AGENDA

JAMES CITY COUNTY PLANNING COMMISSION

REGULAR MEETING

COUNTY GOVERNMENT CENTER BOARD ROOM

101 MOUNTS BAY ROAD, WILLIAMSBURG, VA 23185

September 6, 2023

6:00 PM

A. CALL TO ORDER

B. ROLL CALL

C. PUBLIC COMMENT

D. REPORTS OF THE COMMISSION

E. CONSENT AGENDA

1. Minutes of the August 2, 2023, Regular Meeting

F. PUBLIC HEARING(S)

1. SUP-23-0012. 8659 Richmond Road Solar Project

2. Z-22-0004 and SUP-22-0026. 8290 Richmond Road Hankins-Dunn Rezoning and Residential Cluster Development

G. PLANNING COMMISSION CONSIDERATIONS

H. PLANNING DIRECTOR'S REPORT

1. Planning Director's Report - September 2023

I. PLANNING COMMISSION DISCUSSION AND REQUESTS

J. ADJOURNMENT

M I N U T E S
JAMES CITY COUNTY PLANNING COMMISSION
REGULAR MEETING
County Government Center Board Room
101 Mounts Bay Road, Williamsburg, Va 23185
August 2, 2023
6:00 PM

A. CALL TO ORDER

Mr. Polster called the meeting to order at 6 p.m.

B. ROLL CALL

Planning Commissioners Present:
Tim O'Connor
Jack Haldeman
Rich Krapf
Frank Polster
Barbara Null
Stephen Rodgers

Planning Commissioners Absent:
Rob Rose

Staff Present:
Paul Holt, Director of Community Development and Planning
Liz Parman, Deputy County Attorney
Terry Costello, Senior Planner
Ben Loppacker, Planner

C. PUBLIC COMMENT

Mr. Polster opened Public Comment.

As no one wished to speak, Mr. Polster closed Public Comment.

D. REPORTS OF THE COMMISSION

Mr. Rodgers stated that the Development Review Committee (DRC) met on July 19, 2023.

Mr. Rodgers stated that the DRC discussed C-23-0036. 1821 Jamestown Road Powhatan Ridge Subdivision, which was submitted by Mr. Jason Grimes of AES Consulting Engineers for a proposed residential development. Mr. Rodgers stated that the parcel is located inside the Primary Service Area (PSA) and is approximately 66.04 acres in size with 18.55 being developable and 47.77 being nondevelopable. Mr. Rodgers stated that the parcel is zoned R8, Rural Residential, LB, Limited Business, and is designated Low Density Residential (LDR) according to the 2045 Comprehensive Plan.

Mr. Rodgers stated that the conceptual plan is currently under review by agency and County staff to assess compliance with County Code and other regulations. Mr. Rodgers stated that the applicant requested that this item be placed on the DRC Agenda, as part of the initial

review process to seek input and questions from the DRC members.

Mr. Rodgers stated that the DRC expressed its concerns about several factors it felt would affect current and future residents in the proposed subdivision and surrounding communities, local school systems, and the environment/land that is going to be developed. Mr. Rodgers stated that the areas of concern consisted of whether the future property would consist of 61 units or less based off the Board of Supervisors' decision to approve a change in the density calculation that does not include the steep slopes on the parcel that are nondevelopable, are the clusters shown on the provided plans, what does affordable housing mean to the applicant and how will it be implemented, will there be enough parking or garages to accommodate more than two cars per unit, how does the applicant plan to mitigate traffic and congestion, were the suggestions provided in the Powhatan Creek Watershed Plan applied to the proposed subdivision, which part of the area is impacted by the steepness of the slopes, how will the new development benefit the county, will the surrounding schools be able to accommodate the increase of students that live within the subdivision, and has a fiscal impact analysis been conducted and what did the applicant find.

As this was a discussion item, no action and no vote were required.

E. CONSENT AGENDA

Mr. Haldeman made a motion to approve the Consent Agenda.

On a voice vote, the Commission approved the Consent Agenda. (6-0)

1. Minutes of the July 5, 2023, Regular Meeting

F. PUBLIC HEARINGS

1. SUP-23-0018. Grove Christian Outreach Center SUP Amendment

A motion to Approve w/ Conditions was made by Jack Haldeman, the motion result was Passed.
AYES: 6 NAYS: 0 ABSTAIN: 0 ABSENT: 1
Ayes: Haldeman, Krapf, Null, O'Connor, Polster, Rodgers
Absent: Rose

Mr. Ben Loppacker, Planner, stated that Ms. Katie Patrick has submitted a request to amend a Special Use Permit (SUP), to allow the existing Outreach Center to operate as the primary use due to the growth of the Outreach Center's space needs exceeding those defined in SUP-0014-2010. Mr. Loppacker stated that the subject property is located at 8800 Pocahontas Trail, zoned LB, Limited Business, classified as Neighborhood Commercial on the 2045 Comprehensive Plan, and located inside the PSA.

Mr. Loppacker stated that staff finds the proposed conditions will mitigate impacts to surrounding properties and development. Mr. Loppacker further stated that staff also finds that this proposal is compatible with surrounding zoning and development and is generally consistent with the 2045 Comprehensive Plan and the Zoning Ordinance.

Mr. Loppacker stated that staff recommends that the Planning Commission recommend approval of this application to the Board of Supervisors, subject to the proposed conditions.

Mr. Loppacker noted that staff recommends a minor amendment to Condition No. 1 to carry over existing language from SUP-0014-2010 regarding the ability to expand the existing

structure to 8,400 square feet in the future; this language is not currently in the version in the Commission's packet.

Mr. Haldeman requested clarification on the amended condition.

Mr. Loppacker stated that the amended condition was "a minor amendment to Condition No. 1 to carry over existing language from SUP-0014-2010 regarding the ability to expand the existing structure to 8,400 square feet in the future."

Mr. Holt noted that this addition was made to ensure that the approved expansion is not lost in the future.

Mr. Polster inquired how many members the Grove Christian Community Church has and when it was anticipated that they would move to a new location.

Mr. Loppacker stated that he would defer to the applicant.

Mr. Polster inquired when the clock started ticking for the required move.

Mr. Loppacker stated that the 90 days began in May.

Mr. Polster opened the Public Hearing.

Ms. Katie Patrick, Executive Director, 8800 Pocahontas Trail, Grove Christian Outreach Center, made a presentation in support of the application.

Ms. Patrick noted, in response to Mr. Polster's questions about the Grove Christian Community Church, that they have already moved to the new location as of the past weekend, and that the membership is approximately 30 members of which approximately one- third are Grove residents.

As no one further wished to speak, Mr. Polster closed the Public Hearing.

Mr. Haldeman made a motion to recommend approval of the application with the proposed conditions.

On a roll call vote, the Commission voted to recommend approval of SUP-23-0018. Grove Christian Outreach Center SUP Amendment. (6-0)

2. SUP-23-0019. 213 Southpoint Drive Detached Accessory Apartment

A motion to Approve w/ Conditions was made by Rich Krapf, the motion result was Passed.
AYES: 6 NAYS: 0 ABSTAIN: 0 ABSENT: 1
Ayes: Haldeman, Krapf, Null, O'Connor, Polster, Rodgers
Absent: Rose

Ms. Terry Costello, Senior Planner, stated that Mr. Jason Buckley of Promark Custom Homes has applied for an SUP to allow a detached accessory apartment to be constructed within a detached accessory structure. Ms. Costello stated that the property is located at 213 Southpoint Drive, zoned R-1, Limited Residential, and is designated LDR on the 2045 Comprehensive Plan Land Use Map.

Ms. Costello stated that the detached garage will be approximately 1,728 square feet and the

proposed apartment will be 399 square feet which is approximately 23% of the total floor area.

Ms. Costello stated that the R-1 Zoning District allows detached accessory apartments as a specially permitted use in accordance with Section 24-32(b) of the James City County Zoning Ordinance. Ms. Costello stated that staff has reviewed the proposed design and finds that all requirements have been met.

Ms. Costello stated that staff finds this proposal to be compatible with surrounding development and consistent with the 2045 Comprehensive Plan and Zoning Ordinance. Ms. Costello stated that staff recommends that the Planning Commission recommend approval of this application to the Board of Supervisors, subject to the proposed conditions.

Mr. Polster opened the Public Hearing.

As no one wished to speak, Mr. Polster closed the Public Hearing.

Mr. Krapf made a motion to recommend approval of the application, subject to the proposed conditions.

On a roll call vote, the Commission voted to recommend approval of SUP-23-0019. 213 Southpoint Drive Detached Accessory Apartment. (6-0)

G. PLANNING COMMISSION CONSIDERATIONS

There were no items for Planning Commission Consideration.

H. PLANNING DIRECTOR'S REPORT

Mr. Holt noted that the County received an award from the National Association of Counties for the 2045 Comprehensive Plan.

Mr. O'Connor inquired when the next update process would begin.

Mr. Holt stated that it was generally a five-year cycle; however, there were a number of Ordinance amendments and other implementation items for staff to address from this recent update.

1. Planning Director's Report - August 2023

I. PLANNING COMMISSION DISCUSSION AND REQUESTS

Mr. Haldeman noted that staff is currently soliciting public input on the Yarmouth Creek Watershed Plan though a survey available on the County's website.

Mr. Polster commented on the need for watershed plans to address the cumulative impacts of land use changes within the watershed.

Mr. Polster noted that there may not be an opportunity to remediate the concerns in the Powhatan Creek Watershed; however, the Yarmouth Creek and Diascund Creek Watersheds are in better condition now with the potential to ensure they remain in good condition.

Mr. Haldeman noted that it is important to preserve the rural watersheds through growth management.

Mr. Polster stated that it is important to prioritize implementation of the watershed plans in the areas that can still be preserved.

J. ADJOURNMENT

Ms. Null made a motion to adjourn.

The meeting was adjourned at approximately 6:33 p.m.

_____ _____

Paul D. Holt, III, Secretary Frank Polster, Chair

SUMMARY FACTS

Applicant:	Mr. John Townsend, Sun Tribe Development
Landowner:	Martin Family Holdings, LLC
Proposal:	Development and construction of a solar panel facility for electrical power generation, storage, transmission, and associated activities.
Locations:	8659 Richmond Road 8659A Richmond Road
Tax Map/Parcel Nos.:	1120100042 1140100001
Project Acreage:	67.7 acres
Zoning:	A-1, General Agricultural
Comprehensive Plan:	Rural Lands
Primary Service Area: (PSA)	Outside
Staff Contact:	Suzanne Yeats, Planner

PUBLIC HEARING DATES

Planning Commission:	September 6, 2023, 6:00 p.m.
Board of Supervisors:	October 10, 2023, 5:00 p.m. (tentative)

FACTORS FAVORABLE

1. Staff finds the proposed conditions mitigate impacts to surrounding properties and development.

2. Staff finds the proposal consistent with the 2045 Comprehensive Plan.

3. Impacts: See Impact Analysis on Pages 3-5.

FACTORS UNFAVORABLE

1. Impacts: See Impact Analysis on Pages 3-5.

SUMMARY STAFF RECOMMENDATION

Staff recommends the Planning Commission recommend approval of the proposed Special Use Permit (SUP) subject to the proposed conditions.

Staff also recommends that the Planning Commission find that the general or approximate location, character, and extent of this proposed public facility are substantially in accord with the adopted 2045 Comprehensive Plan and applicable parts thereof, as required by Section 15.2-2232 of the Code of Virginia.

PROJECT DESCRIPTION

Mr. John Townsend of Sun Tribe Development has applied for an SUP for a five-megawatt solar farm to be located at 8659 and 8659A Richmond Road. If approved, the proposed solar farm will be developed on 67.7 acres of the total 134.25 acres of the properties. The parcel located at 8659 Richmond Road is split by Richmond Road (U.S. Route 60) right-of-way and the entirety of the project will lie

south of Richmond Road. The solar panels will be on a Single-Axis Tracking system that will rotate throughout the day to track the sun. The electricity produced by the panels is collected by wires and connected to inverters. The inverters, via additional wiring, are connected to transformers. The transformers ramp up the power to a higher voltage for transmission and interconnection to the existing electrical grid.

The site will be accessed via Richmond Road and according to the Virginia Department of Transportation (VDOT) Functional Classification Web Map, is classified as a principal arterial road.

According to the applicant, the project is intended to operate for a term of 30 years with the potential for two additional five-year periods. The project will sublease the property for a term of up to 40 years. At the end of the sublease term, the Owner will cease operation of the project and execute a Final Decommissioning Plan agreed to by the Landlord and Project Owner. The duration of decommissioning activities will be approximately eight-12 months following receipt of any necessary permits or approvals.

PLANNING AND ZONING HISTORY

The property is located at 8659 and 8569A Richmond Road and has been used as active farmland and there have been no previous SUPs or rezoning cases associated with the properties.

SURROUNDING ZONING AND DEVELOPMENT

All surrounding properties are zoned A-1, General Agricultural.

- Adjacent properties to the north are single-family residential or vacant lot(s) and are designated Low Density Residential and Rural Lands in the 2045 Comprehensive Plan Land Use Map;
- Adjacent properties to the east are single-family residential, farmland, and include a land development contractor and are designated Low Density Residential and Economic Opportunity in the 2045 Comprehensive Plan Land Use Map;
- Adjacent properties to the south are farmland or vacant lot(s); and are designated Economic Opportunity and Rural Lands in the 2045 Comprehensive Plan Land Use Map; and
- Adjacent properties to the west are farmland and single-family residential and are designated Rural Lands in the 2045 Comprehensive Plan Land Use Map.

FINDING OF CONSISTENCY

Section 15.2-2232 of the Code of Virginia requires that unless a Utility facility is shown on the adopted Comprehensive Plan or other Master Plans for the County, the local Planning Commission and governing body shall review the facility to determine whether the location, character, and extent of the project is substantially in accord with the adopted 2045 Comprehensive Plan.

The proposed solar electrical generation facility is not currently shown on the County's adopted Comprehensive Plan and, therefore, requires this additional level of review by the Planning Commission and the Board of Supervisors. For the Commission's consideration, a consistency determination resolution is included as Attachment No. 8.

Impacts/Potentially Unfavorable Conditions	**Status** *(No Mitigation Required/Mitigated/Not Fully Mitigated)*	**Considerations/Proposed Mitigation of Potentially Unfavorable Conditions**
Public Transportation: Vehicular	No Mitigation Required	- The new solar farm would not exceed 100 peak hour trips. - Access to the properties is proposed to be from Richmond Road, a principal arterial road. The access road into the properties will be improved to a commercial entry.
Public Transportation: Bicycle/Pedestrian	Mitigated	- Per the Adopted Regional Bikeways Map Pedestrian Accommodation's Master Plan, a multiuse path is required along the north side of Richmond Road and will be addressed during the development plan stage.
Public Safety	Mitigated	- Fire Station 1 on Forge Road serves this area of the County, approximately 2.3 miles from the proposed solar farm. - Condition No. 4 requires all photovoltaic solar panels on the properties to be made of or be coated with anti-reflective materials to prevent glare. - Condition No. 13 requires an Emergency Management Plan to address situations that may require response from public safety personnel.
Public Schools	No Mitigation Required	- N/A since no residential dwelling units are proposed.
Public Parks and Recreation	No Mitigation Required	- N/A since no residential dwelling units are proposed.
Public Libraries and Cultural Centers	No Mitigation Required	- Staff finds that the project does not generate impacts that require mitigation.
Groundwater and Drinking Water Resources	No Mitigation Required	- The Property does not receive public water and sewer. The solar farm would not need water or sewer services.

Impacts/Potentially Unfavorable Conditions	**Status** *(No Mitigation Required/Mitigated/Not Fully Mitigated)*	**Considerations/Proposed Mitigation of Potentially Unfavorable Conditions**
Watersheds, Streams, and Reservoirs Project is located in the Diascund Creek Watershed.	Mitigated	- The Master Plan shows a conceptual layout for stormwater management facilities. - This project will need to demonstrate full compliance with environmental regulations at the development plan stage, but no other specific environmental impacts have been identified for mitigation. Language has been included for the decommissioning plan to address stormwater ponds (Condition No. 15). - Condition Nos. 14 and 17 address the requirement for a spill prevention control and countermeasures plan and a nutrient management plan, respectively. - The Stormwater and Resource Protection Division provided additional recommended SUP Conditions (Condition Nos. 17, 19-32) to provide a nutrient management plan, special stormwater criteria, resource protection area requirements, stormwater BMP design, Virginia Runoff Reduction Method (VRRM) and nutrient credits, channel and flood protections, erosion and control inspections and designs, panel cover calculations, soil discing, BMP access road requirements, natural open space designation, temporary erosion and sedimentation control designs, outfall monitoring, and stormwater BMP outfall requirements.
Cultural/Historic	Mitigated	- Per Section 24-145 of the Zoning Ordinance, an archaeological study and natural resource inventory will be required at the development plan stage.
Nearby and Surrounding Properties	Mitigated	- Condition Nos. 3 and 4 also limit the height of the panels and address use of materials to prevent glare. - Condition Nos. 5 and 12 requires no objectionable effects, such as dust or noise, shall extend beyond property lines and the project owner or operator notify the Zoning Administrator and adjacent property owners prior to the start of any pile driving phase(s). - Condition No. 6 and 8 limits the height of any proposed light poles and fencing and the color and material of the fencing. - Condition No. 9 requires damaged panels to be stored within a fully enclosed hazardous material and chemical storage container or provide an alternate plan on how damaged panels will be stored or processed.

Impacts/Potentially Unfavorable Conditions	**Status** *(No Mitigation Required/Mitigated/Not Fully Mitigated)*	- **Considerations/Proposed Mitigation of Potentially Unfavorable Conditions**
		- Condition No. 10 requires a construction management and mitigation plan which is intended in part to address impacts to nearby properties during the construction stage. - Condition No. 11 requires new or upgraded overhead utilities shall be located or relocated underground by the applicant if existing overhead utilities need to be upgraded at any location from the Properties to the electrical substation located at 3219 Chickahominy Road. - Condition No. 16 requires a vegetated perimeter buffer to screen the development from adjacent properties and right of ways. - The project will also need to demonstrate full compliance with lighting and landscaping regulations in the Zoning Ordinance at the development plan stage.
Community Character The project is located along the Richmond Road Community Character Corridor (CCC). Buffering along a CCC is required to be an average width of 50 feet.	Mitigated	- Condition No. 16 requires a 50-foot vegetated buffer along Richmond Road to mitigate visual impacts to the CCC.
Covenants and Restrictions	No Mitigation Required	- The applicant has verified that he is not aware of any covenants or restrictions on the Properties that prohibit the proposed use.

NATURAL AND CULTURAL ASSETS

The site is identified as having natural and cultural assets on the Natural & Cultural Assets Plan maps (and/or other supplemental resources such as Virginia Lands and Energy Navigator (VaLENS) as follows:

ASSET	PRESENCE	IMPACT
Habitat Core	Present on Site; see Attachment 4, Master Plan P107.	1. All habitat cores identified in the Natural and Cultural Assets Plan are important ecologically. Of the 1-5 ranking system used in the Plan, the core on this property is ranked in the 1 category (lowest priority). (Attachment 5). 2. The portion of this parcel identified as habitat core is 45.35 acres, or 12%, of the 366.95 acres habitat core total.
Corridors	Not Applicable	Not Applicable
Agricultural Assets	Present on Site; see Attachment 6.	71.8 acres or 55.1% of the Property is rated prime farmland. Conditions 14, 16, 24, 26, 30, 31, and 32 will mitigate excessive erosion and will aid in returning this land to farmland after the life of the project.

Note: Mr. Jim Wallace of Colonial Soil and Water Conservation District has reviewed this application and provided inquiries to the applicant. The applicant has provided responses and Mr. Wallace is satisfied and offers no additional comments.

2045 COMPREHENSIVE PLAN

The site is designated Rural Lands on the 2045 Comprehensive Plan Land Use Map.

Rural Lands are areas containing farms, forests, and scattered houses, exclusively outside of the PSA, where a lower level of public service delivery exists or where utilities and urban services do not exist and are not planned for in the future. Rural Lands uses are intended to help protect and enhance the viability of agricultural and forestal resources and compatible rural economic development uses as important components of the local economy.

Appropriate primary uses include traditional agricultural and forestal activities, but also innovative agriculture, horticulture, silviculture, specialty or niche farming, commercial and non-commercial equine opportunities, agri-tourism, rural-based public or commercial recreation, rural-support businesses and certain public or semi-public and institutional uses that require a spacious site and are compatible with the natural and rural surroundings.

Retail and other commercial uses serving Rural Lands are encouraged to be located at planned commercial locations on major thoroughfares inside the PSA. However, appropriately scaled and located direct agricultural or forestal-support uses (including agri-business and eco-tourism), home-based occupations, or certain uses which require very low-intensity settings relative to the site in which it will be located may be considered based on a case-by-case review, provided such uses are compatible with the natural and rural character of the area and are in accordance with the Rural Lands Development Standards. These uses should be located in a manner that minimizes effects on agricultural and forestal activities, and where public services and facilities, especially roads, can adequately accommodate them.

- *While not a typical primary use, staff finds this use could be appropriate in Rural Lands as solar farms in general are low-intensity uses (traffic, noise, etc.) after the initial construction phase, and could be temporary in nature and return to agricultural or forestal use at the conclusion of the lease term/decommissioning. For this particular proposal, staff finds the use generally compatible with the character of the area and generally in accordance with the Rural Lands Development Standards. The majority of the land has been cleared for farming, is surrounded by natural wooded growth, and the applicant will provide enhanced buffering along Richmond Road.*

- *Staff finds Richmond Road will adequately accommodate the expected traffic that would be generated from this project.*

Per the Development Standards, uses proposed in the Rural Lands should reflect and enhance the rural character of the County. Particular attention should be given to the following:

i. Locating structures and uses outside of sensitive areas;

- *Staff finds this proposal lies outside of the RPA, the project area does not include steep slopes greater than 10%, and the habitat cores intersecting with the project area are classified as the "lowest" priority.*

ii. Maintaining existing topography, vegetation, trees, and tree lines to the maximum extent possible, especially along roads and between uses;

- *Staff finds this proposal does not propose significant changes to topography, trees, and tree lines, and will provide an enhanced buffer along Richmond Road and screening from adjacent property owners.*
- *Staff finds the project area will change existing vegetation into cleared areas.*
- *Staff finds the project area will incorporate pollinator friendly species around panel bases.*

iii. Discouraging development on farmland, open fields, scenic roadside vistas, and other important agricultural/forestal soils and resources;

- *Staff finds the project area includes development on 71.8 acres or 55.1% of the property that is designated as prime farmland.*

- *Within the area on site designated as prime farmland, 3.68 acres contain Class I soil, and are currently in agricultural crop production, and 2.62 acres contain Class II soils and are identified as existing mature vegetation. These Class I and II soil areas are within the proposed limits of disturbance for the project.*

iv. Encouraging enhanced landscaping to screen structures located in open fields using a natural appearance or one that resembles traditional hedgerows and windbreaks;

- *Staff finds this proposal does not propose significant changes to existing trees and existing tree lines. The Project will provide an enhanced buffer along Richmond Road and screening from adjacent property owners.*

v. Locating new driveways or service roads so that they follow existing contours and old roadway corridors whenever feasible;

- *Staff finds the project will comply with VDOT regulations requiring a low-volume commercial entry.*
- *Staff finds access roads shall be a paved or gravel surface, 12-foot wide with ingress and egress at each facility with access to the downstream facility areas, to include the outfall structure and outfall barrel discharge areas.*

vi. Generally limiting the height of structures to an elevation below the height of surrounding mature trees and scaling buildings to be compatible with the character of the existing community;

- *Staff finds the solar panels will not exceed 17 feet in height which is well below the mature height of surrounding trees.*
- *The enhanced buffer along Richmond Road will require time to provide sufficient screening.*

vii. Minimizing the number of street and driveway intersections along the main road by providing common driveways; and

- *There is one entrance proposed for both ingress and egress for this project.*

viii. Utilizing lighting only where necessary and in a manner that eliminates glare and brightness.

- *Staff finds permanent lighting is not included in the proposal.*

The 2045 Comprehensive Plan discourages development on farmland, open fields, scenic roadside vistas, and other important agricultural and forestal soils and resources.

- *Staff finds this development proposal includes plantings that support bees and other pollinating insects.*
- *Staff finds the proposal is consistent with the 2045 Comprehensive Plan by designing, constructing, and operating a solar panel facility in an efficient and environmentally sustainable manner and complementary of local community character.*

Within the Community Character Chapter of the 2045 Comprehensive Plan, Goals, Strategies and Actions (GSAs) GSA 1.5 calls for preserving the character of rural roads by identifying roads that should be preserved and work with VDOT to maintain their rural character while providing an acceptable level of safety.

- *Staff finds this proposal would not negatively impact capacity or geometry on Richmond Road; the solar farm would not exceed 100 peak hour trips, and access to the Property is from Richmond Road, a principal arterial road. The access road to the Property will be improved to a low volume commercial entry. A 50-foot enhanced buffer along the frontage will support and maintain the rural character and scenic roadside vistas.*

Within the Land Use Chapter of the 2045 Comprehensive Plan, Goals, Strategies, and Actions (GSAs) GSA 1.6 calls for exploring emerging technologies in the renewable energy industry, with the intention of protecting the County's unique rural character, preserving natural resources, and mitigating impacts to neighboring properties.

- *Staff finds the proposal is consistent with the 2045 Comprehensive Plan by utilizing innovation and technology where the lifespan, efficiency, and durability is clearly demonstrated.*

PROPOSED SUP CONDITIONS

The full text of the proposed conditions is provided in Attachment No. 1.

With consultation from the County Attorney's Office, *Condition No. 2.- Public Improvements* has been revised so that the owner of the facility will pay the greater of the machinery and tool tax or the amount which would be required through a Revenue Share Ordinance annually to support construction of public improvements.

With consultation from the Soils & Water Conservation District, *Condition No. 18 - Native Pollinators* will address disturbed areas to require reseeding by providing a landscape plan showing the areas being reseeded, including a detailed list of plant species reviewed and approved by the Planning Director or designee prior to final site plan approval.

STAFF RECOMMENDATION

Overall, staff finds the proposal to be compatible with surrounding development and is consistent with the recommendations of the adopted 2045 Comprehensive Plan. Staff recommends the Planning Commission recommend approval of the proposed SUP to the Board of Supervisors, subject to the proposed conditions.

Staff also recommends that the Planning Commission find that the general or approximate location, character, and extent of this proposed solar panel facility are substantially in accord with the adopted 2045 Comprehensive Plan and applicable parts thereof, as required by Section 15.2-2232 of the Code of Virginia.

SY/ap
SUP23-12_8659RichRd

Attachments:
1. Proposed Conditions
2. Location Map
3. Applicant Narrative
4. Master Plan
5. Habitat Cores
6. Agriculture Soils
7. Copy of Review Comments by the Colonial Soil and Water Conservation District
8. Resolution finding the application consistent with the adopted Comprehensive Plan, per 15.2-2232
9. Resolution finding the application Not Consistent with the Comprehensive Plan, per 15.2-2232

R E S O L U T I O N

CASE NO. SUP-23-0012. 8659 RICHMOND ROAD SOLAR PROJECT

1. *Master Plan.* This SUP shall be valid for the construction of a photovoltaic solar electrical generation facility (the "Facility") producing up to 5 megawatts (MW) as measured in alternating current (AC) of electricity on property located at 8659 & 8659A Richmond Road and further identified as James City County Real Estate Tax Map Parcel Nos. 1120100042 and 1140100001 (the "Property"). The Property and Facility shall be developed and constructed substantially in accordance with the plan titled "Richmond Road Solar" prepared by Sun Tribe Development, and dated August 25, 2023, (the "Master Plan"), with any deviations considered per Section 24-23(a)(2) of the Zoning Ordinance, as amended.

2. *Public Improvements.* Pursuant to section 15.2-2288.8(B) of the *Code of Virginia*, 1950, as amended (the "Virginia Code"), a payment of $1,400 per MW measured in AC generation capacity of the nameplate capacity of the Facility, shall be made to the County annually, no later than July 1 of each year after the Facility becomes operational in order to support the cost of construction of public improvements, the need for which is not generated solely by the Facility.

3. *Height Limitation.* The maximum height of all structures on site shall not exceed 17 feet above finished grade.

4. *Glare.* All photovoltaic solar panels shall be of made of or be coated with anti-reflective materials to prevent glare.

5. *Smoke (Dust)/Noise.* No objectional effects, such as dust or noise, shall extend beyond the boundary of the Property.

6. *Lighting.* If any lighting is proposed, it shall be shown on a lighting plan and the Planning Director or designee shall review and approve the lighting plan prior to final site plan approval. Lights shall be operated by a motion detector or be able to be turned on as needed by the Facility operator and shall not be routinely illuminated at night. No light poles shall exceed a height of 17 feet above finished grade unless otherwise approved by the Planning Director prior to final site plan approval.

7. *Signage.* Unless otherwise exempt by Section 24-74 of the Zoning Ordinance, no outdoor signage related to the Facility shall be permitted on the Property.

8. *Fencing.* Any fence on the Property shall be black or other neutral color and shall not exceed a height of eight feet above finished grade and not consist of barbed wire. Prior to final approval of any site plan, the Planning Director or designee shall review and approve a detail of any proposed fencing on the Property for consistency with this condition.

9. *Storage of Panels.* Damaged panels shall not be stored onsite unless they are within a fully enclosed hazardous material and chemical storage container that meets Occupational safety and Health Administration and Environmental Protection Agency standards, as determined by the County Fire Chief. The location of such storage container, if used, shall be shown on the approved site plan. Should such a storage container not be used or available, a written plan shall be provided on how damaged panels will be stored or processed such that hazardous materials will not come

into contact with any soil or groundwater or surface water. Such a plan shall be subject to the approval of the Director of the Stormwater and Resource Protection division prior to final site plan approval.

10. *Construction Management and Mitigation Plan.* A Construction Management and Mitigation Plan shall be provided for review and approval by the Planning Director or designee prior to the approval of the site plan and shall include the following:

    1) Construction Management:
        a. Designated parking areas.
        b. The plan shall note that all piling driving activity on the Property shall be limited to the hours of 8 a.m. to 6 p.m., Monday through Friday.
        c. The plan shall note that other construction activities, including clearing and grading of the Property shall be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday.
        d. The plan shall note that construction delivery traffic to the Property shall not be allowed during pick up/drop off times for surrounding schools.
        e. The plan shall indicate what methods will be used for the storage, transportation, and disposal of any waste and/or hazardous materials and the location of any storage facilities on site.

    2) Construction Mitigation:
        a. The plan shall indicate what methods will be used for dust mitigation.
        b. The plan shall indicate how burning will be handled on site.

11. *Underground Utilities.* Should construction or operation of this Facility require any new overhead utilities or require, in whole or in part, that existing overhead utilities be upgraded at any location from the Property to the electrical substation located at 3219 Chickahominy Road, then such new or upgraded overhead utilities shall be located or relocated underground. Prior to the issuance of a final building inspection for the solar panels, a surety shall be submitted to the County in an amount sufficient to underground any such new or upgraded utilities. The amount of the surety shall be provided by the Planning Director and any costs associated with the County determining the surety amount shall be paid prior to final site plan approval. The surety shall be held by the County for not fewer than five years after the Facility becomes operational. In the event that new overhead utilities or existing overhead utilities are upgraded, in whole or in part, due to the operation of this Facility at any location from the Property to a different electrical substation, then such new or upgraded overhead utilities shall be located or relocated underground and the amount of the surety shall be calculated accordingly.

12. *Pile Driving Notice.* The James City County Zoning Administrator and adjacent property owners shall be notified, in writing, seven (7) days prior to the start of any pile driving phase(s).

13. *Emergency Management Plan.* Prior to final approval of any site plan, an Emergency Management Plan (the "EMP") shall be prepared to address situations that may require response from James City County public safety personnel, including, without limitation, fire safety and emergency response personnel. The EMP shall:
    a) Be developed in conjunction with and approved by the County Fire Chief and County Police Chief or their designees prior to final approval of any site plan.

b) Provide a mutually agreed-upon schedule of communication and training sessions for James City County public safety personnel relative to possible emergency response situations at the Facility.

c) Provide emergency contact information of the operators of the Facility to County public safety personnel.

d) Provide that all emergency contact information pursuant to (c) will be posted on all Facility access gates.

14. *Spill Prevention Control and Countermeasure Plan.* Prior to approval of any site plan, a Spill Prevention Control and Countermeasure Plan (the "SPCCP") for the Facility shall be submitted to the Director of Stormwater and Resource Protection or designee for review and approval. The SPCCP shall outline spill prevention and pollutant containment measures and procedures necessary for the operation of the Facility until decommissioning.

15. *Decommissioning and Restoration Plan and Agreement.* Prior to final approval of any site plan, a Decommissioning and Restoration Plan (the "DRP") shall be submitted to the Planning Director or designee for review and approval. The DRP shall outline the required steps for removal of all above- and below-ground Facility components, disposal and/or recycling of wastes and materials, soil stabilization, soil testing and mitigation for any found hazardous materials, and the revegetation and restoration of native habitat of the Property restored in a manner consistent with its condition prior to Facility construction. At the time of Facility decommissioning, the stormwater facilities on the Property must be evaluated for continued need and the final DRP must include the close-out or remediation of stormwater facilities. The DRP shall be enforceable by a written decommissioning agreement in accordance with and subject to the terms of Virginia Code § 15.2-2241.2. To ensure sufficient funds are available to the County to conduct the DRP, a surety in an amount sufficient for decommissioning the Facility and remediating the Property shall be posted with James City County in a form acceptable to the County Attorney. The decommissioning agreement shall be executed prior to approval of a site plan for the Facility.

16. *Vegetated Buffer.* Prior to final approval of any site plan, the Planning Director or designee shall review and approve a landscape plan for the Facility. The landscape plan shall provide a 35-foot-wide vegetated buffer (the "Perimeter Buffer") along the perimeter of the Facility site. The Perimeter Buffer shall be increased to 50 feet along the boundary of the Property that fronts on Richmond Road. The Perimeter Buffer shall be vegetated in accordance with the applicable provisions of section 24-96 of the zoning ordinance for General Landscape Areas except that the 50-foot-wide buffer shall be planted so that the required number of plants equals at least 133 percent of the County's Landscaping Ordinance requirements with a minimum of 45 percent of the required number of trees and shrubs being evergreen.

17. *Nutrient Management Plan.* A nutrient management plan (the "NMP") prepared by a certified nutrient management planner shall be submitted for all of the area within the defined limits of work (disturbance) for the Property. The purpose of the NMP is to provide for long-term establishment and maintenance of turf grass, pasture, rangeland, or other similar type vegetative cover which preserve the long-term soil health for potential future farming purposes. The NMP shall have a component which specifically identifies and maintains and protects designated Prime Farmland soil mapping units consistent with Natural Resources Conservation Service soil data. The NMP shall be submitted for review and approval by the Director of Stormwater and Resource

Protection prior to approval of any final site plan for the Facility. Upon approval of the NMP, the Facility operator shall be responsible for ensuring that any nutrient applied in the area within the defined limits of work is in strict accordance with the NMP.

18. *Native Pollinators.* Disturbed areas requiring reseeding shall be seeded with a seed mix for site groundcover that includes native pollinators and native grasses which bloom in spring and/or summer as identified by the Virginia Department of Environmental Quality's and the Virginia Department of Conservation and Recreation's Virginia Pollinator-Smart program or the USDA Farm Service Agency's Conservation Reserve Program. A landscaping plan showing the areas being reseeded, including a detailed list of plant species included in the seed mix, shall be reviewed and approved by the Planning Director or designee prior to final site plan approval.

19. *Special Stormwater Criteria.* The application of Special Stormwater Criteria practices are required for the Facility. The number of practices required will be per Table SSC-1 of the Stormwater Resource Protection Division's form entitled, *"Stormwater-Special Criteria (SSC) in James City County, Virginia."* Practices to be used for the Facility must be approved by the Director of Stormwater and Resource Protection for appropriateness to the development.

20. *Resource Protection Area.* Impacts to the Resource Protection Area shall be limited to required stormwater best management practice (the "BMP") outfalls and there shall be no clearing of trees or other vegetation to allow for sunlight access to panel arrays, as determined by the Director of Stormwater and Resource Protection.

21. *Stormwater BMP Design.* All stormwater BMPs shall meet or exceed the criteria of the appropriate Virginia Stormwater BMP Clearinghouse Design Specifications 1 through 17, as determined by the Director of Stormwater and Resource Protection.

22. *Virginia Runoff Reduction Method.* The Forested Open Space (the "FOS") land use category may be used to account for a maximum of 25% of the required water quality associated with the proposed development. The purchase of offsite nutrient credits toward needed water quality associated with the Facility will not be allowed. Should FOS be used in the Virginia Runoff Reduction Method calculations, the area of FOS must meet the criteria set forth in Virginia Stormwater BMP Clearinghouse, Design Specification No. 2: Sheet Flow to a Vegetated Filter Strip or Conserved Open Space. The declared FOS area must treat sheet flow from the Facility, in accordance with the Virginia Stormwater BMP Clearinghouse design specification criteria. The proposed use of FOS on the Property, disconnected from any drainage patterns of the Facility, will not be allowed.

23. *Channel Protection.* The stormwater BMP design shall provide channel protection for the 1-year, 24-hour storm event per the energy balance method, as defined in 9VAC25-870-66(B)(3)(a), for all outfall and discharge locations for the Facility.

24. *Flood Protection.* The stormwater BMP design shall provide flood protection through attenuation of the 10-year, 24-hour storm event, per 9VAC25-870-66(C)(2)(b).

25. *Erosion and Sediment Control Inspection.*
The County may engage the services of County-contracted inspectors for inspections required by County Code Section 8-6(b), or as deemed appropriate by the County to ensure compliance

with applicable codes and ordinances. The Facility operator shall be financially responsible for the costs of any inspections contracted for by the County for the Facility or the Property.

26. *Panel Cover.* Solar panels shall be considered unconnected impervious areas for post-development water quantity calculations as defined in Chapter 9, Part 630 of the NRCS National Engineering Handbook. Calculations shall be in accordance with DEQ policy memoranda and guidance documentation for solar farm development, as determined by the Director of Stormwater and Resource Protection.

27. *Discing.* After areas to be topsoiled have been brought to grade, and immediately prior to dumping and spreading the topsoil, the subsoil shall be loosened by discing to a depth of at least two inches to ensure bonding of the topsoil and subsoil. A geotechnical report showing completion of discing for the Facility shall be submitted to the Director of Stormwater and Resource Protection at the time of submitting a Final Stormwater As-built application.

28. *BMP Access Roads.* BMP access roads shall be a paved or gravel surface and shall be a minimum of 12 feet wide with ingress and egress at each BMP with access to the downstream BMP areas, to include the outfall structure and outfall barrel discharge areas. The use of grass pavers shall be prohibited.

29. *Natural Open Space.* The area of the Property outside of the Facility and south of Richmond Road shall be placed into a Natural Open Space easement dedicated to the County. The easement shall run for the life of the Facility and may be terminated once the decommissioning of the Facility has been completed.

30. *Temporary Erosion and Sedimentation Control Designs.*
    a) Unless directly connected to the stormwater conveyance system, the solar panels should be considered unconnected impervious area when performing runoff computations for erosion and sediment controls.
    b) All temporary trap or basin designs will include the attenuation of a 25-year storm event in order to protect the existing downstream receiving channels, as determined by the Director of Stormwater and Resource Protection.

