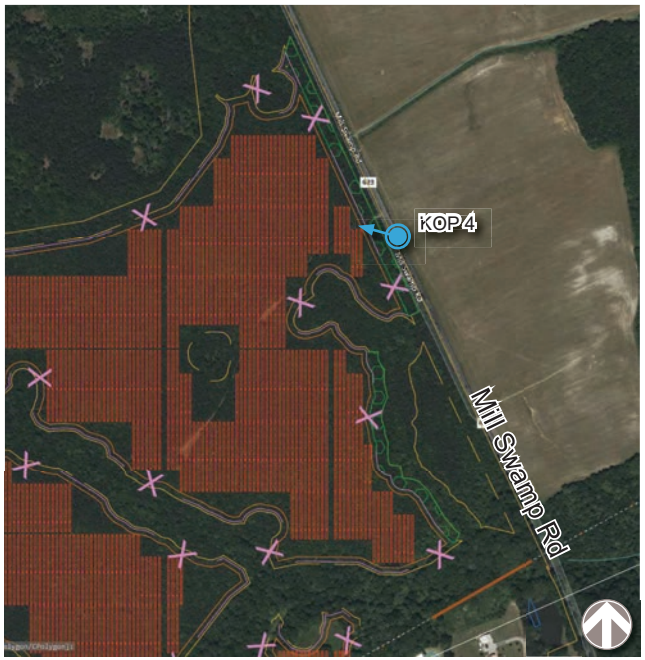
LEGEND

- PV Area
- Panels
- Fenceline
- Vegetative Buffer Area

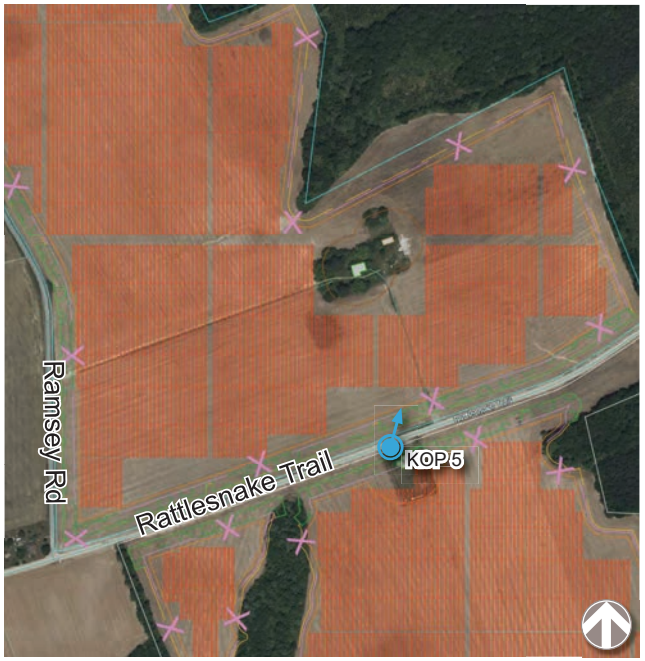
PHOTO LOCATION
& VIEWING DIRECTION

SYCAMORE CROSS SOLAR FACILITY

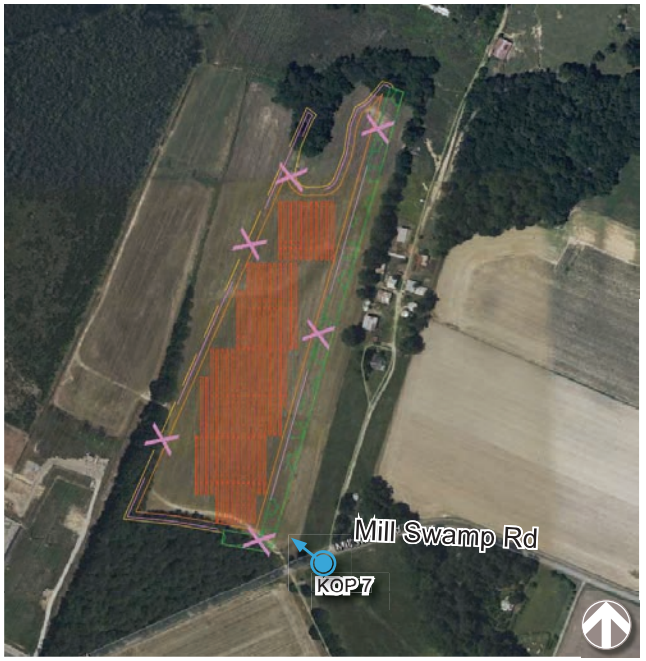
LANDSCAPE BUFFER VISUALIZATION - PHOTO LOCATIONS



KOP 4:
MILL SWAMP ROAD



KOP 5:
RATTLESNAKE TRAIL



KOP 7:
MILL SWAMP ROAD

LEGEND

- PV Area
- Panels
- Fenceline
- Vegetative Buffer Area

PHOTO LOCATION
& VIEWING DIRECTION

SYCAMORE CROSS SOLAR FACILITY

LANDSCAPE BUFFER VISUALIZATION - PHOTO LOCATIONS

KOP 1:
WHITE HILL TRAIL

PHOTOGRAPH INFORMATION

TIME:	11:18 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.994477°
LONGITUDE:	-76.817906°
DISTANCE TO PROJECT:	155 FT



EXISTING



SIMULATED - WITH PLANT SCREENING: AT PLANTING



SIMULATED - WITH PLANT SCREENING: AT MATURE HEIGHT

KOP 2:
SYCAMORE CROSS DRIVE

PHOTOGRAPH INFORMATION

TIME:	10:20 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.986213°
LONGITUDE:	-76.833997°
DISTANCE TO PROJECT:	175 FT



EXISTING



SIMULATED - WITH PLANT SCREENING: AT PLANTING



SIMULATED - WITH PLANT SCREENING: AT MATURE HEIGHT

KOP 3:
RAMSEY ROAD

PHOTOGRAPH INFORMATION

TIME:	9:32 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	SOUTHEAST
LATITIUDE:	36.959386°
LONGITUDE:	-76.829939°
DISTANCE TO PROJECT:	145 FT



EXISTING



SIMULATED - WITH PLANT SCREENING: AT PLANTING



SIMULATED - WITH PLANT SCREENING: AT MATURE HEIGHT

DISCLAIMER: The photographs used as the base for these simulations were collected during winter months where existing deciduous trees are pictured in the leaf-off condition. The landscape screening simulated shows full leaf-on conditions for all vegetation used for screening. While this does not match existing conditions, it demonstrates the maximum extent of screening proposed.

SYCAMORE CROSS SOLAR FACILITY

LANDSCAPE BUFFER VISUALIZATION - BEFORE AND AFTER BUFFER INSTALLATION

KOP 4:
MILL SWAMP ROAD

PHOTOGRAPH INFORMATION

TIME:	11:35 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.011385°
LONGITUDE:	-76.827799°
DISTANCE TO PROJECT:	190 FT



EXISTING



SIMULATED - WITH PLANT SCREENING: AT PLANTING

KOP 5:
RATTLESNAKE TRAIL

PHOTOGRAPH INFORMATION

TIME:	8:53 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHEAST
LATITIUDE:	36.955797°
LONGITUDE:	-76.823667°
DISTANCE TO PROJECT:	400 FT



EXISTING



SIMULATED - WITH PLANT SCREENING: AT PLANTING



SIMULATED - WITH PLANT SCREENING: AT MATURE HEIGHT

KOP 7:
MILL SWAMP ROAD

PHOTOGRAPH INFORMATION

TIME:	1:05 PM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.014834°
LONGITUDE:	-76.733937°
DISTANCE TO PROJECT:	270 FT



EXISTING



SIMULATED - WITH PLANT SCREENING: AT PLANTING



SIMULATED - WITH PLANT SCREENING: AT MATURE HEIGHT

DISCLAIMER: The photographs used as the base for these simulations were collected during winter months where existing deciduous trees are pictured in the leaf-off condition. The landscape screening simulated shows full leaf-on conditions for all vegetation used for screening. While this does not match existing conditions, it demonstrates the maximum extent of screening proposed.

SYCAMORE CROSS SOLAR FACILITY

LANDSCAPE BUFFER VISUALIZATION - BEFORE AND AFTER BUFFER INSTALLATION

SYCAMORE CROSS SOLAR PROJECT

KOP 1: White Hill Trail

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	11:18 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.994477°
LONGITUDE:	-76.817906°
DISTANCE FROM PROJECT:	155 FT

DISCLAIMER: PRELIMINARY VISUALIZATIONS ARE FOR REFERENCE ONLY; PROJECT LAYOUT AND LANDSCAPE DETAILS ARE IN DEVELOPMENT AND SUBJECT TO CHANGE.

SYCAMORE CROSS SOLAR PROJECT

KOP 1: White Hill Trail

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	11:18 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.994477°
LONGITUDE:	-76.817906°
DISTANCE FROM PROJECT:	155 FT

DISCLAIMER:
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SYCAMORE CROSS SOLAR PROJECT

KOP 1: White Hill Trail

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	11:18 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.994477°
LONGITUDE:	-76.817906°
DISTANCE FROM PROJECT:	155 FT

DISCLAIMER:
The photographs used as the base for these simulations were collected during winter months where existing deciduous trees are pictured in the leaf-off condition. The landscape screening simulated shows full leaf-on conditions for all vegetation used for screening. While this does not match existing conditions, it demonstrates the maximum extent of screening proposed.

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SYCAMORE CROSS SOLAR PROJECT

KOP 2: Sycamore Cross Dr

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	10:20 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.986213°
LONGITUDE:	-76.833997°
DISTANCE FROM PROJECT:	175 FT

DISCLAIMER: PRELIMINARY VISUALIZATIONS ARE FOR REFERENCE ONLY; PROJECT LAYOUT AND LANDSCAPE DETAILS ARE IN DEVELOPMENT AND SUBJECT TO CHANGE.

SYCAMORE CROSS SOLAR PROJECT

KOP 2: Sycamore Cross Dr

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	10:20 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.986213°
LONGITUDE:	-76.833997°
DISTANCE FROM PROJECT:	175 FT

DISCLAIMER:
The photographs used as the base for these simulations were collected during winter months where existing deciduous trees are pictured in the leaf-off condition. The landscape screening simulated shows full leaf-on conditions for all vegetation used for screening. While this does not match existing conditions, it demonstrates the maximum extent of screening proposed.

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SYCAMORE CROSS SOLAR PROJECT

KOP 2: Sycamore Cross Dr

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	10:20 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	36.986213°
LONGITUDE:	-76.833997°
DISTANCE FROM PROJECT:	175 FT

DISCLAIMER:
The photographs used as the base for these simulations were collected during winter months where existing deciduous trees are pictured in the leaf-off condition. The landscape screening simulated shows full leaf-on conditions for all vegetation used for screening. While this does not match existing conditions, it demonstrates the maximum extent of screening proposed.

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SYCAMORE CROSS SOLAR PROJECT

KOP 3: Ramsey Rd

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	9:32 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	SOUTHEAST
LATITIUDE:	36.959386°
LONGITUDE:	-76.829939°
DISTANCE FROM PROJECT:	145 FT

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SYCAMORE CROSS SOLAR PROJECT

KOP 3: Ramsey Rd

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

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SYCAMORE CROSS SOLAR PROJECT

KOP 3: Ramsey Rd

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

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SYCAMORE CROSS SOLAR PROJECT

KOP 4: Mill Swamp Rd

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	11:35 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	37.011385°
LONGITUDE:	-76.827799°
DISTANCE FROM PROJECT:	190 FT

DISCLAIMER: PRELIMINARY VISUALIZATIONS ARE FOR REFERENCE ONLY; PROJECT LAYOUT AND LANDSCAPE DETAILS ARE IN DEVELOPMENT AND SUBJECT TO CHANGE.

SYCAMORE CROSS SOLAR PROJECT

KOP 4: Mill Swamp Rd

PHOTO SIMULATION



PROJECT VIEWS ARE OBSTRUCTED BY EXISTING VEGETATION



VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	11:35 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
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SYCAMORE CROSS SOLAR PROJECT

KOP 5: Rattlesnake Trail

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	8:53 AM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHEAST
LATITIUDE:	36.955797°
LONGITUDE:	-76.823667°
DISTANCE FROM PROJECT:	400 FT

DISCLAIMER: PRELIMINARY VISUALIZATIONS ARE FOR REFERENCE ONLY; PROJECT LAYOUT AND LANDSCAPE DETAILS ARE IN DEVELOPMENT AND SUBJECT TO CHANGE.

SYCAMORE CROSS SOLAR PROJECT

KOP 5: Rattlesnake Trail

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
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SYCAMORE CROSS SOLAR PROJECT

KOP 7: Mill Swamp Rd

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

TIME:	1:05 PM
DATE:	3/21/2023
WEATHER CONDITION:	PARTLY CLOUDY
VIEWING DIRECTION:	NORTHWEST
LATITIUDE:	37.014834°
LONGITUDE:	-76.733937°
DISTANCE FROM PROJECT:	270 FT

DISCLAIMER: PRELIMINARY VISUALIZATIONS ARE FOR REFERENCE ONLY; PROJECT LAYOUT AND LANDSCAPE DETAILS ARE IN DEVELOPMENT AND SUBJECT TO CHANGE.

SYCAMORE CROSS SOLAR PROJECT

KOP 7: Mill Swamp Rd

PHOTO SIMULATION





VICINITY MAP

LEGEND

- PHOTO SIMULATION LOCATION
- PROJECT AREA
- KOP LOCATION

PHOTOGRAPH INFORMATION

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Sycamore Cross A and B Solar Projects with Approved Solar Energy Generation Facilities as of 5/21/24

PROJECT	DEVELOPED AREA (PER CUP)	PRIME FARMLAND /SOILS OF STATEWIDE IMPORTANCE*	% OF TOTAL PRIME SOILS (rounded)	LOCATION	% OF TOTAL FARMLAND**	TOTAL MW	APPROVAL DATE
Woodland	180	124	0.10%	Longview	0.22%	20	2015
Solidago	170	170	0.14%	Redhouse	0.21%	20	2018
Ho-Fel	330	315	0.26%	Lees Mill	0.41%	55	2019; Amended 2023
Windsor PV1	630	630	0.52%	Windsor	0.78%	85	2019; Amended in 2021
Cavalier	500	500	0.41%	Hardy	0.62%	240	2021
Nuby Run	20	20	0.02%	Orbit	0.02%	2	2022
Carver	637	297	0.24%	Windsor	0.79% 0.00%	71	Approved 7/23/2023
Prairie Solar	152	152	0.12%	Longview	0.19% 0.00%	20	Approved 8/17/23
Courthouse Solar	18	18	0.01%	Route 258	0.02%	3	Approved 11/16/23
Sycamore Cross A & B (Proposed)	1,030	1,030	0.84%	Ramsey/Mill Swamp/White Hill Trail/Sycamore Cross/Rattlesnake	1.28%	240	Under Review
TOTAL	**3,667**	**3,256**	**2.66%**		**4.57%**	**756**	

Prime soils include Prime Farmland, Prime, If Drained, and Soils of Statewide Importance – 122,296 total acres in County

Total active agricultural lands as of 2022 Census of Agriculture – 80,316 acres

PLANNING REPORT

APPLICATION:

Request of Riverside Health System Smithfield Hospital for a Sign Exception for Certain Signs as shown on the Coordinated Signage Scheme Plan to be located at Riverside Hospital located at 19339 Benns Grant Boulevard on property with tax map number 32-01-102

ELECTION DISTRICT:

D3

LOCATION:

The property is located at 19339 Benns Grant Boulevard adjacent to the Benns Grant master planned community.

BACKGROUND:

The Board of Supervisors approved a change of zoning for the property in 2008 from Rural Agriculture Conservation (RAC) to Conditional-General Commercial (C-GC) to allow for a medical complex with facilities for medical related services appropriate to the medical complex. The property was rezoned as part of the overall Benns Grant master planned mixed use community.

The Board of Supervisors, on recommendation of the Planning Commission, previously approved a Sign Size Exception for the main monument identification sign to be located on Benns Church Blvd. on March 16, 2023, submitted as an individual request not part of a Master Sign Plan for the campus.

DESCRIPTION:

The property owner has submitted the signs that do not meet all the requirements of Section 9-1012 of the Zoning Ordinance. The applicant is requesting the following:

1. Five free-standing signs that are eight feet in height that do not met the the minimum setback from the right-of-way of 35 feet.
2. Two free-standing signs do not meet the setback from the street right-of-way of fifteen feet.

The applicant does not believe the sign standards in the Zoning Ordinance provide for adequate wayfinding signs to be able to safely navigate in and throughout the hospital campus. The proposed coordinated sign scheme is attached to this report.

COMPREHENSIVE LAND USE PLAN:

The future recommended land use for the subject property is Mixed Use on the Future Recommended Land Use Map in the Comprehensive Plan. The Plan cites uses such as housing mixed with office, civic, and commercial uses as appropriate in these areas. The Mixed Use (MU) land use consists of one or multiple detached or attached single family homes, multi-plex and apartment style housing options, along with office or commercial uses. Preservation of environmental features will still occur and community amenities are typically offered.

ORDINANCE REVIEW:

The property lies within the Conditional General Conditional zoning district as well as the Newport Development Service Overlay (NDSO) and Chesapeake Bay Preservation Area (CBPA) Overlay districts. Both the NDSO and CBPA overlay districts provide for enhanced design criteria for new development.

According to the sign standards found in Section 9-1006.C of the Zoning Ordinance, there are three criteria based on the size and height to govern the setback of free standing signs, which have not been met as described in the description.

The Board of Supervisors with a recommendation from the Planning Commission may, however, authorize an exception according to Section 9-1012. According to the Ordinance, the Board of Supervisors shall consider the following:

1. Such exception shall create no greater impact to the residents or occupants of the development, as well as the neighboring property, than that which would be obtained under the applicable regulation;
2. Such exception is reasonable because of the high level of design and construction that will be incorporated in the development; and
3. Such exception will result in design and construction that is in accordance with accepted engineering and building standards.

AGENCY REVIEW:

The application did not require outside agency or department review.

STAFF CONCLUSIONS:

Strengths:

1. The sign exception will provide easier wayfinding in and throughout the campus.
2. The exception shall create no greater impact to the residents or occupants of the development, as well as the neighboring property, than that which would be obtained under the applicable regulation.
3. The resulting signs will be required to meet all other design and construction criteria in accordance with accepted engineering and building standards.

Weaknesses:

1. These certain proposed signs are not in compliance with the Zoning Ordinance without an exception.

STAFF RECOMMENDATION:

Because the proposed signage would increase the level of public safety through more effective communication and better wayfinding on the hospital campus, staff recommends approval of the exception request.