31. *Outfall Monitoring.* The downstream outfall channels from each permanent BMP shall be visually monitored annually for degradation and a report provided to the Director of Stormwater and Resource Protection by December 31 of each year for the life of the Facility. A baseline report shall be provided after all sediment basin construction is completed; current channel conditions shall be photo-documented, and the documentation shall extend to the confirmed US Army Corps of Engineers wetland line below each basin. Each outfall channel shall have at least three photo stations, one at the outfall, one at the wetland edge and at least one midway between. If channel degradation is in evidence per the Director of Stormwater and Resource Protection and meaning a head cut of more than 12 inches in height, a channel restoration plan must be provided to the Director of Stormwater and Resource Protection by March 31 of the following year and restoration activities commenced by June 30. This may include areas outside of the Facility on the Property. A restoration plan shall mean an Erosion and Sediment Control plan that provides for the repair of the degraded area to a stable line and grade and provides an erosion resistant surface over the repaired area sufficient to prevent future degradation from the basin outfall. At the end of the fifth year of reporting, should no channel degradation have been identified based on a

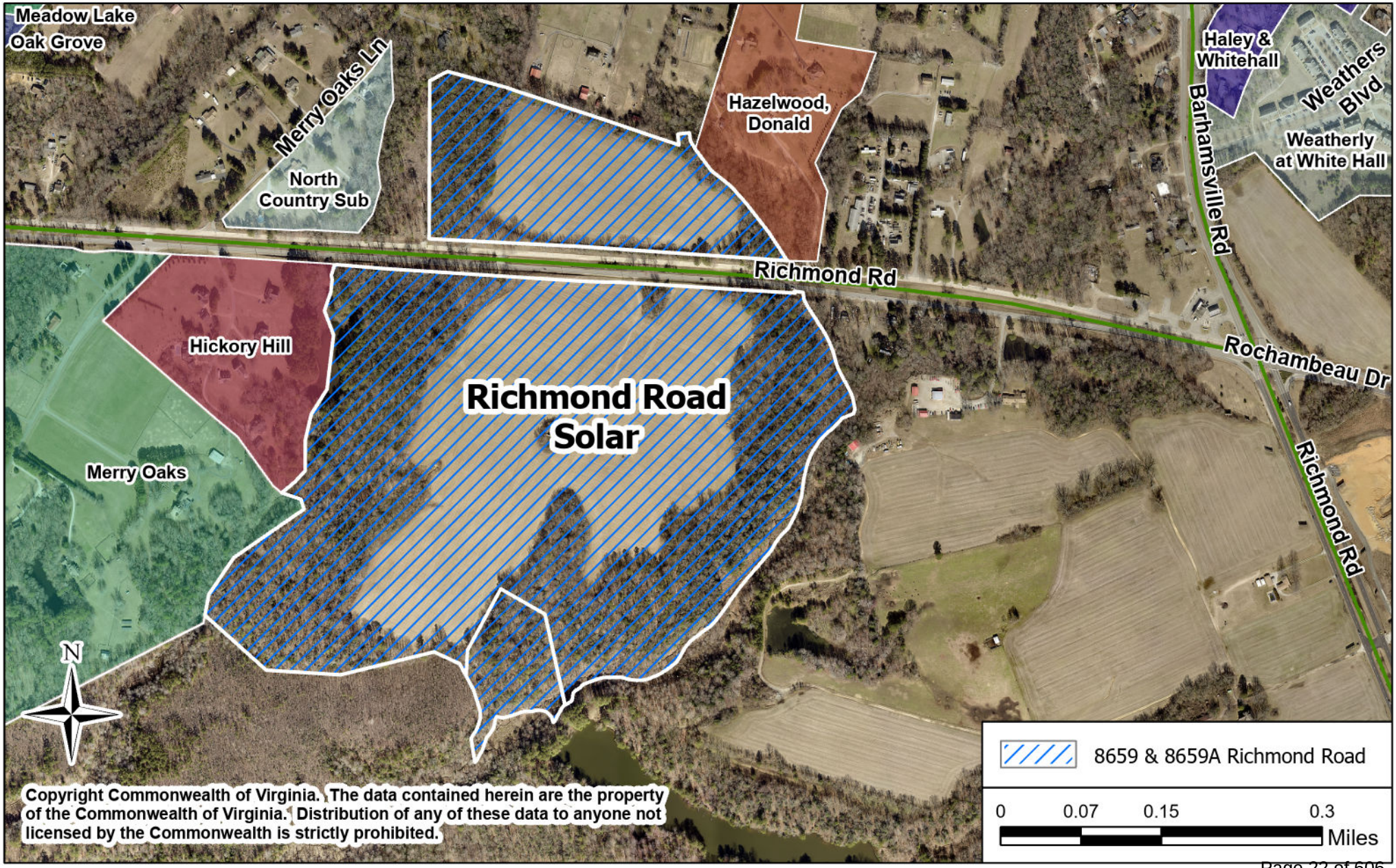
review by the Director of Stormwater and Resource Protection, this condition is considered fulfilled and no further reporting will be required.

32. *Stormwater BMP Outfalls.*
    a) Piped outfalls for any stormwater BMP will be placed at slopes of 0.5% or less for the final 16 linear feet of the piped run.
    b) Stilling basins will be required at the discharge point of each stormwater BMP outfall. These stilling basins will be designed using the 100-year discharge flow rate.
    c) Outfall locations will be no fewer than 20 feet from any property line. The stilling basin may not extend into this 20-foot buffer.

33. *Commencement.* The Facility shall be operational within 48 months from the date of adoption of this resolution authorizing the SUP, or this SUP shall automatically be void. A signed letter shall be submitted to the Planning Director prior to 48 months from the issuance of this SUP to confirm the operational status of the Facility.

34. *Severance Clause.* This Special Use Permit is not severable. Invalidation of any word, phrase, clause, sentence, or paragraph shall invalidate the remainder.

JCC-SUP-23-0012
8659 & 8659A Richmond Road
Richmond Road Solar





Special Use Permit

Richmond Road Solar

James City County, Virginia

Submitted By:

Richmond Road Solar, LLC

107 5th Street SE

Charlottesville, VA 22902

Submitted To:

James City County, VA

Community Development

101 Mounts Bay Road, Building A, Williamsburg, VA 23185

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Project Proposal

This application for a special use permit ("SUP") is submitted to James City County (the "County") by Richmond Road Solar, LLC, (the "Applicant"), wholly owned by Sun Tribe Development, LLC ("Sun Tribe"). The Applicant proposes to construct and operate a photovoltaic ("PV") solar energy generating system up to five (5) megawatts ("MW") on up to 67.7 acres of Parcel 1120100042 (approximately 130.25 acres, according to James City County GIS) in the Powhatan District of James City County zoned as A1 General Agriculture ("Richmond Road Solar" or the "Project"). The Project is located off of US Route 60, Richmond Road. The project parcel is owned by Martin Family Holdings, LLC and an Option to Lease agreement has been executed to allow the Applicant to develop and construct a solar array generating up to 5 MW. Please see Appendix B for the original signature form for legislative cases and a memorandum of the option to lease agreement with Martin Family Holdings, LLC. The memorandum was recorded in the James City County Clerk's Office of Williamsburg/James City County on March 2, 2023 as instrument number 202302084.

A solar energy facility such as Richmond Road Solar will provide an increase in direct, indirect, and induced revenue to James City County. The County will also achieve an increase in tax revenue from the Project site through the permitting and operation of the facility, while requiring minimal to no use of County services such as water, wastewater, schools, and other infrastructure. The Project is expected to generate more than $430,000 for James City County over the life of the project, compared to the parcel's current use.

Richmond Road Solar will provide clean, renewable energy to James City County residents and businesses. Sun Tribe Development has consulted with and will continue to consult with local, State, and Federal agencies to ensure all environmental protection measures are met and exceeded during construction and throughout the facility's life. The array footprint site does not contain any slopes greater than 20%, and therefore the project will require minimal cut, fill, or mass grading. Best management practices for stormwater and erosion and sediment control will be utilized as required by James City County and the Department of Environmental Quality ("DEQ"). The Project is expected to execute an interconnection agreement with Dominion Energy during the 2023 calendar year and will follow all Dominion interconnection guidelines for a small-generation facility.

The project will be constructed and operated in accordance with all applicable Federal, State, and Local building codes and regulations. Please see Appendix C for the conceptual site plan, or master plan, depicting existing and proposed site features.

About Sun Tribe

Sun Tribe is a Virginia-based company focused on ensuring that our Commonwealth's energy transition to renewable, domestic supply is managed in a safe, reliable, and environmentally responsible manner. We specialize in providing sustainable solar energy solutions – with an emphasis on quality, community-focused projects – and have built one of the most experienced teams in the business offering over 20 gigawatts of collective renewable energy experience. Sun Tribe partners with landowners, local governments, and leading utilities as they move towards a cleaner energy future. For more information about Sun Tribe, see Appendix A.

Community Meeting

A community meeting for Richmond Road Solar was held on May 8, 2023 at the Norge Community Center. The list of neighboring parcels who were contacted, along with the list of eleven attendees, can be found in Appendix P. Sun Tribe gave a short presentation regarding the proposed facility and it's benefits to James City County. The following is a list of comments and questions that were discussed with the attendees:

- Will the project impact traffic on Route 60, Richmond Road?
- Will a second phase of the facility occupy the property north of Richmond Road?
- Will the land be decommissioned at the end of the project's life?
- Is the proposed revenue to James City County over the entire life of the project?
- Will the facility require new utility poles along Richmond Road?
- A neighbor commented that this type of development will protect against residential development on the property for the life of the project.

Sun Tribe will continue to work with Planning Staff, to inform the community and address comments or questions regarding the proposed facility.

Compliance with Zoning Ordinance

The Project site, Parcel 1120100042, is currently zoned General Agricultural ("A-1"). The development and construction of alternative energy facilities is allowable within the A-1 General Agricultural zoning district via James City County's Special Use Permitting process as 'Utility Uses' per the James City County zoning ordinance, Sec. 24-212, Use List. The facility will comply with James City County Zoning Ordinance Section 24-23 Submittal Requirements for SUPs as noted below.

James City County Zoning Ordinance Section 24-23 Submittal Requirements for SUP's.

1. Community impact statement
    a. Traffic impact analysis
        i. *Please find the conceptual traffic impact analysis in Appendix K*
    b. Water and sewer impact study
        i. *Please see water and sewer impact study waiver request in Appendix O*

c. Environmental information
    i. *Please see environmental information in **Appendix F** and **Appendix G***
d. Adequate public facilities report
    i. *Please see public facilities report waiver request in **Appendix O***
e. Additional on-site and off-site public facilities or services which would be required
    i. *Please see public facilities services waiver request in **Appendix O***
f. A phase IA archeological study
    i. *Not applicable for small utility solar facilities. Please see Phase 1A archaeological study waiver request, and email from Community Development in **Appendix O***
g. Preliminary natural resource inventory
    i. *Not applicable for small utility solar facilities. Please see Phase 1A archaeological study waiver request, and email from Community Development in **Appendix O***
h. Fiscal impact analysis
    i. *Not applicable for small utility solar facilities. Please see fiscal impact analysis waiver request in **Appendix O***
i. Parks and recreation information
    i. *Not applicable for small utility solar facilities. Please see SUP waiver request in **Appendix O***

2. Master Plan
    a. *Please see **Appendix C** for conceptual site plan*
3. Other submittal requirements which may be required by this chapter
    a. *Please see this narrative for any additional resources*
4. Application and fee in accordance with Section 24-7
    a. *Application and fee submitted in accordance with County guidelines*
5. Additional requirements for submittal include a signed statement from the county treasurer that all real estate taxes owed to the county have been paid in full
    a. *Please see certification from the county treasurer in **Appendix Q.***

The Project site will utilize up to 67.7 acres of the parcel's approximately 130.25 acres. The parcel acreage outside the SUP limits of disturbance will not be impacted as part of the Project.

Construction of Richmond Road Solar will allow the landowner to preserve the remaining approximately 60 acres in its existing form as agricultural and forested land, at their preference. At the end of the Project's useful life, the Project will be decommissioned including removal of all energy generating equipment from the Project site as outlined in Appendix L and the site can be returned to agricultural use.

In accordance with James City County Code of Ordinances Chapter 24, Article 1, Section 24-9 Special Use Permits, the James City County Planning Commission and Board of Supervisors shall evaluate special use permits based on the following considerations:

Sec. 24-9. – Special Use Permits

In order to provide for good zoning practices and the purpose the zoning district seeks to accomplish, to provide for adjustments in the relative location of uses and buildings of the same or different classification, and to promote the usefulness of these regulations, special use permits, limited as to location by the district regulations, are permitted as set forth under the terms of this chapter. In considering an application for a special use permit in those districts allowing them, the planning commission and the board of supervisors shall give due regard to the James City County Comprehensive Plan, the nature and condition of adjacent uses and structures, and the probable effect upon them of the proposed special use permit. They shall also take into account the special characteristics, design, location, construction, methods and hours of operation, effect on traffic conditions, or any other aspects of the particular use or structure that may be proposed by the applicant.

The planning commission and the board of supervisors should consider whether the proposed establishment or use will adversely affect the health, safety or welfare of persons residing or working on the premises or in the neighborhood, will unreasonably restrict an adequate supply of light and air to adjacent property, will increase congestion in the streets, will increase public danger from fire, will impair the character of the district or adjacent districts, will be incompatible with the Comprehensive Plan of James City County, will likely reduce or impair the value of buildings or property in surrounding areas, and whether such establishment or use will be in substantial accordance with the general purpose and objectives of this chapter. After a public hearing, if the planning commission determines the above considerations have been protected, the planning commission shall recommend to the board of supervisors that the special use permit be granted. The board of supervisors shall consider the recommendation of the planning commission and after a public hearing and a determination that the above considerations have been protected shall grant the special use permit. In those instances where the planning commission or the board of supervisors find that the proposed use may be likely to have an adverse effect, they shall determine whether such effect may be avoided by the imposition of special requirements or conditions, including, but not limited to, location, design, construction, equipment, maintenance and/or hours of operation, in addition to those expressly stipulated in this chapter and the commission may make their recommendation or the board of supervisors may grant the special use permit contingent upon the imposition of such special requirements or conditions.

The proposed project offers several benefits to the community, including improved health and safety by reducing harmful emissions that would otherwise be produced by fossil fuel power generation, direct revenue to the county, and a low visual profile with minimal emissions, noise, and traffic. The project's environmentally friendly nature is further enhanced by a proposed vegetative buffer, and during its operation, it is expected to generate only two truck rolls per month, significantly less than other uses/forms of development. The planning commission has determined previously in 2022 that a small solar facility of similar design on a parcel zoned A-1 General Agricultural and located in an area outside the Primary Service Area (“PSA”) and in an area designated as “Rural Lands” was substantially in conformance with the James City County 2045 Comprehensive Plan.

Consistency with Comprehensive Plan

Per VA Sec. 15.2-2232 James City County has developed a Comprehensive Plan to assist in guiding development decisions. Sun Tribe recognizes there is not currently a solar specific policy included in the James City County 2045 Comprehensive Plan, however, as currently written, Richmond Road Solar meets many of the guidelines and objectives of the James City County 2045 Comprehensive Plan. Additionally, the planning commission has determined previously in 2022 that a small solar facility of similar design on a parcel zoned A-1 General Agricultural and located in an area outside the Primary Service Area ("PSA") and in an area designated as "Rural Lands" was substantially in conformance with the James City County 2045 Comprehensive Plan. Richmond Road Solar is substantially in accord with the James City County 2045 Comprehensive Plan and promotes the Goals, Objectives and Strategies noted within the plan.

- Chapter 1: Intro – A Community that Values its Rural Landscape (p. 4)

The greatest reserve of rural areas, however, continues to be outside of the PSA and these areas are traditionally designated as the County's "Rural Lands." Both in this planning process and during outreach in prior comprehensive plans, the citizens of James City County have repeatedly emphasized the great value they place on their rural landscapes, including the high premium citizens put on the quality of life that is derived from the County's pristine natural resources, protected open spaces, scenic rural vistas, and historic and traditional small town and village community character. Many are concerned that the pace, pattern and character of new growth and development may harm this treasured character of the County and many expressed a strong desire both to limit the pace and amount of new development and to direct it away from the rural areas that they value so highly.

The PSA, as described in the "Key Planning Influences, Growth Management" section of Chapter 10: Land Use (p. 287), is the area that is "presently provided with public water and sewer and high levels of public services, as well as areas expected to receive such services over the next 20 years." This concept of "growth" is a theme that runs throughout the Comprehensive Plan and controlling that growth is the primary policy goal of the PSA. Given the Project's attributes and the realities of its construction and operation, it is clear that solar use is not the type of land use the PSA is intended to control and instead, is a use that is very well suited to exist outside the PSA. For example, the Project does not require public or private water or sewer, it generates minimal traffic once constructed, it does not generate additional demand for schools, libraries or human services and it is unlikely to require emergency response services. This stands in stark contrast to those types of development which the PSA seeks to limit. Additionally, the site and design of Richmond Road Solar has been specifically chosen to preserve the rural nature of James City County, and the viewshed from public right of ways and neighboring parcels. Using setbacks, existing vegetation, and new vegetative buffering, the Project will not negatively impact the character or viewshed of the community.

- Chapter 5: Environment - Goals, Strategies, & Actions (p. 140)

Goal – ENV – Continue to improve the high level of environmental quality in James City County and protect rural and sensitive lands and waterways that support the resiliency of our natural systems for the benefit of current and future generations. (p. 140)

The Richmond Road Solar project will be designed and constructed to protect the environmental quality of land and waterways in James City County. During operation, the facility will generate clean, renewable electricity to be used by James City County residents and businesses without dust, noise, or the harmful emissions associated with carbon-based electricity generation.

Strategies & Actions – ENV 4 – Work with the private sector and other governmental entities such as HRPDC and the State through both regulation and non-regulatory techniques to mitigate and adapt to the effects of climate change. (p. 145)

Sun Tribe is a private sector organization developing projects in compliance with the Virginia Clean Economy Act which is the Commonwealth's first Clean Energy Standard. The Virginia Clean Economy Act is the most ambitious clean energy policy in Virginia's history, gives Virginian's a personal stake in the advanced energy economy, and will provide cleaner air and fight climate change.

ENV 4.6 - Investigate ways to amend the County Ordinances to address alternative energy production, and to amend ordinances or include special use permit conditions that protect and enhance natural resources on alternative energy production sites. (p. 146)

Richmond Road Solar is located and designed to protect and enhance the natural resources of James City County. During operation, the facility will generate clean, renewable electricity to be used by James City County residents and businesses without dust, noise, or the harmful emissions associated with carbon-based electricity generation.

The goal of continuing to support alternative energy production so long as it protects and enhances natural resources is met via the proposed location and design of the Project.

ENV 4.6.1 - In Ordinances or as development approval conditions, include provisions to minimize clearing of forested land. (p. 146)

Richmond Road Solar is located almost entirely on land that has been previously cleared by the landowner. Additional tree clearing will be kept to a minimum, and additional trees may be planted to supplement vegetative buffering.

ENV 4.6.2 - In Ordinances or as development approval conditions, implement best practice documents on the inclusion of native pollinator plants. (p. 146)

The Project includes native pollinator species and preferred local foliage as indicated on the Landscape Plan produced by Timmons Group as seen in Appendix J.

- Chapter 10: Land Use - Key Planning Influences, Growth Management – Rural Lands Protection (p. 294)

The areas outside of the PSA are in large part designated as Rural Lands on the Future Land Use Map. While areas with this designation are predominantly known for agricultural and forestal activities, they also contain lands that are vital to the broader environmental health of the County, such as natural areas, extensive Resource Protection Areas (RPAs), aquifer recharge areas, and the headwaters for important watersheds. Land preservation, especially of prime farmland soils, is of utmost importance in this area.

The Project area, once reseeded in native vegetation, will serve as an aquifer recharge area. Runoff rates will decrease relative to the current agricultural use and the additional vegetation planted as a buffer will be maintained for the life of the facility. As a result, the Project will be a net benefit to the environmental health of the community.

Rural Land Tools (p. 295)

1. Enhancing the Viability of the Rural Economy
    a. Taxing Incentives (ex. Land Use Value & Agricultural and Forestal Districts)
2. Retaining Rural Character
    a. Service boundaries (ex. Primary Service Area policy)

Permitting well-sited solar projects in ways that are congruent with other rural uses can be a tool for enhancing the viability of the rural economy. Allowing a rural landowner to establish a solar use helps relieve the pressure to monetize rural properties through traditional residential or commercial development and takes the burden off the County or other public or private actors from purchasing development rights to secure that same level of protection. Solar power offers the advantage of not requiring an extension of county infrastructure, such as water or sewer lines. This distinct advantage helps to maintain the rural character of these areas by mitigating the potential for additional development that may result from such extensions.

- Chapter 10: Land Use – Rural Lands Designation Description – 2. Recommended Uses (p. 321)

Appropriate primary uses include traditional agricultural and forestal activities, but also innovative agriculture, horticulture, silviculture, specialty or niche farming, commercial and non-commercial equine opportunities, agritourism, rural-based public or commercial recreation, rural-support businesses and certain public or semi-public and institutional uses that require a spacious site and are compatible with the natural and rural surroundings.

Richmond Road Solar is classified as a "Utility Use" and described as "electrical generation facilities (public or private)" in the County's Zoning Ordinance. This classification aligns with the category of "certain public or semi-public and institutional uses" that are appropriate primary uses for Rural Lands, according to Chapter 10 Land Use regulations. Additionally, the project is consistent with Virginia law as a "Public Utility" under Va. Code §§ 56-265.1 and 15.2-2232, which requires Planning Commission review of any "public utility facility." Supporting Richmond Road Solar will bring significant benefits to the community, including direct and indirect revenue; clean energy generation for approximately 1,000 local homes; job creation during construction; and a reduction of carbon emissions.

Retail and other commercial uses serving Rural Lands are encouraged to be located at planned commercial locations on major thoroughfares inside the PSA. However, appropriately-scaled and located direct agricultural or forestal-support uses (including agri-business and eco-tourism), home-based occupations, or certain uses which require very low intensity settings relative to the site in which it will be located may be considered on the basis of a case-by-case review, provided such uses are compatible with the natural and rural character of the area and are in accordance with the Rural Lands Development Standards. These uses should be located in a manner that

minimizes effects on agricultural and forestal activities, and where public services and facilities, especially roads, can adequately accommodate them.

Richmond Road Solar is a low intensity use that aligns with the natural and rural character of its surroundings in compliance with the vision for areas designated as Rural Lands in James City County. The Project's low visual profile and quiet operation make it an excellent neighbor to agricultural and forestal uses, and can be installed, operated, and decommissioned without any negative impact on adjacent uses. Displaced areas will be replanted with pollinator-friendly and native species where appropriate, and after decommissioning the site will be restored to near its previous state, preserving natural hydrology and topographies. The Project is located off Richmond Road and will be screened from adjacent properties and public rights of way by existing and supplemental vegetative buffer within the required setbacks.

- Chapter 10: Land Use – Rural Lands Development Standards – 4. Use and Character Compatibility (p. 321)

a. Uses in Rural Lands should reflect and enhance the rural character of the County. Particular attention should be given to the following:

i. Locating structures and uses outside of sensitive areas;

No aspect of the Project will be located within the Resource Protection Area ("RPA") and no environmentally sensitive areas have been identified within the Project site.

ii. Maintaining existing topography, vegetation, trees, and tree lines to the maximum extent possible, especially along roads and between uses;

Minimal grading is anticipated within the project site. Additionally, the Project will maintain existing vegetation and add significant vegetation to screen the facility.

iii. Discouraging development on farmland, open fields, scenic roadside vistas, and other important agricultural/forestal soils and resources;

The Project is a temporary use of the land. Once decommissioned, the project may be returned to its previous agricultural use. The Project does not inhibit the unused areas of the Project parcel from continuing their current use nor does the Project negatively impact surrounding uses.

iv. Encouraging enhanced landscaping to screen structures located in open fields using a natural appearance or one that resembles traditional hedgerows and windbreaks;

A combination of existing and supplemental vegetative buffering will be added to screen the facility from neighboring parcels and public rights of way.

v. Locating new driveways or service roads so that they follow existing contours and old roadway corridors whenever feasible;

To comply with county and Virginia Department of Transportation (VDOT) regulations for a low volume construction entrance, the existing driveway will be integrated with access roads for project installation and operation. These access roads will undergo necessary

upgrades, similar to a low volume commercial entrance, resulting in a more efficient and compliant system that prioritizes public safety and traffic flow.

vi. Generally limiting the height of structures to an elevation below the height of surrounding mature trees and scaling buildings to be compatible with the character of the existing community;

Solar Panels will not exceed 17 feet in height, well below the mature height of surrounding trees and nearby structures.

vii. Minimizing the number of street and driveway intersections along the main road by providing common driveways; and

The Project fully complies with the parking and VDOT requirements outlined by the James City County Zoning Ordinance and its associated Staff regulations. The proposed plan involves the incorporation of the existing driveway into the project access, with perpendicular breaks through the vegetative buffer yard to minimize impact. Dewberry completed an ingress and egress plan from the facility to US Route 60, incorporating a favorable taper requirement design to ensure a seamless merging with traffic, please see Appendix K for exhibits.

viii. Utilizing lighting only where necessary and in a manner that eliminates glare and brightness.

Permanent lighting is not proposed as part of this facility, unless specifically required by James City County.

b. Encourage the preservation and reuse of existing agricultural structures such as barns, silos, and houses.

No agricultural structures will be impacted by the Project.

c. Site more intensive uses in areas where the existing road network can accommodate the additional vehicle trips without the need for significant upgrades or modifications that would impact the character of the rural road network.

Access to the Project Site has been designed and planned to ensure safe and efficient access during construction and operation. VDOT comments from the project review period were incorporated into site entrance design and Dewberry will continue to engage VDOT to coordinate site entrance approval.

- Chapter 10: Land Use – Goals, Strategies, & Actions (p. 340)

Goal – LU – Achieve a pattern of land use and development that reinforces and improves the quality of life for citizens by encouraging infill, redevelopment, and adaptive re-use within the PSA; limiting development on rural and natural lands outside the PSA; and achieving the other eight goals of this Comprehensive Plan. (p. 340)

Richmond Road Solar will improve the quality of life for citizens of James City County by improving air and water quality without drawing on county services like water, sewer, roads and

schools. The Project is a temporary use and will protect the land from other development types before being decommissioned and returned to the landowner at the end of the facility's useful life.

Strategies & Actions – LU 1 – Promote the use of land in a manner harmonious with other land uses and the environment. (p. 340)

Richmond Road Solar is a passive, rural neighbor and will not create harmful emissions, dust or noise during operations. Incorporating setbacks, existing and supplemental buffering, and responsible site selection, the Project will be harmonious with other land uses in the area and is beneficial to the environment.

> LU 1.4 - Require that any development of new public streets, public parks or other public areas, public buildings or public structures, public utility facilities, or public service corporation facilities, inside or outside the Primary Service Area (PSA), be subject to individualized review as provided under Section 15.2-2232, Legal Status of Plan, of the Code of Virginia, as amended. (p. 340)
>
> The planning commission has determined previously in 2022 that a small solar facility of similar design on a parcel zoned A-1 General Agricultural and located in an area outside the Primary Service Area ("PSA") and in an area designated as "Rural Lands" was substantially in conformance with the James City County 2045 Comprehensive Plan. Richmond Road Solar is substantially in accord with the James City County 2045 Comprehensive Plan and promotes the Goals, Objectives and Strategies noted within the plan.
>
> LU 1.6 Explore emerging technologies in the renewable energy industry, with the intention of protecting the County's unique rural character, preserving natural resources, and mitigating impacts to neighboring properties. (p. 340)
>
> The inclusion of this goal indicates that continued development of solar projects is anticipated within the County. As demonstrated throughout this application and the Project's design, the Project is in keeping with the rural character of the surrounding area, has minimal impact to natural resources and provides a number of primary (clean energy) and secondary (aquifer recharge areas, etc.) benefits to natural resources. Based on the updated project landscaping, the impact on neighboring properties has been mitigated and once mature, the vegetation will fully screen the Project.

Strategies & Actions – LU 6 – Enhance and preserve the agricultural and forestal economy and retain the character of Rural Lands and predominantly wooded, natural, and small-town character of the County. (p. 344)

The Richmond Road Solar project will lease slightly more than half the parcel for this special use permit, allowing the property to remain in the family, and protect from more intensive development types before being decommissioned and returned to the landowner at the end of the facility's useful life. The site design will prevent the Project from adversely impacting adjacent parcels or public rights of way thereby protecting the character of the County.

LU 6.1 - Promote the economic viability of traditional and innovative farming and forestry as industries. (p. 344)

The Richmond Road Solar project will lease less than half the parcel for this special use permit, allowing the property to remain in the family, and protect from more intensive development types before being decommissioned and returned to the landowner at the end of the facility's useful life.

LU 6.1.3 - Continue to update the Zoning Ordinance list of permitted and specially permitted uses in the A-1 zoning district. Investigate adding a development standards policy for those uses that might benefit from a rural location. Continue to look at non-residential uses and development standards that may be appropriate, such as agri-business, eco-tourism, or green energy uses, and uses related to projects that are identified by the Strategy for Rural Economic Development. (p. 344)

The development and construction of alternative energy facilities is allowable within the A-1 General Agriculture zoning district via James City County's Special Use Permitting process as 'Utility Uses' per the James City County zoning ordinance, Sec. 24-212, Use List. The technology employed by solar arrays qualifies as clean energy generation because the operation of the facility does not consume carbon-based fuels, nor does it emit harmful emissions. Small utility scale solar facilities remain permittable by special use permit, and Richmond Road Solar is congruent with other recently approved projects in James City County.

LU 6.1.4 - As resources allow, support implementation of the recommendations in the Strategy for Rural Economic Development to maintain and create viable economic options for rural landowners. (p. 345)

Similar to the above strategy for implementation, LU 1.6 and LU 6.1.3 indicate that non-residential uses including renewable energy should continue to be accommodated in the County, so long as they are well designed. Solar leases provide a valuable revenue stream to rural landowners, one which may offset or eliminate the need to pursue other, less rural-friendly options for monetizing that property.

LU 6.1.6 - Protect farming and forestry uses from conflicting activities by encouraging buffers and open space design and by raising awareness among new rural land purchasers about existing farming and forestry uses in the County. (p. 345)

Solar is an ideal neighbor to agricultural and silvicultural operations. The project development is benign, with no offsite sound or emissions. Because of the temporary nature of the Project and the land can be restored after project life, it prevents other more intensive and permanent land uses that may be in conflict with the comprehensive plan.

LU 6.2 - Residential development is not a recommended use in Rural Lands. Creation of any residential lots should be in a pattern that protects the economic viability of farm and forestal assets, natural and cultural resources and rural character. Amend the Subdivision Ordinance, Zoning Ordinance, utility regulations, and related policies to promote such an overall pattern. Consider providing more than one option, such as the following, so long as an overall very low-density pattern can be achieved, and the design and intensity of the development is consistent with the stated Rural Lands designation description and development standards and available infrastructure. (p. 345)

The Project provides an alternative to residential development, such as a family subdivision or similar division which may have been an issue outside the PSA. Construction of the facility will prevent more intensive development types on the parcel, and the Project will be decommissioned and leased acreage returned to the landowner at the end of the facility's useful life.

Public Need and Benefit

Direct Revenue to James City County

James City County will benefit directly from the project in the form of increased tax revenue from real property taxation, permitting and administrative fees, and induced spending from construction and procurement of the project. The project will also be subject to other forms of direct revenue through a voluntary revenue share payment (Option 1) or machinery and tools tax (Option 2), at the County's discretion and is expected to generate more than $830,000 for James City County, which is an increase of more than $430,000 for compared to the property's current use.

Option 1: Sun Tribe understands that James City County may prefer a revenue option for public improvements pursuant to Code of Virginia Section 15.2-2288.8(b) and evaluated the option of a voluntary revenue share agreement. In this scenario, the Project will submit a payment of $1,400 per megawatt, as measured in alternating current generation capacity of the Facility on an annual basis, totaling approximately $280,000. In addition to the $280,000 of voluntary revenue share payments, the Project is expected to generate more than $150,000 of additional real property tax revenue.

Option 2: Sun Tribe estimates that the Project will generate more than $325,000 of machinery and tools tax revenue in accordance with the James City County guidelines for machinery and tools tax, and the Code of Virginia Section 58.1-3660. In addition to the $325,000 of machinery and tools taxation, the Project is expected to generate more than $150,000 of additional real property tax revenue.

When considering this additional potential revenue, it is also important to remember that Richmond Road Solar requires virtually no corresponding draw on public resources or infrastructure such as schools, emergency services, sewer, or roads. Because of this, the benefits of additional tax revenue are amplified by the lack of additional public costs to support them.

Economic Development

In addition to direct revenue from taxes, there are other economic benefits to consider. The largest of these is jobs directly attributable to the facility. From fence installers to panel electricians and construction laborers, significant job creation during the engineering and construction of the solar facility is guaranteed. In addition, it is estimated that as many as 20 people could be working on site at a time during peak construction.

This direct economic impact is also paired with the indirect impact naturally induced when laborers eat, shop and sleep at local establishments, as is typical for all solar facility job sites. The Applicant expects to spend approximately $9 million to $12 million to develop and build Richmond Road Solar, a portion of which will be spent in local area restaurants, stores, and accommodations.

Additionally, Sun Tribe is a Virginia-based company supporting jobs within the state and paying local and state taxes. Sun Tribe is a founding member of the Solar Hands-On Instructional Network of Excellence ("SHINE"), a public-private partnership with Southside Virginia Community College, Maryland-DC-Delaware-Virginia Solar Energy Industries Association and other leading solar developers, construction companies, and consulting firms, and tech companies to build innovative career pathways in Virginia. We value the community that has helped us grow and we take pride in building responsibly in our home state.

Environmental Protection

Richmond Road Solar will also have positive effects on James City County 's environment. Unlike fossil fuel energy sources, a solar energy installation produces no emissions to create energy for local consumption. This results in an estimated 9,186 tons of carbon dioxide offset annually – the equivalent of nearly 1,800 cars being removed from Virginia roads and will power approximately 1,000 local homes per year. In addition, solar energy reduces certain pollutants that are harmful to human health including sulfur dioxide (SO2), nitrous oxide (NOx) and particulate matter (PM2.5). In this way, Richmond Road Solar will make the air cleaner, while also helping to meet Virginia's clean energy goals.

Quantification and Mitigation of Potential Development Impacts

Neighboring Parcels

Seventeen parcels border the Project parcel, or are in close proximity to the proposed facility entrance. The Project parcel is owned by one landowner of record. The proposed Project will mitigate impacts to neighboring parcels by using naturally occurring vegetative screening. Please see Appendix P for table of neighboring parcels.

Visual

Recognizing the importance of conservation of scenic resources, great care was taken to design Richmond Road Solar in a way that protects the viewshed of the neighboring properties and roadways. This is accomplished through property setbacks, leaving mature vegetative buffering in place, and supplementing with additional native buffering where appropriate. Onsite equipment such as the racking and panels which comprise the solar generating facility will not exceed 17 feet measured from the base of the structure to its highest point.

In addition, there will be no signage on site, except for that required for safety, security, or the requirements of the interconnecting utility (Dominion Energy).

Existing slopes, mature vegetation, and supplemental vegetation will further reduce the visual impact to adjacent parcels. There is expected to be limited or no visual impact on parcels adjacent to the Project site, or public rights of way.

Glint and Glare

Solar panels are designed to capture light, rather than reflect it and modules employ anti-reflective technology to further mitigate any reflectivity coming off their surface. Research shows solar panels produce less glare than standard residential window glass, snow, concrete, or standard farm ponds. The applicant has utilized Forge Solar application and technology to conduct a preliminary Glint/Glare. Based on proposed setbacks and vegetative buffering, there are no glare effects on surrounding residences and roads. The glare analysis and generated report can be found in Appendix N.

Using the Federal Aviation Administration's Notice Criteria Tool, which takes into consideration the Project site latitude, longitude, horizontal datum, site elevation, and structure height, it was determined that Richmond Road Solar introduces no risk to air traffic. A copy of the Notice Criteria Tool results can be found in Appendix M.

Noise

Solar facilities produce negligible noise when operating. Any noise produced by the operating facility becomes inaudible at approximately 150 feet from the noise-producing components. These noise-producing components, such as inverters, have few moving parts and do not produce noise at levels that will be heard from adjacent properties. Since the facility will only operate during the day, there will be no noise produced at night.

During the construction of the facility, there will be a short-term increase in noise levels in the immediate area surrounding the site. It is estimated construction will take eight to ten months However, noise-producing construction activities will occur during short increments of time throughout the construction schedule and will not be ongoing. Noise-producing construction activities will be limited to daytime hours. The Applicant wishes to be a good neighbor and will work with the county and adjacent landowners to minimize any impact construction noise may have on the surrounding community.

Manufacturer specification sheets listing noise levels can be viewed in Appendix D.

Lighting

Generally, solar projects do not require permanent lighting and lighting is not proposed as part of this Project. If James City County requires lighting, it will be designed to prevent spillover and will be arranged or shielded to reflect light away from adjoining residences and roads. Permanent lighting, if utilized on the Project, will be only used for inspection and maintenance purposes and shall be dark-sky compliant.

Stormwater

Tetra Tech, a leading national engineering firm, was consulted to assess any preliminary concerns regarding erosion and stormwater management plans. This evaluation represents a conceptual investigation into impervious areas, and identification of stormwater management concerns. Conceptual basin design and locations meet and exceed water quality standards, as seen in Appendix H, with an estimated phosphorous nutrient removal of 9 pounds per year, complying with VA-DEQ regulations. A fully engineered stormwater management plan will be presented to James City County for review and approval with final site plan submittal. The stormwater management plan will comply with the best management practices that will be employed to meet any state or federal guidelines. The Project will file an IA prior to 2024 and as a result anticipates the panels will be considered pervious consistent with DEQ guidelines.

Traffic

During operations, Richmond Road Solar is expected to generate minimal traffic, with fewer than two trips per month. However, during the construction period, peak delivery days may result in 25-40 daily trips to and from the project site. To manage construction traffic volume, a Construction Traffic Management Plan will be developed and submitted to James City County for review and approval alongside the site plan. In response to VDOT officials' request for a review of traffic conditions and ingress/egress during preliminary project design, Dewberry was commissioned to prepare an entrance analysis exhibit and conceptual traffic review memorandum which can be found in Appendix K. The preliminary analysis indicates that a minimum sight distance of 495 feet is required on this section of US Route 60, Richmond Road. At the proposed entrance location, the available sight is estimated at 800 feet, far exceeding the minimum VDOT requirement. Dewberry, and Sun Tribe, will continue to coordinate with VDOT to achieve an approved project entrance.

Hazardous Materials Statement

Solar projects, and solar PV panels, are safe and do not pose a health or safety risk. Panels are typically comprised of silicon, copper and aluminum wiring and connections, which are encapsulated in plastic and sandwiched between glass with an aluminum frame. The glass front and aluminum frame make up over 80% of a panel's content by weight. The electricity generating component of the panel, the PV cells, are composed almost entirely of silicon - the same material as computer chips - which is the 2nd most common element in Earth's crust and obtained by processing quartz sand. Wiring and conducting components of the panels represent less than 5% of a panel's content by weight, and historically may have contained trace amounts of lead in the solder used to make electrical connections; however, panel manufacturers are increasingly utilizing lead-free solders. These materials, if present, are encapsulated within the panel to prevent environmental exposure even in the event a panel is broken or damaged. See Appendix E for a detailed description of panel construction, additional discussion of the public health and safety considerations as they relate to solar PV projects.

Quantification of Potential Impacts on Environmental Features

The Project is located within the James River Watershed and is designed to minimize its impact on the environment. Unlike more intensive forms of development – such as residential or commercial

uses requiring large foundations and parking lots – the Project will not significantly affect water quality, soils, or vegetation. This facility - which includes a mix of panels and vegetation - will not significantly affect water quality thanks to its limited site access and low potential for pollutant runoff. While some tree clearing will be necessary, the Project will not create substantial new impervious surfaces. Instead, the area under the panels will be planted with groundcover, including pollinator species in open areas where appropriate. For a better understanding of the Project's features, please refer to Appendix C, which includes the conceptual site plan showcasing the existing and proposed site features.

Wildlife

As part of the environmental due diligence performed for the Richmond Road Solar project site, the Applicant engaged with Timmons Group, a multi-disciplined engineering and technology firm, to determine the likelihood of encountering any species on the State or Federal list of Threatened and Endangered Species. The complete Threatened and Endangered Review conducted for the Richmond Road Solar is available in Appendix F. A comprehensive review of the following databases was conducted to determine potential impact to Threatened and Endangered Species:

Table 1 threatened and Endangered Species Review

Agency	Database
U.S. Fish and Wildlife Services	Information, Planning and Consultations System
Virginia Department of Game and Inland Fisheries	Virginia Fish and Wildlife Information System
Virginia Department of Game and Inland Fisheries	Wildlife Environmental Review Map Services
Virginia Department of Game and Inland Fisheries	Northern Long-eared Bat Winter Habitat and Roost Locator
Virginia Department of Game and Inland Fisheries	Little Brown Bat and Tri-colored Bat Winter Habitat and Roosts Locator
Virginia Department of Game and Inland Fisheries	Division of Natural Heritage Database
The Center for Conservation Biology	Virginia Eagles Nest Locator
Virginia Department of Conservation and Recreation	Natural Heritage Project Review

The comprehensive review identified the potential for the following species to be present on the Richmond Road Solar site:

Common Name	Scientific Name	Status	Agency Source
Northern Long-eared Bat	Myotis septentrionalis	Federal Endangered , State Threatened	USFWS
Monarch Butterfly	Danaus plexippus	Candidate	USFWS

The results of the detailed review determined:

- Northern long-eared bat: Review of the VDGIF Northern Long-eared Bat Winter Habitat and Roost Indicator determined there were no maternity roosts or hibernacula located within or within a 2-mile radius of the Project site. Given the recent change in species designation, Sun Tribe will work with state and federal agencies to comply with time of year restrictions, if applicable, or other regulations that may impact the construction of the facility.

- Monarch Butterfly: Review of the USFWS IPaC results indicate that the monarch butterfly (Danaus plexippus) has the potential to occur on the site, however its presence has not been confirmed. The monarch butterfly is a candidate species, but it is not currently listed as federally, or state threatened or endangered. Monarch butterflies are found across North America and are broken into two populations separated by the Rocky Mountains. Milkweed is the host plant of this species, and the monarch butterfly relies on this plant to complete its lifecycle. As the species is not listed as threatened or endangered, there is no time of year restrictions for this species, but USFWS recommends protective measures to enhance the butterfly habitat, including planting pollinator habitat.

Coordination with Timmons Group will continue throughout the development to evaluate and mitigate any concerns regarding threatened or endangered species.

Cultural and Historical Resources

Timmons Group was contracted to evaluate the potential for cultural and historic resources on site, or near the project area. A comprehensive desktop review was conducted using the Virginia Cultural Resource Information System ("VCRIS") to determine if any known historical and archaeological resources were present on the Project parcel or within a one-half-mile buffer surrounding the parcel. There are no architectural resources or archaeological resources located on the parcel. There are seven architectural resources and three archeological resources within the one-half mile search buffer. These include the White Hall Tavern (DHR ID 047-0041), is an example of an Early National Period home and tavern. The property is located one-half mile from the Site to the East. Having consulted with experts, the presence of archaeological resources within the Project boundary is unlikely due to the fact that the parcel has previously been agriculture production. The remaining resources identified have not been evaluated for listing on the National Register of Historic Places. The complete Cultural and Historical Resource study by Timmons can be viewed as Appendix F.