ATTACHMENTS:

Description	Type	Upload Date
Application	Backup Material	4/24/2024
Site Vicinity/Location Map	Backup Material	4/24/2024
Sign Layout Plan	Backup Material	4/24/2024
Sign Location Map	Exhibit	4/25/2024
Exception G8	Backup Material	4/24/2024
Exception G2, G3, G4 and G9	Backup Material	4/24/2024
Exception G12, G13	Backup Material	4/24/2024

Local Roots, Global Reach
ISLE OF WIGHT
COUNTY, VIRGINIA
DEPARTMENT OF COMMUNITY DEVELOPMENT

RECEIVED
APR 23 2024
By: CBO

28967
EXC-3-24

APPLICATION FOR EXCEPTIONS

This application should be used to petition for an exception for certain uses which, because of their unique characteristics, but which may, under the right set of circumstances and conditions be acceptable.

A. APPLICATION FOR (CHECK ALL THAT APPLY):

[ ] Chesapeake Bay Preservation Area Ordinance Exception

Newport Development Service Overlay District Exception

[ ] Highway Corridor Overlay District Exception

[✓] Signage Exception

[ ] Subdivision Ordinance Waiver

[ ] Other (please list) _____

The proposal is a request to Section (s)_____of the Chesapeake Bay Preservation Area Ordinance, the Isle of Wight County Zoning Ordinance, or the Isle of Wight County Subdivision Ordinance.

Proposed Use or Activity: Acute Care Hospital Campus (including medical office building - MOB)

B. APPLICATION INFORMATION:

Applicants Name: HDR Architecture Inc. (Christopher C. Yago, Sr.)

Address: 4880 Sadler Road; Suite 100; Glen Allen, VA 23060

Email: chris.yago@hdrinc.com Phone: 804-564-3176

Property Owners Name: Riverside Hospital, Inc. d/b/a Riverside Smithfield Hospital

Address: 701 Town Center Drive, Suite 100; Newport News, VA 23606

C. **PROJECT DESCRIPTION:**

Project Name: Riverside Smithfield Hospital & Medical Office Building (Campus)

Property Address (if any): 19339 & 19375 Benns Grant Boulevard, Smithfield, VA 23430

Comprehensive Plan Designation: _____

The exception will apply to 29.55 acres out of 29.55 total acres

Tax Parcel Identification # Parcel MO-1 Number of acres to be effected: _____

Proposed Utilities (check all that apply): Public Water ✓ Private Well _____

Public Sewer ✓ Private Septic _____

PARCEL TAX MAP NO. 32-01-102

NOTICE: THE ATTACHED CHECKLIST MUST BE COMPLETED, CERTIFIED, AND SUBMITTED OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE.

Remit Application to: Isle of Wight County Central Permitting, 17140 Monument Circle, Suite 100
P. O. Box 80, Isle of Wight, Virginia 23397

[signature] April 12, 2024

Applicant Signature **Date**

[signature] 4/16/2024

Owner Signature *if different* CFO **Date**

FOR OFFICE USE ONLY:

Complete Application Received On: 4/23/24 Fees Paid: ✓

Tax Query: [ ] Current [ ] Delinquent Distribution Date: —

Posted/Date to Post: —

AGENCIES REFERRALS:

_____Department of Conservation & Recreation
_____Economic Development
_____Emergency Services
_____General Services
_____Environmental Planner
_____Health Department
_____Transportation Manager
_____Commission of Revenue
_____Other _____

_____Inspections
_____Sheriff's Office
_____Town of Smithfield
_____Town of Windsor
_____VDOT
_____Schools
_____Budget & Finance
_____County Attorney

Verified By: [signature] Date: 4/23/24

COUNTY OF ISLE OF WIGHT
DISCLOSURE OF REAL ESTATE HOLDINGS

Applicant: Riverside Hospital, Inc. d/b/a Riverside Smithfield Hospital

Address: 701 Town Center Drive, Suite 100; Newport News, VA 23606

REAL ESTATE HOLDINGS TO BE AFFECTED

Location or Address	Description
19339 Benns Grant Blvd. Smithfield VA 23430	PARCEL TAX MAP NO.: 32-01-102 (Future Hospital Campus)

OTHER OWNERS OF AFFECTED REAL ESTATE
(Not Required for Corporation whose stock is traded on a national or local stock exchange or having more than 500 shareholders.)

Name of Individuals Corporation/Partnership Business Association	Address

Does any member of the Isle of Wight County Planning Commission or governing body have any interest in such property, either individually, by ownership of stock in a corporation owning such land, partnership, as the beneficiary of a trust, or the settlor of a revocable trust, or whether a member of the immediate household of any member of the Planning Commission or governing body has any such interest? Yes (No)

If yes, names of members:

I do solemnly swear that the foregoing statement(s) and attachments(s), if any, are complete, correct, and true.

Applicant: William Austin Jr. Applicant: [signature] Date: 4/16/2024
Printed or Typed Name Signature

CFO

Commonwealth of Virginia
County of Isle of Wight

Subscribed and sworn to before me William Austin, Jr.,
A Notary Public in and for the County of Isle of Wight, Commonwealth of Virginia, this 16th day of April, 2024.

Lisa C. Burrows
Notary Public

My Commission Expires 9/30/2026

LISA CAUDLE BURROWS
NOTARY PUBLIC • REG. # 7989118
Commonwealth of Virginia
My Commission Expires 09/30/2026

Local Roots, Global Reach
ISLE OF WIGHT
COUNTY, VIRGINIA

SUBMITTAL CHECKLIST FOR EXCEPTION APPLICATIONS

****Both checklist and application required upon submission to central permitting or application will notbe accepted****

In accordance with Section 5002, *Exceptions,* of the Chesapeake Bay Preservation Area Ordinance, and in accordance with Section 6-1015, *Exceptions*, Section 6-2011, *Exceptions*, and Section 9-1013, *Exceptions*, of the Isle of Wight County Zoning Ordinance, the following information shall be submitted for an exception application. Please note that it is the applicant's responsibility to ensure that the application is in compliance with all Federal, State and County regulations.

No application for an exception shall be certified as complete unless the following information is provided. ***The required number of copies may be increased or reduced with permission of the Zoning Administrator, depending on the review needs.*** Applicant(s) must have their signature(s) notarized on the disclosure of real estate holdings.

To the best of my knowledge, all required items requested by the IOW Staff Reviewer have been provided

- ☐ **Ten (10) copies of the following**
  - ☑ original, executed application
  - ☑ a statement of the reasons for seeking an exception
  - ☑ narrative description of the property which shall include the tax parcel identification number
  - ☑ full size concept plan of the site to show all existing and proposed physical improvements and such otherinformation as is necessary to clearly indicate to the reviewing body that adequate provisions have been made for compliance with all standards for that particular use, the extent of the property to beso used on a given parcel or parcels, and information defining the requested exceptions. The plan shall be prepared by the appropriate authorized design professional licensed to practice in Virginia. No person shall prepare or certify design elements of site plans which are outside the limits of their professional expertise and license. Such document shall be drawn to scale and shall include the following information:
    - A vicinity map at a scale of no less than one (1) inch equals two thousand (2,000) feet
    - Title of drawing
    - Date of drawing
    - Existing wood line
    - North arrow
    - Scale bar
    - Current zoning of parcel(s), including tax map number(s) and owner(s)

- Current zoning of adjacent parcel(s), including tax map number(s) and owner(s)
- Street names including route number and width(s) of the right-of-way(s)

☑ **One (1) original executed application**

☑ **One (1) digital copy of ALL application documents**

☑ **One (1) reduced 11"x17" copy of concept plan**

☑ **Application fee submitted with the application. Checks should be made payable to treasurer, Isle of Wight, County**

☐ **<u>For CBPA Exception applications</u>, a major water quality impact assessment which meets the criteria in Section 4003 of the Chesapeake Bay Preservation Area Ordinance must be submitted at the time of application.**

☐ Other information may be necessary to demonstrate compliance with all other applicable federal, state and County standards and regulations.

☐ All real estate taxes must be paid and current at the time of submittal; otherwise, the submittal willbe refused at the counter. Proof of the most recent tax payment to the County must accompany the application.

Please note that additional information on the site layout may be requested by the Zoning Administrator during the review process in order to more effectively review the application and prepare the staff reports for the appropriate reviewing body.

I, the undersigned, certify that this application is complete, accurate and contains all required and requested information, documents, and other submittals, and that all statements made herein are, to the best of my knowledge, true and correct. I further certify that I have exercised due diligence to obtain the most recent, complete, and correct information available. I understand that any section not completed in its entirety may delay the processing of this application.

Christopher C. Yago, Sr. (HDR Architecture, Inc.)

Printed or Typed Name



Signature

April 16, 2024

Date

PREPARED FOR:

RIVERSIDE

RIVERSIDE HEALTH SYSTEM
701 TOWN CENTER DR.
FOUNTAIN PLAZA ONE, SUITE 1000
NEWPORT NEWS, VA 23606
CONTACT: RUSSELL PARISH

PREPARED BY:

HDR

HOSPITAL AND MOB ARCHITECT:
4880 SADLER ROAD, SUITE 100
GLEN ALLEN, VA 23060
CONTACT: CHRIS YAGO

ENGINEER:
LAND PLANNING SOLUTIONS
1403 GREENBRIER PARKWAY, SUITE 205
CHESAPEAKE, VA 23320
CONTACT: JEFFREY P. HUENTELMAN, PE

NOTE: THIS IS FOR APPROVAL OF THE OVERALL CAMPUS COORDINATED SIGNAGE SCHEME. SIGN PERMIT DRAWINGS WILL BE SUBMITTED BY THE SIGN FABRICATOR FOR REVIEW AND APPROVAL UNDER SEPARATE COVER PRIOR TO SIGNS BEING INSTALLED.

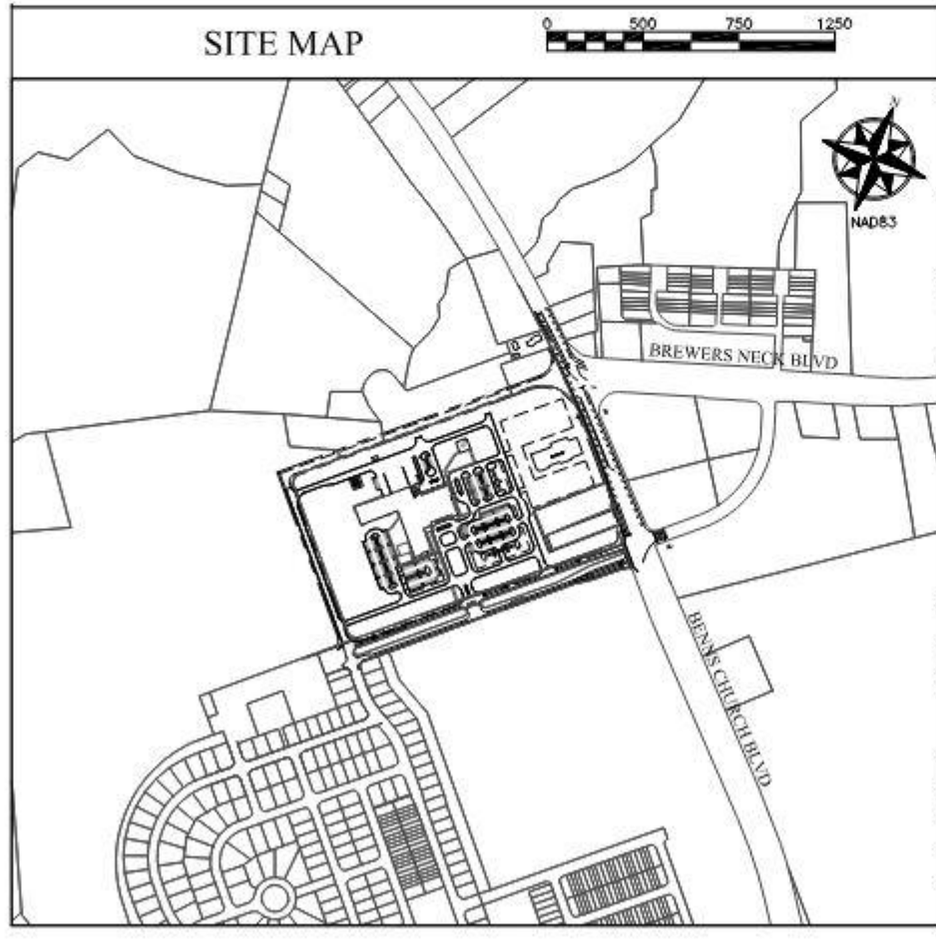
SHEET 1

COORDINATED SIGNAGE SCHEME FOR COUNTY OF ISLE OF WIGHT, VA REVIEW
PAGE 1 OF 6
FEBRUARY 14, 2024

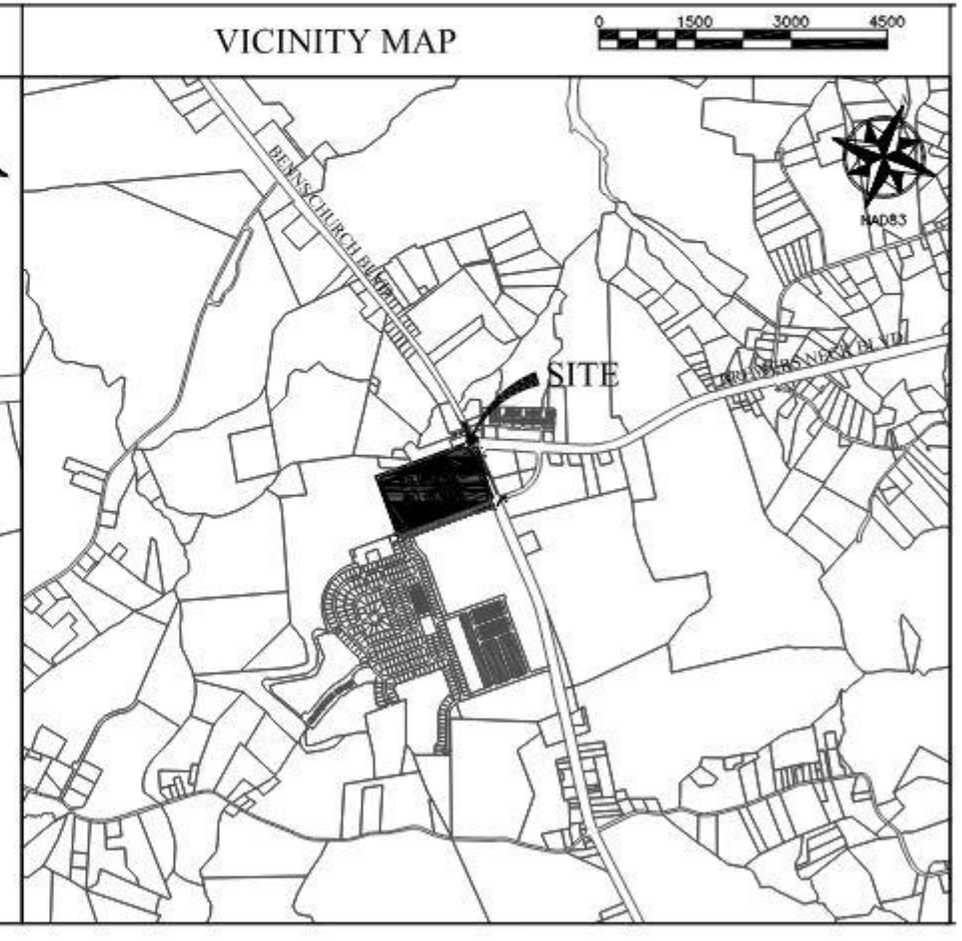
RIVERSIDE HEALTH SYSTEM SMITHFIELD HOSPITAL

COORDINATED SIGNAGE SCHEME FOR REVIEW BY COUNTY OF ISLE OF WIGHT, VA
FOR 19339 BENN'S GRANT BOULEVARD, SMITHFIELD, VA 23430

SITE MAP



VICINITY MAP



RIVERSIDE HEALTH SYSTEM SMITHFIELD HOSPITAL

COORDINATED SIGNAGE SCHEME FOR REVIEW BY COUNTY OF ISLE OF WIGHT, VA

FOR 19339 BENN'S GRANT BOULEVARD, SMITHFIELD, VA 23430

PREPARED FOR:

RIVERSIDE

RIVERSIDE HEALTH SYSTEM
701 TOWN CENTER DR.
FOUNTAIN PLAZA ONE, SUITE 1000
NEWPORT NEWS, VA 23606
CONTACT: RUSSELL PARISH

PREPARED BY:

HDR

HOSPITAL AND MOB ARCHITECT:
4880 SADLER ROAD, SUITE 100
GLEN ALLEN, VA 23060
CONTACT: CHRIS YAGO

ENGINEER:
LAND PLANNING SOLUTIONS
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SHEET 2

COORDINATED SIGNAGE SCHEME FOR COUNTY OF ISLE OF WIGHT, VA REVIEW

FEBRUARY 14, 2024



AERIAL VIEW RENDERING DEPICTING HOSPITAL AND MOB SITES WITH PROPOSED WAYFINDING SIGNAGE INCLUDED.

NOT ALL WAYFINDING SIGNS ARE VISIBLE IN THIS VIEW.

SIGNS VISIBLE IN THIS RENDERING HAVE BEEN HIGHLIGHTED TO PROVIDE AN UNDERSTANDING OF THE OVERALL CONTEXT OF THE SCALE OF WAYFINDING SIGNAGE ON THE SITE.