Table 2 Historic/Cultural Resources Identified

Resource ID	Site Description	Location	Site Evaluation Status
Architectural Resources			
047-0013	Martin House Site	Nearby	No longer extant
047-0041	White Hall Tavern	Nearby	NRHP Listing VLR Listing
047-0084	Vivian White House	Nearby	Not evaluated
047-5106	Fariview Farm	Nearby	Not evaluated
047-5134	5298 Riverview Road House	Nearby	Not evaluated
047-5162	Victorian Ages Farm	Nearby	Not evaluated
047-5251	182 Ol Stage Roadhouse	Nearby	Not evaluated
Archaeological Resource			
44JC0020	Martin's Place	Nearby	Not evaluated
44JC0285	Open Air Terrestrial	Nearby	Not evaluated
44JC1122	Open Air Terrestrial	Nearby	Not eligible

Streams and Wetlands

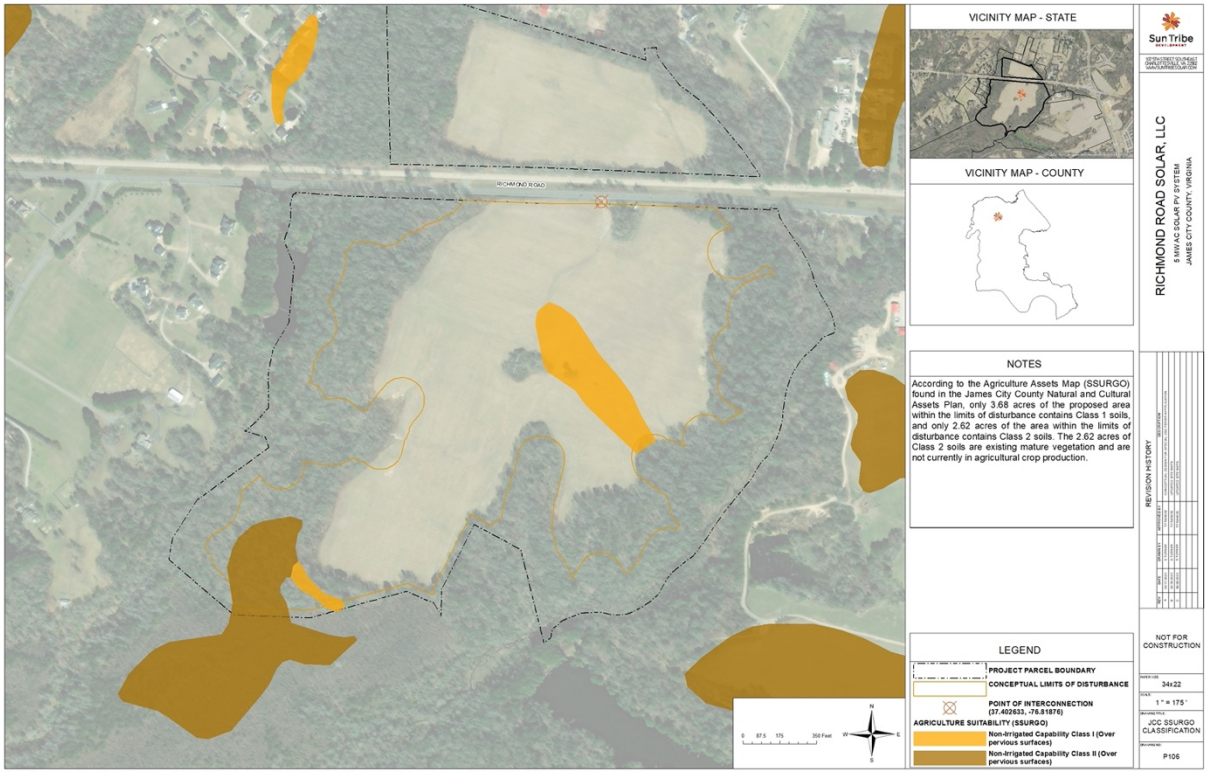
A wetland delineation was performed by Timmons Group to identify all streams and wetlands on the Richmond Road Solar Project site. There are no identified wetlands, intermittent streams, or resource protections areas within the limits of disturbance. The field wetland delineation for the Richmond Road Solar can be viewed as Appendix G.

The Project is designed to minimize impact on any identified streams or wetlands. Tree clearing activities will comply with the James City County 's land disturbance guidelines, the James City County regulations involving stormwater management, erosion and sedimentation control, and Virginia's Chesapeake Bay Preservation Act (if applicable).

Prior to site plan submittal, Sun Tribe may coordinate with Timmons Group, the U.S. Army Corps of Engineers (USACE), if required, and James City County to confirm the stream and wetland areas identified in the delineation. In addition, the Project will be developed and constructed in conformance with all applicable federal, state, and local laws and regulations, including the Chesapeake Bay Act, Clean Water Act, and VA-DEQ Stormwater Management Program Regulations.

Soil Survey

The applicant conducted an evaluation of the soil types present on the project site by utilizing the United States Department of Agriculture's Web Soil Survey (WSS) and the James City County Natural and Cultural Assets Plan. According to the Agriculture Assets Map (SSURGO) found in the James City County Natural and Cultural Assets Plan Class 1 and Class 2 soils are considered the highest quality soil for agriculture purposes. Class 1 soils account for 3.68 acres, and Class 2 soils account for 2.62 acres within the approximately 67 acre limits of disturbance, comprising less than 10% of the site. The project parcel comprises several soil types, including Slagle Sandy Loam, Craven-Uchee Complex, and Kempsville-Emporia Fine Sandy Loams. Notably, the most prevalent soil type on the project site is Kempsville-Emporia Sandy Loams, constituting approximately 75% of the soils present. Both Kempsville-Emporia and Slagle Fine Sandy Loam are prime farmland in all areas. Please see the map below showing the Class 1 and Class 2 soils present within the site footprint.



The Richmond Road Project is planned to occupy less than 68 acres of about 130.25-acre parcel. The remaining soils on the property will remain undisturbed by the project. The soil survey map is provided in Appendix I for reference. After the useful life of the project, the soils may be returned to Agriculture usage if desired.

Facility Considerations

Design

Richmond Road Solar is an alternating current ("AC") photovoltaic solar electric power generation facility capable of generating up to five (5) megawatts of electricity.

The Project will utilize photovoltaic (PV) panels to convert the sun's energy into electricity (direct current, "DC"). The PV panels are electrically connected and mechanically mounted on racking equipment made from metal framing driven into the ground. The racks are oriented in rows along a north-south axis. These rows of panels use self-powered motors to rotate east-west following the sun's path each day facing east in the morning, horizontal midday, and west in the afternoon. This single axis tracking mechanism produces more energy as compared to a fixed-tilt racking system using a similar footprint. Additionally, most panels used on the Project site will be bifacial, meaning both sides of each panel are used to produce energy. This increases total energy generation and improves plant efficiency.

The electricity produced by the panels is collected by wires in both above ground and underground conduits before connecting to inverters that convert the electricity from direct

current to alternating current. The inverters are then connected through additional wiring in conduit to transformers that step up the power to a higher voltage for transmission and interconnection to the existing electrical grid. Inverters and transformers will be strategically placed throughout the site.

All the equipment utilized for the Project will be UL listed (or equivalent) and the design will comply with the current version of the National Electric Code. Meters, safety switches, and combiner boxes will be utilized as necessary. The exact manufacturer and type of equipment and associated design is subject to change based on future availability and pricing. Current manufacturer specification sheets can be found in Appendix D.

Interconnection

Richmond Road Solar's interconnection will be established on circuit 426 of Dominion's distribution system. The project is expected to connect to existing electrical infrastructure off US Route 60, Richmond Road, which feeds into the Toano Substation. The point of Interconnection is located at coordinates 37.402634, -76.818756, situated on the northern portion of the site, and falls under Sun Tribe Development's option to lease agreement with the landowner. The interconnection agreement, a crucial document outlining the terms of the interconnection to meet Dominion standards, is expected to be executed prior to December 2024.

Project Site Access

Access to the Project site will occur by a single existing gravel access road off Route 60. Several small accessways will be installed within the Project site boundary to allow access to all site equipment. During the construction period there will be an increase in traffic due to on-site personnel and deliveries. Once operational, there will be no daily staff at the Project site, and site visits are expected to be limited to approximately two times per month. The applicant will continue to coordinate with James City County to develop a Construction Traffic Management Plan that satisfies the Virginia Department of Transportation, and James City County requirements. Additionally, Dewberry performed a site entrance analysis and developed an exhibit illustrating the site entrance, ensuring compliance with VDOT regulations for a low-volume commercial entrance CG-9.

Vegetative Buffer

Currently existing, mature vegetation will be utilized to screen the project wherever practical on the Project site. The project contains several hundred feet of dense, mature vegetation on the east, west, and south sides of the property that will naturally screen the project without requiring additional plantings. Along Richmond Road, a Community Character Corridor in James City County, the project is proposing significant new vegetative buffering. Along the southern boundary, where a small portion of the existing mature vegetation may not meet the 35' buffer requirement, Sun Tribe is also proposing new vegetation. A landscape plan has been developed by Timmons group to screen the facility from the roadway, and can be found in Appendix J. According to Sec. 24-91 of the James City County ordinance, plant species modifications, substitutions and transfers are acceptable when designed to mitigate existing site constraints. The landscape plan utilizes lower lying vegetation, reaching a max height of 35 feet in order to ensure

that viewshed is preserved as vegetation matures. Existing mature vegetation to remain along the east, west, and south sides of the property are expected to screen the facility from nearby parcels, and meet the intent of the ordinance without new plantings. Any new vegetative buffer will be maintained throughout the life of the Project.

Fencing and Security

All system components will be enclosed in a perimeter fence of not-less-than seven (7) feet in height as required by the National Electric Code (NEC). The fencing will serve to prevent unauthorized personnel from entering the Project site and will protect the system components from damage by wildlife. A locked gate will be installed to allow for ingress and egress of authorized personnel. The security fencing will be installed interior of vegetative buffering.

Temporary fencing will be installed, as necessary for safety and security, during construction. Access will be limited to authorized personnel, including designated County officials.

Signage

Safety and security signs will be installed along perimeter security fencing as required by Dominion Energy, James City County, or the National Electric Code. Temporary instructional or safety signs will be posted during construction, as appropriate and necessary. All signage will comply with the James City County's applicable codes & ordinances.

Facility Permitting

Stormwater Management Plan

The Applicant is coordinating with the James City County Stormwater and Resource Protection Division, as the designated program authority for the Virginia Stormwater Management Program ("VSMP"), for review and approval of Richmond Road Solar's stormwater management plan prior to construction. Richmond Road Solar will comply with the requirements of the James City County as well as any additional local or federal requirements. Tetra Tech was engaged to create a preliminary stormwater management plan using the Virginia Runoff Reduction Method which can be found in Appendix H. The preliminary stormwater management plan shows probable basin and outfall locations, potential sediment basin types, plus additional features that show that the site can meet the County requirements during final site plan review.

Erosion and Sediment Control

Richmond Road Solar will comply with all applicable erosion and sediment control laws and regulations. Management practices utilized on site will be designed specifically to prevent the discharge of sediment and other pollutants into nearby streams. The Applicant will coordinate with James City County, as the designated Erosion and Sediment Control program ("VESCP") Authority, on submittal and review of the Project's erosion and sediment control plans. Because the Project site will require very little cut/fill, E&S basins will be converted to long term BMPs post-construction. Richmond Road Solar comply with the requirements of the James City County any other local or federal requirements. Preliminary basin placement can be found in Appendix H.

Local Building and Electrical

The Applicant will adhere to all County, State and Federal building and electrical codes. The Applicant will coordinate with James City County to secure all applicable building and electrical permits prior to the start of construction.

Permit By Rule

All renewable energy generating facilities in the Commonwealth of Virginia must complete requirements set forth under the Department of Quality Permit By Rule ("PBR") process. Projects with a nameplate capacity less than or equal to 5 MW AC - such as Richmond Road Solar - are subject to the Permit By Rule provisions set forth in 9VAC15-60-130. Under regulation 9VAC15-60-130, "the owner or operator of small solar energy project with either a rated capacity greater than 500 kilowatts and less than or equal to 5 megawatts or a disturbance zone greater than two acres and less than or equal to 10 acres shall notify the Department [of Environmental Quality] and shall submit a certification by the governing body of the locality wherein the project will be located that the project complies with all applicable land use ordinances."

Facility Construction

Construction of Richmond Road Solar is expected to take approximately eight to ten months, beginning in mid 2024.

A construction manager will coordinate, direct, and manage all logistical and workforce aspects of construction of the facility. It is estimated that there will be approximately 20 to 30 personnel on site daily during construction, with some construction activities requiring fewer personnel to be on site. Personnel will park only in designated areas on the Project site during construction of the facility.

On-site construction activities fall into the following main categories:

- Civil & Environmental: Temporary erosion and sediment control Best Management Practices (BMPs), permanent stormwater management BMPs, internal site road construction, construction entrances and material laydown area
- Fence: Permanent fence surrounding the Project site
- Mechanical: Racking foundation pile driving, metal racking assembly, and solar panel installation
- Electrical: Mounting of electrical equipment, trenching, and installation of conduit and wire
- Site Commissioning: Inspecting, testing, and energization of facility prior to commercial operation.

Materials and equipment necessary to construct Richmond Road Solar will be manufactured off site but will be delivered to the Project site by truck. Trucks delivering project materials will be both staged and unloaded on the Project site. Major materials that may be stored on site prior to installation include PV modules, inverters, transformers, racking, and spooled wire. Other materials arriving by truck for more immediate installation include fencing, conduit, concrete,

reinforcing steel, wire management hardware, communication equipment, and other electrical components.

Construction is planned for daylight hours and will conform to County regulations regarding allowable hours of operation.

Facility Operations and Maintenance

Solar generating facilities such as Richmond Road Solar are monitored and operated remotely. The facility will be monitored 24/7 for performance and security by the owner operator, and for service quality and interruption by the interconnection utility, Dominion Energy. Automatic breakers and reclosers are standard protective devices on this type of electrical system.

Ongoing maintenance of facility components will occur at regular intervals and using the protocols prescribed by the equipment manufacturer. All maintenance activities will adhere to NFPA 70E safety standards.

All vegetative areas in and around the Project site will be maintained by a qualified grounds maintenance crew.

Facility Decommissioning

At the time the Project permanently ceases operations, the Project Owner ("the Owner") will perform decommissioning activities. The Owner will provide notification to the Zoning Administrator of the abandonment or discontinuance of the use and initiate the process of obtaining any permits or other approvals required to disconnect the Project from the utility power grid and remove, recycle, repurpose, or otherwise dispose of Project components. The Project proposes to safely remove the relevant components within twelve (12) to fifteen (15) months from the receipt of the above referenced permits and approvals. The Preliminary Decommissioning Plan, which can be viewed in Appendix L includes the steps and processes to remove equipment and materials related to the operation of a solar PV project. The proposed decommissioning sequence includes:

- Disconnect the Project from the utility power grid in accordance with the requirements of the utility of other distribution or transmission system owner as applicable.
- Remove solar panels, foundations, racking, electrical components, cabling and other associated facilities to a depth not less than forty-eight (48) inches below grade.
- Recycle, repurpose, or otherwise dispose of equipment and materials in accordance with the applicable permit requirements in a manner that complies with local, state, and federal regulations.
- Decommissioning activities may exclude the removal of select roads, driveways, fences and other real property improvements that the landowner requests be left in place for future use.

Existing vegetation and buffering will remain in place to the extent they do not obstruct or otherwise interfere with the removal of the facilities. Surfaces utilized by the Project will be restored to as near normal grade and level as is reasonably practicable, and disturbed areas will be

reseeded and stabilized. Decommissioning is designed to restore the property to a condition similar to the condition that existed prior to the Project's construction.

Prior to Project construction the Owner will enter into a written agreement with the County to enable the County to decommission the facility in the unlikely event the Owner is not able to do so. This agreement will be developed in accordance with State regulation [15.2-2241.2] and will give the County access to decommissioning funds through a decommissioning bond if the need arises. The Project's Proposed Decommissioning Plan can be viewed in Appendix L.

Appendix A – Sun Tribe Informational

Sun Tribe
DEVELOPMENT

Utility-Scale Solar Development



About Sun Tribe

At Sun Tribe, we make legacy-grade clean energy projects happen. Diligent upfront de-risking, best-in-class development and engineering, and forging ongoing relationships built on trust translate into long-term value for our partners. Sun Tribe projects stand the test of time and exceed expectations. Because legacies are a serious thing to build — and the integrity of ours depends on the quality of yours.

Solar That Does More

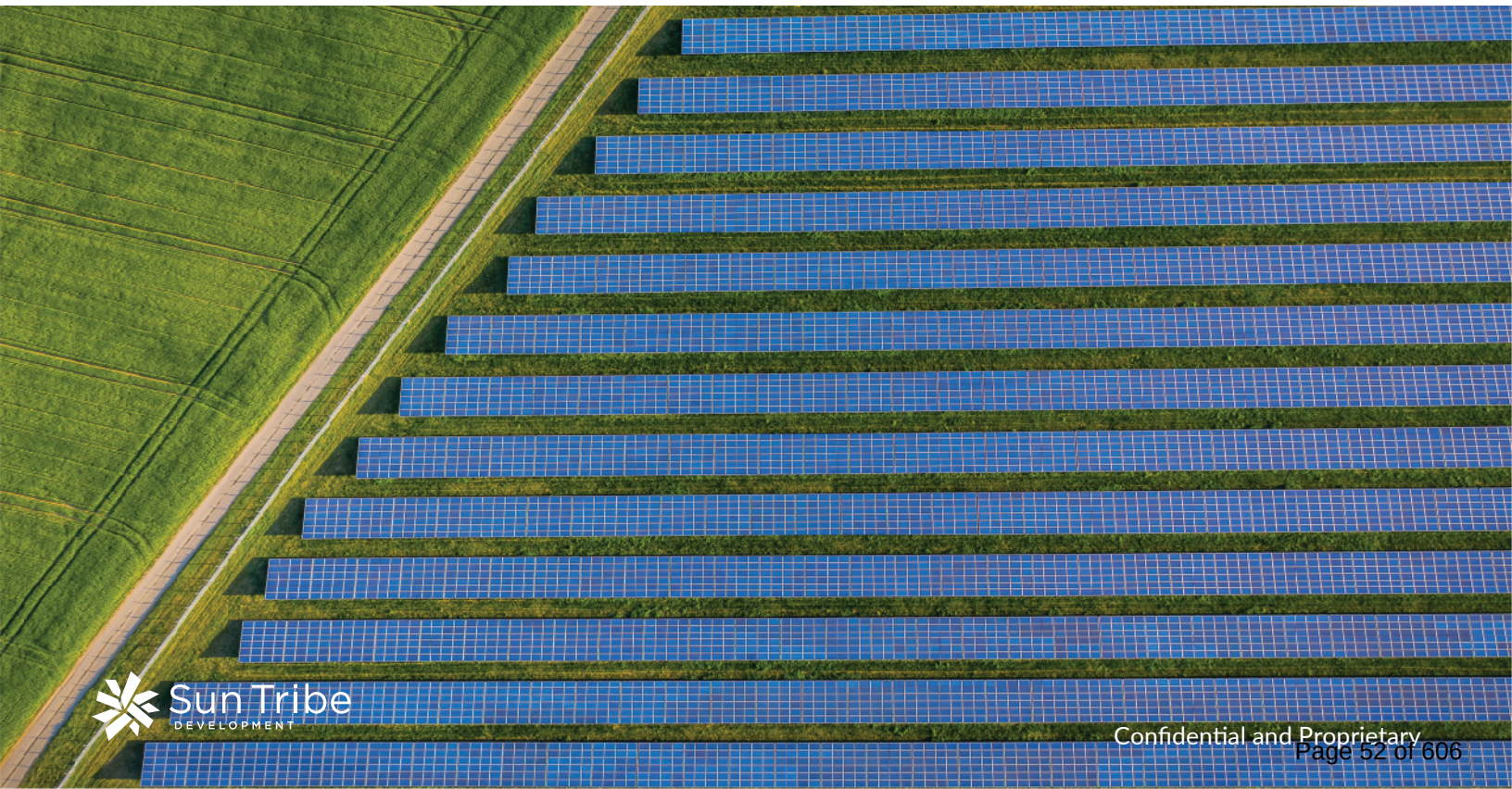
Generating clean, affordable, domestic energy for decades to come is our baseline, but Sun Tribe projects go further: The first solar array in Virginia history to sit on an abandoned coal mine. The first school district in the state powered by 100% onsite solar. Bringing solar energy education into school curricula. Incorporating agriculture- and pollinator-friendly principles into projects.

Partnering For Success

Legacies get built together. That's why we partner with a wide variety of individuals and organizations to bring projects to life: landowners, investors, K-12 schools, universities, government agencies, community and economic development organizations, utilities, local businesses and Fortune 200 companies alike, nonprofits, elected leaders, and other energy companies.

Domestically Focused, Internationally Respected

Headquartered out of East Coast clean energy hub Charlottesville, Virginia, we remain committed to and focused on the Mid-Atlantic, Southeast, and other U.S. domestic markets — even as we've built a reputation for solar innovation that has garnered attention across the country and around the world in outlets such as Bloomberg, the Washington Post, Canada's CBC, and Germany's ARD.





About Sun Tribe Development

Sun Tribe's utility-scale development arm partners with Fortune 500 companies, landowners, governments, and leading utilities to develop legacy-worthy large-scale solar, storage, and solar+storage projects.

Our team has 5+ GW of collective renewable energy experience. We've previously developed and built solar facilities in 20 states for the likes of AEP, Dominion Energy, Duke Energy, Entergy, Exelon, Georgia Power, Gulf Power, Idaho Power, Pacific Power, PSEG, the Tennessee Valley Authority, United States Air Force, and United States Navy.

As a utility-scale developer, we begin with a focus on honoring the heritage of the land. From local agriculture and longstanding rural character, to former coalfields that once defined the region's economy, we know that we have a responsibility to steward these lands for future generations. This is why we forge sustainable, respectful, long-term relationships with landowners first — then back that with diligent project planning and collaboration with local AHJs and elected leaders throughout the permitting process — to earn and retain trust across years and across multiple projects.

Leading corporate offtakers, innovative utilities, and respected environmental nonprofits count Sun Tribe utility-scale projects as highlights in their renewable energy portfolios.

Meet the Tribe

In less than a decade, Sun Tribe has grown into one of the largest clean energy companies in the Mid-Atlantic region. We are a disciplined team who love this work and continually strive to set a new standard for what's possible. Key stats about our collective impact include:

Solar That Does More

- **Founded:** 2015
- **Team Members:** 80+
- **Projects Completed:** 100+
- **Years of Combined Team Experience:** 300+
- **Team Lifetime Development:** 50 GW+
- **Business + Leadership Industry Positions:** 15+
- **Business Units:**
  - Commercial-scale Development
  - Utility-scale Development
  - EPC: Design + Build
  - Asset Management: Operations + Maintenance



Appendix B – Option to Lease Memo

EXHIBIT B TO AGREEMENT

FORM OF MEMORANDUM OF OPTION FOR SOLAR ENERGY LAND LEASE

[See Attached]

Prepared By and After Recording Return To:
107 5th Street Southeast
Charlottesville, VA 22902

James City County, Virginia GPIN 112-01-0-0042

Consideration: $__

MEMORANDUM OF OPTION FOR SOLAR ENERGY LAND LEASE

This Memorandum of Option Agreement for Solar Energy Land Lease (this "Memorandum") is entered into as of the 27 day of August, 2021 (the "Effective Date") by and between Martin Family Holdings, LLC, a Virginia limited liability company, ("Landowner") with an address of 1010 Marney Court, Henrico, Virginia 23229, and Richmond Road Solar, LLC, a Virginia limited liability company, with an address of 107 5th Street Southeast VA 22902 ("Developer").

1. Grant of Option; Option Agreement. For good and valuable consideration, the parties executed that certain Option Agreement for Solar Energy Land Lease on and as of August 27, 2021, 2021 (the "Option Agreement"), pursuant to which Landowner has granted to Developer a unilateral and exclusive option (the "Option") to lease the property located in James City County, Virginia and designated as GPIN 112-01-0-0042 and as set forth with greater particularity in Exhibit A hereto (the "Property").

2. Option Term. The Initial Term, as that term is defined in the Option Agreement, is three (3) years following the Effective Date. The Option may be extended for up to one (1), one (1) year Extension Terms.

3. Option Price. The consideration for the Option in the Initial Term and for the Extension Term of the Option Agreement is set forth in the Option Agreement.

4. Termination. The Option Agreement may be terminated by Developer in its sole discretion at any time during the Term or by the Landowner in the event of default by Developer.

5. Purpose of Option. The purpose of this Memorandum is to provide record notice to all persons of the existence and legal effect of the Option Agreement and the Option and of Developer's unilateral right to exercise its Option to lease the Property.

[Signature Pages Follow]

INTENDING TO BE BOUND, the parties hereto execute this Memorandum of Option for Solar Energy Ground Lease dated as of the first date written above.

RICHMOND ROAD SOLAR, LLC

By: Sun Tribe Development, LLC
A Virginia Limited Liability Company
Its: Sole Member

By: _____
Danny Van Clief
Chief Executive Officer

COMMONWEALTH OF VIRGINIA
COUNTY OF Fluvanna

The foregoing instrument was acknowledged before me on this 27 day of August 2021 by Danny Vanclief, CEO of Sun Tribe Development, LLC, the Sole Member of Richmond Road Solar, LLC, a Virginia limited liability company, on behalf of the company.

Seal

ELIZABETH MARIE ARLEN
NOTARY PUBLIC
REG # 7889527
COMMISSION EXPIRES 09/30/2024
COMMONWEALTH OF VIRGINIA

_____
Signature
Notary Public

Notary Registration Number: 7889527

My Commission Expires: 9/30/24

INTENDING TO BE BOUND, the parties hereto execute this Memorandum of Option for Solar Energy Ground Lease dated as of the first date written above.

Martin Family Holdings, LLC

By: _____
Patricia H. Hunter, Manager

COMMONWEALTH OF VIRGINIA
COUNTY OF Middlesex

The foregoing instrument was acknowledged before me on this 19 day of August, 2021 by Patricia H. Hunter, Manager of Martin Family Holdings, LLC, a Virginia limited liability company, on behalf of the limited liability company.

Seal



_____
Signature
Notary Public

Notary Registration Number: 337091

My Commission Expires: 09/30/2021

EXHIBIT A TO MEMORANDUM OF OPTION FOR SOLAR ENERGY GROUND LEASE

DESCRIPTION OF PROPERTY

All that certain tract of land situate in Stonehouse District, James City County, Virginia, described as follows:

All of that certain lot or parcel of land containing an estimate of 139.1 acres with building and improvement thereon beginning at a cedar stob on a swamp which is the line between the property of I.N. Oliver and the property herein described. This cedar stob is 100 feet north of the headwall of a culvert. Thence N 30° 45' W 339 feet to a spruce pine. Thence N 25° 45' W 94 feet to a spruce pine. Thence N 37° 30' W 57 feet to a red oak. Thence N 47° 30' W 95 feet to a spruce pine. Thence N 27° 30' W 292 feet to a cedar stob on the side of a road and 9 feet on the same line to the center of the road. Thence S 6° 30' W 103 feet to a cedar tree on the side of a road. The center of this road is the line. Thence N 64° 15' W 907 feet to a white oak. Thence S 67° 30' W 300 feet to a cedar stob in a white oak stump. Thence down a ravine and swamp across the state highway along the property of G.W. Rankin and W. L. Hunt to a stob in a pine stump on the east side of the swamp. Thence along the property of Branch Martin, S 43° 45' E 210 feet to a pine tree. Thence S 42° 00' E 197 feet to a hickory tree. Thence S 82° 00' E 362 feet to a pine tree. Thence N 82° 00' E 465 feet to a post and on the same line 10 feet to the center of a road. Thence along the center of the road as it meanders to a swamp. Thence up this swamp along the property of H. N. Martin's Est., W. H. Porter and I.N. Oliver, across the state highway to the point of beginning. Containing 144.1 acres. From this is deducted 5 acres more or less as stated in the deed dated February 9, 1903, from Hattie N. Wilkerson to L.L. Martin, recorded D.B. 8, Page 517, leaving a total of 139.1 Acres more or less as surveyed by G.L. Evans, Certified Surveyor of West Point, VA., on October 24th, 1934, and for a more particular description reference is made to a plat of this survey bearing the same date, recorded in PB 6, Page 28, reference to said plat is made for a more complete description.

Less and Except that 5.73 Acres to the Commonwealth of Virginia as conveyed in Deed Book 41 at Page 31; and

Less and Except 4.00 Acres conveyed to Verna J. Dickerson in Deed Book 526 at Page 280. Less and Except that 2.27 acres to the Commonwealth of Virginia as conveyed in Deed Book 117, Page 329.

GPIN 112-01-0-0042

13909678.3 045699.00001

Original Signature EnerGov

The applicant and property owner for all legislative case requests must submit an original signature of consent or the application will not be processed.

(Legislative cases include the following: Rezoning, Master Plan, Special Use Permit, Height Waiver, Land Use Change, Board of Zoning Appeals and Agricultural and Forestal District.)

Project Information

Case Type: Special Use Permit

Online Case Submission Date: _____

Project Name: Richmond Road Solar

Address: 8659 Richmond Road, Toano, Virginia, 23168

Tax Map and Parcel ID: Tax Map 112, Parcel 1120100042 and Tax Map 114, Parcel 1140100001

Applicant/Contact Information

Name: Richmond Road Solar, LLC (Contact: John Townsend, Developer)

Company: Richmond Road Solar, LLC

Phone: 720-244-1924

Address: 107 5th Street SE, Charlottesville, VA, 22902

Email: John.Townsend@suntribedevelopment.com

Property Owner Information

Name: Martin Family Holdings, LLC c/o Patricia H. Hunter

Company: Martin Family Holdings, LLC

Phone: 804-741-7691

Address: 1010 Marney Court, Henrico, Virginia, 23229

Email: 1984uva@gmail.com

I (We), the undersigned do hereby make application and petition the applicable governing body of James City County, Virginia, to consider the above request. All applicable submittal requirements and documentation has been submitted online as Case No.: _____.

Applicant Signature: _____ Date: 3/20/2023

Authorized signatory Richmond Road Solar, LLC

Property Owner Signature: _____ Date: 3/21/2023

managing member Martin Family

Property Owner Signature: _____ Date: _____

OrigSigEnerGov March 2018

Appendix C – Conceptual Plan and Area Map

Appendix D – Manufacturer's Specification Sheets

Information provided in Appendix C is intended only as a reference of commercially available equipment at the time of this submission. Equipment may change prior to construction due to availability, economics, supply chain considerations, or other criteria, at the sole discretion of the Owner.

SIEMENS

blueplanet 155 + 165 TL3

Transformerless, three-phase string inverters

The trendsetter among inverters



- Optimized for solar power plants with 1500 volt modules
- Extensive grid management functions
- Farsighted technical features for future requirements
- Lean commissioning and maintenance via remote services

Technical Data

DC input data	155 TL3	165 TL3
Max. recommended PV generator power	232 500 W	247 500 W
MPP range	875 – 1300 V	960 – 1300 V
Operating range	875 – 1450 V	960 – 1450 V
Rated DC voltage / start voltage	900 V / 1000 V	1000 V / 1100 V
Max. no-load voltage	1500 V	1500 V
Max. input current	183 A	183 A
Max. short circuit current $I_{sc\ max}$	300 A	300 A
Number of MPP tracker	1	1
Connection per tracker	1 – 2	1 – 2
AC output data		
Rated output	155 000 VA	165 000 VA
Max. power	155 000 VA	165 000 VA
Line voltage	600 V (3P+PE)	660 V (3P+PE)
Voltage range (Ph-Ph)	480 – 690 V	480 – 760 V
Rated frequency (range)	50 Hz / 60 Hz (45 – 65 Hz)	50 Hz / 60 Hz (45 – 65 Hz)
Rated current	3 x 149.5 A	3 x 144.4 A
Max. current	3 x 152.0 A	3 x 152.0 A
Reactive power / cos phi	0 – 100 % Snom / 0,30 ind. – 0,30 cap.	
Max. total harmonic distortion (THD)	≤ 3 %	≤ 3 %
Number of grid phases	3	3

usa.siemens.com/solarphotovoltaics

General data	155 TL3	165 TL3
Max. efficiency	99.1 %	99.1 %
Europ. efficiency	98.9 %	99.0 %
CEC efficiency	98.9 %	99.0 %
Standby consumption	7 W	7 W
Circuitry topology	transformerless	transformerless
Mechanical data		
Display	LEDs	LEDs
Control units	webserver, supports mobile devices	webserver, supports mobile devices
Interfaces	Ethernet (Modbus TCP, Sunspec), RS485 (KACO-protocol), USB, optional: 4-DI, WIFI	
Fault signalling relay	potential-free NOC max. 30 V / 1 A	potential-free NOC max. 30 V / 1 A
DC connection	cable lug, max. 240 mm² (0.372 in2) Cu or Al	
AC connection	cable lug, max. 240 mm² (0.372 in2) Cu or Al	
Ambient temperature	-25 °C – +60 °C 1)	-25 °C – +60 °C 1)
Humidity	0 – 100 %	0 – 100 %
Max. installation elevation (above MSL)	3 000 m	3 000 m
Min. distance from coast	500 m	500 m
Cooling	temperature controlled fan	temperature controlled fan
Protection class	IP66 / NEMA 4X	IP66 / NEMA 4X
Noise emission	59.2 db (A)	59.2 db (A)
H x W x D	719 x 699 x 460 mm	719 x 699 x 460 mm
Weight	78.2 kg	78.2 kg
Certifications		
Safety	IEC 62109-1/-2, EN 61000-6-1/-2/-4, EN 61000-3-11/-12, EN 55011 group 1, class A EN 62920 Emission class A / Immunity class A UL62109-1, UL1741, CSA-C22.2 No.107.1, CSA-C22.2 No.62109-1, CSA-C22.2 No.62109-2	
Grid connection rule	overview see homepage / download area	

1) Power derating at high ambient temperatures

Versions	S	XL
Number of DC inputs	1 - 2	1 - 2
DC switch	–	✓
DC SPD	Type 1 + 2	Type 1 + 2
AC SPD	○	○
RS485 interface SPD	○	○
Ethernet interface SPD	○	○
PID Set	○	○

standard = ✓ upgradeable = ○

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Siemens Industry, Inc.
3617 Parkway Ln.
Peachtree Corners, GA 30092

For more information, including service or parts, please contact our Customer Support Center.
Phone: +1 (800) 333-7421

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The technical data presented in this document is based on an actual case or on as-designed parameters, and therefore should not be relied upon for any specific application and does not constitute a performance guarantee for any projects. Actual results are dependent on variable conditions. Accordingly, Siemens does not make representations, warranties, or assurances as to the accuracy, currency or completeness of the content contained herein. If requested, we will provide specific technical data or specifications with respect to any customer's particular applications. Our company is constantly involved in engineering and development. For that reason, we reserve the right to modify, at any time, the technology and product specifications contained herein.

Hi-MO 5

LR5-72HBD

540~565M

- Based on M10-182mm wafer, best choice for ultra-large power plants
- Advanced module technology delivers superior module efficiency
  - M10 Gallium-doped Wafer
  - Smart Soldering
  - 9-busbar Half-cut Cell
- Globally validated bifacial energy yield
- High module quality ensures long-term reliability

12 12-year Warranty for Materials and Processing

30 30-year Warranty for Extra Linear Power Output



Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730

ISO 9001:2015: ISO Quality Management System

ISO 14001: 2015: ISO Environment Management System

TS62941: Guideline for module design qualification and type approval

ISO 45001: 2018: Occupational Health and Safety

LONGi

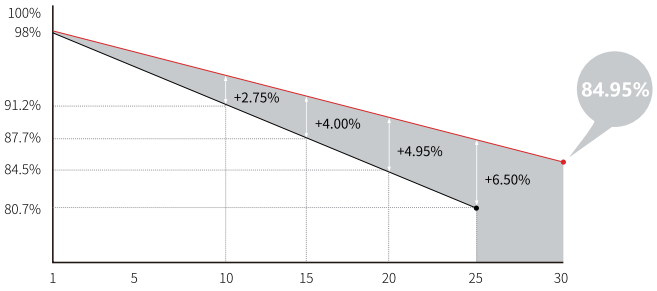
Hi-MO 5

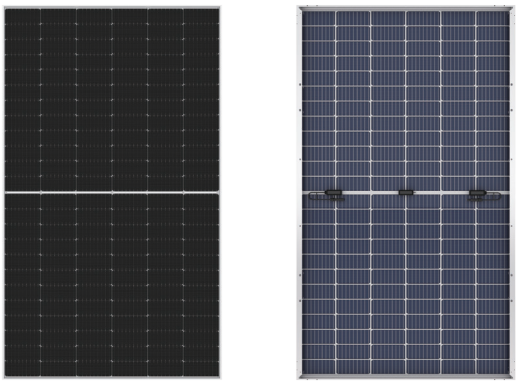
LR5-72HBD 540~565M

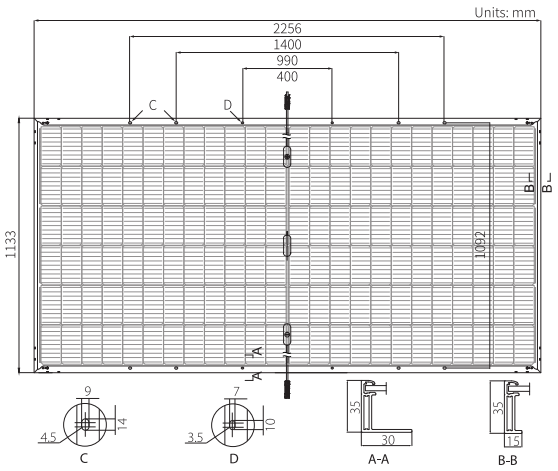
22.1%	0~+5W	<2%	0.45%	HALF-CELL
MAX MODULE EFFICIENCY	POWER TOLERANCE	FIRST YEAR POWER DEGRADATION	YEAR 2-30 POWER DEGRADATION	Lower operating temperature

Additional Value

30-Year Power Warranty







Mechanical Parameters

Cell Orientation	144 (6×24)
Junction Box	IP68, three diodes
Output Cable	4mm², +400, -200mm/±1400mm length can be customized
Glass	Dual glass, 2.0mm coated tempered glass
Frame	Anodized aluminum alloy frame
Weight	32.3kg
Dimension	2256×1133×35mm
Packaging	31pcs per pallet / 155pcs per 20' GP / 558pcs per 40' HC

Electrical Characteristics

STC : AM1.5 1000W/m² 25°C NOCT : AM1.5 800W/m² 20°C 1m/s Test uncertainty for Pmax: ±3%

Module Type	LR5-72HBD-540M		LR5-72HBD-545M		LR5-72HBD-550M		LR5-72HBD-555M		LR5-72HBD-560M		LR5-72HBD-565M	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	540	403.3	545	407.0	550	410.7	555	414.5	560	418.2	565	421.9
Open Circuit Voltage (Voc/V)	49.50	46.31	49.65	46.46	49.80	46.60	49.95	46.74	50.10	46.88	50.25	47.02
Short Circuit Current (Isc/A)	13.85	11.19	13.92	11.24	13.98	11.30	14.04	11.34	14.10	11.39	14.16	11.44
Voltage at Maximum Power (Vmp/V)	41.65	38.83	41.80	38.97	41.95	39.11	42.10	39.25	42.25	39.39	42.40	39.53
Current at Maximum Power (Imp/A)	12.97	10.39	13.04	10.44	13.12	10.51	13.19	10.57	13.26	10.62	13.33	10.67
Module Efficiency(%)	21.1		21.3		21.5		21.7		21.9		22.1	

Operating Parameters

Operational Temperature	-40°C ~ +85°C
Power Output Tolerance	0 ~ +5 W
Voc and Isc Tolerance	±3%
Maximum System Voltage	DC1500V (IEC/UL)
Maximum Series Fuse Rating	30A
Nominal Operating Cell Temperature	45±2°C
Protection Class	Class II
Fire Rating	UL type 29
Bifaciality	70±5%

Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

Temperature Ratings (STC)

Temperature Coefficient of Isc	+0.050%/°C
Temperature Coefficient of Voc	-0.284%/°C
Temperature Coefficient of Pmax	-0.350%/°C

LONGi

No.8369 Shangyuan Road, Xi'an Economic And Technological Development Zone, Xi'an, Shaanxi, China.

Web: en.longi-solar.com

Specifications included in this datasheet are subject to change without notice. LONGi reserves the right of final interpretation. (20210518V13)

Appendix E – Hazardous Material Review

NC CLEAN ENERGY
TECHNOLOGY CENTER

Health and Safety Impacts of Solar Photovoltaics

MAY 2017



NC STATE UNIVERSITY

Health and Safety Impacts of Solar Photovoltaics

The increasing presence of utility-scale solar photovoltaic (PV) systems (sometimes referred to as solar farms) is a rather new development in North Carolina's landscape. Due to the new and unknown nature of this technology, it is natural for communities near such developments to be concerned about health and safety impacts. Unfortunately, the quick emergence of utility-scale solar has cultivated fertile grounds for myths and half-truths about the health impacts of this technology, which can lead to unnecessary fear and conflict.