RIVERSIDE HEALTH SYSTEM SMITHFIELD HOSPITAL

COORDINATED SIGNAGE SCHEME FOR REVIEW BY COUNTY OF ISLE OF WIGHT, VA
FOR 19339 BENN'S GRANT BOULEVARD, SMITHFIELD, VA 23430

PREPARED FOR:

RIVERSIDE

RIVERSIDE HEALTH SYSTEM
701 TOWN CENTER DR.
FOUNTAIN PLAZA ONE, SUITE 1000
NEWPORT NEWS, VA 23606
CONTACT: RUSSELL PARISH

PREPARED BY:

HDR

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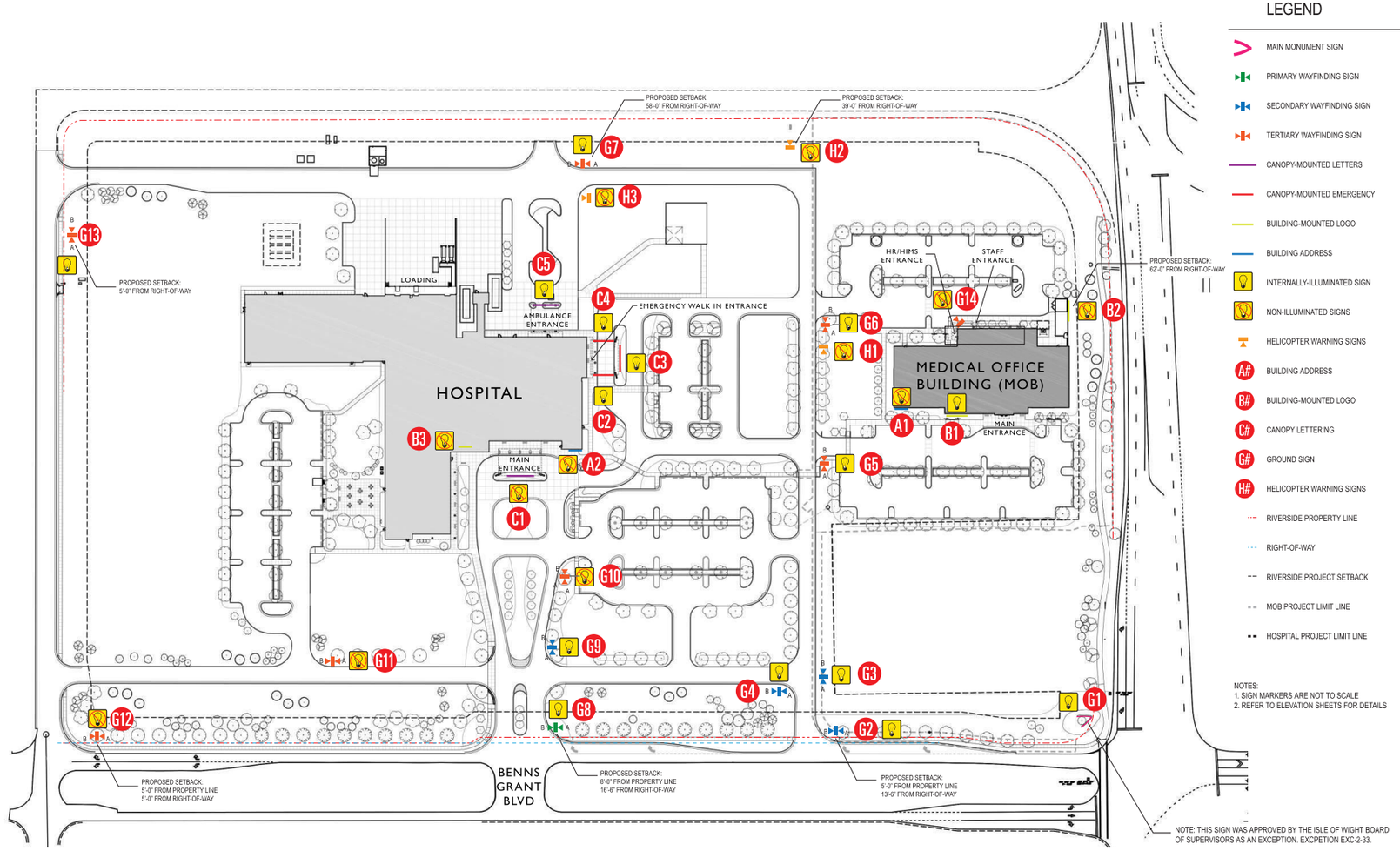
NOTE: THIS IS FOR APPROVAL OF THE OVERALL CAMPUS COORDINATED SIGNAGE SCHEME. SIGN PERMIT DRAWINGS WILL BE SUBMITTED BY THE SIGN FABRICATOR FOR REVIEW AND APPROVAL UNDER SEPARATE COVER PRIOR TO SIGNS BEING INSTALLED.

SHEET 3

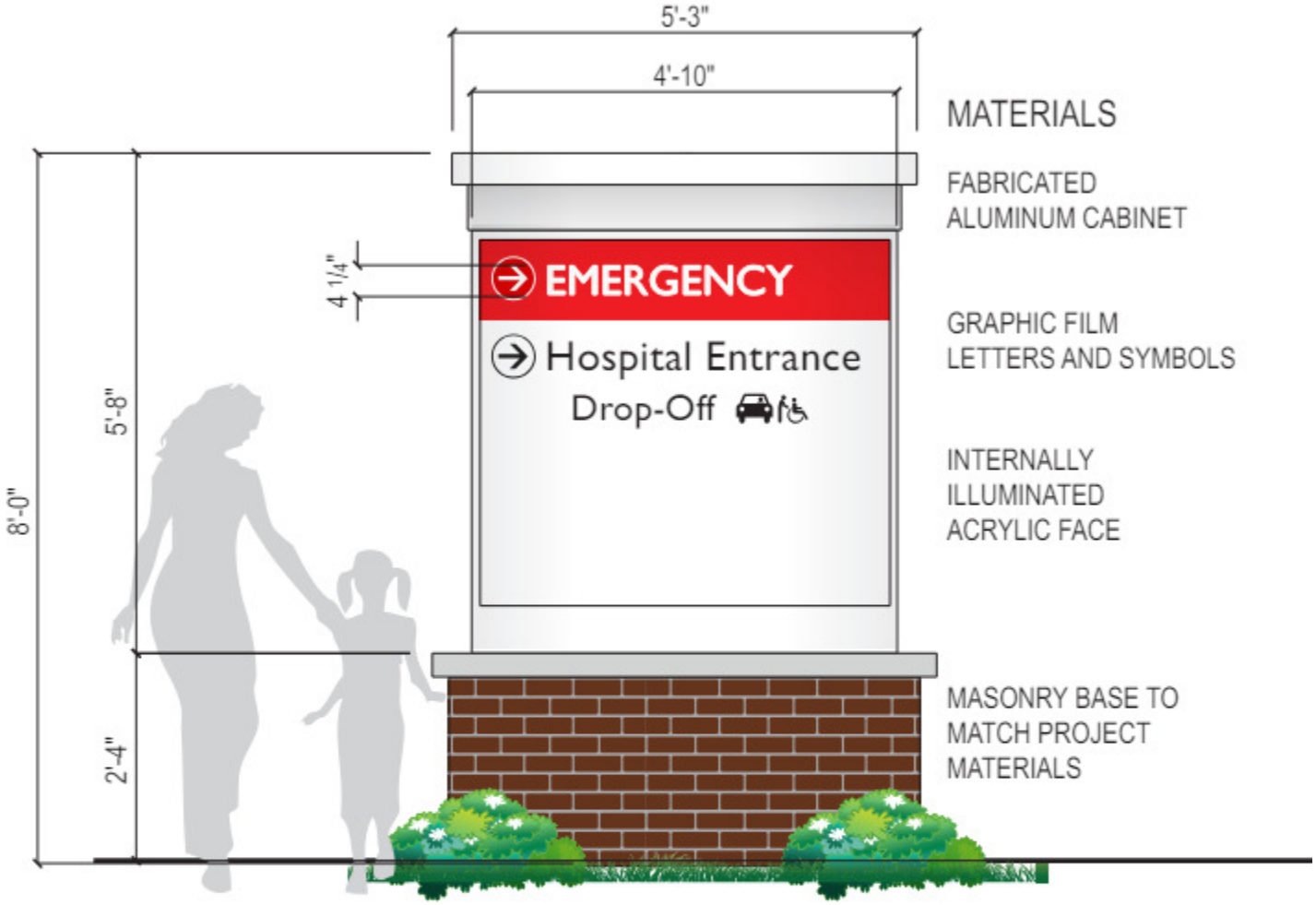
COORDINATED SIGNAGE SCHEME FOR COUNTY OF ISLE OF WIGHT, VA REVIEW
PAGE 3 OF 6
APRIL 10, 2024