Photovoltaic (PV) technologies and solar inverters are not known to pose any significant health dangers to their neighbors. The most important dangers posed are increased highway traffic during the relative short construction period and dangers posed to trespassers of contact with high voltage equipment. This latter risk is mitigated by signage and the security measures that industry uses to deter trespassing. As will be discussed in more detail below, risks of site contamination are much less than for most other industrial uses because PV technologies employ few toxic chemicals and those used are used in very small quantities. Due to the reduction in the pollution from fossil-fuel-fired electric generators, the overall impact of solar development on human health is overwhelmingly positive. This pollution reduction results from a partial replacement of fossil-fuel fired generation by emission-free PV-generated electricity, which reduces harmful sulfur dioxide (SO_2), nitrogen oxides (NO_x), and fine particulate matter ($PM_{2.5}$). Analysis from the National Renewable Energy Laboratory and the Lawrence Berkeley National Laboratory, both affiliates of the U.S. Department of Energy, estimates the health-related air quality benefits to the southeast region from solar PV generators to be worth 8.0 ¢ per kilowatt-hour of solar generation.[1] This is in addition to the value of the electricity and suggests that the air quality benefits of solar are worth more than the electricity itself.

Even though we have only recently seen large-scale installation of PV technologies, the technology and its potential impacts have been studied since the 1950s. A combination of this solar-specific research and general scientific research has led to the scientific community having a good understanding of the science behind potential health and safety impacts of solar energy. This paper utilizes the latest scientific literature and knowledge of solar practices in N.C. to address the health and safety risks associated with solar PV technology. These risks are extremely small, far less than those associated with common activities such as driving a car, and vastly outweighed by health benefits of the generation of clean electricity.

This paper addresses the potential health and safety impacts of solar PV development in North Carolina, organized into the following four categories:

(1) Hazardous Materials
(2) Electromagnetic Fields (EMF)
(3) Electric Shock and Arc Flash
(4) Fire Safety

1. Hazardous Materials

One of the more common concerns towards solar is that the panels (referred to as "modules" in the solar industry) consist of toxic materials that endanger public health. However, as shown in this section, solar energy systems may contain small amounts of toxic materials, but these materials do not endanger public health. To understand potential toxic hazards coming from a solar project, one must understand system installation, materials used, the panel end-of-life protocols, and system operation. This section will examine these aspects of a solar farm and the potential for toxicity impacts in the following subsections:

(1.2) Project Installation/Construction
(1.2) System Components
    1.2.1 Solar Panels: Construction and Durability
    1.2.2 Photovoltaic technologies
        (a) Crystalline Silicon
        (b) Cadmium Telluride (CdTe)
        (c) CIS/CIGS
    1.2.3 Panel End of Life Management
    1.2.4 Non-panel System Components
(1.3) Operations and Maintenance

1.1 Project Installation/Construction

The system installation, or construction, process does not require toxic chemicals or processes. The site is mechanically cleared of large vegetation, fences are constructed, and the land is surveyed to layout exact installation locations. Trenches for underground wiring are dug and support posts are driven into the ground. The solar panels are bolted to steel and aluminum support structures and wired together. Inverter pads are installed, and an inverter and transformer are installed on each pad. Once everything is connected, the system is tested, and only then turned on.



Figure 1: Utility-scale solar facility (5 MW_{AC}) located in Catawba County. Source: Strata Solar

1.2 System Components

1.2.1 Solar Panels: Construction and Durability

Solar PV panels typically consist of glass, polymer, aluminum, copper, and semiconductor materials that can be recovered and recycled at the end of their useful life.[2] Today there are two PV technologies used in PV panels at utility-scale solar facilities, silicon, and thin film. As of 2016, all thin film used in North Carolina solar facilities are cadmium telluride (CdTe) panels from the US manufacturer First Solar, but there are other thin film PV panels available on the market, such as Solar Frontier's CIGS panels. Crystalline silicon technology consists of silicon wafers which are made into cells and assembled into panels, thin film technologies consist of thin layers of semiconductor material deposited onto glass, polymer or metal substrates. While there are differences in the components and manufacturing processes of these two types of solar technologies, many aspects of their PV panel construction are very similar. Specifics about each type of PV chemistry as it relates to toxicity are covered in subsections a, b, and c in section 1.2.2; on crystalline silicon, cadmium telluride, and CIS/CIGS respectively. The rest of this section applies equally to both silicon and thin film panels.

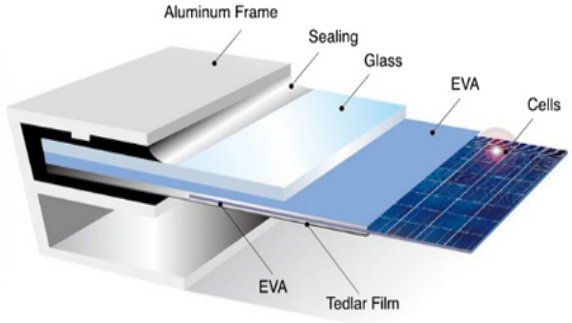


Figure 2: Components of crystalline silicon panels. The vast majority of silicon panels consist of a glass sheet on the topside with an aluminum frame providing structural support. Image Source: www.riteksolar.com.tw

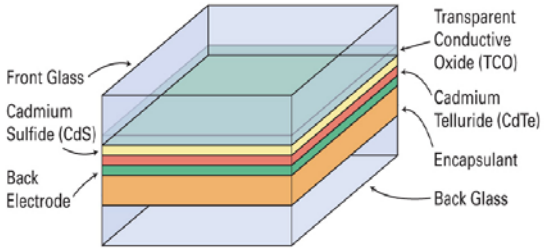


Figure 3: Layers of a common frameless thin-film panel (CdTe). Many thin film panels are frameless, including the most common thin-film panels, First Solar's CdTe. Frameless panels have protective glass on both the front and back of the panel. Layer thicknesses not to scale. Image Source: www.homepower.com

To provide decades of corrosion-free operation, PV cells in PV panels are encapsulated from air and moisture between two layers of plastic. The encapsulation layers are protected on the top with a layer of tempered glass and on the backside with a polymer sheet. Frameless modules include a protective layer of glass on the rear of the panel, which may also be tempered. The plastic ethylene-vinyl acetate (EVA) commonly provides the cell encapsulation. For decades, this same material has been used between layers of tempered glass to give car windshields and hurricane windows their great strength. In the same way that a car windshield cracks but stays intact, the EVA layers in PV panels keep broken panels intact (see Figure 4). Thus, a damaged module does not generally create small pieces of debris; instead, it largely remains together as one piece.



Figure 4: The mangled PV panels in this picture illustrate the nature of broken solar panels; the glass cracks but the panel is still in one piece. Image Source: http://img.alibaba.com/photo/115259576/broken_solar_panel.jpg

PV panels constructed with the same basic components as modern panels have been installed across the globe for well over thirty years.[3] The long-term durability and performance demonstrated over these decades, as well as the results of accelerated lifetime testing, helped lead to an industry-standard 25-year power production warranty for PV panels. These power warranties warrant a PV panel to produce at least 80% of their original nameplate production after 25 years of use. A recent SolarCity and DNV GL study reported that today's quality PV panels should be expected to reliably and efficiently produce power for thirty-five years.[4]

Local building codes require all structures, including ground mounted solar arrays, to be engineered to withstand anticipated wind speeds, as defined by the local wind speed requirements. Many racking products are available in versions engineered for wind speeds of up to 150 miles per hour, which is significantly higher than the wind speed requirement anywhere in North Carolina. The strength of PV mounting structures were demonstrated during Hurricane Sandy in 2012 and again during Hurricane Matthew in 2016. During Hurricane Sandy, the many large-scale solar facilities in New Jersey and New York at that time suffered only minor damage.[5] In the fall of 2016, the US and Caribbean experienced destructive winds and torrential rains from Hurricane Matthew, yet one leading solar tracker manufacturer reported that their numerous systems in the impacted area received zero damage from wind or flooding.[6]

In the event of a catastrophic event capable of damaging solar equipment, such as a tornado, the system will almost certainly have property insurance that will cover the cost to cleanup and repair the project. It is in the best interest of the system owner to protect their investment against such risks. It is also in their interest to get the project repaired and producing full power as soon as possible. Therefore, the investment in adequate insurance is a wise business practice for the system owner. For the same

reasons, adequate insurance coverage is also generally a requirement of the bank or firm providing financing for the project.

1.2.2 Photovoltaic (PV) Technologies

a. Crystalline Silicon

This subsection explores the toxicity of silicon-based PV panels and concludes that they do not pose a material risk of toxicity to public health and safety. Modern crystalline silicon PV panels, which account for over 90% of solar PV panels installed today, are, more or less, a commodity product. The overwhelming majority of panels installed in North Carolina are crystalline silicon panels that are informally classified as Tier I panels. Tier I panels are from well-respected manufacturers that have a good chance of being able to honor warranty claims. Tier I panels are understood to be of high quality, with predictable performance, durability, and content. Well over 80% (by weight) of the content of a PV panel is the tempered glass front and the aluminum frame, both of which are common building materials. Most of the remaining portion are common plastics, including polyethylene terephthalate in the backsheet, EVA encapsulation of the PV cells, polyphenyl ether in the junction box, and polyethylene insulation on the wire leads. The active, working components of the system are the silicon photovoltaic cells, the small electrical leads connecting them together, and to the wires coming out of the back of the panel. The electricity generating and conducting components makeup less than 5% of the weight of most panels. The PV cell itself is nearly 100% silicon, and silicon is the second most common element in the Earth's crust. The silicon for PV cells is obtained by high-temperature processing of quartz sand (SiO_2) that removes its oxygen molecules. The refined silicon is converted to a PV cell by adding extremely small amounts of boron and phosphorus, both of which are common and of very low toxicity.

The other minor components of the PV cell are also generally benign; however, some contain lead, which is a human toxicant that is particularly harmful to young children. The minor components include an extremely thin antireflective coating (silicon nitride or titanium dioxide), a thin layer of aluminum on the rear, and thin strips of silver alloy that are screen-printed on the front and rear of cell.[7] In order for the front and rear electrodes to make effective electrical contact with the proper layer of the PV cell, other materials (called glass frit) are mixed with the silver alloy and then heated to etch the metals into the cell. This glass frit historically contains a small amount of lead (Pb) in the form of lead oxide. The 60 or 72 PV cells in a PV panel are connected by soldering thin solder-covered copper tabs from the back of one cell to the front of the next cell. Traditionally a tin-based solder containing some lead (Pb) is used, but some manufacturers have switched to lead-free solder. The glass frit and/or the solder may contain trace amounts of other metals, potentially including some with human toxicity such as cadmium. However, testing to simulate the potential for leaching from broken panels, which is discussed in more detail below, did not find a potential toxicity threat from these trace elements. Therefore, the tiny amount of lead in the grass frit and the solder is the only part of silicon PV panels with a potential to create a negative health impact. However, as described below, the very limited amount of lead involved and its strong physical and chemical attachment to other components of the PV panel means that even in worst-case scenarios the health hazard it poses is insignificant.

As with many electronic industries, the solder in silicon PV panels has historically been a lead-based solder, often 36% lead, due to the superior properties of such solder. However, recent advances in lead-free solders have spurred a trend among PV panel manufacturers to reduce or remove the lead in their panels. According to the 2015 Solar Scorecard from the Silicon Valley Toxics Coalition, a group that tracks environmental responsibility of photovoltaic panel manufacturers, fourteen companies (increased from twelve companies in 2014) manufacture PV panels certified to meet the European Restriction of

Hazardous Substances (RoHS) standard. This means that the amount of cadmium and lead in the panels they manufacture fall below the RoHS thresholds, which are set by the European Union and serve as the world's de facto standard for hazardous substances in manufactured goods.[8] The Restriction of Hazardous Substances (RoHS) standard requires that the maximum concentration found in any homogenous material in a produce is less than 0.01% cadmium and less than 0.10% lead, therefore, any solder can be no more than 0.10% lead.[9]

While some manufacturers are producing PV panels that meet the RoHS standard, there is no requirement that they do so because the RoHS Directive explicitly states that the directive does not apply to photovoltaic panels.[10] The justification for this is provided in item 17 of the current RoHS Directive: "The development of renewable forms of energy is one of the Union's key objectives, and the contribution made by renewable energy sources to environmental and climate objectives is crucial. Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources (4) recalls that there should be coherence between those objectives and other Union environmental legislation. Consequently, this Directive should not prevent the development of renewable energy technologies that have no negative impact on health and the environment and that are sustainable and economically viable."

The use of lead is common in our modern economy. However, only about 0.5% of the annual lead consumption in the U.S. is for electronic solder for all uses; PV solder makes up only a tiny portion of this 0.5%. Close to 90% of lead consumption in the US is in batteries, which do not encapsulate the pounds of lead contained in each typical automotive battery. This puts the lead in batteries at great risk of leaching into the environment. Estimates for the lead in a single PV panel with lead-based solder range from 1.6 to 24 grams of lead, with 13g (less than half of an ounce) per panel seen most often in the literature.[11] At 13 g/panel[12], each panel contains one-half of the lead in a typical 12-gauge shotgun shell. This amount equates to roughly 1/750th of the lead in a single car battery. In a panel, it is all durably encapsulated from air or water for the full life of the panel.[14]

As indicated by their 20 to 30-year power warranty, PV modules are designed for a long service life, generally over 25 years. For a panel to comply with its 25-year power warranty, its internal components, including lead, must be sealed from any moisture. Otherwise, they would corrode and the panel's output would fall below power warranty levels. Thus, the lead in operating PV modules is not at risk of release to the environment during their service lifetime. In extreme experiments, researchers have shown that lead can leach from crushed or pulverized panels.[15, 16] However, more real-world tests designed to represent typical trash compaction that are used to classify waste as hazardous or non-hazardous show no danger from leaching.[17, 18] For more information about PV panel end-of-life, see the Panel Disposal section.

As illustrated throughout this section, silicon-based PV panels do not pose a material threat to public health and safety. The only aspect of the panels with potential toxicity concerns is the very small amount of lead in some panels. However, any lead in a panel is well sealed from environmental exposure for the operating lifetime of the solar panel and thus not at risk of release into the environment.

b. Cadmium Telluride (CdTe) PV Panels

This subsection examines the components of a cadmium telluride (CdTe) PV panel. Research demonstrates that they pose negligible toxicity risk to public health and safety while significantly reducing the public's exposure to cadmium by reducing coal emissions. As of mid-2016, a few hundred MWs of

cadmium telluride (CdTe) panels, all manufactured by the U.S. company First Solar, have been installed in North Carolina.

Questions about the potential health and environmental impacts from the use of this PV technology are related to the concern that these panels contain cadmium, a toxic heavy metal. However, scientific studies have shown that cadmium telluride differs from cadmium due to its high chemical and thermal stability.[19] Research has shown that the tiny amount of cadmium in these panels does not pose a health or safety risk.[20] Further, there are very compelling reasons to welcome its adoption due to reductions in unhealthy pollution associated with burning coal. Every GWh of electricity generated by burning coal produces about 4 grams of cadmium air emissions.[21] Even though North Carolina produces a significant fraction of our electricity from coal, electricity from solar offsets much more natural gas than coal due to natural gas plants being able to adjust their rate of production more easily and quickly. If solar electricity offsets 90% natural gas and 10% coal, each 5-megawatt (5 MW_{AC}, which is generally 7 MW_{DC}) CdTe solar facility in North Carolina keeps about 157 grams, or about a third of a pound, of cadmium *out of* our environment.[22, 23]

Cadmium is toxic, but all the approximately 7 grams of cadmium in one CdTe panel is in the form of a chemical compound cadmium telluride,[24] which has $1/100^{th}$ the toxicity of free cadmium.[25] Cadmium telluride is a very stable compound that is non-volatile and non-soluble in water. Even in the case of a fire, research shows that less than 0.1% of the cadmium is released when a CdTe panel is exposed to fire. The fire melts the glass and encapsulates over 99.9% of the cadmium in the molten glass.[27]

It is important to understand the source of the cadmium used to manufacture CdTe PV panels. The cadmium is a byproduct of zinc and lead refining. The element is collected from emissions and waste streams during the production of these metals and combined with tellurium to create the CdTe used in PV panels. If the cadmium were not collected for use in the PV panels or other products, it would otherwise either be stockpiled for future use, cemented and buried, or disposed of.[28] Nearly all the cadmium in old or broken panels can be recycled which can eventually serve as the primary source of cadmium for new PV panels.[29]

Similar to silicon-based PV panels, CdTe panels are constructed of a tempered glass front, one instead of two clear plastic encapsulation layers, and a rear heat strengthened glass backing (together >98% by weight). The final product is built to withstand exposure to the elements without significant damage for over 25 years. While not representative of damage that may occur in the field or even at a landfill, laboratory evidence has illustrated that when panels are ground into a fine powder, very acidic water is able to leach portions of the cadmium and tellurium,[30] similar to the process used to recycle CdTe panels. Like many silicon-based panels, CdTe panels are reported (as far back ask 1998[31]) to pass the EPA's Toxic Characteristic Leaching Procedure (TCLP) test, which tests the potential for crushed panels in a landfill to leach hazardous substances into groundwater.[32] Passing this test means that they are classified as non-hazardous waste and can be deposited in landfills.[33, 34] For more information about PV panel end-of-life, see the Panel Disposal section.

There is also concern of environmental impact resulting from potential catastrophic events involving CdTe PV panels. An analysis of worst-case scenarios for environmental impact from CdTe PV panels, including earthquakes, fires, and floods, was conducted by the University of Tokyo in 2013. After reviewing the extensive international body of research on CdTe PV technology, their report concluded, "Even in the worst-case scenarios, it is unlikely that the Cd concentrations in air and sea water will exceed the environmental regulation values."[35] In a worst-case scenario of damaged panels abandoned on the ground, insignificant amounts of cadmium will leach from the panels. This is because this scenario is

much less conducive (larger module pieces, less acidity) to leaching than the conditions of the EPA's TCLP test used to simulate landfill conditions, which CdTe panels pass.[36]

First Solar, a U.S. company, and the only significant supplier of CdTe panels, has a robust panel take-back and recycling program that has been operating commercially since 2005.[37] The company states that it is "committed to providing a commercially attractive recycling solution for photovoltaic (PV) power plant and module owners to help them meet their module (end of life) EOL obligation simply, cost-effectively and responsibly." First Solar global recycling services to their customers to collect and recycle panels once they reach the end of productive life whether due to age or damage. These recycling service agreements are structured to be financially attractive to both First Solar and the solar panel owner. For First Solar, the contract provides the company with an affordable source of raw materials needed for new panels and presumably a diminished risk of undesired release of Cd. The contract also benefits the solar panel owner by allowing them to avoid tipping fees at a waste disposal site. The legal contract helps provide peace of mind by ensuring compliance by both parties when considering the continuing trend of rising disposal costs and increasing regulatory requirements.

c. CIS/CIGS and other PV technologies

Copper indium gallium selenide PV technology, often referred to as CIGS, is the second most common type of thin-film PV panel but a distant second behind CdTe. CIGS cells are composed of a thin layer of copper, indium, gallium, and selenium on a glass or plastic backing. None of these elements are very toxic, although selenium is a regulated metal under the Federal Resource Conservation and Recovery Act (RCRA).[38] The cells often also have an extremely thin layer of cadmium sulfide that contains a tiny amount of cadmium, which is toxic. The promise of high efficiency CIGS panels drove heavy investment in this technology in the past. However, researchers have struggled to transfer high efficiency success in the lab to low-cost full-scale panels in the field.[39] Recently, a CIGS manufacturer based in Japan, Solar Frontier, has achieved some market success with a rigid, glass-faced CIGS module that competes with silicon panels. Solar Frontier produces the majority of CIS panels on the market today.[40] Notably, these panels are RoHS compliant,[41] thus meeting the rigorous toxicity standard adopted by the European Union even thought this directive exempts PV panels. The authors are unaware of any completed or proposed utility-scale system in North Carolina using CIS/CIGS panels.

1.2.3 Panel End-of-Life Management

Concerns about the volume, disposal, toxicity, and recycling of PV panels are addressed in this subsection. To put the volume of PV waste into perspective, consider that by 2050, when PV systems installed in 2020 will reach the end of their lives, it is estimated that the global annual PV panel waste tonnage will be 10% of the 2014 global e-waste tonnage.[42] In the U.S., end-of-life disposal of solar products is governed by the Federal Resource Conservation and Recovery Act (RCRA), as well as state policies in some situations. RCRA separates waste into hazardous (not accepted at ordinary landfill) and solid waste (generally accepted at ordinary landfill) based on a series of rules. According to RCRA, the way to determine if a PV panel is classified as hazardous waste is the Toxic Characteristic Leaching Procedure (TCLP) test. This EPA test is designed to simulate landfill disposal and determine the risk of hazardous substances leaching out of the landfill.[43, 44, 45] Multiple sources report that most modern PV panels (both crystalline silicon and cadmium telluride) pass the TCLP test.[46, 47] Some studies found that some older (1990s) crystalline silicon panels, and perhaps some newer crystalline silicon panels (specifics are not given about vintage of panels tested), do not pass the lead (Pb) leachate limits in the TCLP test.[48, 49]

The test begins with the crushing of a panel into centimeter-sized pieces. The pieces are then mixed in an acid bath. After tumbling for eighteen hours, the fluid is tested for forty hazardous substances that all must be below specific threshold levels to pass the test. Research comparing TCLP conditions to conditions of damaged panels in the field found that simulated landfill conditions provide overly conservative estimates of leaching for field-damaged panels.[50] Additionally, research in Japan has found no detectable Cd leaching from cracked CdTe panels when exposed to simulated acid rain.[51]

Although modern panels can generally be landfilled, they can also be recycled. Even though recent waste volume has not been adequate to support significant PV-specific recycling infrastructure, the existing recycling industry in North Carolina reports that it recycles much of the current small volume of broken PV panels. In an informal survey conducted by the NC Clean Energy Technology Center survey in early 2016, seven of the eight large active North Carolina utility-scale solar developers surveyed reported that they send damaged panels back to the manufacturer and/or to a local recycler. Only one developer reported sending damaged panels to the landfill.

The developers reported at that time that they are usually paid a small amount per panel by local recycling firms. In early 2017, a PV developer reported that a local recycler was charging a small fee per panel to recycle damaged PV panels. The local recycling firm known to authors to accept PV panels described their current PV panel recycling practice as of early 2016 as removing the aluminum frame for local recycling and removing the wire leads for local copper recycling. The remainder of the panel is sent to a facility for processing the non-metallic portions of crushed vehicles, referred to as "fluff" in the recycling industry.[52] This processing within existing general recycling plants allows for significant material recovery of major components, including glass which is 80% of the module weight, but at lower yields than PV-specific recycling plants. Notably almost half of the material value in a PV panel is in the few grams of silver contained in almost every PV panel produced today. In the long-term, dedicated PV panel recycling plants can increase treatment capacities and maximize revenues resulting in better output quality and the ability to recover a greater fraction of the useful materials.[53] PV-specific panel recycling technologies have been researched and implemented to some extent for the past decade, and have been shown to be able to recover over 95% of PV material (semiconductor) and over 90% of the glass in a PV panel.[54]

A look at global PV recycling trends hints at the future possibilities of the practice in our country. Europe installed MW-scale volumes of PV years before the U.S. In 2007, a public-private partnership between the European Union and the solar industry set up a voluntary collection and recycling system called PV CYCLE. This arrangement was later made mandatory under the EU's WEEE directive, a program for waste electrical and electronic equipment.[55] Its member companies (PV panel producers) fully finance the association. This makes it possible for end-users to return the member companies' defective panels for recycling at any of the over 300 collection points around Europe without added costs. Additionally, PV CYCLE will pick up batches of 40 or more used panels at no cost to the user. This arrangement has been very successful, collecting and recycling over 13,000 tons by the end of 2015.[56]

In 2012, the WEEE Directive added the end-of-life collection and recycling of PV panels to its scope.[57] This directive is based on the principle of extended-producer-responsibility. It has a global impact because producers that want to sell into the EU market are legally responsible for end-of-life management. Starting in 2018, this directive targets that 85% of PV products "put in the market" in Europe are recovered and 80% is prepared for reuse and recycling.

The success of the PV panel collection and recycling practices in Europe provides promise for the future of recycling in the U.S. In mid-2016, the US Solar Energy Industry Association (SEIA) announced that they are starting a national solar panel recycling program with the guidance and support of many

leading PV panel producers.[58] The program will aggregate the services offered by recycling vendors and PV manufacturers, which will make it easier for consumers to select a cost-effective and environmentally responsible end-of-life management solution for their PV products. According to SEIA, they are planning the program in an effort to make the entire industry landfill-free. In addition to the national recycling network program, the program will provide a portal for system owners and consumers with information on how to responsibly recycle their PV systems.

While a cautious approach toward the potential for negative environmental and/or health impacts from retired PV panels is fully warranted, this section has shown that the positive health impacts of reduced emissions from fossil fuel combustion from PV systems more than outweighs any potential risk. Testing shows that silicon and CdTe panels are both safe to dispose of in landfills, and are also safe in worst case conditions of abandonment or damage in a disaster. Additionally, analysis by local engineers has found that the current salvage value of the equipment in a utility scale PV facility generally exceeds general contractor estimates for the cost to remove the entire PV system.[59, 60, 61]

1.2.4 Non-Panel System Components (racking, wiring, inverter, transformer)

While previous toxicity subsections discussed PV panels, this subsection describes the non-panel components of utility-scale PV systems and investigates any potential public health and safety concerns. The most significant non-panel component of a ground-mounted PV system is the mounting structure of the rows of panels, commonly referred to as "racking". The vertical post portion of the racking is galvanized steel and the remaining above-ground racking components are either galvanized steel or aluminum, which are both extremely common and benign building materials. The inverters that make the solar generated electricity ready to send to the grid have weather-proof steel enclosures that protect the working components from the elements. The only fluids that they might contain are associated with their cooling systems, which are not unlike the cooling system in a computer. Many inverters today are RoHS compliant.

The electrical transformers (to boost the inverter output voltage to the voltage of the utility connection point) do contain a liquid cooling oil. However, the fluid used for that function is either a non-toxic mineral oil or a biodegradable non-toxic vegetable oil, such as BIOTEMP from ABB. These vegetable transformer oils have the additional advantage of being much less flammable than traditional mineral oils. Significant health hazards are associated with old transformers containing cooling oil with toxic PCBs. Transfers with PCB-containing oil were common before PCBs were outlawed in the U.S. in 1979. PCBs still exist in older transformers in the field across the country.

Other than a few utility research sites, there are no batteries on- or off-site associated with utility-scale solar energy facilities in North Carolina, avoiding any potential health or safety concerns related to battery technologies. However, as battery technologies continue to improve and prices continue to decline we are likely to start seeing some batteries at solar facilities. Lithium ion batteries currently dominate the world utility-scale battery market, which are not very toxic. No non-panel system components were found to pose any health or environmental dangers.

1.4 Operations and Maintenance – Panel Washing and Vegetation Control

Throughout the eastern U.S., the climate provides frequent and heavy enough rain to keep panels adequately clean. This dependable weather pattern eliminates the need to wash the panels on a regular basis. Some system owners may choose to wash panels as often as once a year to increase production, but most in N.C. do not regularly wash any PV panels. Dirt build up over time may justify panel washing a few times over the panels' lifetime; however, nothing more than soap and water are required for this activity.

The maintenance of ground-mounted PV facilities requires that vegetation be kept low, both for aesthetics and to avoid shading of the PV panels. Several approaches are used to maintain vegetation at NC solar facilities, including planting of limited-height species, mowing, weed-eating, herbicides, and grazing livestock (sheep). The following descriptions of vegetation maintenance practices are based on interviews with several solar developers as well as with three maintenance firms that together are contracted to maintain well over 100 of the solar facilities in N.C. The majority of solar facilities in North Carolina maintain vegetation primarily by mowing. Each row of panels has a single row of supports, allowing sickle mowers to mow under the panels. The sites usually require mowing about once a month during the growing season. Some sites employ sheep to graze the site, which greatly reduces the human effort required to maintain the vegetation and produces high quality lamb meat.[62]

In addition to mowing and weed eating, solar facilities often use some herbicides. Solar facilities generally do not spray herbicides over the entire acreage; rather they apply them only in strategic locations such as at the base of the perimeter fence, around exterior vegetative buffer, on interior dirt roads, and near the panel support posts. Also unlike many row crop operations, solar facilities generally use only general use herbicides, which are available over the counter, as opposed to restricted use herbicides commonly used in commercial agriculture that require a special restricted use license. The herbicides used at solar facilities are primarily 2-4-D and glyphosate (Round-up®), which are two of the most common herbicides used in lawns, parks, and agriculture across the country. One maintenance firm that was interviewed sprays the grass with a class of herbicide known as a growth regulator in order to slow the growth of grass so that mowing is only required twice a year. Growth regulators are commonly used on highway roadsides and golf courses for the same purpose. A commercial pesticide applicator license is required for anyone other than the landowner to apply herbicides, which helps ensure that all applicators are adequately educated about proper herbicide use and application. The license must be renewed annually and requires passing of a certification exam appropriate to the area in which the applicator wishes to work. Based on the limited data available, it appears that solar facilities in N.C. generally use significantly less herbicides per acre than most commercial agriculture or lawn maintenance services.

2. Electromagnetic Fields (EMF)

PV systems do not emit any material during their operation; however, they do generate electromagnetic fields (EMF), sometimes referred to as radiation. EMF produced by electricity is non-ionizing radiation, meaning the radiation has enough energy to move atoms in a molecule around (experienced as heat), but not enough energy to remove electrons from an atom or molecule (ionize) or to damage DNA. As shown below, modern humans are all exposed to EMF throughout our daily lives without negative health impact. Someone outside of the fenced perimeter of a solar facility is not exposed to significant EMF from the solar facility. Therefore, there is no negative health impact from the EMF

produced in a solar farm. The following paragraphs provide some additional background and detail to support this conclusion.

Since the 1970s, some have expressed concern over potential health consequences of EMF from electricity, but no studies have ever shown this EMF to cause health problems.[63] These concerns are based on some epidemiological studies that found a slight increase in childhood leukemia associated with average exposure to residential power-frequency magnetic fields above 0.3 to 0.4 μT (microteslas) (equal to 3.0 to 4.0 mG (milligauss)). μT and mG are both units used to measure magnetic field strength. For comparison, the average exposure for people in the U.S. is one mG or 0.1 μT, with about 1% of the population with an average exposure in excess of 0.4 μT (or 4 mG).[64] These epidemiological studies, which found an association but not a causal relationship, led the World Health Organization's International Agency for Research on Cancer (IARC) to classify ELF magnetic fields as "possibly carcinogenic to humans". Coffee also has this classification. This classification means there is limited evidence but not enough evidence to designate as either a "probable carcinogen" or "human carcinogen". Overall, there is very little concern that ELF EMF damages public health. The only concern that does exist is for long-term exposure above 0.4 μT (4 mG) that may have some connection to increased cases of childhood leukemia. In 1997, the National Academies of Science were directed by Congress to examine this concern and concluded:

> "Based on a comprehensive evaluation of published studies relating to the effects of power-frequency electric and magnetic fields on cells, tissues, and organisms (including humans), the conclusion of the committee is that the current body of evidence does not show that exposure to these fields presents a human-health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential electric and magnetic fields produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects."[65]

There are two aspects to electromagnetic fields, an electric field and a magnetic field. The electric field is generated by voltage and the magnetic field is generated by electric current, i.e., moving electrons. A task group of scientific experts convened by the World Health Organization (WHO) in 2005 concluded that there were no substantive health issues related to *electric* fields (0 to 100,000 Hz) at levels generally encountered by members of the public.[66] The relatively low voltages in a solar facility and the fact that electric fields are easily shielded (i.e., blocked) by common materials, such as plastic, metal, or soil means that there is no concern of negative health impacts from the electric fields generated by a solar facility. Thus, the remainder of this section addresses magnetic fields. Magnetic fields are not shielded by most common materials and thus can easily pass through them. Both types of fields are strongest close to the source of electric generation and weaken quickly with distance from the source.

The direct current (DC) electricity produced by PV panels produce stationary (0 Hz) electric and magnetic fields. Because of minimal concern about potential risks of stationary fields, little scientific research has examined stationary fields' impact on human health.[67] In even the largest PV facilities, the DC voltages and currents are not very high. One can illustrate the weakness of the EMF generated by a PV panel by placing a compass on an operating solar panel and observing that the needle still points north.

While the electricity throughout the majority of a solar site is DC electricity, the inverters convert this DC electricity to alternating current (AC) electricity matching the 60 Hz frequency of the grid. Therefore, the inverters and the wires delivering this power to the grid are producing non-stationary EMF, known as extremely low frequency (ELF) EMF, normally oscillating with a frequency of 60 Hz. This frequency is at the low-energy end of the electromagnetic spectrum. Therefore, it has less energy than

other commonly encountered types of non-ionizing radiation like radio waves, infrared radiation, and visible light.

The wide use of electricity results in background levels of ELF EMFs in nearly all locations where people spend time – homes, workplaces, schools, cars, the supermarket, etc. A person's average exposure depends upon the sources they encounter, how close they are to them, and the amount of time they spend there.[68] As stated above, the average exposure to magnetic fields in the U.S. is estimated to be around one mG or 0.1 μT, but can vary considerably depending on a person's exposure to EMF from electrical devices and wiring.[69] At times we are often exposed to much higher ELF magnetic fields, for example when standing three feet from a refrigerator the ELF magnetic field is 6 mG and when standing three feet from a microwave oven the field is about 50 mG.[70] The strength of these fields diminish quickly with distance from the source, but when surrounded by electricity in our homes and other buildings moving away from one source moves you closer to another. However, unless you are inside of the fence at a utility-scale solar facility or electrical substation it is impossible to get very close to the EMF sources. Because of this, EMF levels at the fence of electrical substations containing high voltages and currents are considered "generally negligible".[71, 72]

The strength of ELF-EMF present at the perimeter of a solar facility or near a PV system in a commercial or residential building is significantly lower than the typical American's average EMF exposure.[73, 74] Researchers in Massachusetts measured magnetic fields at PV projects and found the magnetic fields dropped to very low levels of 0.5 mG or less, and in many cases to less than background levels (0.2 mG), at distances of no more than nine feet from the residential inverters and 150 feet from the utility-scale inverters.[75] Even when measured within a few feet of the utility-scale inverter, the ELF magnetic fields were well below the International Commission on Non-Ionizing Radiation Protection's recommended magnetic field level exposure limit for the general public of 2,000 mG.[76] It is typical that utility scale designs locate large inverters central to the PV panels that feed them because this minimizes the length of wire required and shields neighbors from the sound of the inverter's cooling fans. Thus, it is rare for a large PV inverter to be within 150 feet of the project's security fence.

Anyone relying on a medical device such as pacemaker or other implanted device to maintain proper heart rhythm may have concern about the potential for a solar project to interfere with the operation of his or her device. However, there is no reason for concern because the EMF outside of the solar facility's fence is less than 1/1000 of the level at which manufacturers test for ELF EMF interference, which is 1,000 mG.[77] Manufacturers of potentially affected implanted devices often provide advice on electromagnetic interference that includes avoiding letting the implanted device get too close to certain sources of fields such as some household appliances, some walkie-talkies, and similar transmitting devices. Some manufacturers' literature does not mention high-voltage power lines, some say that exposure in public areas should not give interference, and some advise not spending extended periods of time close to power lines.[78]

3. Electric Shock and Arc Flash Hazards

There is a real danger of electric shock to anyone entering any of the electrical cabinets such as combiner boxes, disconnect switches, inverters, or transformers; or otherwise coming in contact with voltages over 50 Volts.[79] Another electrical hazard is an arc flash, which is an explosion of energy that can occur in a short circuit situation. This explosive release of energy causes a flash of heat and a shockwave, both of which can cause serious injury or death. Properly trained and equipped technicians and electricians know how to safely install, test, and repair PV systems, but there is always some risk of

injury when hazardous voltages and/or currents are present. Untrained individuals should not attempt to inspect, test, or repair any aspect of a PV system due to the potential for injury or death due to electric shock and arc flash, The National Electric Code (NEC) requires appropriate levels of warning signs on all electrical components based on the level of danger determined by the voltages and current potentials. The national electric code also requires the site to be secured from unauthorized visitors with either a six-foot chain link fence with three strands of barbed wire or an eight-foot fence, both with adequate hazard warning signs.

4. Fire Safety

The possibility of fires resulting from or intensified by PV systems may trigger concern among the general public as well as among firefighters. However, concern over solar fire hazards should be limited because only a small portion of materials in the panels are flammable, and those components cannot self-support a significant fire. Flammable components of PV panels include the thin layers of polymer encapsulates surrounding the PV cells, polymer backsheets (framed panels only), plastic junction boxes on rear of panel, and insulation on wiring. The rest of the panel is composed of non-flammable components, notably including one or two layers of protective glass that make up over three quarters of the panel's weight.

Heat from a small flame is not adequate to ignite a PV panel, but heat from a more intense fire or energy from an electrical fault can ignite a PV panel.[80] One real-world example of this occurred during July 2015 in an arid area of California. Three acres of grass under a thin film PV facility burned without igniting the panels mounted on fixed-tilt racks just above the grass.[81] While it is possible for electrical faults in PV systems on homes or commercial buildings to start a fire, this is extremely rare.[82] Improving understanding of the PV-specific risks, safer system designs, and updated fire-related codes and standards will continue to reduce the risk of fire caused by PV systems.

PV systems on buildings can affect firefighters in two primary ways, 1) impact their methods of fighting the fire, and 2) pose safety hazard to the firefighters. One of the most important techniques that firefighters use to suppress fire is ventilation of a building's roof. This technique allows superheated toxic gases to quickly exit the building. By doing so, the firefighters gain easier and safer access to the building, Ventilation of the roof also makes the challenge of putting out the fire easier. However, the placement of rooftop PV panels may interfere with ventilating the roof by limiting access to desired venting locations.

New solar-specific building code requirements are working to minimize these concerns. Also, the latest National Electric Code has added requirements that make it easier for first responders to safely and effectively turn off a PV system. Concern for firefighting a building with PV can be reduced with proper fire fighter training, system design, and installation. Numerous organizations have studied fire fighter safety related to PV. Many organizations have published valuable guides and training programs. Some notable examples are listed below.

- The International Association of Fire Fighters (IAFF) and International Renewable Energy Council (IREC) partnered to create an online training course that is far beyond the PowerPoint click-and-view model. The self-paced online course, "Solar PV Safety for Fire Fighters," features rich video content and simulated environments so fire fighters can practice the knowledge they've learned. www.iaff.org/pvsafetytraining
- Photovoltaic Systems and the Fire Code: Office of NC Fire Marshal
- Fire Service Training, Underwriter's Laboratory

- Firefighter Safety and Response for Solar Power Systems, National Fire Protection Research Foundation
- Bridging the Gap: Fire Safety & Green Buildings, National Association of State Fire Marshalls
- Guidelines for Fire Safety Elements of Solar Photovoltaic Systems, Orange County Fire Chiefs Association
- Solar Photovoltaic Installation Guidelines, California Department of Forestry & Fire Protection, Office of the State Fire Marshall
- PV Safety & Firefighting, Matthew Paiss, Homepower Magazine
- PV Safety and Code Development: Matthew Paiss, Cooperative Research Network

Summary

The purpose of this paper is to address and alleviate concerns of public health and safety for utility-scale solar PV projects. Concerns of public health and safety were divided and discussed in the four following sections: (1) Toxicity, (2) Electromagnetic Fields, (3) Electric Shock and Arc Flash, and (4) Fire. In each of these sections, the negative health and safety impacts of utility-scale PV development were shown to be negligible, while the public health and safety benefits of installing these facilities are significant and far outweigh any negative impacts.

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[1] Wiser, Ryan, Trieu Mai, Dev Millstein, Jordan Macknick, Alberta Carpenter, Stuart Cohen, Wesley Cole, Bethany Frew, and Garvin A. Heath. 2016. On the Path to SunShot: The Environmental and Public Health Benefits of Achieving High Penetrations of Solar Energy in the United States. Golden, CO: National Renewable Energy Laboratory. Accessed March 2017, www.nrel.gov/docs/fy16osti/65628.pdf

[2] IRENA and IEA-PVPS (2016), "End-of-Life Management: Solar Photovoltaic Panels," International Renewable Energy Agency and International Energy Agency Photovoltaic Power Systems.

[3] National Renewable Energy Laboratory, *Overview of Field Experience – Degradation Rates & Lifetimes*. September 14, 2015. Solar Power International Conference. Accessed March 2017, www.nrel.gov/docs/fy15osti/65040.pdf

[4] Miesel et al. *SolarCity Photovoltaic Modules with 35 Year Useful Life.* June 2016. Accessed March 2017. http://www.solarcity.com/newsroom/reports/solarcity-photovoltaic-modules-35-year-useful-life

[5] David Unger. *Are Renewables Stormproof? Hurricane Sandy Tests Solar, Wind.* November 2012. Accessed March 2017. http://www.csmonitor.com/Environment/Energy-Voices/2012/1119/Are-renewables-stormproof-Hurricane-Sandy-tests-solar-wind & http://www.csmonitor.com/Environment/Energy-Voices/2012/1119/Are-renewables-stormproof-Hurricane-Sandy-tests-solar-wind

[6] NEXTracker and 365 Pronto, *Tracking Your Solar Investment: Best Practices for Solar Tracker O&M*. Accessed March 2017. www.nextracker.com/content/uploads/2017/03/NEXTracker_OandM-WhitePaper_FINAL_March-2017.pdf

[7] Christiana Honsberg, Stuart Bowden. *Overview of Screen Printed Solar Cells*. Accessed January 2017. www.pveducation.org/pvcdrom/manufacturing/screen-printed

[8] Silicon Valley Toxics Coalition. *2015 Solar Scorecard.* Accessed August 2016. www.solarscorecard.com/2015/2015-SVTC-Solar-Scorecard.pdf

[9] European Commission. *Recast of Reduction of Hazardous Substances (RoHS) Directive*. September 2016. Accessed August 2016. http://ec.europa.eu/environment/waste/rohs_eee/index_en.htm

[10] Official Journal of the European Union, *DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.* June 2011. Accessed May 2017. http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011L0065&from=en

[11] Giancarlo Giacchetta, Mariella Leporini, Barbara Marchetti. *Evaluation of the Environmental Benefits of New High Value Process for the Management of the End of Life of Thin Film Photovoltaic Modules.* July 2013. Accessed August 2016. www.researchgate.net/publication/257408804_Evaluation_of_the_environmental_benefits_of_new_high_value_process_for_the_management_of_the_end_of_life_of_thin_film_photovoltaic_modules

[12] European Commission. *Study on Photovoltaic Panels Supplementing The Impact Assessment for a Recast of the Weee Directive.* April 2011. Accessed August 2016. http://ec.europa.eu/environment/waste/weee/pdf/Study%20on%20PVs%20Bio%20final.pdf

[14] The amount of lead in a typical car battery is 21.4 pounds. Waste 360. Chaz Miller. *Lead Acid Batteries.* March 2006. Accessed August 2016. http://waste360.com/mag/waste_leadacid_batteries_3

[15] Okkenhaug G. *Leaching from CdTe PV module material results from batch, column and availability tests.* Norwegian Geotechnical Institute, NGI report No. 20092155-00-6-R; 2010

[16] International Journal of Advanced Applied Physics Research. Renate Zapf-Gottwick1, et al. *Leaching Hazardous Substances out of Photovoltaic Modules*. January 2015. Accessed January 2016. www.cosmosscholars.com/phms/index.php/ijaapr/article/download/485/298

[17] ibid

[18] Parikhit Sinha, et al. Evaluation of Potential Health and Environmental Impacts from End-Of-Life Disposal of Photovoltaics, Photovoltaics, 2014. Accessed May 2016

[19] Bonnet, D. and P. Meyers. 1998. *Cadmium-telluride—Material for thin film solar cells.* J. Mater. Res., Vol. 13, No. 10, pp. 2740-2753

[20] V. Fthenakis, K. Zweibel. *CdTe PV: Real and Perceived EHS Risks*. National Center ofr Photovoltaics and Solar Program Review Meeting, March 24-26, 2003. www.nrel.gov/docs/fy03osti/33561.pdf. Accessed May 2017

[21] International Energy Agency Photovoltaic Power Systems Programme. *Life Cycle Inventories and Life Cycle Assessments of Photovoltaic Systems*. March 2015. Accessed August 2016. http://iea-pvps.org/index.php?id=315

[22] Data not available on fraction of various generation sources offset by solar generation in NC, but this is believed to be a reasonable rough estimate. The SunShot report entitled The Environmental and Public Health Benefits of Achieving High Penetrations of Solar Energy in the United States analysis contributes significant (% not provided) offsetting of coal-fired generation by solar PV energy in the southeast.

[23] 7 MW_{DC} * 1.5 GWh/MW_{DC} * 25 years * 0.93 degradation factor * (0.1 *4.65 grams/GWh + 0.9*0.2 grams/GWh)

[24] Vasilis Fthenakis. *CdTe PV: Facts and Handy Comparisons.* January 2003. Accessed March 2017. https://www.bnl.gov/pv/files/pdf/art_165.pdf

[25] Kaczmar, S., *Evaluating the Read-Across Approach on CdTe Toxicity for CdTe Photovoltaics*, SETAC North America 32nd Annual Meeting, Boston, MA, November 2011. Available at: ftp://ftp.co.imperial.ca.us/icpds/eir/campo-verde-solar/final/evaluating-toxicity.pdf, Accessed May 2017

[27] V. M. Fthenakis et al, *Emissions and Encapsulation of Cadmium in CdTe PV Modules During Fires* Renewable Progress in Photovoltaics: Research and Application: Res. Appl. 2005; 13:1–11, Accessed March 2017, www.bnl.gov/pv/files/pdf/abs_179.pdf

[28] Fthenakis *V.M., Life Cycle Impact Analysis of Cadmium in CdTe Photovoltaic Production*, Renewable and Sustainable Energy Reviews, 8, 303-334, 2004. www.clca.columbia.edu/papers/Life_Cycle_Impact_Analysis_Cadmium_CdTe_Photovoltaic_production.pdf, Accessed May 2017

[29] International Renewable Energy Agency. Stephanie Weckend, Andreas Wade, Garvin Heath. *End of Life Management: Solar Photovoltaic Panels*. June 2016. Accessed November 2016.

[30] International Journal of Advanced Applied Physics Research. Renate Zapf-Gottwick1, et al. *Leaching Hazardous Substances out of Photovoltaic Modules*. January 2015. Accessed January 2016. www.cosmosscholars.com/phms/index.php/ijaapr/article/download/485/298

[31] Cunningham D., Discussion about TCLP protocols, Photovoltaics and the Environment Workshop, July 23-24, 1998, Brookhaven National Laboratory, BNL-52557

[32] Parikhit Sinha, et al. Evaluation of Potential Health and Environmental Impacts from End-Of-Life Disposal of Photovoltaics, Photovoltaics, 2014. Accessed May 2016

[33] Practical Handbook of Photovoltaics: Fundamentals and Applications. T. Markvart and L. Castaner. *Chapter VII-2: Overview of Potential Hazards*. December 2003. Accessed August 2016. https://www.bnl.gov/pv/files/pdf/art_170.pdf

[34] Norwegian Geotechnical Institute. *Environmental Risks Regarding the Use and End-of-Life Disposal of CdTe PV Modules*. April 2010. Accessed August 2016. https://www.dtsc.ca.gov/LawsRegsPolicies/upload/Norwegian-Geotechnical-Institute-Study.pdf

[35] First Solar. Dr. Yasunari Matsuno. December 2013. August 2016. *Environmental Risk Assessment of CdTe PV Systems to be considered under Catastrophic Events in Japan*. http://www.firstsolar.com/-/media/Documents/Sustainability/Peer-Reviews/Japan_Peer-Review_Matsuno_CdTe-PV-Tsunami.ashx

[36] First Solar. Parikhit Sinha, Andreas Wade. *Assessment of Leaching Tests for Evaluating Potential Environmental Impacts of PV Module Field Breakage*. 2015 IEEE

[37] See p. 22 of First Solar, Sustainability Report. Available at: www.firstsolar.com/-/media/First-Solar/Sustainability-Documents/03801_FirstSolar_SustainabilityReport_08MAR16_Web.ashx, Accessed May 2017

[38] 40 CFR §261.24. *Toxicity Characteristic*. May 2017. Accessed May 2017. https://www.ecfr.gov/cgi-bin/text-idx?node=se40.26.261_124&rgn=div8
[39] Office of Energy Efficiency & Renewable Energy. *Copper Indium Gallium Diselenide.* Accessed March 2017. https://www.energy.gov/eere/sunshot/copper-indium-gallium-diselenide
[40] Mathias Maehlum. *Best Thin Film Solar Panels – Amorphous, Cadmium Telluride or CIGS?* April 2015. Accessed March 2017. http://energyinformative.org/best-thin-film-solar-panels-amorphous-cadmium-telluride-cigs/
[41] RoHS tested certificate for Solar Frontier PV modules. TUVRheinland, signed 11.11.2013
[42] International Renewable Energy Agency. Stephanie Weckend, Andreas Wade, Garvin Heath. *End of Life Management: Solar Photovoltaic Panels*. June 2016. Accessed November 2016. http://www.irena.org/DocumentDownloads/Publications/IRENA_IEAPVPS_End-of-Life_Solar_PV_Panels_2016.pdf
[43] 40 C.F.R. §261.10. *Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Waste*. November 2016. Accessed November 2016 http://www.ecfr.gov/cgi-bin/text-idx?SID=ce0006d66da40146b490084ca2816143&mc=true&node=pt40.26.261&rgn=div5#sp40.28.261.b
[44] 40 C.F.R. §261.24 *Toxicity Characteristic.* November 2016. Accessed November 2016. http://www.ecfr.gov/cgi-bin/text-idx?SID=ce0006d66da40146b490084ca2816143&mc=true&node=pt40.26.261&rgn=div5#se40.28.261_124
[45] International Renewable Energy Agency. Stephanie Weckend, Andreas Wade, Garvin Heath. *End of Life Management: Solar Photovoltaic Panels*. June 2016. Accessed November 2016. http://www.irena.org/DocumentDownloads/Publications/IRENA_IEAPVPS_End-of-Life_Solar_PV_Panels_2016.pdf
[46] TLCP test results from third-party laboratories for REC, Jinko, and Canadian Solar silicon-based panels. Provided by PV panel manufacturers directly or indirectly to authors
[47] Sinovoltaics, *Introduction to Solar Panel Recycling*, March 2014. Accessed October 2016. http://sinovoltaics.com/solar-basics/introduction-to-solar-panel-recycling/
[48] Brookhaven National Laboratory. Vasilis Fthenakis, *Regulations on Photovoltaic Module Disposal and Recycling.* January 29, 2001.
[49] Parikhit Sinha, et al. Evaluation of Potential Health and Environmental Impacts from End-Of-Life Disposal of Photovoltaics, Photovoltaics, 2014.
[50] First Solar. Parikhit Sinha, Andreas Wade. *Assessment of Leaching Tests for Evaluating Potential Environmental Impacts of PV Module Field Breakage.* October 2015. Accessed August 2016. http://www.firstsolar.com/-/media/Documents/Sustainability/PVSC42-Manuscript-20150912--Assessment-of-Leaching-Tests-for-Evaluating-Potential-Environmental-Impa.ashx
[51] First Solar. Dr. Yasunari Matsuno. December 2013. *Environmental Risk Assessment of CdTe PV Systems to be considered under Catastrophic Events in Japan*. http://www.firstsolar.com/-/media/Documents/Sustainability/Peer-Reviews/Japan_Peer-Review_Matsuno_CdTe-PV-Tsunami.ashx
[52] Phone interview, February 3, 2016, TT&E Iron & Metal, Garner, NC www.ncscrapmetal.com/
[53] Wen-His Huang, et al. *Strategy and Technology To Recycle Water-silicon Solar Modules*. Solar Energy, Volume 144, March 2017, Pages 22-31
[54] International Renewable Energy Agency. Stephanie Weckend, Andreas Wade, Garvin Heath. *End of Life Management: Solar Photovoltaic Panels*. June 2016. Accessed November 2016. http://www.irena.org/DocumentDownloads/Publications/IRENA_IEAPVPS_End-of-Life_Solar_PV_Panels_2016.pdf
[55] Official Journal of the European Union. *Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on Waste Electrical and Electronic Equipment*. July 2012. Accessed November 2016. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0019
[56] PV CYCLE. *Annual Report 2015.* Accessed November 2016. https://pvcyclepublications.cld.bz/Annual-Report-PV-CYCLE-2015/6-7
[57] Official Journal of the European Union. *Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on Waste Electrical and Electronic Equipment*. July 2012. Accessed November 2016. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0019
[58] SEIA National PV Recycling Program: www.seia.org/seia-national-pv-recycling-program
[59] RBI Solar, Decommissioning Plan submitted to Catawba County associated with permitting of a 5MW solar project in June 2016. Accessed April 2017. www.catawbacountync.gov/Planning/Projects/Rezonings/RZ2015-05_DecommissioningPlan.pdf
[60] Birdseye Renewables, Decommissioning Plan submitted to Catawba County associated with permitting of a 5MW solar project in May 2015. Accessed April 2017. www.catawbacountync.gov/Planning/Projects/Rezonings/RZ2015-04_DecommissioningPlan.pdf
[61] Cypress Creek Renewables, Decommissioning Plan submitted to Catawba County associated with permitting of a 5MW solar project in September 2016. Accessed April 2017. www.catawbacountync.gov/Planning/Projects/Rezonings/RZ2016-06decommission.pdf
[62] Sun Raised Farms: http://sunraisedfarms.com/index.html
[63] National Institute of Environmental Health Sciences and National Institutes of Health, EMF: Electric and Magnetic Fields Associated with Electric Power: Questions and Answers, June 2002

[64] World Health Organization. *Electromagnetic Fields and Public Health: Exposure to Extremely Low Frequency Fields*. June 2007. Accessed August 2016. http://www.who.int/peh-emf/publications/facts/fs322/en/
[65] Committee on the Possible Effects of Electromagnetic Fields on Biologic Systems, National Research Council, Possible Health Effects of Exposure to Residential Electric and Magnetic Fields, ISBN: 0-309-55671-6, 384 pages, 6 x 9, (1997) This PDF is available from the National Academies Press at: http://www.nap.edu/catalog/5155.html
[66] World Health Organization. *Electromagnetic Fields and Public Health: Exposure to Extremely Low Frequency Fields*. June 2007. Accessed August 2016. http://www.who.int/peh-emf/publications/facts/fs322/en/
[67] World Health Organization. *Electromagnetic Fields and Public Health: Static Electric and Magnetic Fields*. March 2006. Accessed August 2016. http://www.who.int/peh-emf/publications/facts/fs299/en/
[68] Asher Sheppard, Health Issues Related to the Static and Power-Frequency Electric and Magnetic Fields (EMFs) of the Soitec Solar Energy Farms, April 30, 2014. Accessed March 2017: www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/Soitec-Documents/Final-EIR-Files/Appendix_9.0-1_EMF.pdf
[69] Massachusetts Clean Energy Center. *Study of Acoustic and EMF Levels from Solar Photovoltaic Projects*. December 2012. Accessed August 2016.
[70] Duke Energy Corporation. *Frequently Asked Questions: Electric and Magnetic Fields*. Accessed August 2016. https://www.duke-energy.com/about-energy/frequently_asked_questions.asp
[71] National Institute of Environmental Health Sciences, *Electric and Magnetic Fields Associate with the use of Electric Power: Questions and Answers*, 2002. Accessed November 2016 www.niehs.nih.gov/health/materials/electric_and_magnetic_fields
[72] Duke Energy Corporation. *Frequently Asked Questions: Electric and Magnetic Fields*. Accessed August 2016. https://www.duke-energy.com/about-energy/frequently_asked_questions.asp
[73] R.A. Tell et al, *Electromagnetic Fields Associated with Commercial Solar Photovoltaic Electric Power Generating Facilities*, Journal of Occupational and Environmental Hygiene, Volume 12, 2015,- Issue 11. Abstract Accessed March 2016: http://www.tandfonline.com/doi/full/10.1080/15459624.2015.1047021
[74] Massachusetts Department of Energy Resources, Massachusetts Department of Environmental Protection, and Massachusetts Clean Energy Center. *Questions & Answers: Ground-Mounted Solar Photovoltaic Systems*. June 2015. Accessed August 2016. http://www.mass.gov/eea/docs/doer/renewables/solar/solar-pv-guide.pdf
[75] Ibid.
[76] Ibid.
[77] *EMFs and medical devices*, Accessed March 2017. www.emfs.info/effects/medical-devices/
[78] ibid.
[79] Damon McCluer. *Electrical Construction & Maintenance: NFPA 70E's Approach to Considering DC Hazards*. September 2013. Accessed October 2016. http://ecmweb.com/safety/nfpa-70e-s-approach-considering-dc-hazards,
[80] Hong-Yun Yang, et. al. *Experimental Studies on the Flammability and Fire Hazards of Photovoltaic Modules, Materials.* July 2015. Accessed August 2016. http://www.mdpi.com/1996-1944/8/7/4210/pdf
[81] Matt Fountain. The Tribune. *Fire breaks out at Topaz Solar Farm*. July 2015. Accessed August 2016. www.sanluisobispo.com/news/local/article39055539.html
[82] Cooperative Research Network. Matthew Paiss. *Tech Surveillance: PV Safety & Code Developments*. October 2014. Accessed August 2016. http://www.nreca.coop/wp-content/uploads/2013/06/ts_pv_fire_safety_oct_2014.pdf

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Appendix F – Timmons Group Cultural and Environmental Review

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

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November 21, 2022

Ms. Avery Clemens
Sun Tribe Solar
107 5th Street, SE
Charlottesville, VA 22902

RE: Richmond Road Solar – Desktop Database Review

Dear Ms. Clemens,

Timmons Group has completed a desktop database review and report of the Richmond Road Solar project, a proposed electric solar power generation facility. The project encompasses approximately 136.2 acres and is located in James City, Virginia (see Figure 1: Vicinity Map). The study was developed as a preliminary planning tool to help identify potential constraints and to assist in planning the proposed Richmond Road Solar (Site). The study consists of the following components:

- Threatened and Endangered Species
- Cultural Resources

This comprehensive review of publicly available environmental mapping and database resources will assist in identifying local, state, and federally regulated resources that have the potential to significantly impact the feasibility of the Site.

I. Threatened and Endangered Species Database Search

An endangered species review was conducted to gain insight regarding the potential presence of Endangered Species Act (ESA) listed species as well as State listed species onsite or in the vicinity of the Site. The following agencies and associated databases were reviewed for threatened and endangered species:

- U.S. Fish and Wildlife Services (USFWS) – Information, Planning and Consultations system (IPaC)
- Virginia Department of Wildlife Resources (VDWR) – Wildlife Environmental Review Map Service (WERMS)
- Virginia Department of Wildlife Resources (VDWR) – Virginia Fish and Wildlife Information Service (VaFWIS)
- Virginia Department of Wildlife Resources (VDWR) – Northern Long Eared Bat (NLEB) Winter Habitat and Roost Tree Locator
- Virginia Department of Wildlife Resources (VDWR) – Little Brown Bat and Tri-colored Bat Winter Habitat & Roosts Locator
- Virginia Department of Conservation and Recreation (VDCR) – Natural Heritage Data Explorer (NHDE)
- Virginia Department of Environmental Quality (VDEQ) – Coastal Geospatial and Education Mapping System (GEMS)
- Center for Conservation Biology (CCB) – VaEagles Nest Locator
- U.S. Fish and Wildlife Services (USFWS) – Bald Eagle Concentration Areas

The comprehensive database search determined there is the potential for one species with federal and/or state protection to occur within the project area (see Attachment 1: Threatened and Endangered Database Searches). The potentially present species and their associated databases are listed below in Table 1.

Table 1. Threatened and Endangered Species Potentially Present at Richmond Road Solar

Common Name	Scientific Name	Status	Agency Source
Mammal			
Northern Long-eared Bat	*Myotis septentrionalis*	Federal Threatened State Threatened	USFWS
Butterfly			
Monarch butterfly	*Danaus plexippus*	Candidate	USFWS

According to the USFWS IPaC results, the federally and state threatened northern long-eared bat (NLEB) (*Myotis septentrionalis*) has the potential to occur on the Site. Based upon a review of available information, in particular the VDWR NLEB Winter Habitat and Roost Tree Locator, there are no known maternity roosts or hibernacula located within or in close proximity to the Site. Based on VDWR VaFWIS database, the species has not been observed within the Site or within the two-mile buffer around the Site. Under the USFWS NLEB final 4(d) rule, incidental take of the NLEB is not prohibited but the USFWS reserves the right to request additional studies or information during consultation with federal permitting agencies. As there are no known hibernacula or roost trees within 0.25 miles or 150 feet, respectively, the Site may choose to implement voluntary conservation measures to reduce the likelihood of incidental takes by conducting tree removal activities outside of the pup season (June 1 – July 31). The USFWS recently issued a proposal to elevate the NLEB from threatened to endangered. The proposed reclassification, if finalized, would remove the current 4(d) rule protections (as these rules may be applied only to threatened species) and projects completed after the reclassification is finalized may require USFWS consultation and/or a mandatory time of year restrictions (TOYR) for tree clearing, which may be from April 1 – November 14. The final reclassification decision is expected to be issued in late 2022 and would go into effect upon issuance.

According to the USFWS IPaC results, the monarch butterfly (*Danaus plexippus*) has the potential to occur on the Site. The monarch butterfly is a candidate species, but it is not currently listed as federally, or state threatened or endangered. Monarch butterflies are found across North America and are broken into two populations separated by the Rocky Mountains. Milkweed is the host plant of this species, and the monarch butterfly relies on this plant to complete its lifecycle. As the species is not listed as threatened or endangered, there is no time of year restrictions for this species, but USFWS recommends protective measures to enhance the butterfly habitat, including planting pollinator habitat.

According to the VDWR Little Brown Bat and Tri-colored Bat Winter Habitat & Roosts Locator, the little brown bat (*Myotis lucifugus*) and tri-colored bat (*Perimyotis subflavus*) do not have hibernacula within range of the Site.

According to VDCR, natural heritage resources have not been documented within the Site. The Site will not impact any documented state-listed plants or insects. VDCR recommends the development of an invasive species management plan for the project and the planting of Virginia native pollinator species.

Information provided by VDEQ Coastal GEMS indicates that the Project is located within a Coastal Avian Protection Zone (CAPZ). The entirety of the Site lies within Zone 13, known for breeding eagles. As this project will not be receiving Permit by Rule authorization, no further coordination regarding the CAPZ zone is required.

A search of known bald eagle nest locations/concentration areas utilizing the VDWR VaFWIS database, the CCB website, and USFWS Bald Eagle Concentration Areas mapping tool indicates there are several bald eagle nests in proximity of the Site. The closest bald eagle nest to the site is roughly three miles away. The Site is also roughly 5.3 miles from bald eagle concentration areas; however, the Site is not located within a concentration area.

II. Cultural Resources Search

Timmons Group conducted a Virginia Department of Historic Resources (VDHR) database search for the project area and a one-half mile (0.5mi) buffer surrounding the Site. An exhibit showing the approximate location of the Site with previously recorded architectural and archaeological resources from the Virginia Cultural Resource Information Services (VCRIS) database is included in Attachment 2: VCRIS Database Search.

According to the VCRIS database, there are no known architectural resources or archaeological resources that intersect with the Site boundary.

Seven architectural resources and three archaeological resources intersect with the one-half mile buffer around the Site. One resource (DHR ID 047-0041) is registered on both the National Register of Historic Places (NRHP) and the Virginia Landmarks Register (VLR) listings and is nearby the Site. One resource is listed as no longer extant. The remaining resources have not yet been evaluated for listing on the NRHP and VLR. Additional information is provided in Table 2, below.

Table 2. Cultural Resources within 0.5 mile of Richmond Road Solar

DHR ID	Name	Location	Status
Architectural Resources			
047-0013	Martin House Site	Nearby	No longer extant
047-0041	White Hall Tavern	Nearby	NRHP Listing VLR Listing
047-0084	Vivian White House	Nearby	Not Evaluated
047-5106	Fairview Farm	Nearby	Not Evaluated
047-5134	5298 Riverview Road House	Nearby	Not Evaluated
047-5162	Victorian Acres Farm	Nearby	Not Evaluated
047-5251	182 Old Stage Road House	Nearby	Not Evaluated
Archaeological Resource			
44JC0020	Martin's Place	Nearby	Not Evaluated
44JC0285	Open Air Terrestrial	Nearby	Not Evaluated
44JC1122	Open Air Terrestrial	Nearby	Not Eligible

The NRHP and VLR Listed resource, White Hall Tavern (DHR ID 047-0041), is an example of an Early National Period home and tavern. The house was originally built in 1805 as a home but due to the location, the house doubled as a rest stop and tavern for people traveling to Richmond from the East Coast. The property is located one-half mile from the Site to the East.

III. Summary and Conclusions

We have conducted queries of federal and state databases for the presence of threatened and endangered species, as well as the potential presence of cultural and historical resources.

If work is proposed in wetlands or waters of the U.S., then Section 401 and Section 404 Clean Water Act Permits will be required. Submittal of a Section 404 Clean Water Act Permit will provide a federal nexus that will trigger a review of threatened and endangered species and cultural resources that could further impose timeline restrictions or reduce the developable footprint of the project.

There is one potential bat species present within the vicinity of the Site. The Site may choose to implement voluntary conservation measures for the Northern Long Eared Bat by conducting tree removal activities outside of the pup season (June 1 – July 31). This recommendation may change if the USFWS elevates the status of the NLEB from threatened to endangered. The monarch butterfly also has the potential to be present within the vicinity of the Site; however, this species is not listed and has no time of year restriction.

Ten cultural resources are located within a one half-mile search buffer. A site conditions assessment by a registered historian is recommended to better understand the level of work required for a Phase I Cultural Resources Assessment.

We appreciate the opportunity to present this preliminary analysis for planning purposes. Please note that threatened and endangered database searches must be current (data accessed within six months) to be considered by reviewing agencies.

If you have any questions, please contact me at (804) 489-5973 or jillian.frazier@timmons.com or Rick Thomas at (804) 200-6446 or rick.thomas@timmons.com.

Sincerely,

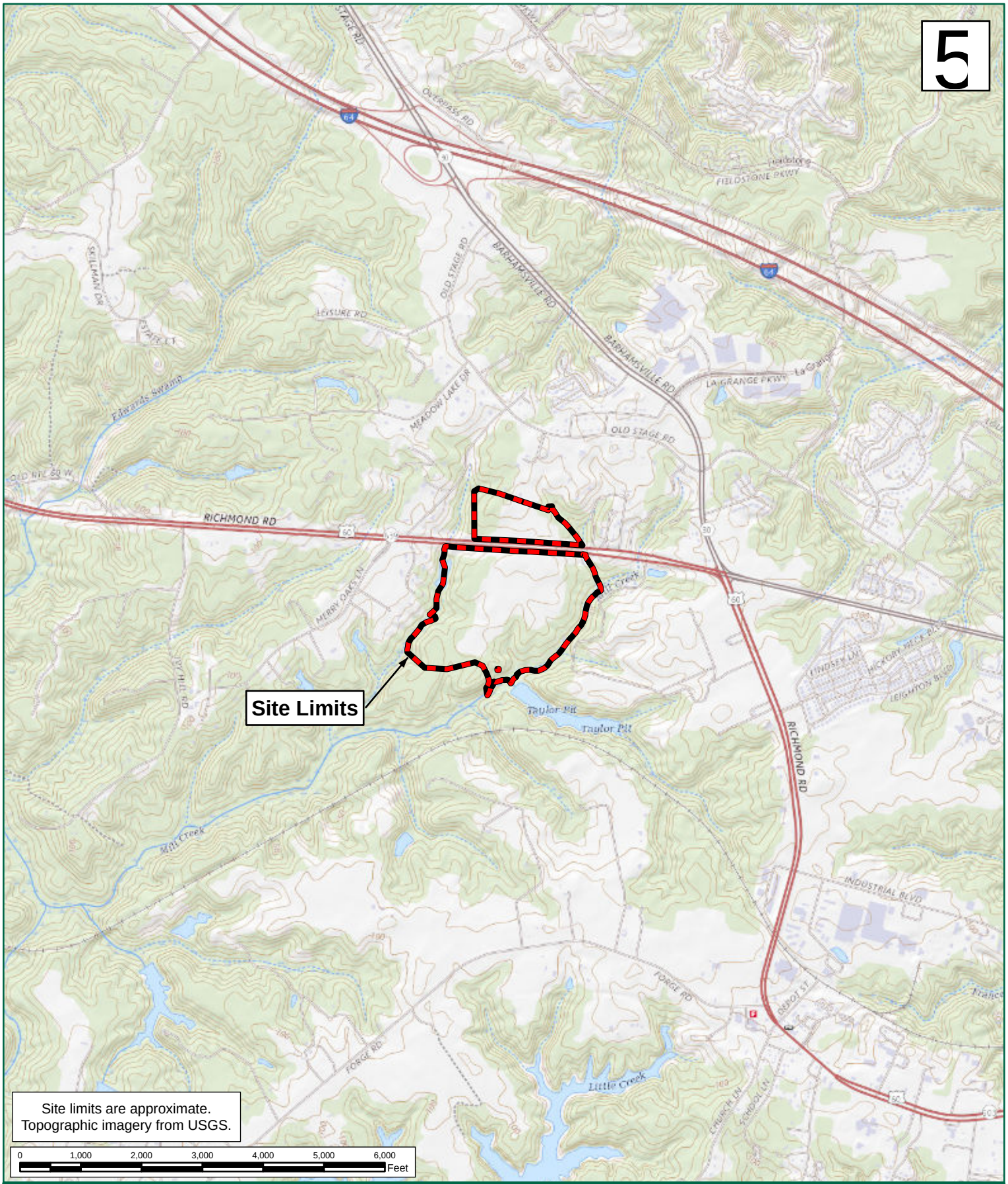
Jillian Stickley
GIS Specialist

Rick Thomas
Principal

Figures and Attachments

Figure 1 Vicinity Map

Attachment 1 Threatened and Endangered Species Database Searches
Attachment 2 Cultural Resources Search



RICHMOND ROAD SOLAR
JAMES CITY COUNTY RICHMOND
FIGURE 1: VICINITY MAP

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TIMMONS GROUP JOB NUMBER: *45853.032*
PROJECT STUDY LIMITS: *136.15 ACRES*
LATITUDE: *37.401262*
LONGITUDE: *-76.820257*

U.S.G.S. QUADRANGLE(S): *TOANO*
DATE(S): *2019*
WATERSHED(S): *LOWER JAMES*
HYDROLOGIC UNIT CODE(S): *02080206*

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Attachment 1: Protected Species Database Searches

- U.S. Fish and Wildlife Services (USFWS) – Information, Planning and Consultations system (IPaC) – Trust Resource List
- Virginia Department of Wildlife Resources (VDWR) – Wildlife Environmental Review Map Service (WERMS)
- Virginia Department of Wildlife Resources (VDWR) – Virginia Fish and Wildlife Information Service (VaFWIS)
- Virginia Department of Wildlife Resources (VDWR) – Northern Long Eared Bat (NLEB) Winter Habitat and Roost Tree Locator
- Virginia Department of Wildlife Resources (VDWR) – Little Brown Bat and Tri-colored Bat Winter Habitat & Roosts Locator
- Virginia Department of Conservation and Recreation (VDCR) – Natural Heritage Data Explorer (NHDE) Screening
- Virginia Department of Environmental Quality (VDEQ) – Coastal Geospatial and Education Mapping System (GEMS)
- Center for Conservation Biology (CCB) – VaEagles Nest Locator
- U.S. Fish and Wildlife Services (USFWS) – Bald Eagle Concentration Areas

U.S. Fish and Wildlife Services (USFWS) – Information, Planning and Consultations system (IPaC)

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

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

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

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Location

James City County, Virginia



Local office

Virginia Ecological Services Field Office

(804) 693-6694
(804) 693-9032

6669 Short Lane

Gloucester, VA 23061-4410

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Endangered species

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

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

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

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

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

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

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

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

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2. 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.

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

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

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

There are no critical habitats at this location.

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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.

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

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.

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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 Oct 15 to Aug 31
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
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

Kentucky Warbler Oporornis formosus — Breeds Apr 20 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prairie Warbler Dendroica discolor — Breeds May 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prothonotary Warbler Protonotaria citrea — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

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Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

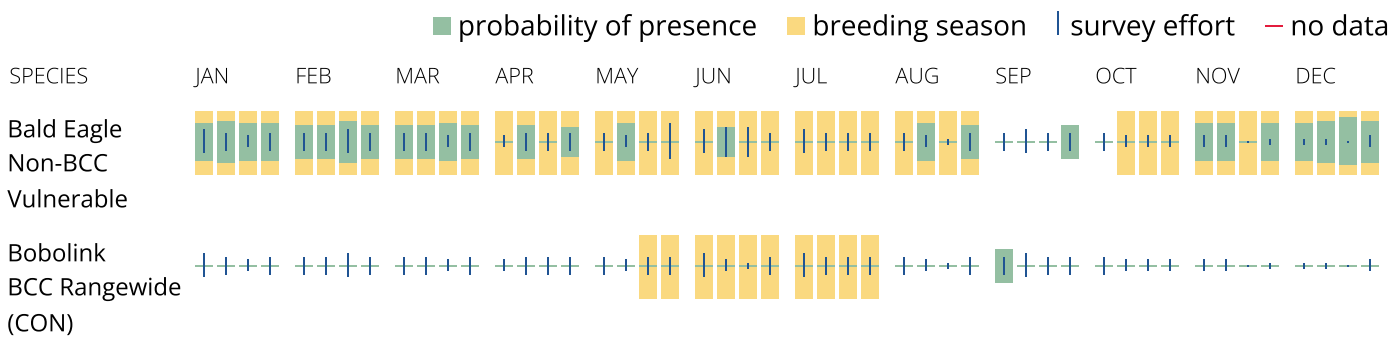
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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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

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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.

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Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

There are no known coastal barriers at this location.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

Facilities

National Wildlife Refuge lands

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 at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

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For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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Virginia Department of Wildlife Resources (VDWR) – Wildlife Environmental Review Map Service (WERMS)

Species Observed Within Two Miles		
Common Name	**Federal Status**	**State Status**
Bluegill	NT / NE	NT / NE
Bowfin	NT / NE	NT / NE
Bullhead, brown	NT / NE	NT / NE
Bullhead, yellow	NT / NE	NT / NE
Chubsucker, creek	NT / NE	NT / NE
Darter, tessellated	NT / NE	NT / NE
Eel, American	NT / NE	NT / NE
Frog, eastern cricket	NT / NE	NT / NE
Frog, green	NT / NE	NT / NE
Frog, pickerel	NT / NE	NT / NE
Heron, great blue	NT / NE	NT / NE
Lizard, eastern fence	NT / NE	NT / NE
Lizard, eastern slender glass	NT / NE	NT / NE
Milksnake, eastern	NT / NE	NT / NE
Mosquitofish, eastern	NT / NE	NT / NE
Mudminnow, eastern	NT / NE	NT / NE
Newt, red-spotted	NT / NE	NT / NE
Peeper, spring	NT / NE	NT / NE
Perch, pirate	NT / NE	NT / NE
Perch, white	NT / NE	NT / NE
Pickerel, redfin	NT / NE	NT / NE
Pumpkinseed	NT / NE	NT / NE
Ratsnake, eastern	NT / NE	NT / NE
Salamander, Atlantic Coast Slimy	NT / NE	NT / NE
Salamander, eastern mud	NT / NE	NT / NE
Salamander, southern two-lined	NT / NE	NT / NE
Shiner, golden	NT / NE	NT / NE
Skink, common five-lined	NT / NE	NT / NE
Skink, little brown	NT / NE	NT / NE
Skink, southeastern five-lined	NT / NE	NT / NE
Sunfish, bluespotted	NT / NE	NT / NE
Toad, Fowler's	NT / NE	NT / NE
Turtle, snapping	NT / NE	NT / NE
Turtle, woodland box	NT / NE	NT / NE

NT = Non-Threatened, NE = Non-Endangered

Legend

- Project Study Limits - 136.2 Acres
- Two Mile Buffer
- NLEB Roost Trees - Not Present
- Threatened/Endangered Waters
- Trout Streams - Not Present
- Anadromous Fish Use
- Bald Eagle Concentration Areas and Roosts - Not Present
- Colonial Water Birds
- Bat Hibernacula (0.5 Mile Buffer) - Not Present
- Federal or State Listed Observation Area- Not Present
- Bat Hibernacula (5.5 Mile Buffer) - Not Present

Federal Status, State Status

- Non-Threatened, Non-Endangered

Heron, great blue

Heron, great blue

Heron, great blue

Heron, great blue

SCALE (FEET)

0 1,300 2,600

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE: H: 1" = 1,300'

SHEET NUMBER: 1

Y:\852\99999-Richmond_Road_Solar\GIS\Richmond Road Solar\Richmond Road Solar.aprx

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Richmond, VA 23225
TEL 804.200.6500
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PROJECT NAME & LOCATION

RICHMOND ROAD SOLAR

JAMES CITY COUNTY, VIRGINIA

DATE: 10/04/2022

PROJECT NUMBER: 45853.032

PROJECT NAME: RICHMOND ROAD SOLAR

DESIGNED BY / DRAWN BY: W. HART

NOTES:
Project Limits are approximate.
WERMS data from DWR.
Bat hibernacula include identifications of Northern long-eared bat, Tri-colored bat, Little-brown bat, Virginia big-eared bat, Gray bat, and Indiana bat.
Aerial imagery from VGIN.

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REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION

WILDLIFE ENVIRONMENTAL REVIEW MAP

Virginia Department of Wildlife Resources (VDWR) – Virginia Fish and Wildlife Information Service (VaFWIS)

VaFWIS - Department of Game and Inland Fisheries

37.40072 -76.82047
is the Search Point
Submit Cancel

Search Point
- **Change** to "clicked" map point
- **Fixed** at 37.40072 -76.82047

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

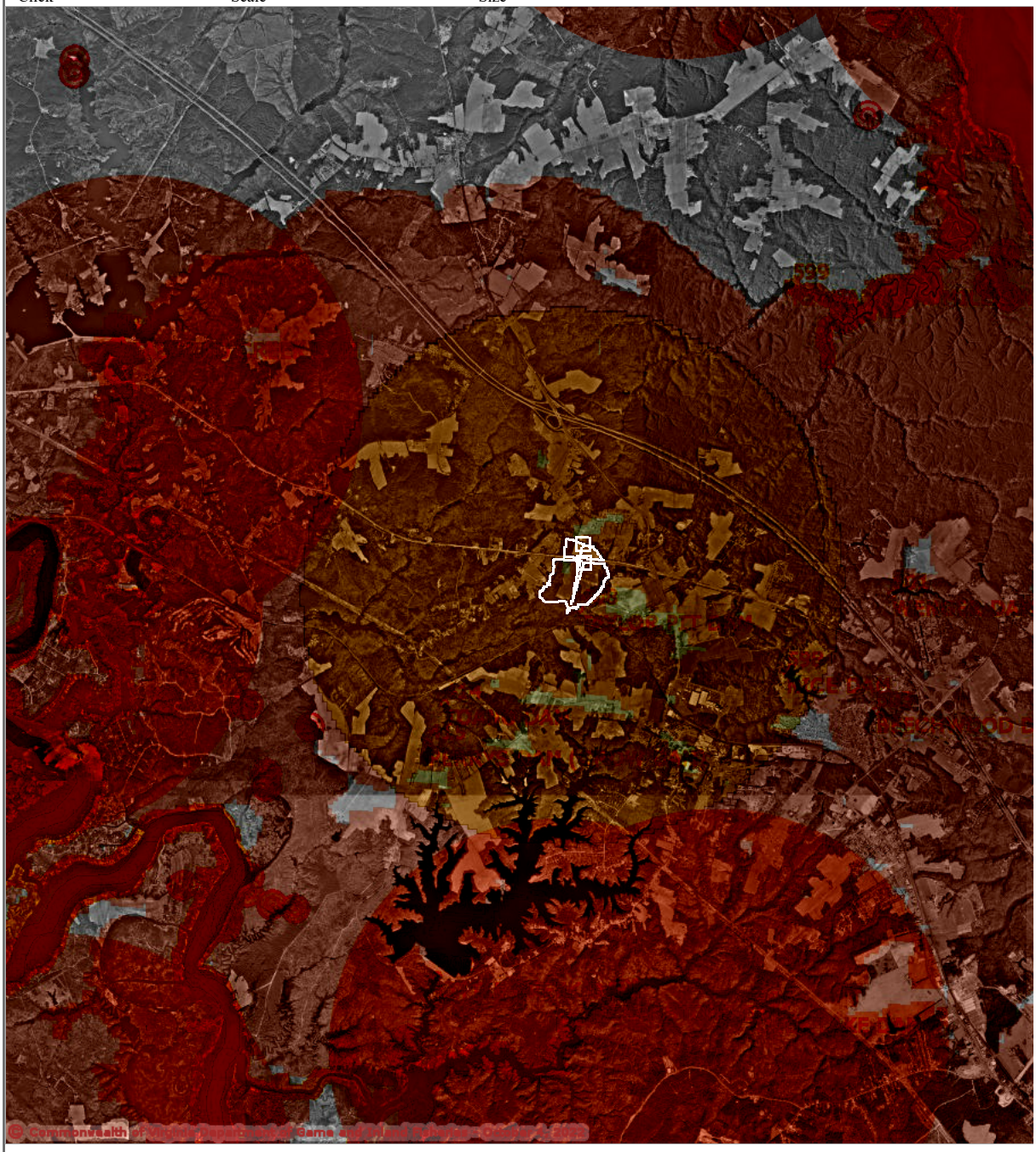
2 mile radius Search Area

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



Point of Search 37.40072 -76.82047
Map Location 37.40072 -76.82047

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 330870 and top 4148883. Pixel size is 12. .
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 2022-10-04 16:38:45 (qa/qc March 21, 2016 12:20 - tn=1411807 dist=3218 I
)
$poi=37.4025500 -76.8189900

| 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 10/4/2022, 4:40:25 PM

Help

Known or likely to occur within a **2 mile buffer around polygon; center 37.4025500 -76.8189899** in **095 James City County, VA**

View Map of Site Location

458 Known or Likely Species ordered by Status Concern for Conservation (displaying first 22) (22 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
040110	FTSE	Ia	Rail, eastern black	Laterallus jamaicensis jamaicensis		BOVA
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
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
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA
010077		Ia	Shiner, bridle	Notropis bifrenatus		BOVA
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
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA

To view **All 458 species** View 458

*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.