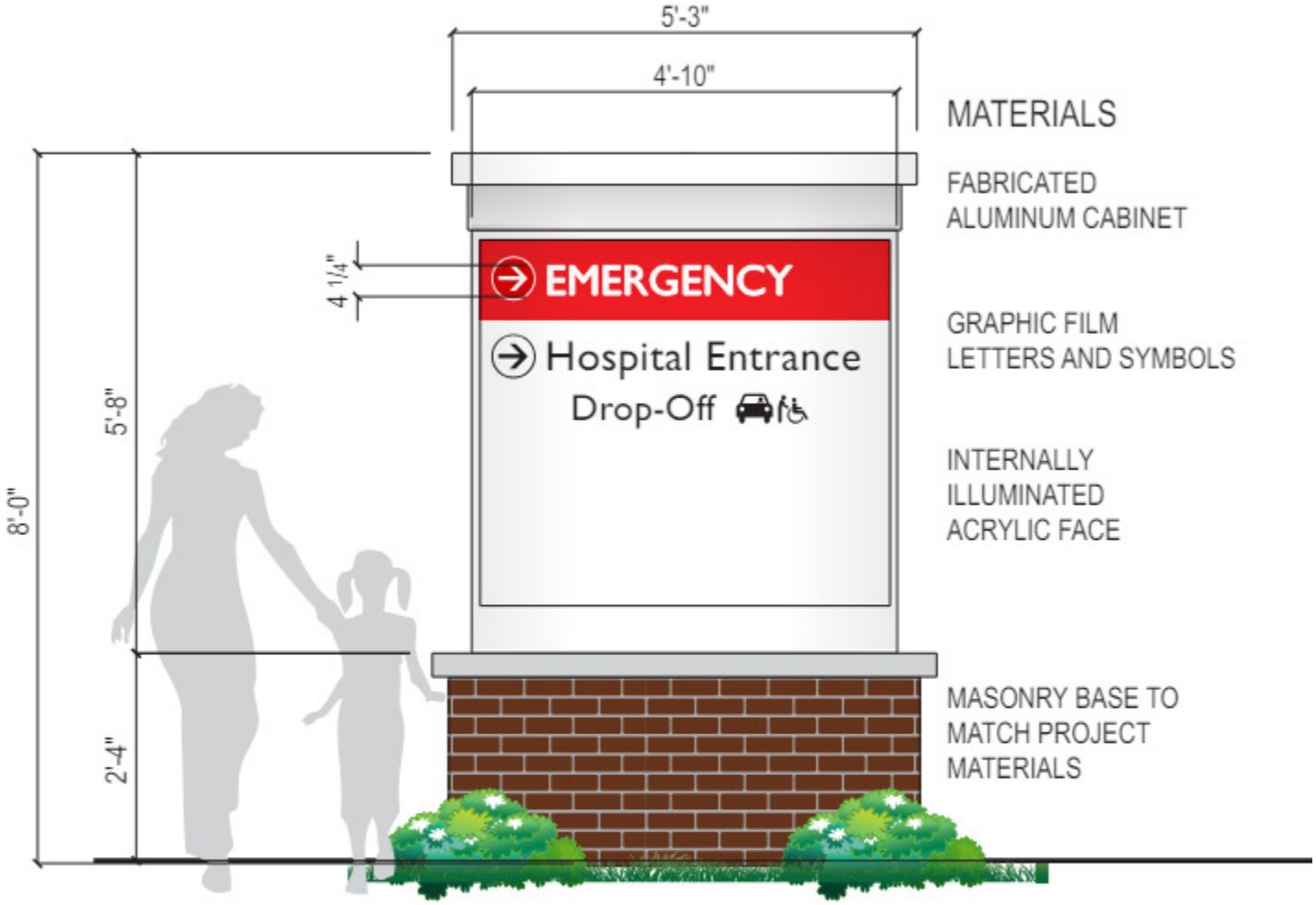
LEGEND

- MAIN MONUMENT SIGN
- PRIMARY WAYFINDING SIGN
- SECONDARY WAYFINDING SIGN
- TERTIARY WAYFINDING SIGN
- CANOPY-MOUNTED LETTERS
- CANOPY-MOUNTED EMERGENCY
- BUILDING-MOUNTED LOGO
- BUILDING ADDRESS
- INTERNALLY-ILLUMINATED SIGN
- NON-ILLUMINATED SIGNS
- HELICOPTER WARNING SIGNS
- A# BUILDING ADDRESS
- B# BUILDING-MOUNTED LOGO
- C# CANOPY LETTERING
- G# GROUND SIGN
- H# HELICOPTER WARNING SIGNS
- RIVERSIDE PROPERTY LINE
- RIGHT-OF-WAY
- RIVERSIDE PROJECT SETBACK
- MOB PROJECT LIMIT LINE
- HOSPITAL PROJECT LIMIT LINE

NOTES:
1. SIGN MARKERS ARE NOT TO SCALE
2. REFER TO ELEVATION SHEETS FOR DETAILS



PRIMARY WAYFINDING SIGN
LOCATION G8
SIGNAGE SQUARE FOOTAGE BASED
ON 4'-10" W X 5'-8" H = 27.4



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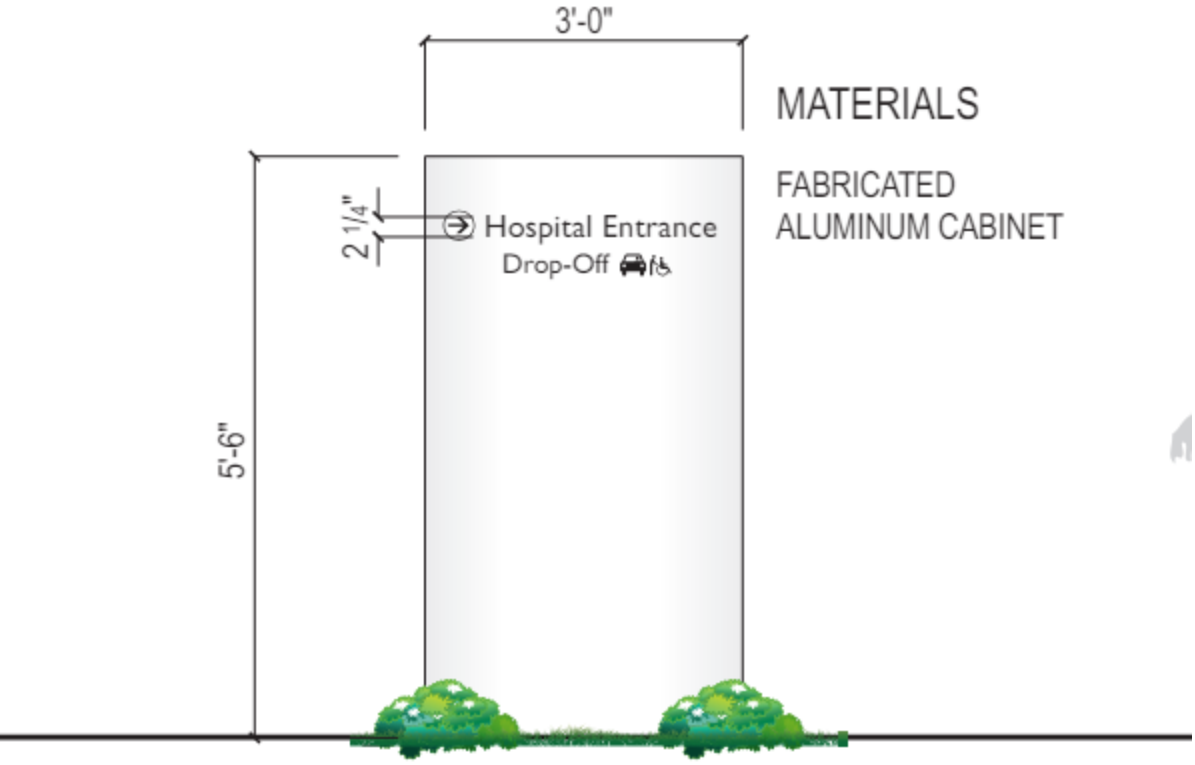


MATERIALS

FABRICATED
ALUMINUM CABINET

TERTIARY WAYFINDING SIGN
LOCATIONS: G5, G6, G7, G11,
G12, G13, G14

PLANNING REPORT

APPLICATION:

Request of James River Crossings for an exception to allow one sign on either side of Spadea Way, as shown on the Proposed Amended Master Sign Plan, on property with tax map numbers 34-01-070E and 34-01-070D1.

ELECTION DISTRICT:

D2

LOCATION:

The property is located at the intersection of Carrollton Blvd and Spadea Way adjacent to the Crossings master planned community of residential and commercial uses.

BACKGROUND:

James River Crossings, Inc. has submitted an application for a Amendment to the Master Sign Plan that will require an exception to the setback off of the street right-of-way to allow one sign to be three feet and the other to be eleven feet off of Spadea Way.

The Master Plan approved in October 2023 for the proposed entrance sign in the median of Spadea Was was later denied by VDOT and the new location for that signage is proposed as described above if the exception and Amended Master Sign Plan is approved by the Board of Supervisors.

The proposed designs of these signs are consistent with the colors and materials contained in the proffered building design for the Crossings.

DESCRIPTION:

The property owner is requesting an exception to the maximum permitted free-standing sign face area size and height requirements in accordance with Section 9-1012 of the Ordinance. The applicant proposes to install two monument-style, free-standing signs with a sign face of 24 SF and a under 6 feet in height.

The applicant has exhausted all options for identification signage at this entrance due to concerns of VDOT and Public Utilities.

COMPREHENSIVE LAND USE PLAN:

The future recommended land use for the subject property is Mixed Use on the Future Recommended Land Use Map in the Comprehensive Plan. The Plan cites uses such as housing mixed with office, civic, and commercial uses as appropriate in these areas. The Mixed Use (MU) land use consists of one or multiple detached or attached single family homes, multi-plex and apartment style housing options, along with office or commercial uses. Preservation of environmental features will still occur and community amenities are typically offered.

ORDINANCE REVIEW:

The property lies within the GC zoning district as well as the NDSO and Chesapeake Bay Preservation Area (CBPA) Overlay districts. Both the NDSO and CBPA overlay districts provide for enhanced design criteria for new development.

According to the sign standards for the GC zoning district found in Section 9-1006.C of the Zoning Ordinance, the maximum size for a sign face is fifty square feet with a maximum height of eight feet with a 35 foot setback.

The Board of Supervisors with a recommendation by the planning commission may, however, authorize an exemption to the sign regulations according to Section 9-1012. According to the Ordinance, the Board of Supervisors shall consider the following:

1. Such exception shall create no greater impact to the residents or occupants of the development, as well as the neighboring property, than that which would be obtained under the applicable regulation;
2. Such exception is reasonable because of the high level of design and construction that will be incorporated in the development; and
3. Such exception will result in design and construction that is in accordance with accepted engineering and building standards.