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Colonial Water Bird Survey (2 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**	
FRANCE SWAMP	10	May 1 2003	1			Yes
France Swamp at I-64	1	Jun 1 1993	1			Yes

Displayed 2 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

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Yes

Public Holdings:

N/A

Compiled on 10/4/2022, 4:40:25 PM I1411807.0 report=IPA searchType= P dist= 3218 poi= 37.4025500 -76.8189899 siteDD= 37.4025530 -76.8189930;37.4023631 -76.8160134;37.4023891 -76.8160261;37.4023825 -76.8159712;37.4023710 -76.8158765;37.4023578 -76.8158745;37.4022941 -76.8158651;37.4022760 -76.8158645;37.4022567 -76.8158546;37.4022428 -76.8158451;37.4022262 -76.8158342;37.4022091 -76.8158242;37.4021905 -76.8158128;37.4021707 -76.8157980;37.4021501 -76.8157823;37.4021314 -76.8157660;37.4021159 -76.8157530;37.4020969 -76.8157392;37.4020719 -76.8157210;37.4020382 -76.8156943;37.4020012 -76.8156636;37.4019699 -76.8156397;37.4019481 -76.8156269;37.4019299 -76.8156121;37.4019084 -76.8155924;37.4018858 -76.8155742;37.4018632 -76.8155575;37.4018405 -76.8155403;37.4018168 -76.8155236;37.4017910 -76.8155060;37.4017637 -76.8154884;37.4017344 -76.8154718;37.4017051 -76.8154548;37.4016759 -76.8154397;37.4016458 -76.8154246;37.4016162 -76.8154100;37.4015842 -76.8153955;37.4015522 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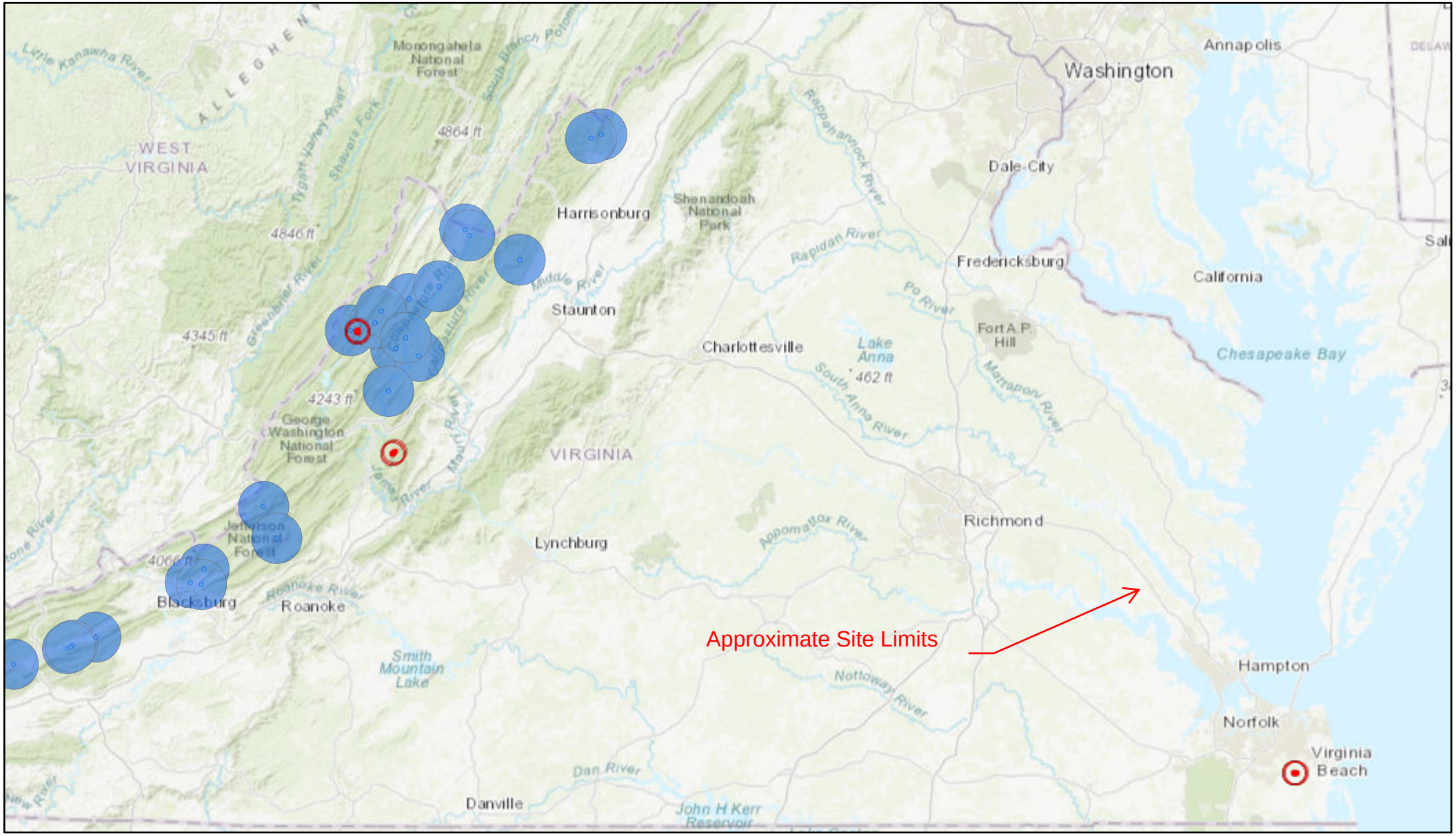
Virginia Department of Wildlife Resources (VDWR) – Northern Long Eared Bat (NLEB) Winter Habitat and Roost Tree Locator

NLEB Locations and Roost Trees



10/4/2022, 3:41:55 PM

NLEB Known Occupied Maternity Roost (Summer Habitat)

NLEB Hibernaculum 5.5 Mile Buffer

NLEB Hibernaculum Half Mile Buffer

1:2,311,162

0 15 30 60 mi

0 20 40 80 km

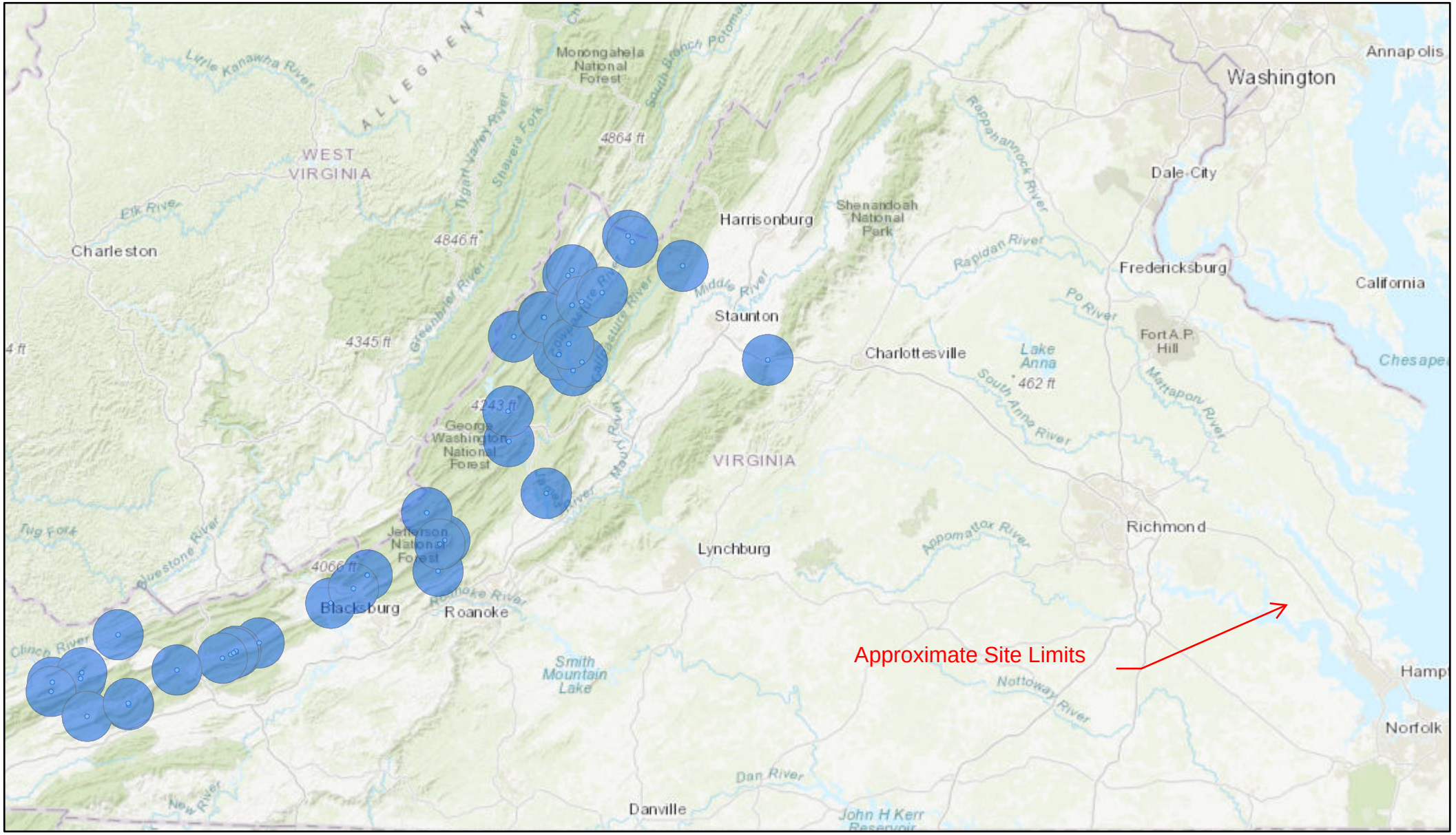
Esri, HERE, Garmin, FAO, USGS, EPA, NPS

VA Dept. of Game and Inland Fisheries,

Esri, HERE, Garmin, FAO, USGS, EPA, NPS |

Virginia Department of Wildlife Resources (VDWR) – Little Brown Bat and Tri-colored Bat Winter Habitat & Roosts Locator

Little Brown and Tri-Colored Bat



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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 |

Virginia Department of Conservation and Recreation (VDCR) – Natural Heritage Data Explorer (NHDE)

Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

Web Project ID: WEB0000018744

Client Project Number: 99999

PROJECT INFORMATION

TITLE: Richmond Road Solar

DESCRIPTION: This site is a proposed solar facility. Wetlands and streams will be avoided.

EXISTING SITE CONDITIONS: Agricultural

QUADRANGLES: Toano

COUNTIES: James City

Latitude/Longitude (DMS): 37° 24' 2.5486" N / 76° 49' 13.897" W

Acreage: 143 acres

Comments:

REQUESTOR INFORMATION

Priority: N

Tier Level: Tier II Plus

Tax ID: 54-1301413

Contact Name: William Hart

Company Name: Timmons Group

Address: 1001 Boulders Pkwy

City: Richmond

State: VA

Zip: 23225

Phone: 9803073952

Fax:

Email: william.hart@timmons.com

Conservation Site	Site Type	Brank	Acreage	Listed Species Presence	Essential Conservation Site?
Natural Heritage Screening Features Intersecting Project Boundary					

Site Name	Group Name	Common Name	Scientific Name	GRANK	SRANK	Fed Status	Species of Concern	State Status	EO Rank	Last Obs Date	Precision
Natural Heritage Resources Intersecting Project Boundary											

Intersecting Predictive Models
Predictive Model Results

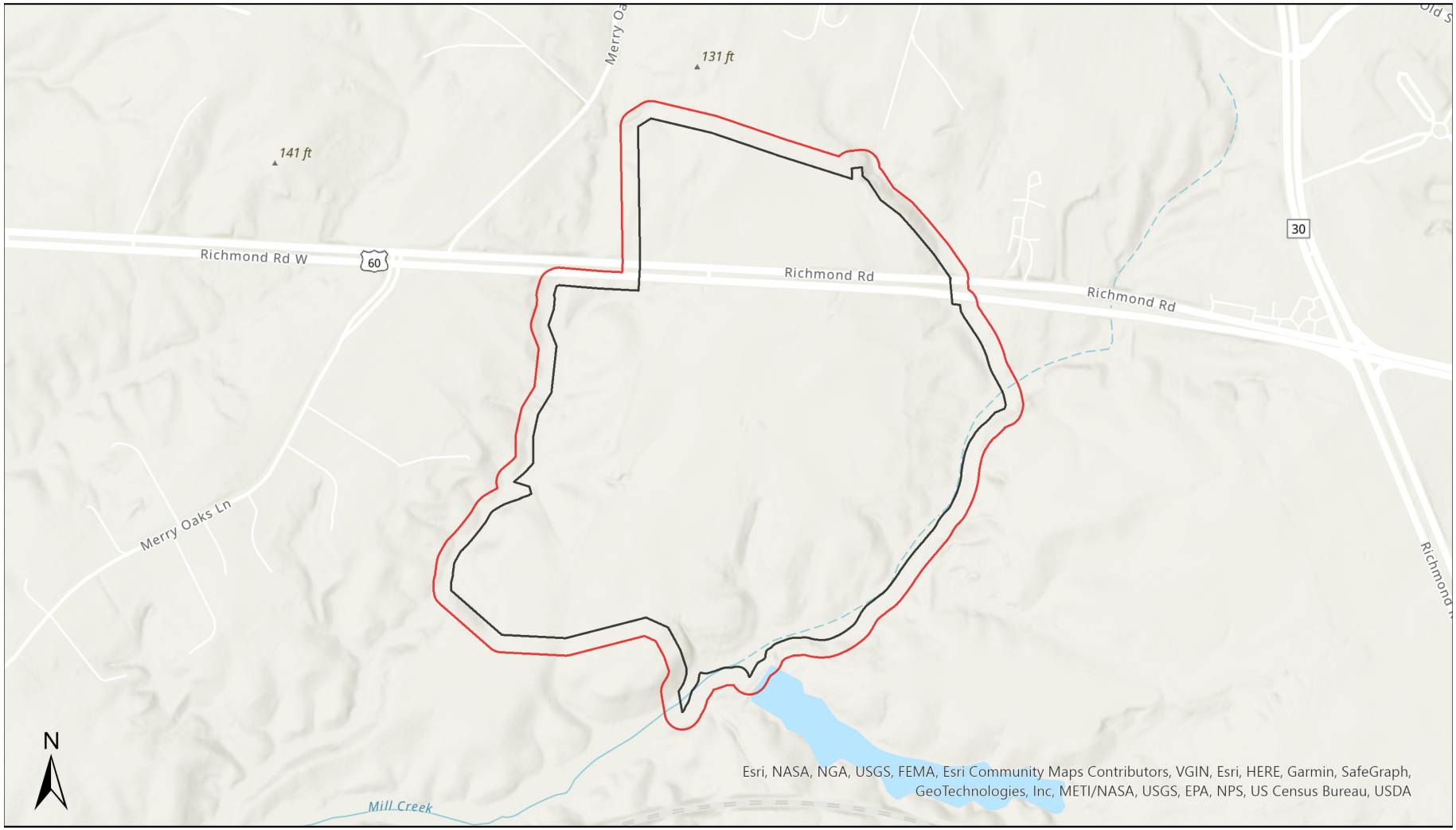
In addition, the proposed project will impact an Ecological Core(s) C4 as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: 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.

Richmond Road Solar



Buffered Project Boundary

Project Boundary

0 0.07 0.15 0.3 Miles

Scale: 1:9,049

Quads: Toano

Counties: James City

Company: Timmons Group

Lat/Long: 372402 / -764913

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

The project mapped as part of this report has been searched against the Department of Conservation and Recreation's Biotics Data System for occurrences of natural heritage resources in the vicinity of the area indicated for this project. 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 Biotics, natural heritage resources have not been documented within the submitted project boundary including a 100 foot buffer. In addition, the project area does not intersect any of the predictive models identifying potential habitat for natural heritage resources.

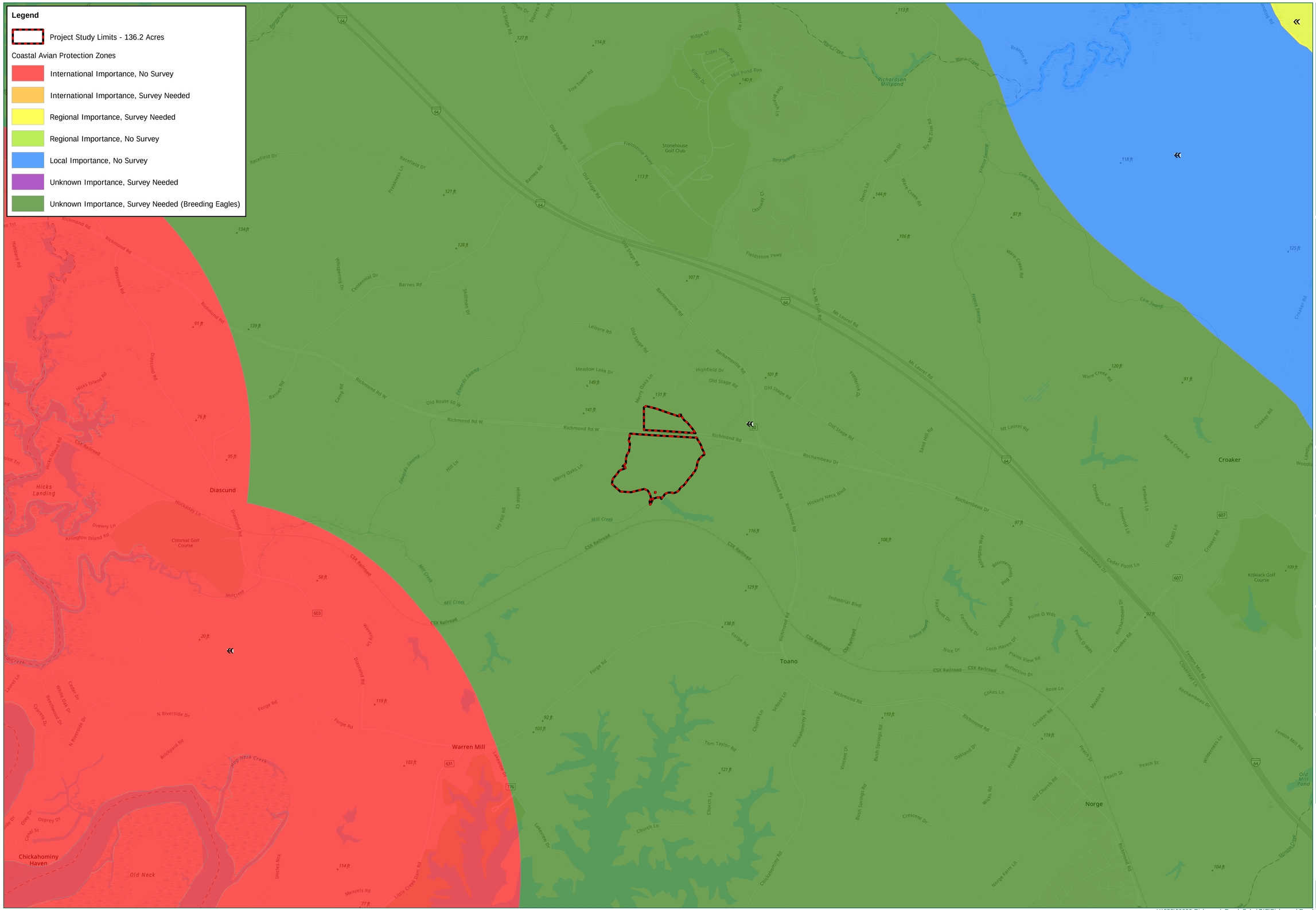
Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

Any absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks additional natural heritage resources. New and updated information is continually added to Biotics. Please revisit this website or contact DCR for an update on this natural heritage information if a significant amount of time passes (DCR recommends no more than six months) before it is utilized.

The Virginia Department of Wildlife Resources maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters, that may contain information not documented in the Natural Heritage Data Explorer. Their database may be accessed from https://services.dwr.virginia.gov/fwis/ or contact Amy Martin (804-367-2211 or amy.martin@dwr.virginia.gov).

Thank you for submitting your project to the Virginia Department of Conservation and Recreation's Natural Heritage Data Explorer Web Service. Based on the preliminary screening results for this project, no further correspondence will be sent from this office. Should you have any questions or concerns about this report, the Data Explorer, or other Virginia Natural Heritage Program services, please contact the Natural Heritage Project Review Unit at 804-371-2708.

Virginia Department of Environmental Quality (VDEQ) – Coastal Geospatial and Education Mapping System (GEMS)



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1001 Boulders Parkway, Suite 300
Richmond, VA 23225
TEL 804.200.6500
www.timmons.com

PROJECT NAME & LOCATION

RICHMOND ROAD SOLAR

JAMES CITY COUNTY - VIRGINIA

DATE: 10/04/2022

PROJECT NUMBER: 45853.032

PROJECT NAME: RICHMOND ROAD SOLAR

DESIGNED BY / DRAWN BY: W. HART

NOTES:
Project Limits are approximate.
Coastal Avain Protection Zone data from VCU's Virginia Coastal Zone Management Program for Virginia Only.
Aerial imagery from ESRI.

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REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION: COASTAL AVAIAN PROTECTION ZONE MAP

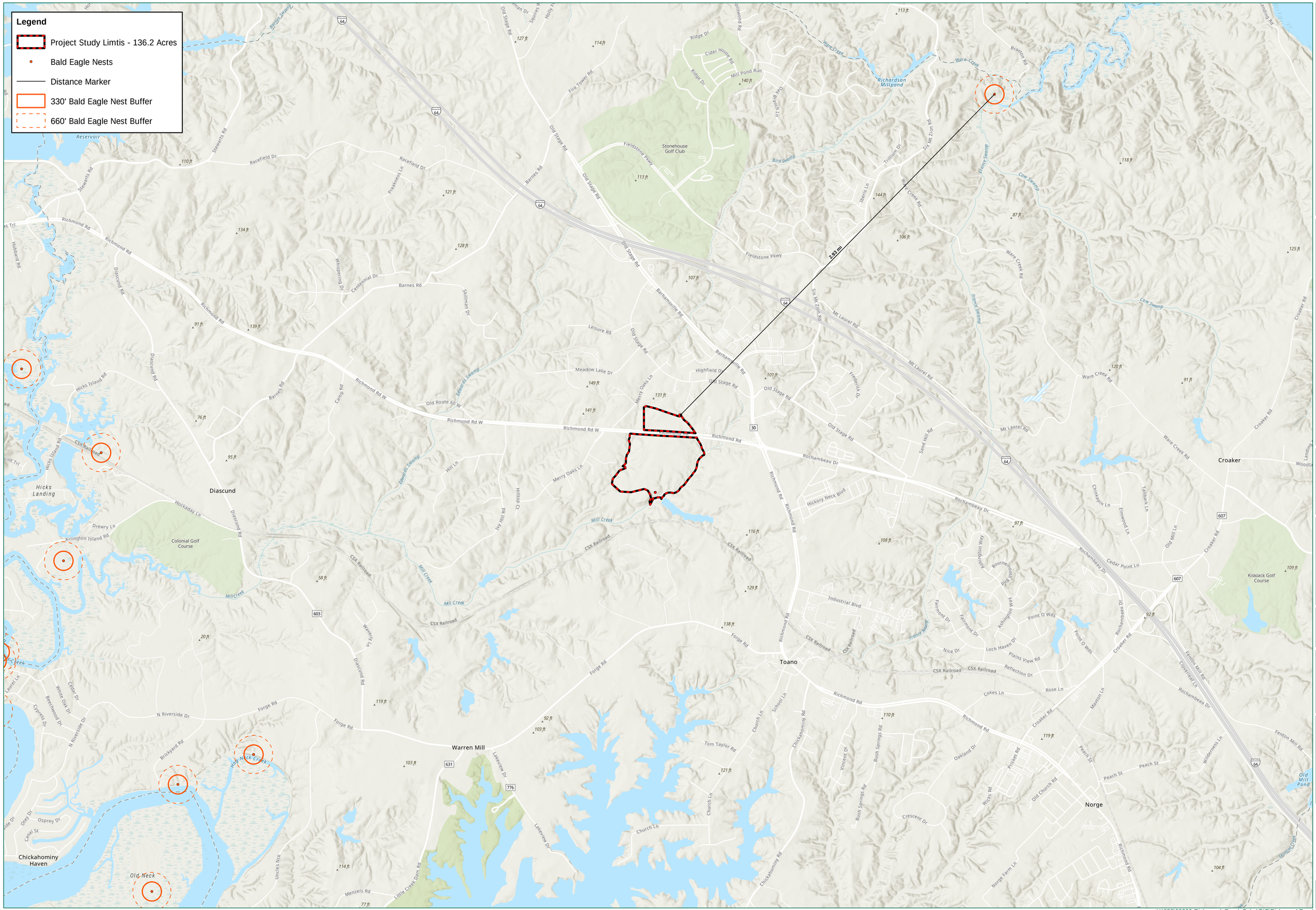
SCALE: 1" = 1,500 ft

SHEET NUMBER: 1

PLANS PRINTED AS 11X17 ARE HALF SCALE

Y:\852\99999-Richmond_Road_Solar\GIS\Richmond Road Solar\Richmond Road Solar.aprx

Center for Conservation Biology (CCB) –
VaEagles Nest Locator


Legend
Project Study Limtis - 136.2 Acres
Bald Eagle Nests
Distance Marker
330' Bald Eagle Nest Buffer
660' Bald Eagle Nest Buffer
2.93 mi
Stonehouse Golf Club
Richardson Millpond
Colonial Golf Course
Kiskiack Golf Course
Hicks Landing
Diascund
Toano
Warren Mill
Croaker
Norge
Chickahominy Haven
Old Neck
Richmond Rd
Old Stage Rd
Barnes Rd
Fieldstone Pkwy
Mt Laurel Rd
Ware Creek Rd
Rochambeau Dr
Richmond Rd W
Old Route 60 W
Barhamsville Rd
Croaker Rd
Mill Creek
Ware Creek
Cow Swamp
Bird Swamp
Frenchs Swamp
Edwards Swamp
Barnes Swamp
CSX Railroad
Reservoir
Old Mill Pond
Hog Neck Creek
Uncles Neck
Lake Powell
Lakeview Dr
Church Ln
Forge Rd
Fenton Mill Rd
Peach St
Oakland Dr
Industrial Blvd
Hickory Neck Blvd
Sandy Hill Rd
Bush Springs Rd
Chickahominy Rd
Little Creek Dam Rd
Menzels Rd
Hockaday Ln
Arlington Island Rd
Brickyard Rd
N Riverside Dr
Hicks Island Rd
Stewarts Rd
Racefield Dr
Whispering Dr
Centennial Dr
Skillman Dr
Leisure Rd
Meadow Lake Dr
Highfield Dr
Merry Oaks Ln
Tom Taylor Rd
Rochambeau Dr
Cedar Point Ln
Nice Dr
Loch Haven Dr
Plains View Rd
Reflection Dr
Cokes Ln
Rose Ln
Fairmont Dr
Arlington Way
Bournemouth Blvd
Point O Wods
Chickahominy Dr
Fieldstone Pkwy
Ridge Dr
Cider House Rd
Mill Pond Run
Fire Tower Rd
Old Stage Rd
Trillium Dr
Ivy Hill Rd
Hillcrest Dr
Oak Glade Ln
Sandy Ridge Rd
Sandy Ridge Ln
Sharon Ln
Sharon Rd
Sandy Ridge Rd
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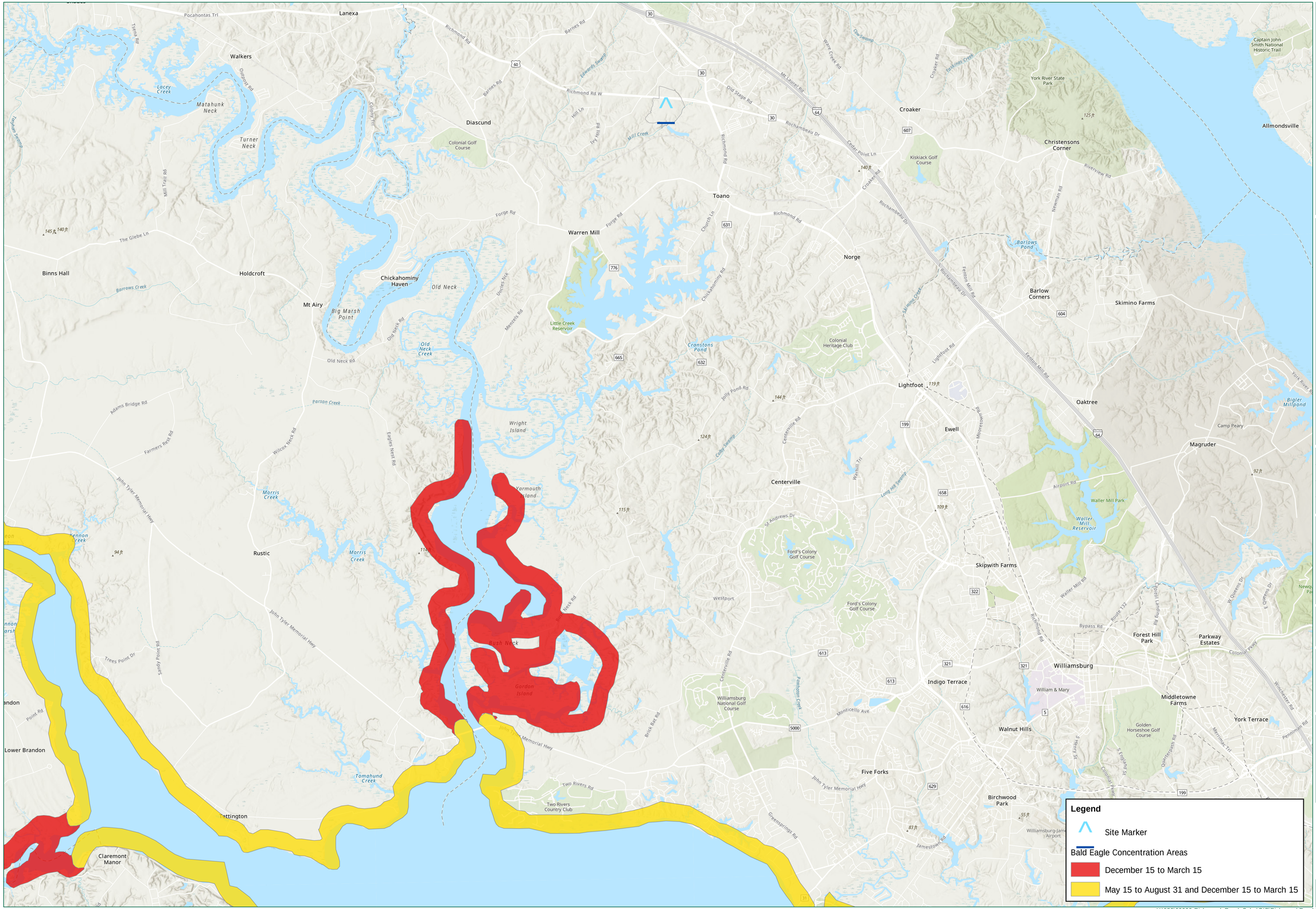
Sandy Ridge Rd
Sandy Ridge Ln
Sandy Ridge Rd
Sandy Ridge Ln

U.S. Fish and Wildlife Services (USFWS) –
Bald Eagle Concentration Areas



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PROJECT NAME & LOCATION

RICHMOND ROAD SOLAR

JAMES CITY COUNTY, VIRGINIA

DATE	10/07/2022
PROJECT NUMBER	45853.032
PROJECT NAME	RICHMOND ROAD SOLAR
DESIGNED BY / DRAWN BY	W. HART

NOTES:
Project Limits are approximate.
Bald Eagle Concentration Areas from USFWS Bald Eagle Concentration - Virginia Mapping Service.

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REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION

BALD EAGLE CONCENTRATION AREA MAP

SCALE (FEET)
0 3,500 7,000
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H: 1" = 3,500'	1

Y:\852\99999-Richmond_Road_Solar\GIS\Richmond Road Solar\Richmond Road Solar.aprx

Attachment 2: Cultural Resources Search



Y:\852\99999-Richmond_Road_Solar\GIS\Richmond Road Solar\Richmond Road Solar.aprx

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PROJECT NAME & LOCATION

RICHMOND ROAD SOLAR

JAMES CITY COUNTY - VIRGINIA

DATE	10/04/2022
PROJECT NUMBER	45853.032
PROJECT NAME	RICHMOND ROAD SOLAR
DESIGNED BY / DRAWN BY	W/ HART

NOTES:
Project Limits are approximate.
Cultural resource data from VDHR.
Aerial imagery from VGIN.

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REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION

CULTURAL RESOURCE MAP

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

SCALE	SHEET NUMBER
H: 1" = 500 '	1

Property Information

Property Names

Name Explanation	Name
Current	Martin House Site

County/Independent City(s): James City (County)
Incorporated Town(s): *No Data*
Zip Code(s): *No Data*
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): TOANO

Property Evaluation Status

The Primary Resource is no longer extant.

Additional Property Information

Architecture Setting: *No Data*
Acreage: *No Data*
Site Description:
No Data
Property Event Type:
Destroyed
Surveyor Assessment:
No Data
Surveyor Recommendation: *No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction:
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: 1.5
Condition: Demolished
Threats to Resource: Demolition
Cultural Affiliations: *No Data*
Cultural Affiliation Details:
No Data
Architectural Description:
No Data

Exterior Components

Component	Component Type	Material	Material Treatment
Roof	Gable	Wood	Other
Roof	Gable	*No Data*	Other
Chimneys	Exterior End	Brick	Not Visible
Structural System and	Frame	Wood	Weatherboard

Exterior Treatment			
Windows	Sash, Double-Hung	Wood	Other

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: Destroyed

Project Review File Number: *No Data*
Investigator: *No Data*
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: *No Data*
Dhr Library Report Number: Cost-Share
Project Staff/Notes:

No Data

Project Bibliographic Information:

Name: ACS, Inc.
DHR CRM Report Number: 2007-1696
Record Type: Report
Bibliographic Notes: JC-263: Phase I Cultural Resources Survey of 5 Acres Near Anderson's Corner, James City County, Virginia
September 2007

Name: The Ottery Group
DHR CRM Report Number: Cost-Share
Record Type: Report
Bibliographic Notes: JC-271: Historic Structures Survey of James City County, Virginia
May 2008

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Property Information

Property Names

Name Explanation	Name
Historic	Geddy Farm House
Historic/Current	White Hall Tavern
Historic/Current	Whitehall Tavern
Historic/Location	Whitehall, 3200 Rochambeau Drive

Property Evaluation Status

NRHP Listing
VLR Listing

Property Addresses

Alternate - Route 30
Current - 3200 Rochambeau Drive

County/Independent City(s): James City (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23168
Magisterial District(s): *No Data*
Tax Parcel(s): 1220100008
USGS Quad(s): TOANO

Additional Property Information

Architecture Setting: Rural
Acreage: 2.64

Site Description:

2001: Located on a 45 acre parcel on the northwest corner created by the junction of Routes 30 and 60, north of the village of Toano in James City County. The house is approached from the southwest on from Route 30 on a short unimproved drive.

2005 PIF: 3-story wood frame farm house sitting 150 yards off highway, surrounded by open fields and wood land.

2006 nomination: The property known today as Whitehall Plantation stands about 75 yards east of the point where VA Route 30 and US Route 60 intersect, near Toano in James City County. The main house fronts southwest toward Route 30, the front shaded by three large trees--a walnut and two magnolias. The nominated parcel consists of 2.64 acres.

The proposed boundary embraces 2.64 acres at the southeastern corner of the present Geddy property. Beginning at the line by the road, the boundary extends parallel to the fence line delimiting the front yard, continuing 351' feet to the rear of the paddock behind the stable. From that point it runs parallel to the NE gable of the barn 100' to a point NEE of the stable, thence SSW 35' to a point directly east of the stable, thence SE 437' to the existing fence and property line at the SE corner of the property, continuing thereafter along the southern property line about 637' to the beginning.

Boundary Justification

This boundary conforms to those of the parcel on which a Historic Easement is to be granted by the owner to the Commonwealth of Virginia. It takes in all contributing structures, including the house, the barn, the workshop/storage building, and the garage, together with the front and side yard of the dwelling, the drive, and the field east of the drive.

2001: 7 contributing buildings are located northeast (behind) the main structure.

2006 nomination: Seven outbuildings and one ruinous farm structure stand behind the main house, deployed around the perimeter of a large paddock. There are also two wells in the house yard.

Surveyor Assessment:

It was originally known as the White Hall Tavern.

2001 intensive survey: This mass plan building was the Whitehall Tavern in the 19th century and later the Geddy Farmhouse. This house has been in the same family for eight generations. According to the owner, the house was apparently built by William Geddy, son of James Geddy of Williamsburg, between 1760 and 1790.

2005 PIF: The Geddy farmhouse or Whitehall Tavern has been in the same family since it was built between 1760 and 1790 by William Geddy, son of James Geddy of Williamsburg. It was once utilized as the Whitehall Tavern or ordinary.

2006 nomination: Built For William Geddy in 1805-06, White Hall, together with its complement of early 20th-century outbuildings, represents more than two centuries of nearly continuous occupation by the Geddy family, prominent in the early history of Williamsburg though the activities of blacksmith William Geddy and his son, silversmith James Geddy. William Geddy's social standing was that of an upper middling planter, and his dwelling represents the improving quality of housing for all Virginians during the early republican period.

The plan and interior appointments exemplify important changes in Virginia's domestic buildings at that time. The full, two-story volume of the house with its upper-floor chambers, and the rearward orientation of its stair both expressed a growing emphasis on

domestic privacy at that time, while the old-fashioned stair details demonstrated the continued conservatism of rural carpenters' work.

Historical Background

White Hall, the traditional home of the Geddys, is located upon land that has been in the family's hands almost continuously since the 1780s. The vestry records of Blisland Parish, which included western James City County, reveal that the Geddy family had commenced residing there prior to 1761. James City County land tax rolls indicate that by 1789 William Geddy had acquired the 200 acres that in time became the family's home tract. Personal property tax rolls suggest that Geddy, who was in possession of several adult slaves, was a member of the upper middle class. At his death, around 1803, his property passed to his son and namesake, William Geddy Jr., who was credited with it in 1805. He appears to have added structural improvements to the property, the value of which rose by 1806. It was likely during that interval (1805-1806) that White Hall was built. Personal property tax rolls for 1804 and 1805 indicate that William Geddy purchased an ordinary license, the only time he did so. Precisely where he conducted business is uncertain. Perhaps White Hall's distance from the main road and its proximity to a well known tavern, which was less than a mile away, discouraged Geddy's interest in tavern-keeping. William Geddy Jr. eventually moved to New Kent County, where he was residing at the time of his death in 1816. From then until 1829, his acreage was attributed to his estate. This raises the possibility that he was survived by a widow who had life rights in the property or by minor children (James City County Land Tax Lists 1782-1820; Personal Property Tax Lists 1782-1820).

In 1820, when Virginia's tax commissioners commenced assigning an estimated value to the aggregate of structural improvements that were on a landowner's property, buildings worth $800 stood on the 340 ¼ acres that were part of William Geddy's estate. By 1822, the decedent's son, Edward B. Geddy, had transferred 200 acres to the Slaters, who conveyed it to Nathaniel Lindsey; that portion of the property which lacked improvements, was identified as part of the late William Geddy's estate. At that point the tax commission began crediting William Geddy's estate with 140 ¼ acres that had $750 worth of improvements. The house tract remained intact through 1829, at which point it came into the hands of Allen Lindsey, to whom it was transferred by William Brown, the late William Geddy's administrator. By that time, Lindsey had come into the 200 acres formerly belonging to Nathaniel Lindsey, thereby reconstituting the late William Geddy's 340 acre estate (James City County Land Tax Lists 1820-1830).

Allen Lindsey died within two years of acquiring the White Hall tract, which from 1833 through 1846 was attributed to his estate. The value of the property's improvements dwindled, probably on account of deterioration, and from 1840 on, the buildings' aggregate value was only $500. Personal property tax rolls reveal that Allen Lindsey was a slaveholder and a member of the upper middle class, whose material wealth exceeded that of the Geddys and included taxable luxury items (James City County Land Tax Lists 1833-1846; Personal Property Tax Lists 1815-1846).

Between 1846 and the time of the tax assessor's 1847 visit, George E. Geddy acquired the late Allen Lindsey's 375 16/25 acre estate. The value of the buildings on the property, identified in 1851 as White Hall, rose from $500 in 1850 to $1,200 in 1851. This occurred less than a decade after George E. Geddy married Lucy Elizabeth Henley, Richardson Henley's daughter. White Hall's size and the value of its structural improvements remained constant through 1861 (James City County Land Tax Lists 1846-1861).

Maps made by Confederate cartographers in 1863 and 1864 show the house known as White Hall, attributing it to "Captain Geddy." The Geddy home, situated where it overlooked the road that linked Williamsburg to the New Kent County seat and points beyond, and a lesser road that led toward the York River, was a position by which both Union and Confederate troops marched on their way to Richmond, the Confederate capital. A narrative written by Union Army veteran and provost marshal David Cronin suggests that White Hall's position at a crossroads, on a slight rise, made it an important site for the gathering and distribution of intelligence. He said that when he visited the house, three ladies were present, an elderly matron and two young women. According to the older woman, the family had been robbed of its cooking utensils the year before when Union troops passed through. There were few slaves on the premises, those who were very young or very old, as the middle-aged ones had left to become "contrabands" (Cronin [1862-1865]). George E. Geddy, a captain in the James City County cavalry, Company H, 5th Regiment, was then away at war (Richmond Times-Dispatch, June 1, 1896).

In 1884, when George E. Geddy made his will, which was proved in 1887, he left White Hall and virtually all of his real and personal estate to his wife, Lucy E. Henley Geddy, who had the right to dispose of it at her discretion. The testator said that he considered the bequest repayment for the money that had come to him through their marriage. An inventory of the late George E. Geddy's estate, prepared in 1887, reveals that White Hall was a working farm whose livestock included horses, cattle, and swine. The decedent's household furnishings were modest but ample as was his agricultural equipment (James City County Will Book 2:1, 7-8).

Lucy E. Geddy stayed on at White Hall and on August 18, 1903, when she prepared her will, referred to it as the house tract "on which I now reside." She left that portion of her real estate to her son, Richardson B. Geddy and instructed her executors to sell the remainder of her realty, distributing the proceeds among her other children. On March 29, 1904, Mrs. Geddy added a codicil to her will, noting that she had just sold White Hall to her son, Richardson B. Geddy. That transaction, which occurred on March 11, 1904, made reference to the farm's physical boundaries, one of which lines passed close to an "old stable" then on the property (James City County Will Book 2:412; Deed Book 9:256-257). Richardson B. Geddy and his wife, Mary Lucille, promptly mortgaged White Hall, using it as collateral when securing their loan. They secured a deed of release within five years time (James City County Deed Book 9:257-258; 12:47-48).

Richardson B. Geddy died intestate sometime prior to March 2, 1933, when all of his living children and heirs-at-law deeded their interest in White Hall to their mother, Mary Lucille Geddy. Excluded from the transaction was an 11 acre parcel that the late Richardson B. Geddy had sold to his neighbor, L. J. Haley, of La Grange and certain easements granted to the state highway department and for power lines (James City County Deed Book 20:67; 27:100-111). In 1960, after Mary Lucille Geddy's decease, her surviving heirs deeded their interest in White Hall to Bertrand Edward Geddy. At his death in 1975, his real and personal estate descended to his wife, Trittie Ware Geddy, from whom it passed to her son, Bertrand E. Geddy Jr., the current owner of record (James City County Will Book 13:506-514, 516).

Surveyor Recommendation: Legacy

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: Ca 1805
Date Source: Site Visit/Written Data
Historic Time Period: Early National Period (1790 - 1829)
Historic Context(s): Architecture/Landscape, Social
Other ID Number: *No Data*
Architectural Style: Colonial
Form: *No Data*
Number of Stories: 2.5
Condition: Good
Interior Plan: Side Passage, Double Pile
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

2001 survey: This a 2.5-story, side gabled with rear two story wing, 3-bay, side passage building. The side gable has a box cornice and an asphalt shingle covering. There is a late 19th/early 20th-century full front porch with square supports posts and an asphalt shigle covering. There are two massive shouldered exterior chimneys on the same side of the building. The resource is in good condition, and there are no known threats.

Interior: The hallway has a stairwell with landings between floors and at the second and third floor. The second floor also has the side hall plan. The stairway has squared newel post and cap, with spindle post balusters placed on an incline (not the steps, all painted). The banister rail is flat on top, rounded edges which extend outward on both sides. The underside of the banister is channeled. There is a decorative round wood ball at the base of the newel post that overhangs the hallway. See file for additional interior details.

2005 PIF: Circa 1760 3-story farm house in good condition with no known threats. An open stairwell from the first to the third floor is a defining feature of the interior. Large rooms (15x15 with 10 foot ceilings); chair rail and wainscotting in some rooms. Three story part of the house is original (1760-1780). Two story wing on back was added in the twenties.

Owner understands that some of the glass in the double-hung single-pane glazed 6/6 windows is original. Continuous brick foundation; large hand-hewn structural timbers connected by mortise and tenon; wood clapboard siding, beaded; fiberglass shingles on the roof; 2 large brick chimneys and 4 fireplaces. Primary porch is screened, with rectangular wood columns, and runs most of the length of the front facade of the house.

2006 nomination: The original house is a two-story, double-pile frame structure with a gable roof. It is laid out on a side-passage plan having two exterior brick chimneys, each with single weatherings. The building stands on a brick foundation. The front façade exhibits three bays on the ground floor but only two bays above. Here and on the other facades, all windows display 6/6 sash. The southeast or passage-side façade exhibits a one window at the first-floor level, three at the second, and two in the garret. On opposite façade, all three levels exhibit two bays between the chimneys. One additional ground-floor window stands behind the rear chimney. The original rear façade is largely obscured by a modern, two-story wing.

A modern, one-story, three-bay porch with a hipped roof, battered wooden columns, and pierced skirting of textured brick extends across the front of the building. Opposite the front door a pair of concrete steps ascends to this porch from the yard.

In the rear is a two-story wing and porch, the latter of which is now closed in. A pair of stone steps with brick cheek walls and concrete copings provides access to this enclosed porch from the side yard. The foundation of the wing, porch and steps is composed of smooth red bricks. At the main house, these bricks continue to the north corner, where a pair of sloping doors, both modern, encloses the original cellar entry.

All roofs are covered with asphalt shingles and the walls with beaded weatherboards. The simple cornice is composed of a crown molding, fascia, soffit and bed molding. At the corners, double corner boards are separated by a quarter-round molding.

Two ground-floor window frames and sash on the front façade, two garret window frames on the chimney façade, and the chimneys themselves are all or partly original. Otherwise, all exterior elements date to the 20th century.

Exterior Components

Component	Component Type	Material	Material Treatment
Windows	Sash, Double-Hung	Wood	6/6
Roof	Gable	Slate	Shingle
Chimneys	Exterior End	Brick	Other
Structural System and Exterior Treatment	Frame	Wood	Weatherboard
Porch	1-story, 3-bay	Wood	Screened

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Well/Well House
Date of Construction: 1900Ca
Date Source: Site Visit
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Architecture/Landscape, Social
Architectural Style: *No Data*
Form: *No Data*
Condition: N/A
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

2006: Wells - 2 - Non-contributing
In the side yard are two wells, one with a square wellhead of planks, early 20th century in date, and one with a cylindrical concrete cover at ground level. This latter enclosure is modern.

Number of Stories: *No Data*

Secondary Resource #2

Resource Category: Domestic
Resource Type: Garage
Date of Construction: 1930Ca
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Architecture/Landscape, Social
Architectural Style: No Discernable Style
Form: *No Data*
Condition: N/A
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

2006: Garage - Contributing
Northeast of the workshop and adjoining the rear yard is a framed garage. The building probably dates to the 1930s when the use of automobiles was becoming widespread in the region. As in the case of the workshop, the roof is covered with asphalt shingles and the walls are clad with beaded weatherboards, all matching those of the house. In this way the outbuildings close to and serving the main house were distinguished from the farm buildings. There is no interior finish except for flush boarding low down on the back wall.

Interior Plan: One-room
Number of Stories: 1

Secondary Resource #3

Resource Category: Agriculture/Subsistence
Resource Type: Corncrib
Date of Construction: Ca
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): Architecture/Landscape, Social
Architectural Style: No Discernable Style
Form: *No Data*

Condition: Ruinous
Threats to Resource: Deterioration, Structural Failure
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

2006: Corn Crib - Non-contributing
Near the barn, situated on the rear perimeter of the paddock, a building, now collapsed, stood on terra cotta pipes, set upright to serve as piers. Only the circular-sawn, wire-nailed floor joists and flooring of this building remain intact. The structure reportedly functioned as a corn crib and exhibited splayed construction typical of this building type. The gable-end door of this structure faced the house.

Secondary Resource #4

Resource Category: Agriculture/Subsistence
Resource Type: Chicken House/Poultry House
Date of Construction: Ca
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): Architecture/Landscape, Social
Architectural Style: No Discernable Style
Form: *No Data*
Condition: N/A
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

2006: Poultry Shed - Non-contributing
At the northeastern extremity of the paddock stands a poultry shed on a concrete foundation. This has a long shed roof with a short, opposing front slope to shelter the front. This roof is covered with ribbed sheet metal and the walls with plain horizontal weatherboards. At some point, the framing of the front wall was removed and the altered structure became a shelter for horses.

Number of Stories: 1

Secondary Resource #5

Resource Category: Domestic
Resource Type: Outbuilding,Domestic
Date of Construction: Ca
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): Architecture/Landscape, Social
Architectural Style: No Discernable Style
Form: *No Data*
Condition: Ruinous
Threats to Resource: Deterioration, Structural Failure
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

2006: Frame Ruins - Non-contributing
Between the corncrib and the poultry house are ruins of another wood frame outbuilding.

Number of Stories: 1

Secondary Resource #6

Resource Category: Agriculture/Subsistence
Resource Type: Barn
Date of Construction: 1900Ca

Date Source: Site Visit
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Architecture/Landscape, Social
Architectural Style: No Discernable Style
Form: *No Data*
Condition: N/A
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

2006: Barn/Stable - Contributing
The SE corner of the paddock is a large, 46 x 24 structure on a brick and concrete foundation. The lower level has been partitioned at different times into of stalls. Those at the southeastern end appear to be original. The stalls at the opposite end appear to be later and were certainly modified in recent years.
From a wide aisle at the northeastern end, broad doorways opened into the pasture behind, or the paddock in front. The gambrel roof, providing for hay storage on the upper level, is covered with ribbed sheet metal. The walls are clad with wooden novelty siding, which suggests an early 20th-century date for the stable alterations. A modern shed on this end of the building is covered with corrugated sheet metal and clad with plywood.

Number of Stories: *No Data*

Secondary Resource #7

Resource Category: Domestic
Resource Type: Privy
Date of Construction: 1900Ca
Date Source: Site Visit
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Architecture/Landscape, Social
Architectural Style: No Discernable Style
Form: *No Data*
Condition: N/A
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

2006: Privy - Contributing
Behind this outbuilding is a 20th-century privy. The building is composed of wire-nailed, circular-sawn material, with board-and-batten siding. It seems to have served the family and perhaps domestic servants.

Interior Plan: One-room
Number of Stories: 1

Secondary Resource #8

Resource Category: Agriculture/Subsistence
Resource Type: Workshop
Date of Construction: 1930Ca
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Architecture/Landscape, Social
Architectural Style: No Discernable Style
Form: *No Data*
Condition: N/A
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

2006: Workshop/Storage Building - Contributing
Nearest the house is an unheated outbuilding which has served for storage and as a workshop. It is a one-story, single-pile frame structure with a gable roof, approximately 24’ x 10’ in plan, having two rooms, each served by a doorway and a window on the front façade. It is covered with beaded weatherboards and asphalt shingles. In the front two doors serve two separate spaces. In the right room two windows flank the doorway. The room on the left has only a doorway. The exterior finishes match 1930s trim of the house, and the window trim matches that of the house.

Interior Plan: One-room

Number of Stories: 1

Secondary Resource #9

Resource Category: Agriculture/Subsistence
Resource Type: Chicken House/Poultry House
Date of Construction: 1900Ca
Date Source: Site Visit
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Architecture/Landscape, Social
Architectural Style: No Discernable Style
Form: *No Data*
Condition: N/A
Threats to Resource: None Known
Cultural Affiliations: *No Data*

Cultural Affiliation Details:

No Data

Architectural Description:

2006: Poultry House - Non-contributing
At the north corner of the paddock stood a frame, shed-roof structure, 8’ x 10’ in plan, probably dating to the early 20th century. This appears to have served as a poultry house. The roof is covered with ribbed sheet metal and the walls with plain horizontal siding.

Number of Stories: 1

Secondary Resource #10

Resource Category: Domestic
Resource Type: Well/Well House
Date of Construction: Ca
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): Architecture/Landscape, Social
Architectural Style: *No Data*
Form: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Cultural Affiliations: *No Data*

Cultural Affiliation Details:

No Data

Architectural Description:

No Data

Number of Stories: *No Data*

Secondary Resource #11

Resource Category: Agriculture/Subsistence
Resource Type: Barn
Date of Construction: Ca
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): Architecture/Landscape, Social
Architectural Style: *No Data*

Form: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Cultural Affiliations: *No Data*
Cultural Affiliation Details:
No Data
Architectural Description:
No Data
Number of Stories: *No Data*

Secondary Resource #12

Resource Category: DSS Legacy
Resource Type: Shed
Date of Construction: Ca
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): Architecture/Landscape, Social
Architectural Style: *No Data*
Form: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Cultural Affiliations: *No Data*
Cultural Affiliation Details:
No Data
Architectural Description:
No Data
Number of Stories: *No Data*

Secondary Resource #13

Resource Category: Commerce/Trade
Resource Type: Tavern/Ordinary
Date of Construction: Ca
Date Source: *No Data*
Historic Time Period: *No Data*
Historic Context(s): Architecture/Landscape, Social
Architectural Style: *No Data*
Form: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Cultural Affiliations: *No Data*
Cultural Affiliation Details:
No Data
Architectural Description:
No Data
Number of Stories: *No Data*

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: NRHP Listing

DHR ID: 047-0041
Staff Name: NPS
Event Date: 3/30/2007
Staff Comment

No Data

Event Type: VLR Listing

DHR ID: 047-0041
Staff Name: State Review Board
Event Date: 9/6/2006
Staff Comment

No Data

Event Type: NRHP Nomination

DHR ID: 047-0041
Staff Name: Wenger, Mark R.
Event Date: 7/12/2006
Staff Comment

Mesick Cohen Wilson Baker, Architects

Event Type: NRHP Nomination

DHR ID: 047-0041
Staff Name: Wenger, Mark R.
Event Date: 7/12/2006
Staff Comment

No Data

Event Type: Survey:Windshield

Project Review File Number: *No Data*
Investigator: Loth, Calder
Organization/Company: VA Dept. of Historic Resources
Photographic Media: Film
Survey Date: 6/5/2006
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Baseline photodocumentation for a potential easement with DHR.
Additional photographic documentation by Wendy Musumeci of DHR on 10/18/2013.

Project Bibliographic Information:

Name: ACS, Inc.
DHR CRM Report Number: 2007-1696
Record Type: Report
Bibliographic Notes: JC-263: Phase I Cultural Resources Survey of 5 Acres Near Anderson's Corner, James City County, Virginia September 2007

Name: The Ottery Group
DHR CRM Report Number: Cost-Share
Record Type: Report
Bibliographic Notes: JC-271: Historic Structures Survey of James City County, Virginia May 2008

Name: Cultural Resources, Inc.
DHR CRM Report Number: 1998-0052
Record Type: Report
Bibliographic Notes: JC-255: Phase I Cultural Resources Investigation of Approximately 93 Acres at the Proposed Fenwick Hills Tract James City County, Virginia. January 1998

Name: Bibliography
DHR CRM Report Number: 2006 Nomination
Record Type: Other
Bibliographic Notes: Bibliographical References

Chamberlin, Charles C.
1935The Vestry Book of Blisland (Blissland) Parish, New Kent and James City Counties, 1721-1786. Virginia State Library, Richmond, Virginia.

Cronin, David E.
[1862-1865] The Vest Mansion, Its Historical and Romantic Associations as Confederate and Union Headquarters in the American and Civil War. Transcript, Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

Gilmer, J. F.
1863Map of New Kent, James City, Charles City and York Counties. Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

1864Vicinity of Richmond and Part of the Peninsula. Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

James City County
1782-2006 Land and Personal Property Tax Lists, Deed Books, Will Books, Plats. Library of Virginia, Richmond, Virginia, and Williamsburg-James City County Courthouse, Williamsburg, Virginia.

Richmond Times-Dispatch
1896Rosters of the James City Cavalry and the Williamsburg Junior Guard. Richmond Times-Dispatch, June 1, 1896. Facsimile, James City County Historical Commission files, Williamsburg, Virginia.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, C - Distinctive Characteristics of Architecture/Construction

Phase II Intensive Survey Integrity Recommendations: Association, Design, Feeling, Location, Materials, Setting, Workmanship

Event Type: DHR Staff: Eligible

DHR ID: 047-0041

Staff Name: DHR

Event Date: 12/16/2005

Staff Comment

White Hall Tavern, James City County, DHR File 047-0041
The resource is rare-for-James City County surviving frame rural area tavern that may date to the colonial period. The two story vernacular building has evolved fabric. The period of significance suggested was 1760 to 1940. The resource was proposed as regionally significant under Criterion C for architecture. The committee recommended individually eligible for listing at 38 points. The committee asked for more historical information before the matter goes to the board.

Event Type: PIF

Project Review File Number: *No Data*

Investigator: Geddy, Bert

Organization/Company: Unknown (DSS)

Photographic Media: *No Data*

Survey Date: 11/15/2005

Dhr Library Report Number: Cost-Share

Project Staff/Notes:

Evaluation is being sought to place Whitehall Tavern on the history registers.

Project Bibliographic Information:

Name: ACS, Inc.
DHR CRM Report Number: 2007-1696
Record Type: Report
Bibliographic Notes: JC-263: Phase I Cultural Resources Survey of 5 Acres Near Anderson's Corner, James City County, Virginia September 2007

Name: The Ottery Group
DHR CRM Report Number: Cost-Share
Record Type: Report
Bibliographic Notes: JC-271: Historic Structures Survey of James City County, Virginia May 2008

Name: Cultural Resources, Inc.
DHR CRM Report Number: 1998-0052
Record Type: Report
Bibliographic Notes: JC-255: Phase I Cultural Resources Investigation of Approximately 93 Acres at the Proposed Fenwick Hills Tract James City County, Virginia. January 1998

Name: Bibliography
DHR CRM Report Number: 2006 Nomination
Record Type: Other
Bibliographic Notes: Bibliographical References

Chamberlin, Charles C.
1935The Vestry Book of Blisland (Blissland) Parish, New Kent and James City Counties, 1721-1786. Virginia State Library, Richmond, Virginia.

Cronin, David E.
[1862-1865] The Vest Mansion, Its Historical and Romantic Associations as Confederate and Union Headquarters in the American and Civil War. Transcript, Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

Gilmer, J. F.
1863Map of New Kent, James City, Charles City and York Counties. Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

1864Vicinity of Richmond and Part of the Peninsula. Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

James City County
1782-2006 Land and Personal Property Tax Lists, Deed Books, Will Books, Plats. Library of Virginia, Richmond, Virginia, and Williamsburg-James City County Courthouse, Williamsburg, Virginia.

Richmond Times-Dispatch
1896Rosters of the James City Cavalry and the Williamsburg Junior Guard. Richmond Times-Dispatch, June 1, 1896. Facsimile, James City County Historical Commission files, Williamsburg, Virginia.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, C - Distinctive Characteristics of Architecture/Construction

Phase II Intensive Survey Integrity Recommendations: Association, Design, Feeling, Location, Materials, Setting, Workmanship

Event Type: Survey:Phase II/Intensive

Project Review File Number: *No Data*

Investigator: Del Sordo, Stephen

Organization/Company: Unknown (DSS)

Photographic Media: *No Data*

Survey Date: 5/1/2001

Dhr Library Report Number: Cost-Share

Project Staff/Notes:

MAAR Associates, Inc 1999-2000 Cost Share project

Project Bibliographic Information:

Name: ACS, Inc.
DHR CRM Report Number: 2007-1696
Record Type: Report
Bibliographic Notes: JC-263: Phase I Cultural Resources Survey of 5 Acres Near Anderson's Corner, James City County, Virginia September 2007

Name: The Ottery Group
DHR CRM Report Number: Cost-Share
Record Type: Report
Bibliographic Notes: JC-271: Historic Structures Survey of James City County, Virginia May 2008

Name: Cultural Resources, Inc.
DHR CRM Report Number: 1998-0052
Record Type: Report
Bibliographic Notes: JC-255: Phase I Cultural Resources Investigation of Approximately 93 Acres at the Proposed Fenwick Hills Tract James City County, Virginia. January 1998

Name: Bibliography
DHR CRM Report Number: 2006 Nomination
Record Type: Other
Bibliographic Notes: Bibliographical References

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1935The Vestry Book of Blisland (Blissland) Parish, New Kent and James City Counties, 1721-1786. Virginia State Library, Richmond, Virginia.

Cronin, David E.
[1862-1865] The Vest Mansion, Its Historical and Romantic Associations as Confederate and Union Headquarters in the American and Civil War. Transcript, Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

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1863Map of New Kent, James City, Charles City and York Counties. Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg,

Virginia.

1864Vicinity of Richmond and Part of the Peninsula. Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

James City County
1782-2006 Land and Personal Property Tax Lists, Deed Books, Will Books, Plats. Library of Virginia, Richmond, Virginia, and Williamsburg-James City County Courthouse, Williamsburg, Virginia.

Richmond Times-Dispatch
1896Rosters of the James City Cavalry and the Williamsburg Junior Guard. Richmond Times-Dispatch, June 1, 1896. Facsimile, James City County Historical Commission files, Williamsburg, Virginia.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, C - Distinctive Characteristics of Architecture/Construction

Phase II Intensive Survey Integrity Recommendations: Association, Design, Feeling, Location, Materials, Setting, Workmanship

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*

Investigator: Del Sordo, Stephen

Organization/Company: Unknown (DSS)

Photographic Media: *No Data*

Survey Date: 2/1/2001

Dhr Library Report Number: Cost-Share

Project Staff/Notes:

MAAR Associates, Inc 1999-2000 Cost Share project

Project Bibliographic Information:

Name: ACS, Inc.
DHR CRM Report Number: 2007-1696
Record Type: Report
Bibliographic Notes: JC-263: Phase I Cultural Resources Survey of 5 Acres Near Anderson's Corner, James City County, Virginia September 2007

Name: The Ottery Group
DHR CRM Report Number: Cost-Share
Record Type: Report
Bibliographic Notes: JC-271: Historic Structures Survey of James City County, Virginia May 2008

Name: Cultural Resources, Inc.
DHR CRM Report Number: 1998-0052
Record Type: Report
Bibliographic Notes: JC-255: Phase I Cultural Resources Investigation of Approximately 93 Acres at the Proposed Fenwick Hills Tract James City County, Virginia. January 1998

Name: Bibliography
DHR CRM Report Number: 2006 Nomination
Record Type: Other
Bibliographic Notes: Bibliographical References

Chamberlin, Charles C.
1935The Vestry Book of Blisland (Blissland) Parish, New Kent and James City Counties, 1721-1786. Virginia State Library, Richmond, Virginia.

Cronin, David E.
[1862-1865] The Vest Mansion, Its Historical and Romantic Associations as Confederate and Union Headquarters in the American and Civil War. Transcript, Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

Gilmer, J. F.
1863Map of New Kent, James City, Charles City and York Counties. Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

1864Vicinity of Richmond and Part of the Peninsula. Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

James City County
1782-2006 Land and Personal Property Tax Lists, Deed Books, Will Books, Plats. Library of Virginia, Richmond, Virginia, and Williamsburg-James City County Courthouse, Williamsburg, Virginia.

Richmond Times-Dispatch
1896Rosters of the James City Cavalry and the Williamsburg Junior Guard. Richmond Times-Dispatch, June 1, 1896. Facsimile, James City County Historical Commission files, Williamsburg, Virginia.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, C - Distinctive Characteristics of Architecture/Construction

Phase II Intensive Survey Integrity Association, Design, Feeling, Location, Materials, Setting, Workmanship

Recommendations:

Event Type: Survey:Windshield

Project Review File Number: *No Data*
Investigator: Loth, Calder
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 1/1/1970
Dhr Library Report Number: Cost-Share
Project Staff/Notes:

VHLC update on HABS form; no details, photos only

Project Bibliographic Information:

Name: ACS, Inc.
DHR CRM Report Number: 2007-1696
Record Type: Report
Bibliographic Notes: JC-263: Phase I Cultural Resources Survey of 5 Acres Near Anderson's Corner, James City County, Virginia September 2007

Name: The Ottery Group
DHR CRM Report Number: Cost-Share
Record Type: Report
Bibliographic Notes: JC-271: Historic Structures Survey of James City County, Virginia
May 2008

Name: Cultural Resources, Inc.
DHR CRM Report Number: 1998-0052
Record Type: Report
Bibliographic Notes: JC-255: Phase I Cultural Resources Investigation of Approximately 93 Acres at the Proposed Fenwick Hills Tract James City County, Virginia. January 1998

Name: Bibliography
DHR CRM Report Number: 2006 Nomination
Record Type: Other
Bibliographic Notes: Bibliographical References

Chamberlin, Charles C.
1935The Vestry Book of Blisland (Blissland) Parish, New Kent and James City Counties, 1721-1786. Virginia State Library, Richmond, Virginia.

Cronin, David E.
[1862-1865] The Vest Mansion, Its Historical and Romantic Associations as Confederate and Union Headquarters in the American and Civil War. Transcript, Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

Gilmer, J. F.
1863Map of New Kent, James City, Charles City and York Counties. Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

1864Vicinity of Richmond and Part of the Peninsula. Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

James City County
1782-2006 Land and Personal Property Tax Lists, Deed Books, Will Books, Plats. Library of Virginia, Richmond, Virginia, and Williamsburg-James City County Courthouse, Williamsburg, Virginia.

Richmond Times-Dispatch
1896Rosters of the James City Cavalry and the Williamsburg Junior Guard. Richmond Times-Dispatch, June 1, 1896. Facsimile, James City County Historical Commission files, Williamsburg, Virginia.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, C - Distinctive Characteristics of Architecture/Construction

Phase II Intensive Survey Integrity Recommendations: Association, Design, Feeling, Location, Materials, Setting, Workmanship

Bibliographic Information

Bibliography:

No Data

Property Notes:

Name: Bert E. and Sharon Geddy Jr.
Address 1: 3200 Rochambeau Drive
City: Toano
State: Virginia

ZIP: 23168
Phone 1: 757-566-4708
Ext: 0000
Surveyor Notes: Owner at time of 2001 cost share surveys and 2005 PIF.
Owner Relationship: Occupant, Owner of property

Property Information

Property Names

Name Explanation	Name
Historic/Location	Vivian White House, 8615 Richmond Road

Property Addresses

Current - 8615 Richmond Road

County/Independent City(s): James City (County)
Incorporated Town(s): *No Data*
Zip Code(s): *No Data*
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): TOANO

Property Evaluation Status

Not Evaluated

Additional Property Information

Architecture Setting: *No Data*
Acreage: *No Data*
Site Description:

No Data

Surveyor Assessment:

None.

Surveyor Recommendation: *No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: 1900
Date Source: Site Visit
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Other
Form: *No Data*
Number of Stories: 1.0
Condition: Fair
Threats to Resource: None
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

Architecture Summary:

Exterior Components

Component	Component Type	Material	Material Treatment
Porch	1-story, 3-bay	Wood	Other
Roof	Gable	Asphalt	Shingle
Structural System and Exterior Treatment	Frame	*No Data*	Other

Windows	Sash, Double-Hung	*No Data*	1/1, Paired

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: *No Data*
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: *No Data*
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	House, 8421 Richmond Road
Historic	Hickory Neck Primary School
Historic/Current	Taylor Farm/Fairview Farm

Property Evaluation Status

Not Evaluated

Property Addresses

Alternate - Route 60
Current - 8491 Richmond Road

County/Independent City(s): James City (County)
Incorporated Town(s): *No Data*
Zip Code(s): *No Data*
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): TOANO

Additional Property Information

Architecture Setting: Rural
Acreage: *No Data*
Site Description:

2007: This agricultural complex is located on the west side of Richmond Road, Route 60, in the vicinity of Toano. The property lies north of Forge Road and south of Rochambeau Road. The property is surrounded by fields and there is English Ivy, Magonlia, and Walnut trees in the front yard.

2000: There are several older outbuildings associated with this property. The most significant is the sweet potato shed that is about 500 yards behind the house. This was not directly viewed as permission was denied by the owner.

2007: There are four sheds, two silos, and a sweet potato house that are associated with the property. There is a tool shed located southwest of the dwelling. Directly behind the tool shed is another shed. Northwest of the dwelling is a tractor shed and adjacent to that is a large open shed. West of the dwelling is a sweet potato house and the silos.

Surveyor Assessment:

2000: This agricultural complex represents the efforts on the part of local farmers at the beginning of the twentieth century to maintain housing that was large enough to support their families.

2007: According to a local source, the Hickory Neck Primary School was once located in one of the buildings on the property. Currently, the property is used for farming.

Surveyor Recommendation: *No Data*

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: Ca 1900
Date Source: Site Visit
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic, Education, 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: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

2000 with corrections, 2007: This large four square, frame dwelling is two stories tall with a hipped roof. It sits on a raised brick foundation. There is a porch across the front which wraps around the left side. It is supported by Tuscan columns. There are faux palladian windows on the first floor. There is a dormer on each face of the asphalt shingle roof. The central entrance has side lights and a three-part transom. There is a two-story rear wing that contains the original kitchen equipment from the construction of the house.

2007: This is a frame, two-story, central passage dwelling. It is clad with aluminum siding. There is a hipped roof with an asphalt shingle covering. There are three, hipped roof dormers located on the front and sides of the house. Each dormer has a pair of windows. The windows are eight-over-eight double-hung sash and they do not have shutters. The front door has side-lights and a transom. The front porch wraps around the left side of the house. The porch has a shed roof and is supported by Tuscan columns. There are three interior chimneys and there is a two-story rear addition, which has a gable roof.

Exterior Components

Component	Component Type	Material	Material Treatment
Roof	Hipped	Asphalt	Shingle
Foundation	Solid/Continuous	Brick	Bond, Stretcher
Structural System and Exterior Treatment	Frame	Aluminum	Siding, Aluminum
Chimneys	Interior	Brick	Cap, Corbeled
Windows	Sash, Double-Hung	Wood	8/8
Porch	1-story, full-width	Wood	Other

Secondary Resource Information

Secondary Resource #1

Resource Category: Agriculture/Subsistence
Resource Type: Agricultural Outbuildings
Date of Construction: 1900Ca
Date Source: Site Visit
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic, Education, Subsistence/Agriculture
Architectural Style: Other
Form: *No Data*
Condition: Fair
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

2007: Small, frame, one-story sweet potato house with a front facing gable roof. There is one door located on the front of the building.

Number of Stories: 1

Secondary Resource #2

Resource Category: DSS Legacy
Resource Type: Shed
Date of Construction: 1900Ca
Date Source: Site Visit
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic, Education, Subsistence/Agriculture
Architectural Style: Other

Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:
No Data
Architectural Description:
2007: There is a shed roof which is supported by wooden posts. It appears that this building is used as a workshop.
Number of Stories: 1

Secondary Resource #3

Resource Category: Agriculture/Subsistence
Resource Type: Silo
Date of Construction: 1900Ca
Date Source: Site Visit
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic, Education, Subsistence/Agriculture
Architectural Style: Other
Form: *No Data*
Condition: Fair
Threats to Resource: Neglect
Cultural Affiliations: *No Data*
Cultural Affiliation Details:
No Data
Architectural Description:
2007: There are two relatively short silos clad in T-111 siding. They are situated side by side and each is capped by a standing-seam aluminum roof.

Secondary Resource #4

Resource Category: DSS Legacy
Resource Type: Shed
Date of Construction: 1900Ca
Date Source: Site Visit
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic, Education, Subsistence/Agriculture
Architectural Style: Other
Form: *No Data*
Condition: Poor
Threats to Resource: Deterioration, Neglect
Cultural Affiliations: *No Data*
Cultural Affiliation Details:
No Data
Architectural Description:
2007: There are two large, frame, one-story sheds. They each have a side gable roof. The windows and doors are missing. There are three interior chimneys piercing the roof of each building.
Number of Stories: 1

Secondary Resource #5

Resource Category: DSS Legacy
Resource Type: Shed
Date of Construction: Ca
Date Source: *No Data*
Historic Time Period: Reconstruction and Growth (1866 - 1916)

Historic Context(s): Domestic, Education, Subsistence/Agriculture
Architectural Style: *No Data*
Form: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Cultural Affiliations: *No Data*
Cultural Affiliation Details:
No Data
Architectural Description:
No Data
Number of Stories: *No Data*

Secondary Resource #6

Resource Category: Agriculture/Subsistence
Resource Type: Silo
Date of Construction: Ca
Date Source: *No Data*
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic, Education, Subsistence/Agriculture
Architectural Style: *No Data*
Form: *No Data*
Condition: *No Data*
Threats to Resource: *No Data*
Cultural Affiliations: *No Data*
Cultural Affiliation Details:
No Data
Architectural Description:
No Data

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: Moyer, Erin
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 2/16/2007
Dhr Library Report Number: 2007-1696
Project Staff/Notes:
Reconnaissance Survey completed by the Ottery Group, Inc.
Project Bibliographic Information:
Name: ACS, Inc.
DHR CRM Report Number: 2007-1696
Record Type: Report
Bibliographic Notes: JC-263: Phase I Cultural Resources Survey of 5 Acres Near Anderson's Corner, James City County, Virginia September 2007

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Del Sordo, Stephen
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 1/1/1999
Dhr Library Report Number: 2007-1696
Project Staff/Notes:

VDHR/James City County 10/99-12/00; MAAR Associates, Inc., P.O. Box 655, Newark, DE (302)996-0713; Stephen Del Sordo, Surveyor

Project Bibliographic Information:

Name: ACS, Inc.
DHR CRM Report Number: 2007-1696
Record Type: Report
Bibliographic Notes: JC-263: Phase I Cultural Resources Survey of 5 Acres Near Anderson's Corner, James City County, Virginia September 2007

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	House, 5298 Riverview Road

Property Addresses

Current - 5298 Riverview Road

County/Independent City(s): James City (County)
Incorporated Town(s): *No Data*
Zip Code(s): *No Data*
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): GRESSITT

Property Evaluation Status

Not Evaluated

Additional Property Information

Architecture Setting: Rural
Acreage: *No Data*
Site Description:

2007: This resource is located on the north side of Riverview Road, west of York River Park Road, and east of Croaker Road. The Kiskiack Golf Club is located nearby.

2007: None noted.

Surveyor Assessment:

1999 with corrections, 2007: This large farmhouse is owned by Arthur Richardson, age 84. He has lived in the house for 80 years. There was a fire which burned a section of the home, however that section was able to be rebuilt on the same foundation. This is one of the oldest farmhouses in James City County.

Surveyor Recommendation: *No Data*

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: Ca 1912
Date Source: Site Visit
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Architecture/Community Planning
Other ID Number: *No Data*
Architectural Style: Other
Form: *No Data*
Number of Stories: 2.0
Condition: Good
Interior Plan: Side Passage, Double Pile
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

1999 with corrections, 2007: This is a frame, two-story, four-bay, side passage dwelling on a brick pier foundation. There is a front gable roof with a two-story addition on the east elevation. The gable end has a box cornice with no returns and has an asphalt shingle covering. The windows are one-over-one double-hung sash and they have shutters. There is a full front porch which has a standing-seam tin hipped roof, supported by square posts. The house has two interior chimneys. There is a open deck on the rear of the house.

Exterior Components

Component	Component Type	Material	Material Treatment
Chimneys	Interior	Brick	*No Data*
Windows	Sash, Double-Hung	Wood	1/1
Roof	Gable, Front	Asphalt	Shingle
Structural System and Exterior Treatment	Frame	Wood	*No Data*
Foundation	Piers	Brick	*No Data*
Porch	1-story, full-width	*No Data*	Post, Square

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: Moyer, Erin
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 1/30/2007
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Completion of Architectural Documentation by the Ottery Group, Inc.

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 1999-2000 Cost Share
Investigator: VDHR
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: *No Data*
Dhr Library Report Number: *No Data*
Project Staff/Notes:

VDHR/James City County 10/99-12/00; MAAR Associates, Inc., P.O. Box 655, Newark, DE (302)996-0713; Stephen Del Sordo, Surveyor

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Property Information

Property Names

Name Explanation	Name
Current Name	Victorian Acres Farm
Function/Location	House, 8841 Richmond Road

Property Evaluation Status

Not Evaluated

Property Addresses

Current - 8841 Richmond Road Route 60

County/Independent City(s): James City (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23168
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): TOANO

Additional Property Information

Architecture Setting: Rural
Acreage: 10.17

Site Description:

2007: This resource is located on the south side of Richmond Road, west of Merry Oaks Lane.

April 2019: Circa~ re-surveyed the site during the course of the Phase I survey and noted the house. The parcel containing the house does include several outbuildings and since the original surveys the owner of the house has purchased the adjoining parcel. Thus, Circa~ also identified two garages, two barns, one pole barn, one shed, one swimming pool, one pool house, one well, one barbeque pit, and one pen. This site is situated on the southern side of Richmond Road on an approximately 10.17-acre parcel close to Richmond Road surrounded by mowed lawn with scattered mature trees and plantings. Facing north, the building is set on a fairly-level grade with a single-lane, paved driveway leading from Richmond Road to the west of the house. A slate walkway leads from the house to the driveway. A series of interconnecting slate walkways are visible in the backyard with a painted-black metal lamppost to the south of the house. A second single-lane gravel driveway leads from Richmond Road to the west of the house into the property where it ends in a circle. There is a wood basketball hoop at the end of the driveway adjacent to the garage and a wooden pole with a mercury vapor light attached to the top is situated at the entrance of the driveway near Richmond Road. Overhead utility lines run parallel to Richmond Road. A painted-white wooden picket fence gate is situated at the entrance of the driveway and a three-rail, painted-white fence runs parallel to Richmond Road. There is also a wooden privacy fence that runs along the western edge of the property. The fence transitions to a four-rail, painted-white wood fence to the rear of the property. A wooden sign attached to one of the barns notes that the property is known as Victorian Acres Farm.

Surveyor Assessment:

1999 with corrections, 2007: This is a very nicely maintained Colonial Revival style dwelling. It has original windows and large trees in the yard. This resource is probably a good candidate for a more intensive recordation.

April 2019: Site 047-5162, the circa 1920 house, appears to be occupied and in fair condition. The building does not possess any unique characteristics that would separate it from other early-20th century suburban housing examples in James City County. The design and workmanship of the building is undistinguished, and the construction materials are common (Criterion C). The house is a Colonial Revival style, which is common throughout James City County and Virginia. A preliminary review of historic records including various maps and historical contexts for James City County does not indicate significant contributions with events (Criterion A) or persons (Criterion B) associated with the property. Further, the house has undergone considerable renovations with six additions constructed on the elevations. The property has also been consolidated with the adjacent parcel that contains several outbuildings constructed in the 1980s. These buildings are now associated with this resource and alter the primary resource's setting, feeling, and association, particularly are they were constructed some 60 years after its construction. Considering this, the building does not appear to be potentially eligible for the National Register of Historic Places under Criteria A, B, or C. Thus, Circa~ recommends no further architectural survey work on this resource and no further architectural survey for the project.

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
Historic District Status: *No Data*
Date of Construction: Ca 1920
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Architecture/Community Planning, Domestic
Other ID Number: *No Data*
Architectural Style: Colonial Revival
Form: *No Data*
Number of Stories: 2.0
Condition: Good
Interior Plan: Side Passage, Double Pile
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

1999 with corrections, 2007: This is a frame, two-story, three-bay, side passage dwelling on a brick foundation. There is a gable front roof with a box cornice and an asphalt shingle covering. There are two, one-story additions located on the left and the right of the house. The addition on the left side has a side gabled roof and the addition on the right side has a flat roof. The windows are two-over-two double-hung sash and they have shutters. The windows on the front of the additions are paired. There is a pedimented front entrance porch, which has a a gable roof and is supported by two round columns. The underside of the porch roof is curved. The front door has side lights. There is an enclosed porch on the rear. There is one exterior brick chimney

April 2019: This circa 1920, two-and-a-half-story, three-bay, front-gable, Colonial Revival style, wood-frame house is clad in painted-white composition siding and rests on a Flemish-bond brick foundation with two exterior-end Flemish-bond brick chimneys with corbelled caps and metal vent caps. The roof is covered in asphalt shingles with overhanging eaves and cornice returns. There is a one-story, one-bay, poured-concrete and Flemish-bond brick porch under a front-gable with cornice returns supported by tapered, painted-white wood columns. Two Flemish-bond brick steps lead from the porch to the walkway. Single and paired, sash, double-hung, 2/2, wood-frame windows flanked by painted-black wood shutters are typical on the façade and elevations with sash, double-hung, 1/1, wood-frame windows flanked by painted-black shutters typical in the gable ends. The entrance on the façade is a single-leaf, wood-panel door with sidelights covered by a metal storm door.

There is a one-story, one-bay, shed roof, wood-frame addition attached to the side (east) elevation clad in painted-white composition siding and resting on a Flemish-bond brick foundation. The roof is covered in standing seam metal. Paired, sash, double-hung, 2/2, wood-frame windows flanked by painted-black wood shutters are typical on the addition. No entrance is visible on the addition.

There is a one-story, one-bay, shed roof, wood-frame addition attached to the east elevation of the addition clad in painted-white composition siding and resting on a raised Flemish-bond brick foundation. The roof is covered in standing seam metal with metal gutters and downspouts. Paired, sash, double-hung, 1/1, wood-frame windows flanked by painted-black wood shutters are typical on the addition. No entrance is visible on the addition.

There is a one-story, three-bay, shed roof, wood-frame addition attached to the side (east) elevation and the south elevations of the additions clad in painted-white composition siding and resting on a Flemish-bond brick foundation. The roof is covered in asphalt shingles with a boxed cornice. Single and paired, fixed, two-light, wood-frame windows are typical on the addition. No entrance is visible on the addition.

There is a one-story, one-bay, flat roof, wood-frame addition attached to the side (west) elevation clad in painted-white composition siding and resting on a Flemish-bond brick foundation. The roof is covered in asphalt shingles with overhanging eaves. Sash, double-hung, 2/2, wood-frame windows flanked by painted-black wood shutters are typical on the addition. No entrance is visible on the addition.