AGENCY REVIEW:

The application has been reviewed and approved by VDOT and Public Utilities.

STAFF CONCLUSIONS:

Strengths:

1. The sign exception will allow for recognition of the main entrance into the development.
2. The exception will not create an impact to the residents or occupants of the development, as well as neighboring property.
3. The proposed signs meet all other design and construction criteria in accordance with accepted engineering and building standards.

Weaknesses:

1. The proposed sign size and setback are not in compliance with the Zoning Ordinance guidelines.

STAFF RECOMMENDATION:

Because of the strengths outlined in the staff conclusions, staff recommends approval of the exception request.

ATTACHMENTS:

Description	Type	Upload Date
Application	Backup Material	5/6/2024
Location map Approved Master Sign Plan Main Entrance	Backup Material	5/6/2024
Location map Requested Exception for Main Entrance Sign	Backup Material	5/21/2024
Proposed main entrance signage x 2	Backup Material	5/21/2024

Local Roots, Global Reach
ISLE OF WIGHT
COUNTY, VIRGINIA
DEPARTMENT OF COMMUNITY DEVELOPMENT

28460
EXC-2-24

APPLICATION FOR EXCEPTIONS

This application should be used to petition for an exception for certain uses which, because of their unique characteristics, but which may, under the right set of circumstances and conditions be acceptable.

A. **APPLICATION FOR (CHECK ALL THAT APPLY):**

[ ] Chesapeake Bay Preservation Area Ordinance Exception

[ ] Newport Development Service Overlay District Exception

[ ] Highway Corridor Overlay District Exception

[X] Signage Exception

[ ] Subdivision Ordinance Waiver

[ ] Other (please list) _____

The proposal is a request to Section (s)_____of the Chesapeake Bay Preservation Area Ordinance, the Isle of Wight County Zoning Ordinance, or the Isle of Wight County Subdivision Ordinance.

Proposed Use or Activity: The master signage plan for Bartlett Station was approved by the Isle of Wight Board of Supervisors on October 19, 2023. A copy of the letter informing us of the approval is attached hereto. VDOT had approved the sign and its location prior to our submittal. Thereafter VDOT informed Isle of Wight that the sign could not be in the Spadea Way median. We are requesting that the Board of Supervisors approve an amendment solely to the master sign in the Spadea Way median to remove the 6' x 8' sign and replace it with two 4' x 6' signs at the corners of Spadea Way and Carrollton Blvd.

B. **APPLICATION INFORMATION:**

Applicants Names: Mr. Jerry L Bowman - James River Crossings Inc. and James River Crossings Master Association Inc.

Address: 616 Village Drive, Ste G, Virginia Beach, VA 23454

Email: JBowman@evalaw.net Phone: 757-517-3010

Easement Holder: James River Crossings Inc. (Attn: Jerry L Bowman)

Address: 616 Village Drive, Ste G, Virginia Beach, VA 23454

C. **PROJECT DESCRIPTION:**

Project Name: Bartlett Station

Property Address (if any): Spadea Way at Crossings Way, Carrollton, Virginia

Comprehensive Plan Designation: _____

This exception will apply to _____ acres out of _____ total acres

Tax Parcel: Parcel A = 34-01-070E Number of acres to be effected: _____

Parcel D = 34-01-070D1

Proposed Utilities (check all that apply): Public Water__ Private Well _____

Public Sewer _____ Private Septic _____

NOTICE: THE ATTACHED CHECKLIST MUST BE COMPLETED, CERTIFIED, AND SUBMITTED OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE.

Remit Application to: Isle of Wight County Central Permitting, 17140 Monument Circle, Suite 100
P. O. Box 80, Isle of Wight, Virginia 23397

_____

Jerry L Bowman, President of James River Crossings, Inc.

_____

Jerry L Bowman, President of James River Crossings Master Association Inc.

FOR OFFICE USE ONLY:

Complete Application Received On: ✓ Fees Paid: ✓

Tax Query: [✓] Current [ ] Delinquent Distribution Date: _____

Posted/Date to Post: X

AGENCIES REFERRALS:

_____Department of Conservation & Recreation
_____Economic Development
_____Emergency Services
__✓__General Services
_____Environmental Planner
_____Health Department
_____Transportation Manager
_____Commission of Revenue
_____Other _____

_____Inspections
_____Sheriff's Office
_____Town of Smithfield
_____Town of Windsor
__✓__VDOT
_____Schools
_____Budget & Finance
_____County Attorney

Verified By: _____ Date: 04-24-2024

F. Applicants/Owners Affidavit (including compliance with all deed restrictions and covenants)

This application must be signed by the owner(s) of the subject property or must have attached written evidence of the owner's consent, which may be in the form of a binding contract of sale with the owner's signature or a letter signed by the owner(s), containing written authorization to act with full authority on the owner(s) behalf in filing this appeal, variance or interpretation application. Signing this application shall certify the owner's compliance with all deed restrictions and covenants, and shall constitute the granting of authority of the County to enter onto the property for the purpose of conducting site analyses and compliance with Federal, State and County regulations.

Applicant: Mr. Jerry L Bowman- James River Crossings, Inc
Printed or Typed Name

Applicant: _____ Date: 2-29-24
Signature

City of Norfolk
County of Isle of Wight, Commonwealth of Virginia

Subscribed and sworn to before me Michelle Maki,
A Notary Public in and for the County of Isle of Wight,
Commonwealth of Virginia, this 29 day of February, 2024

_____
Notary Public

My Commission Expires _____

MICHELLE S. MAKI NOTARY PUBLIC REG # 324602 MY COMMISSION EXPIRES 12/31/24 COMMONWEALTH OF VIRGINIA

Applicant: Mr. Jerry L Bowman - James River Crossings
~~Owner:~~ Master Association Inc.
Printed or Typed Name

Owner: _____ Date: 2-29-24
Signature

City of Norfolk
~~County of Isle of Wight,~~ Commonwealth of Virginia

Subscribed and sworn to before me Michelle Maki,
A Notary Public in and for the County of Isle of Wight,
Commonwealth of Virginia, this 29 day of February, 2024

_____
Notary Public

My Commission Expires _____

MICHELLE S. MAKI NOTARY PUBLIC REG # 324602 MY COMMISSION EXPIRES 12/31/24 COMMONWEALTH OF VIRGINIA

Owner: _____
Printed or Typed Name

Owner: _____ Date: _____
Signature

County of Isle of Wight, Commonwealth of Virginia

Subscribed and sworn to before me _____,
A Notary Public in and for the County of Isle of Wight,
Commonwealth of Virginia, this ___day of _____, 20___

_____
Notary Public

My Commission Expires _____

Owner: _____
Printed or Typed Name

Owner: _____ Date: _____
Signature

County of Isle of Wight, Commonwealth of Virginia

Subscribed and sworn to before me _____,
A Notary Public in and for the County of Isle of Wight,
Commonwealth of Virginia, this __day of _____, 20__

_____
Notary Public

My Commission Expires _____

Revised September 14, 2018

COUNTY OF ISLE OF WIGHT
DISCLOSURE OF REAL ESTATE HOLDINGS

Applicant Mr. Jerry L. Bowman - James River Crossings Master Association Inc.

Address 616 Village Drive, Ste. G
Street

Virginia Beach VA 23454
City State Zip

REAL ESTATE HOLDINGS TO BE AFFECTED

Location or Address	Description
Spadea Way, Carrollton, Virginia	Adjacent right of way

OTHER OWNERS OF AFFECTED REAL ESTATE

(Not Required for Corporation whose stock is traded on a national or local stock exchange or having more than 500 shareholders.)

Name of Individuals Corporation/Partnership Business Association	Address
None	

Does any member of the Isle of Wight County Planning Commission or governing body have any interest in such property, either individually, by ownership of stock in a corporation owning such land, partnership, as the beneficiary of a trust, or the settlor of a revocable trust, or whether a member of the immediate household of any member of the Planning Commission or governing body has any such interest? Yes No X

If yes, names of members:

I do solemnly swear that the foregoing statement(s) and attachments(s), if any, are complete, correct and true.

Applicant: Jerry L Bowman (Printed or Typed Name) Applicant: (Signature) Date: 2/29/24

Commonwealth of Virginia
~~County of Isle of Wight~~ City of Norfolk

Subscribed and sworn to before me Michelle Maki,
A Notary Public in and for the County of Isle of Wight, Commonwealth of Virginia, this 29 day of February, 20 24.

MICHELLE S. MAKI NOTARY PUBLIC REG # 324602 MY COMMISSION EXPIRES 12/31/24 COMMONWEALTH OF VIRGINIA

MS Maki
Notary Public

My Commission Expires 12/31/24

Local Roots, Global Reach

ISLE OF WIGHT COUNTY, VIRGINIA

DEPARTMENT OF COMMUNITY DEVELOPMENT

February 1, 2024

Jerry Bowman
616 Village Drive, Suite G
Virginia Beach, VA 23454

Subject: Application (Misc-15-23) of James River Crossings, Inc., Owner, for a Master Signage Plan pursuant to Article IX Section 9-1006D of the Zoning Ordinance for the Property at the Intersection of Brewers Neck Blvd., Spadea Way and Carrollton Boulevard

Dear Mr. Bowman,

Please be advised that at its meeting on October 19, 2023, the Isle of Wight County Board of Supervisors approved the Master Signage Plan application MISC-15-23 for Bartlett Station (MUNIS # 28460) to allow three entrance signs at the three entrances and two directional signs at the entrances of the Publix Grocery Store along with the proposed design, material and color scheme as submitted as part of your application.

In order to install your signs, you will first need to apply for a sign permit through the County Central Permitting office. Please feel free to contact Sandy Robinson, your project manager, at (757) 365-6208 or by email at srobinson@iwus.net, should you have any questions.

Sincerely,

Amy M. Ring
Community Development Director

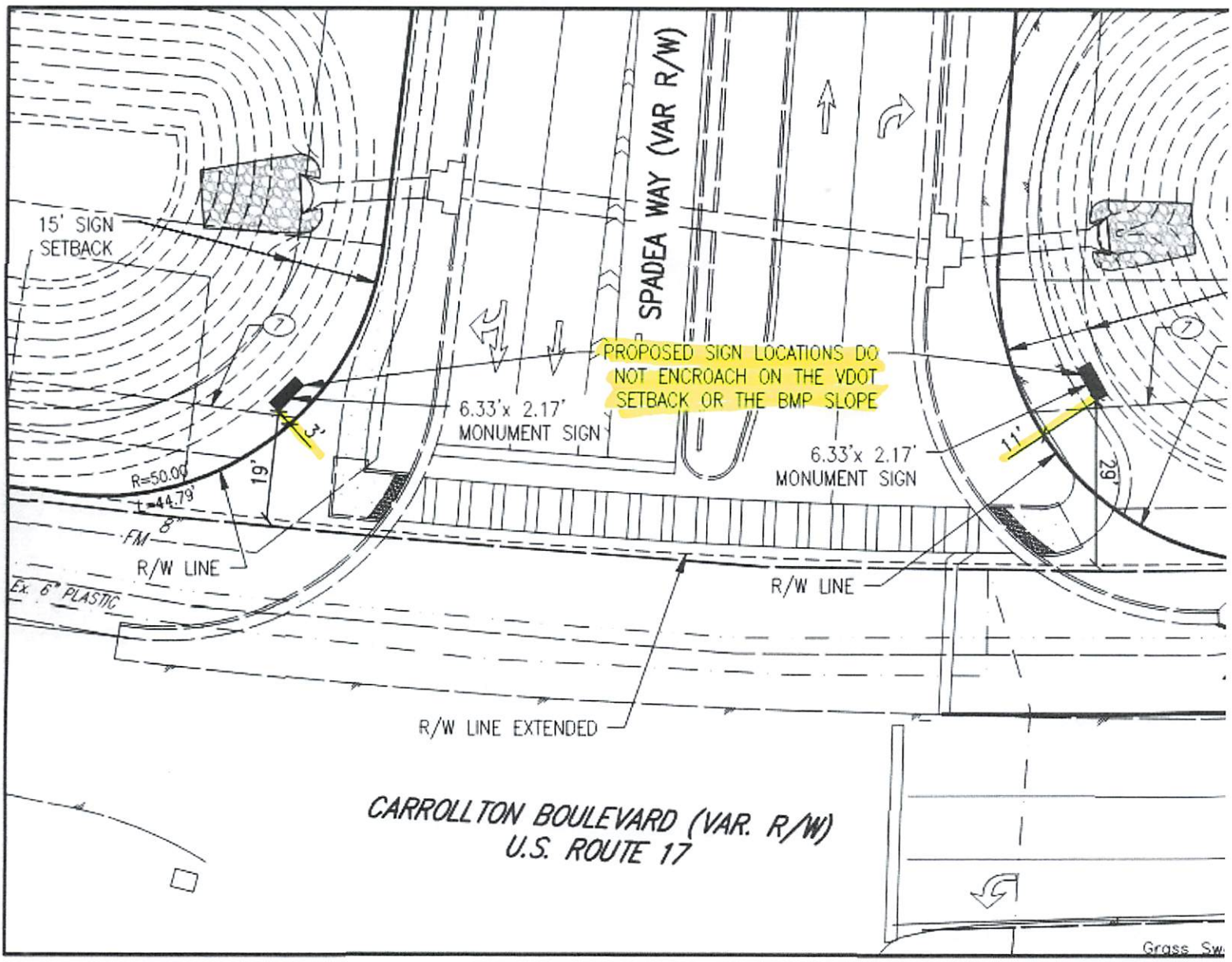
P. O. Box 80
17140 Monument Circle
Isle of Wight, VA 23397
(757) 357-9206
www.co.isle-of-wight.va.us

JAMES RIVER CROSSINGS INC. LOCATION MAP



Legend

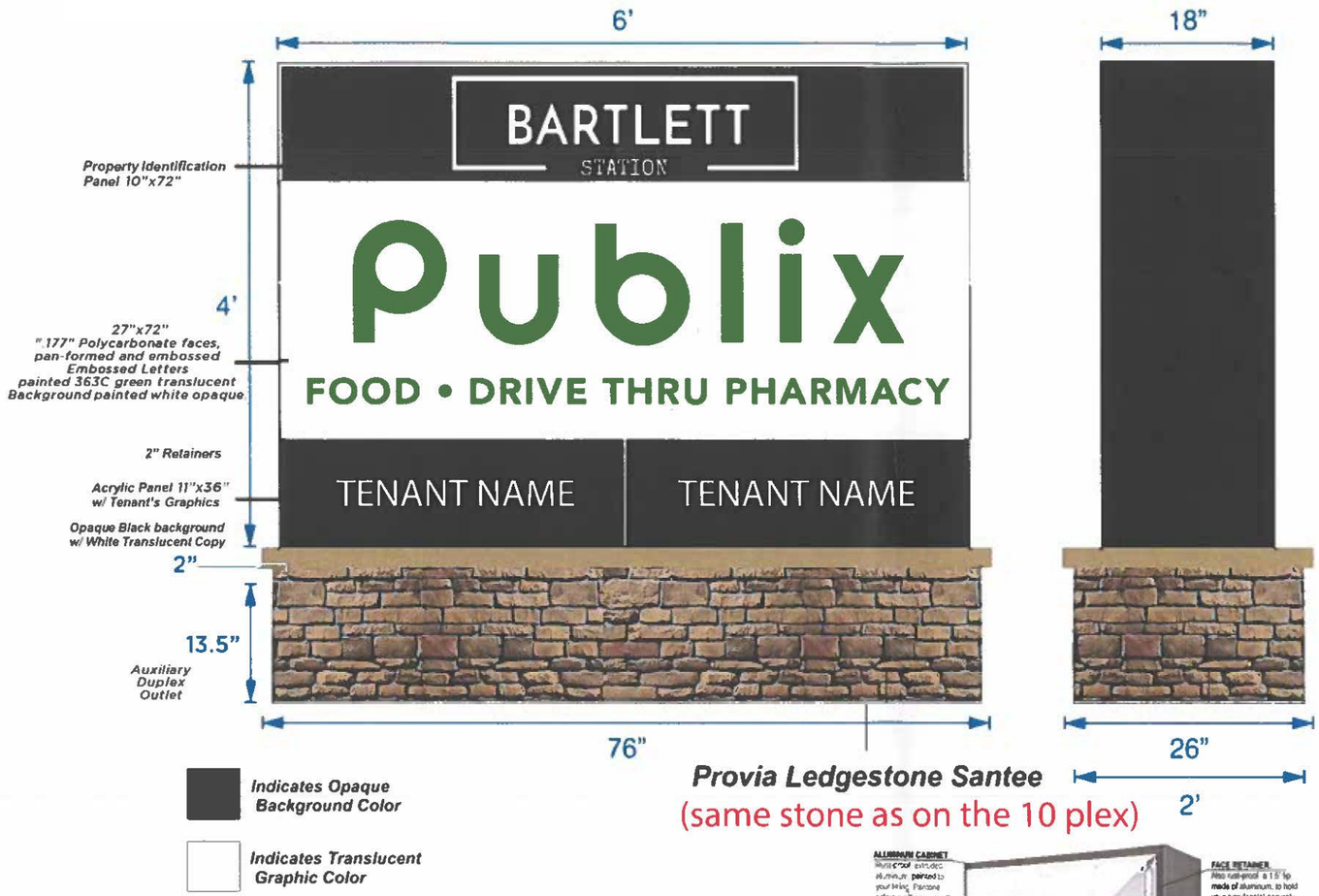
Parcels



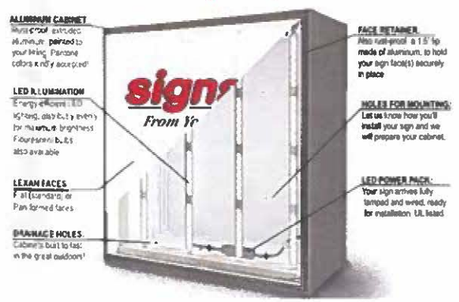
INSET

SCALE: 1"=20'

ILLUMINATED MONUMENT SIGN



Provia Ledgestone Santee
(same stone as on the 10 plex)



Color palette & material specs to be consistent with the proffered conditions and the rest of the devopment

CLIENT

Franciscus Homes

LOCATION

SALESMAN:	S. LALWANI
DRAWN BY:	A. HAVRILLA
SIZE:	6' x 63.5"
DATE:	3/15/2023
FILE NAME:	
STORAGE:	

REVISIONS

NO	DATE	DESCRIPTION
1		
2		
3		
4		
5		

ARCHBELL SIGNS
757-853-2679
www.archbellsigns.com
1572 JUNIPER STREET NORFOLK, VA 23502

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