There is a one-story, three-bay, hipped roof, wood-frame addition attached to the rear (south) elevation clad in painted-white composition siding and resting on a Flemish-bond brick foundation. The roof is covered in asphalt shingles with a boxed cornice. There is a two-bay, wood deck with a wood balustrade. Three wood steps flanked by wood railings lead from the deck to the backyard. Sash, double-hung, 1/1, wood-frame windows and fixed, one-light, wood-frame windows are typical on the addition. The entrance on the addition is a single-leaf, wood-panel door with a center light.

There is a one-story, one-bay, front-gable, wood-frame addition attached to the south elevation of the addition clad in painted-white composition siding and resting partially below grade on a concrete-block foundation. The roof is covered in asphalt shingles. No windows are visible on the addition. The entrance on the addition is a single-leaf, vertical wood plank door.

Exterior Components

Component	Component Type	Material	Material Treatment
Windows	Sash, Double-Hung	Wood	2/2
Roof	Gable, Front	Asphalt	Shingle
Foundation	Solid/Continuous	Brick	Flemish Bond
Structural System and Exterior Treatment	Wood Frame	Composite	Siding
Porch	Stoop/Deck	Wood	Posts
Windows	Fixed	Wood	*No Data*
Chimneys	Exterior End	Brick	Flemish Bond

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Garage
Date of Construction: 1920Ca
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the west of the house, there is a circa 1920, one-story, two-bay, front-gable, wood-frame garage clad in painted-white composition siding and resting on a concrete-block foundation (noted as Garage 1 on the site plan). The roof is covered in asphalt shingles. No windows are visible on the façade; fixed, one-light, wood-frame windows are typical on the elevations. The entrance on the façade consists of two roll-up metal garage doors. There is a single-leaf wood door on the side (east) elevation.

There is a one-story, one-bay, side-gable, wood-frame addition attached to the rear (south) elevation clad in painted-white composition siding and resting on a concrete-block foundation with one interior-end concrete block chimney. The roof is covered in asphalt shingles with metal gutters and downspouts. Fixed, one-light, wood-frame windows are typical on the addition. The entrance on the addition is a double-leaf, wood-frame sliding glass door flanked by painted-black wood shutters.

Number of Stories: 1
Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	Concrete	Block
Structural System and Exterior Treatment	Wood Frame	Composite	Siding
Windows	Fixed	Wood	*No Data*
Roof	Front Gable	Asphalt	*No Data*
Roof	Side Gable	Asphalt	*No Data*

Secondary Resource #2

Resource Category: Domestic
Resource Type: Garage
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, one-story, three-bay, side-gable, wood-frame garage clad in vertical wood siding and resting on a poured-concrete slab-on-grade foundation (noted as Garage 2 on the site plan. The roof is covered in standing seam metal with overhanging eaves and one cupola with a pyramidal roof and a metal weather vane at the roof peak. No windows are visible on the garage. The entrance on the façade consists of three roll-up metal garage doors.

Number of Stories: 1
Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Slab	Concrete	Uncoursed
Structural System and Exterior Treatment	Wood Frame	Wood	Siding
Roof	Side Gable	Metal	*No Data*

Secondary Resource #3

Resource Category: Agriculture/Subsistence
Resource Type: Barn
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, one-story, seven-bay, side-gable, wood-frame barn clad in vertical wood siding and resting on a poured-concrete slab-on-grade foundation (noted as Barn 1 on the site plan). The roof is covered in standing seam metal with two cupolas with pyramidal roofs and metal weather vanes along the center roof peak. There is a one-story, full-width, poured-concrete porch under a shed roof supported by square metal posts. Fixed, two-light, wood-frame windows are typical on the façade and elevations and one bow window on the façade that consists of three fixed, one-light, wood-frame windows. The entrance on the façade is a single-leaf, wood-panel door with lights. There are also four single-leaf, wood-panel Dutch doors on the façade.

There is a one-story, one-bay, side-gable, hyphen that connects Barn 1 to Barn 2. The roof is covered in standing seam metal supported by metal poles resting on a poured-concrete slab-on-grade foundation. The hyphen is open on all sides.

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Slab	Concrete	Uncoursed
Structural System and Exterior Treatment	Wood Frame	Wood	Vertical Board
Windows	Fixed	Wood	*No Data*
Roof	Pyramidal	Metal	*No Data*

Secondary Resource #4

Resource Category: Agriculture/Subsistence
Resource Type: Barn
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, one-story, two-bay, front-gable, wood-frame barn clad in vertical wood siding and resting on a poured-concrete slab-on-grade foundation (noted as Barn 2 on the site plan). The roof is covered in standing seam metal with overhanging eaves and metal gutters and downspouts. Five metal cupolas run along the center peak of the roof with pyramidal roofs and metal weather vanes attached to the top. No windows are visible on the faced; fixed, one-light, wood-frame windows are typical on the elevations. The entrance on the façade is a double-leaf, sliding, vertical wood plank door. There is a single-leaf, wood-panel door with lights to the east of the main entrance. There are two sets of double-leaf, sliding, vertical wood plank doors on the side (east) elevation.

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Slab	Concrete	Uncoursed
Structural System and Exterior Treatment	Wood Frame	Wood	Vertical Board
Windows	Fixed	Wood	*No Data*
Roof	Front Gable	Metal	*No Data*

Secondary Resource #5

Resource Category: Agriculture/Subsistence
Resource Type: Pole Barn
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, one-story, two-bay, salt-box, wood-frame pole barn clad in vertical wood siding and resting on a raised, concrete-block foundation. The roof is covered in standing seam metal. No windows are visible on the pole barn. The façade is open.

Secondary Resource #6

Resource Category: Domestic
Resource Type: Shed
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, one-story, one-bay, front-gable, wood-frame shed clad in painted-white composition siding and resting on a poured-concrete slab-on-grade foundation. The roof is covered in standing seam metal with overhanging eaves and exposed rafter tails. No windows are visible on the shed. The entrance on the façade is not visible.

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Slab	Concrete	Uncoursed
Structural System and Exterior Treatment	Wood Frame	Composite	Siding
Roof	Front Gable	Asphalt	*No Data*

Secondary Resource #7

Resource Category: Social/Recreational
Resource Type: Pool/Swimming Pool
Date of Construction: 1980Ca
Date Source: Site Visit

Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, in-ground, poured-concrete, rectangular, swimming pool surrounded by a poured-concrete apron. The pool was covered with a green vinyl cover at the time of the survey. The top of a metal ladder was visible on the south side of the pool and there is a metal and plastic ladder on the south side.

Secondary Resource #8

Resource Category: Social/Recreational
Resource Type: Pool House
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, one-story, four-bay, side-gable, wood-frame pool house clad in painted-white composition siding and resting on a concrete-block foundation. The roof is covered in asphalt shingles. There is a full-width poured-concrete stoop under a roof overhang. No windows are visible on the pool house. The entrance on the façade consists of three single-leaf, wood-panel doors and one double-leaf, wood-panel door.

Number of Stories: 1
Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	Concrete	Block
Structural System and Exterior Treatment	Wood Frame	Composite	Siding
Roof	Side Gable	Asphalt	*No Data*

Secondary Resource #9

Resource Category: Domestic
Resource Type: Well
Date of Construction: 1920Ca
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the north of the house, there is a circa 1920, rectangular, poured-concrete well resting at grade level. The top is covered with plywood and there is a single concrete block resting on top of the plywood to keep it in place.

Secondary Resource #10

Resource Category: Social/Recreational
Resource Type: Barbecue Pit
Date of Construction: 1920Ca
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1920, rectangular, Flemish-bond brick barbeque pit. The pit is tiered with a metal grate on the west side for cooking and a Flemish-bond brick chimney with a corbelled cap.

Secondary Resource #11

Resource Category: Agriculture/Subsistence
Resource Type: Pen
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, square, open pen enclosed by half-story concrete-block walls. The pen is open at the top. No windows are visible on the pen. No entrance to the pen is visible.

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: 2019-3392
Investigator: Dawn Muir
Organization/Company: Circa~ Cultural Resource Management, LLC

Photographic Media: Digital

Survey Date: 3/1/2019

Dhr Library Report Number: JC-406

Project Staff/Notes:

March 2019: In February of 2019, Circa~ Cultural Resource Management, LLC (Circa~) conducted a Phase I cultural resources survey of the Lifeway Church Tract in James City County, Virginia. The project area, which encompasses approximately 10 acres, is bordered by Richmond Road to the north, rural residential lands to the east and west, and an unnamed tributary to Edwards Mill Swamp to the south. The Area of Potential Effect (APE) for archaeological and architectural resources is the 10-acre developable project area.

At Circa~, Carol D. Tyrer served as Project Manager and Principal Investigator for the project and was assisted in the field by Matt Carr, Diana Johnson, Michael Foley, Shayne Spears, Jake Stanley, Pam Wood, and McKenzie Kyger, Field Archaeologists. Dawn M. Muir served as the Architectural Historian for the project and completed the architectural survey and historic context. Carol D. Tyrer and Dawn M. Muir prepared the report. Skye Hughes and Dawn M. Muir entered the information into the VDHR V-CRIS system and Carol D, Tyrer photographed the resource. The successful completion of the Phase I survey for the proposed development was made possible by the contribution of many individuals. In particular, Tim Davis with Vanasse Hangen Brustlin, INc. (VHB) ensured that project information and maps were always available for the study.

Project Bibliographic Information:

Circa~
2019 Phase I Cultural Resources Survey of Lifepointe Christian Church Tract, James City County, Virginia.
DHR Report No. JC-406
DHR Project No. 2019-3392

Advisory Council on Historic Preservation
1986"36 CFR Part 800 – Protection of Historic Properties (incorporating amendments effective August 5, 2004)" Regulations of the Advisory Council on Historic Preservation Governing the Section 106 Review Process. Available online at http://www.achp.gov

Anonymous
1862Map of Southeast Virginia. Colonial Williamsburg Foundation, Williamsburg, Virginia.

Berthier, Alexander
1781Untitled map of York and Gloucester. Colonial Williamsburg Foundation, Williamsburg, Virginia.

Billings, Warren M., John E. Selby, and Thad W. Tate
1986Colonial Virginia: A History. KTO Press, White Plains, New York.

Blanton, Dennis B., Wayne Walker, and Charles M. Downing
1997Preserving Our Hidden Heritage: An Archaeological Assessment of James City County, Virginia. Available at the Virginia Department of Historic Resources archives, Richmond, Virginia.

Boye, Herman
1825A map of the state of Virginia, constructed in conformity to law from the late surveys authorized by the legislature and other original and authentic documents. Available online at http://www.loc.gov/maps/collections

Carson, Cary, Norman F. Barka, William M. Kelso, Garry Wheeler Stone, and Dell Upton
1982 "Impermanent Architecture in the Southern American Colonies," Winterthur Portfolio 16: 136-196.

Chapman, Jefferson, and Andrea Brewer Shea
1981"The Archaeobotanical Record: Early Archaic Period to Contact in the Lower Little Tennessee River Valley." Tennessee Anthropologist VI (1).

Colles, Christopher
1789From Annapolis to Williamsburg. Virginia Department of Historic Resources, Richmond, Virginia.

Colonial Williamsburg Foundation.
1985Resource Protection Process for James City, York County, Williamsburg, and Poquoson, Virginia. Available at the Colonial Williamsburg Foundation, Williamsburg, Virginia.

Craven Wesley F.
1957The Southern Colonies in the Seventeenth Century 1607-1689. Louisiana State University Press, Baton Rouge, Louisiana.

Dent, Richard J., Jr
1995Chesapeake Prehistory: Old Traditions, New Directions. Plenum Press, New York, New York.

Department of the Interior, National Park Service
1983Archaeology and Historic Preservation; Secretary of the Interior's Standards and Guidelines. Federal Register 48:44716-44762. Available online at http://www.nps.gov

Fry, Joshua and Peter Jefferson
1751A map of the most inhabited part of Virginia containing the whole province of Maryland with part of Pensilvania, New Jersey and North Carolina. Available online at http://www.loc.gov/maps/collections

Gardner, William M.
1974"The Flint Run Paleoindian Complex: A Preliminary Report 1971-1973 Seasons." Occasional Publication No. 1, Archeology Laboratory.

1977 "Flint Run Paleoindian Complex, its Implication for Eastern North American Prehistory." In "Amerinds and Their Paleoenvironment in Northeastern North America." edited by W. S. Mewman and B. Salwen, Annals of the New York Academy of Sciences.

1981 "Paleoindian Settlement Pattern and Site Distribution in the Middle Atlantic." Anthropological Careers, edited by R. H. Landmine, L. A.

Bennett, A. Brooks, and P. P. Chock.

1989 "An Examination of Cultural Change in the Late Pleistocene and Early Holocene (circa 9200 to 6800 B. C.)." In "Paleoindian Research in Virginia: A Synthesis." edited by J. Mark Wittkofski and Theodore R. Reinhart, Special Publication No. 19 of the Archeological Society of Virginia.

Gilmer, J.F.
1863Map of New Kent, James City, Charles City and York Counties. Colonial Williamsburg Foundation, Williamsburg, Virginia.

1864Vicinity of Richmond and Part of the Peninsula. Virginia Department of Historic Resources, Richmond, Virginia.

1867Vicinity of Richmond and Part of the Peninsula. Virginia Department of Historic Resources, Richmond, Virginia.

Hare, I. Knowles
1862Hare's Map of the Vicinity of Richmond and the Peninsula Campaign. Colonial Williamsburg Foundation, Williamsburg, Virginia.

Hening, William W., ed.
1809-1823 The Statutes At Large: Being a Collection of All the Laws of Virginia. 13 vols. University Press of Virginia, Charlottesville, Virginia.

Henry, John
1770Virginia. Available online at http://www.loc.gov/maps/collections

Herrmann, Augustine
1670Virginia and Maryland in 1670. Available online at
http://www.loc.gov/maps/collections

Hodges, Mary Ellen N., and Charles T. Hodges, editors
1994Paspahegh Archaeology: Data Recovery Investigations of Site 44JC308 at The Governor's Land at Two Rivers, James City County, Virginia. Available at the Virginia Department of Historic Resources archives.

Humphreys, A. A.
1862Map of Williamsburg to White House. National Archives, College Park, Maryland

James City County
1768-1769 Tax Lists. Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

James City County Government
1984Where America Began: James City County 1634-1984. James City County Board of Supervisors, Williamsburg, Virginia.

Jefferson, Thomas
1787A Map of the Country between Albemarle Sound and Lake Erie. Available online at http://www.loc.gov/maps/collections

Kingsbury, Susan M.
1906-1935 Records of the Virginia Company of London. 4 vols. Available at the Library of Congress, Washington, D.C.

Long, E. B.
1987The Civil War Day By Day, An Almanac. Da Capo Press, Inc., New York, New York.

Madison, James
1807Map of Virginia. Virginia Department of Historic Resources, Richmond, Virginia.

McAvoy, Joseph M., and Lynn D. McAvoy
1997 "Archaeological Investigations of Site 44SX202, Cactus Hill, Sussex County, Virginia." Research Report Series No. 8, Virginia Department of Historic Resources.

McCary, Ben C.
1951 "A Workshop of Early Man in Dinwiddie County, Virginia." American Antiquity 17(1).

1975"The Williamson Paleoindian Site, Dinwiddie County, Virginia." The Chesopiean 13(3-4).

1983"The Paleoindian in Virginia." Archeological Society of Virginia Quarterly Bulletin 38(1).

McCartney, Martha.
1985"Seventeenth Century Apartheid: The Suppression and Containment of Indians in Colonial Virginia." Journal of Middle Atlantic Archaeology 1:51-80.

McIlwaine, H. R., ed.
1924Minutes of Council and General Court of Colonial Virginia. The Library Board, Richmond, Virginia. Reprinted 1934, 1979.

Mouer, Lloyd Daniel
1990"The Archaic to Woodland Transition" in The Piedmont and Coastal Plain Sections of the James River Valley, Virginia. Ph.D. dissertation, University of Pittsburgh.

National Park Service
1990National Register of Historic Places Bulletin 15: How to Apply the National Register of Historic Places Criteria for Evaluation. Available online at http://www.nps.gov

Natural Resources Conservation Service
2018Online soils data. Available online at http://soils.usda.gov/.

Nugent, Nell Marion (ed.)
1969-1979 Cavaliers and Pioneers: Abstracts of Virginia Land Patents and Grants. 3 vols. Genealogical Publishing Company, Baltimore, Maryland.

Reps, John W.
1972Tidewater Towns: City Planning in Colonial Virginia and Maryland. University Press of Virginia, Charlottesville, Virginia.

Rice, Howard C. and Ann S. K. Brown
1972The American Campaigns of Rochambeau's Army. 2 vols. Princeton University Press, Princeton, New Jersey.

Robinson, W. Stitt.
1957Mother Earth – Land Grants in Virginia 1607 – 1699. Virginia 350th Anniversary Celebration Committee, Williamsburg, Virginia.

Swift, J. G.
1818Untitled map of Yorktown and the Peninsula. Virginia Department of Historic Resources, Richmond, Virginia.

Turner, E. Randolph, III
1989"Paleoindian Settlement Patterns and Population Distribution in Virginia. In Paleoindian Research in Virginia: A Synthesis." edited by J. Mark Wittkofski and Theodore R. Reinhart, Special Publication No. 19 of the Archeological Society of Virginia.

United States Geological Survey
1917Toano quadrangle sheet. Available online at http://historicalmaps.arcgis.com/usgs/

1953Toano quadrangle sheet. Available online at http://historicalmaps.arcgis.com/usgs/

1965Toano quadrangle sheet. Available online at http://historicalmaps.arcgis.com/usgs/

1972Toano quadrangle sheet. Available online at http://historicalmaps.arcgis.com/usgs/

1986Toano quadrangle sheet. Available online at http://historicalmaps.arcgis.com/usgs/

United States War Department (U.S.W.D.)
1891The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies. Prepared by Lt. Col. Robert N. Scott and compiled by George B. Davies, Leslie J. Perry and Joseph W. Kirkley. Series I, Vol. XVIII. U. S. Government Printing Office, Washington, D. C.

Virginia Department of Historic Resources
2017Guidelines for Conducting Historic Resources Survey in Virginia. Available at the Virginia Department of Historic Resources, Richmond, Virginia.

Yarnell, Richard A.
1976"Early Plant Husbandry in Eastern North America." In Cultural Change and Continuity: Essays in Honor of James Bennett Griffin, edited by Charles E. Cleland.

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Erin Moyer
Organization/Company: The Ottery Group
Photographic Media: *No Data*
Survey Date: 1/8/2007
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Completion of Architectural Documentation by the Ottery Group, Inc.

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Stephen Del Sordo
Organization/Company: DHR
Photographic Media: Film
Survey Date: 1/1/2000
Dhr Library Report Number: *No Data*
Project Staff/Notes:

VDHR/James City County 10/99-12/00; MAAR Associates, Inc., P.O. Box 655, Newark, DE (302)996-0713; Stephen Del Sordo, Surveyor

1999-2000 Cost Share survey project - initial survey of the property

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Property Information

Property Names

Name Explanation	Name
Function/Location	House, 182 Old Stage Road

Property Addresses

Current - 182 Old Stage Road

County/Independent City(s): James City (County)
Incorporated Town(s): *No Data*
Zip Code(s): *No Data*
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): TOANO

Property Evaluation Status

Not Evaluated

Additional Property Information

Architecture Setting: Rural
Acreage: *No Data*
Site Description:

2007: This resource is located on the northeast side of Old Stage Road, south of Meadowlake Drive, north of Richmond Road, and west of Barhamsville Road.

2007: None noted.

Surveyor Assessment:

1999 with corrections, 2007: This small house is typical of rural residences typically intended for lower or moderate income families in James City County.

Surveyor Recommendation: *No Data*

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: Ca 1920
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Architecture/Community Planning
Other ID Number: *No Data*
Architectural Style: Vernacular
Form: *No Data*
Number of Stories: 1.0
Condition: Good
Interior Plan: Central Passage, Single Pile
Threats to Resource: Neglect, None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

1999 with corrections, 2007: This is a frame, one-story, three-bay, central passage dwelling on a brick foundation. There is a front gable roof with a wing. The roof has a box cornice and a standing-seam tin covering. The windows are one-over-one double-hung sash and they have shutters. There is a porch in the ell which has a hipped roof and is supported by square base spindle posts. The porch is screened and has a chair railing. No chimneys observed.

Exterior Components

Component	Component Type	Material	Material Treatment
Windows	Sash, Double-Hung	Wood	1/1
Roof	Gable, Front	Metal	Standing Seam
Structural System and Exterior Treatment	Frame	Wood	*No Data*
No Data	*No Data*	Brick	*No Data*
Porch	1-story	*No Data*	Screened
Chimneys	None	*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: Moyer, Erin
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 1/29/2007
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Completion of Architectural Documentation by the Ottery Group, Inc.

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 1999-2000 Cost Share
Investigator: VDHR
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: *No Data*
Dhr Library Report Number: *No Data*
Project Staff/Notes:

VDHR/James City County 10/99-12/00; MAAR Associates, Inc., P.O. Box 655, Newark, DE (302)996-0713; Stephen Del Sordo, Surveyor

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Snapshot

Date Generated: October 06, 2022

Site Name: Martin's Place
Site Classification: Terrestrial, open air
Year(s): No Data
Site Type(s): Dwelling, single
Other DHR ID: No Data
Temporary Designation: No Data

Site Evaluation Status
Not Evaluated

Locational Information

USGS Quad: TOANO
County/Independent City: James City (County)
Physiographic Province: No Data
Elevation: No Data
Aspect: No Data
Drainage: No Data
Slope: No Data
Acreage: No Data
Landform: Other
Ownership Status: No Data
Government Entity Name: No Data

Site Components

Component 1

Category: Domestic
Site Type: Dwelling, single
Cultural Affiliation: Indeterminate
Cultural Affiliation Details: No Data
DHR Time Period: Historic/Unknown
Start Year: No Data
End Year: No Data
Comments: No Data

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/Reconnaissance

Project Staff/Notes:
VHLC file no. 47-45

Project Review File Number:	No Data
Sponsoring Organization:	No Data
Organization/Company:	Unknown (DSS)
Investigator:	VDHR-Keith Egloff
Survey Date:	12/5/1977

Survey Description:
No Data

Threats to Resource:	No Data
Site Conditions:	Site Condition Unknown
Survey Strategies:	Informant
Specimens Collected:	No
Specimens Observed, Not Collected:	No

Artifacts Summary and Diagnostics:
No Data

Summary of Specimens Observed, Not Collected:
No Data

Current Curation Repository:	No Data
Permanent Curation Repository:	No Data
Field Notes:	No
Field Notes Repository:	No Data
Photographic Media:	No Data
Survey Reports:	No

Survey Report Information:
W&M Quarterly, 2nd Series, Vol. 12. #4

Survey Report Repository:	No Data
DHR Library Reference Number:	No Data
Significance Statement:	No Data
Surveyor's Eligibility Recommendations:	No Data
Surveyor's NR Criteria Recommendations, :	No Data
Surveyor's NR Criteria Considerations:	No Data

Snapshot

Date Generated: October 06, 2022

Site Name: No Data
Site Classification: Terrestrial, open air
Year(s): 1800 - 1899
Site Type(s): Mill
Other DHR ID: No Data
Temporary Designation: No Data

Site Evaluation Status

Not Evaluated

Locational Information

USGS Quad: TOANO
County/Independent City: James City (County)
Physiographic Province: No Data
Elevation: No Data
Aspect: No Data
Drainage: No Data
Slope: No Data
Acreage: No Data
Landform: Other
Ownership Status: No Data
Government Entity Name: No Data

Site Components

Component 1

Category: Industry/Processing/Extraction
Site Type: Mill
Cultural Affiliation: Indeterminate
Cultural Affiliation Details: No Data
DHR Time Period: Antebellum Period, Civil War, Early National Period, Reconstruction and Growth
Start Year: 1800
End Year: 1899
Comments: No Data

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/Reconnaissance

Project Staff/Notes:
No Data

Project Review File Number: No Data
Sponsoring Organization: No Data
Organization/Company: Unknown (DSS)
Investigator: College of William and Mary (CWM)
Survey Date: 6/18/1986
Survey Description:
This portion of old 608 was destroyed by construction of Interstate 64; 608 was re-routed to run beside 64. Old [1986] 608 is shown on James City County contour map section 13-1, 5' interval (date ca. 1960's).

Threats to Resource: No Data
Site Conditions: Site Condition Unknown
Survey Strategies: Historic Map Projection
Specimens Collected: No
Specimens Observed, Not Collected: No
Artifacts Summary and Diagnostics:
No Data
Summary of Specimens Observed, Not Collected:
No Data
Current Curation Repository: No Data
Permanent Curation Repository: No Data
Field Notes: No
Field Notes Repository: No Data
Photographic Media: No Data
Survey Reports: No Data
Survey Report Information:
See Phase I report on the Ware Creek Survey by the William and Mary Dept. of Anthropology
See also other references on first page of site inventory form for this site.

Site depicted on Gilmer's 1863-4 maps, "Vicinity of Richmind and part of the Peninsula"
Survey Report Repository: VDHR
DHR Library Reference Number: No Data
Significance Statement: No Data
Surveyor's Eligibility Recommendations: No Data
Surveyor's NR Criteria Recommendations, : No Data
Surveyor's NR Criteria Considerations: No Data

Event Type: Other

Project Staff/Notes:
No Data

Project Review File Number: No Data
Sponsoring Organization: No Data
Organization/Company: Unknown (DSS)
Investigator: VDHR-Martha McCartney
Survey Date: 11/1/1983
Survey Description:
No Data

Threats to Resource: No Data
Site Conditions: No Data
Survey Strategies: No Data
Specimens Collected: No Data
Specimens Observed, Not Collected: No Data
Artifacts Summary and Diagnostics:
No Data
Summary of Specimens Observed, Not Collected:
No Data
Current Curation Repository: No Data
Permanent Curation Repository: No Data
Field Notes: No Data
Field Notes Repository: No Data
Photographic Media: No Data
Survey Reports: No Data
Survey Report Information:
No Data
Survey Report Repository: No Data
DHR Library Reference Number: No Data
Significance Statement: No Data
Surveyor's Eligibility Recommendations: No Data
Surveyor's NR Criteria Recommendations, : No Data
Surveyor's NR Criteria Considerations: No Data

Snapshot

Date Generated: October 06, 2022

Site Name: No Data
Site Classification: Terrestrial, open air
Year(s): 1775 - 1799, 1800 - 1825
Site Type(s): Trash scatter
Other DHR ID: No Data
Temporary Designation: MG Site 4

Site Evaluation Status

DHR Staff: Not Eligible

Locational Information

USGS Quad: TOANO
County/Independent City: James City (County)
Physiographic Province: Coastal Plain
Elevation: 110
Aspect: Flat
Drainage: York River
Slope: 0 - 2
Acreage: 0.090
Landform: Terrace
Ownership Status: Private
Government Entity Name: No Data

Site Components

Component 1

Category: No Data
Site Type: No Data
Cultural Affiliation: Indeterminate
Cultural Affiliation Details: No Data
DHR Time Period: Colony to Nation, Early National Period
Start Year: 1775
End Year: 1799
Comments: No Data

Component 2

Category: No Data
Site Type: No Data
Cultural Affiliation: Indeterminate
Cultural Affiliation Details: No Data
DHR Time Period: Early National Period
Start Year: 1800
End Year: 1825
Comments: No Data

Component 3

Category: Transportation/Communication
Site Type: Trash scatter
Cultural Affiliation: No Data
Cultural Affiliation Details: No Data
DHR Time Period: No Data
Start Year: No Data

Archaeological site data is protected under the Archaeological Resource Protection Act (ARPA 1979).

End Year: No Data

Comments: Site 4 was located on the northeastern edge of the project tract adjacent to Route 60 and across the road from Site 44JC282. The site is situated in an open hardwood and softwood forest.
The site was identified through Phase I shovel testing on a 50' grid across the landform. The Phase I shovel tests indicated artifacts concentrated within an area measuring approximately 50' (N-S) by 75' (E-W). JRIA excavated 11 shovel tests in this area. The site borders were defined by negative shovel tests to the south, east, and north, and by Route 60 to the east. The site was found to consist of a light scatter of historic material recovered from three positive shovel tests. Based on the artifacts recovered, this site evidently was occupied from the late 18th- through the early 19th century. It may represent debris related to Sites 44JC282 and 44JC821 located across Route 60 to the east.

Bibliographic Information

Bibliography:

No Data

Informant Data:

Name: Mr. Mark Renaldi
Title: Planner
Company 1: Landmark Design Group
Address 1: 4029 Ironbound Road
Address 2: Suite 100
City: Williamsburg
State: Virginia
ZIP: 23188
Phone 1: 757-253-2975
Ext: 0000
Owner Relationship: Property Manager

CRM Events

Event Type: DHR Staff: Not Eligible

DHR ID: 44JC1122
Staff Name: VDHR, Roger Kirchen
Event Date: 4/26/2005
Staff Comment No Data

Event Type: Survey:Phase I/Reconnaissance

Project Staff/Notes:

The Phase I survey was conducted prior to the proposed development of the 38-acre tract.

Project Review File Number: 2003-1502
Sponsoring Organization: No Data
Organization/Company: Unknown (DSS)
Investigator: JRIA
Survey Date: 1/12/2004
Survey Description:

The site was identified through the excavation of screened shovel tests at 50' and 25' intervals.

Current Land Use	Date of Use	Comments
Forest	1/12/2004 12:00:00 AM	At the time of the survey, the site was located within a wooded area slated for residential development.

Threats to Resource: No Data
Site Conditions: 50-74% of Site Destroyed
Survey Strategies: Subsurface Testing
Specimens Collected: Yes
Specimens Observed, Not Collected: No
Artifacts Summary and Diagnostics:

Artifacts retrieved from the Phase I survey included one sherd of creamware, one cut nail, one sherd of dark green bottle glass, two handmade brick fragments, and one oyster shell.

Summary of Specimens Observed, Not Collected:

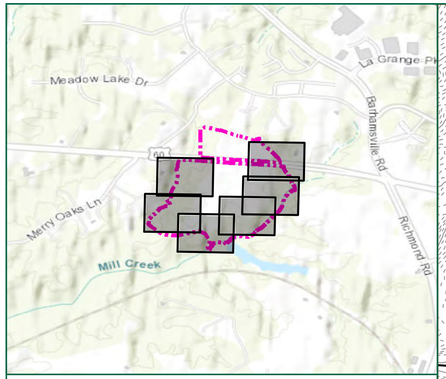
No Data

Current Curation Repository: VDHR
Permanent Curation Repository: No Data
Field Notes: Yes
Field Notes Repository: VDHR
Photographic Media: No Data
Survey Reports: Yes
Survey Report Information:

Tyrer, Carol D., and Matthew R. Laird, "Phase I Cultural Resources Survey of the 38-Acre Michelle's Point Development, James City County, Virginia." James River Institute for Archaeology, Inc., Williamsburg, Virginia.

Survey Report Repository: VDHR and JRIA
DHR Library Reference Number: No Data
Significance Statement: No Data
Surveyor's Eligibility Recommendations: No Data
Surveyor's NR Criteria Recommendations, : No Data
Surveyor's NR Criteria Considerations: No Data

Appendix G – Field Wetland Delineation



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B	116,577									NT/V
C	31,049	566	9,676	44,268						NT/V
D			1,998							NT/V
E	3,491									NT/V
F					1,548	1,078			11,863	NT/NV
G						120	91		418	NT/NV
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N						50			198	NT/NV
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P						122			334	NT/NV
Total	**545,143**	**566**	**11,674**	**44,268**	**1,848**	**2,793**	**91**	**0**	**19,871**	
Total Wetland Area =			**601,651 sq ft**			**13.81 ac**				
Total Stream Area =			**19,871 sq ft**			**0.46 ac**				
Total Stream Length =			**4,732 lf**							

* T=Tidal; NT=Non-tidal; V=Vegetated; NV=Non-Vegetated; PFO=Palustrine Forested Wetland; PSS=Palustrine Scrub-Shrub Wetland; PEM=Palustrine Emergent Wetland; POW= Palustrine Open Water; EW= Estuarine Intertidal Wetlands; R3= Upper Perennial Streams; R4=Intermittent Streams; R6 = Ephemeral Streams

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- Culvert
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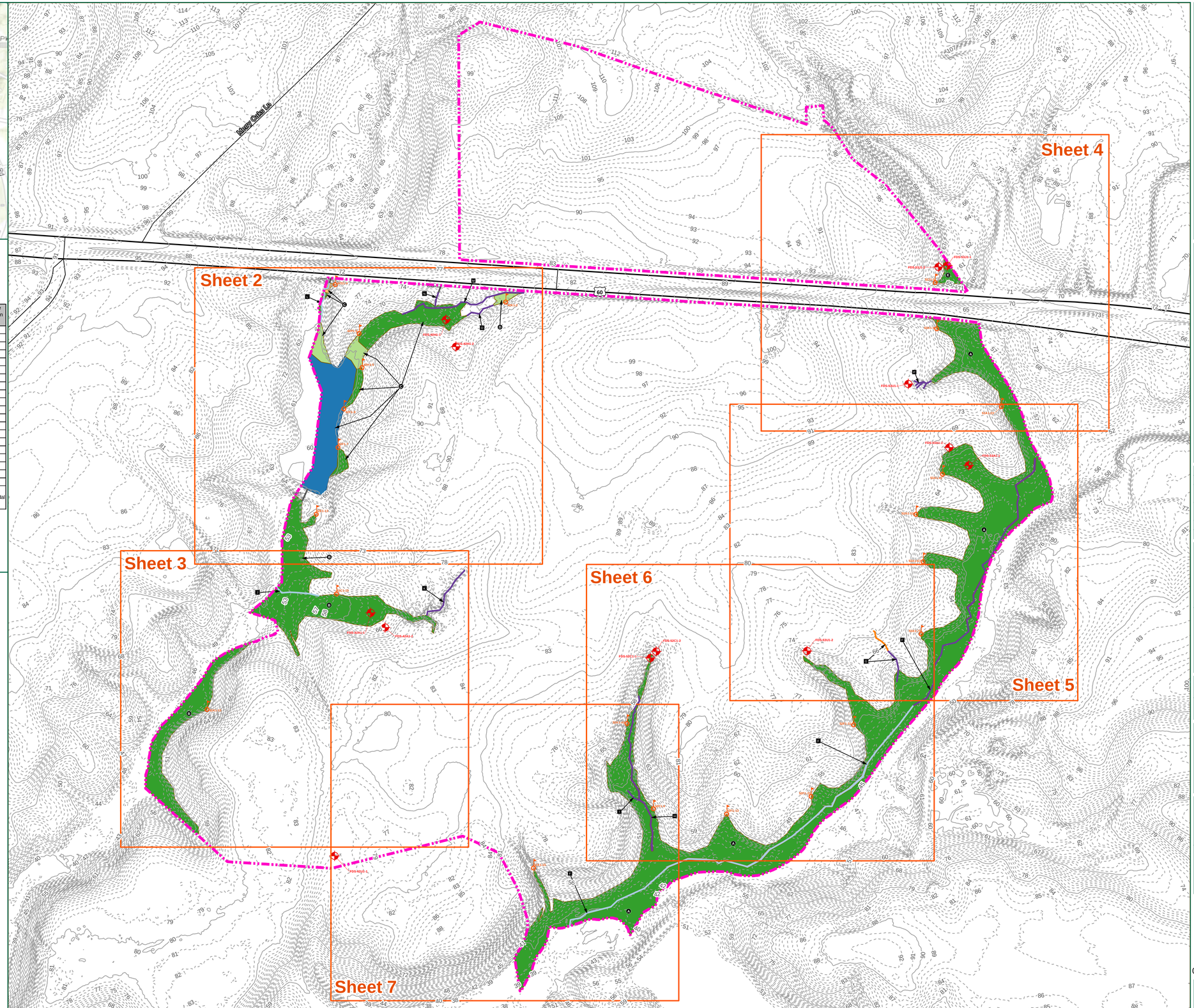
- Palustrine Scrub-Shrub (PSS) Wetland
- Palustrine Open Water (POW)

Topographic Contours

- Major- 10 Foot
- Minor- 1 Foot



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DATE 11/03/2022

PROJECT NUMBER 45853

PROJECT NAME RICHMOND ROAD SOLAR

DESIGNED BY / DRAWN BY M.COOLEY

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3. Project limits are approximate.
4. Topography based on USGS LiDAR.
5. Cowardin Stream Classifications are based on NC DWQ Stream Identification form version 4.11.

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FIGURE 4:
WETLANDS AND WATERS DELINEATION MAP

SCALE (FEET)

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PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
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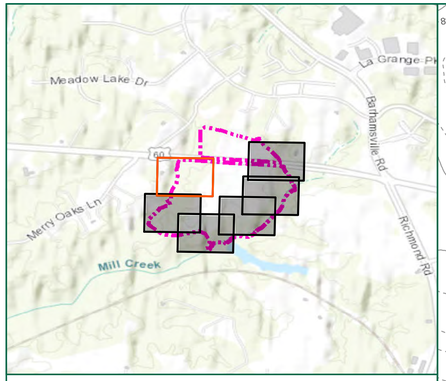

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- Palustrine Open Water (POW)

Topographic Contours

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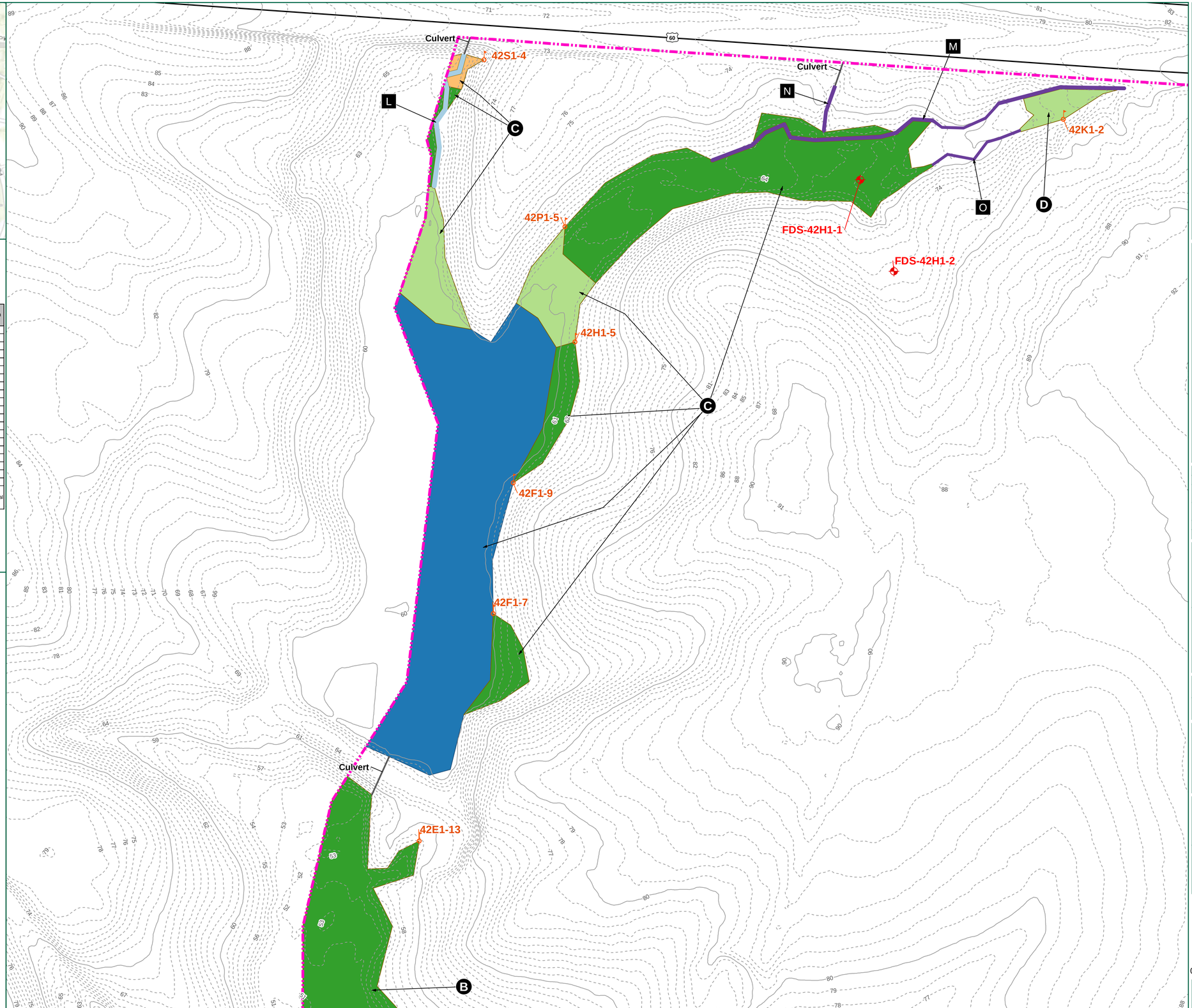
- Minor- 1 Foot



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0 50 100

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SCALE	SHEET NUMBER
H:1 " = 50 '	2 of 7

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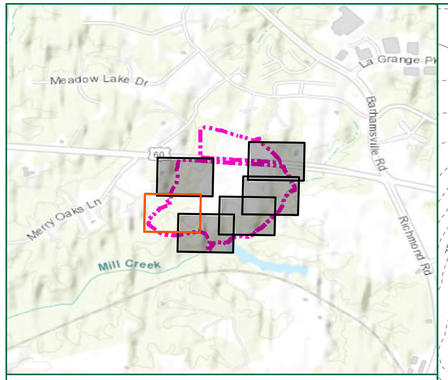

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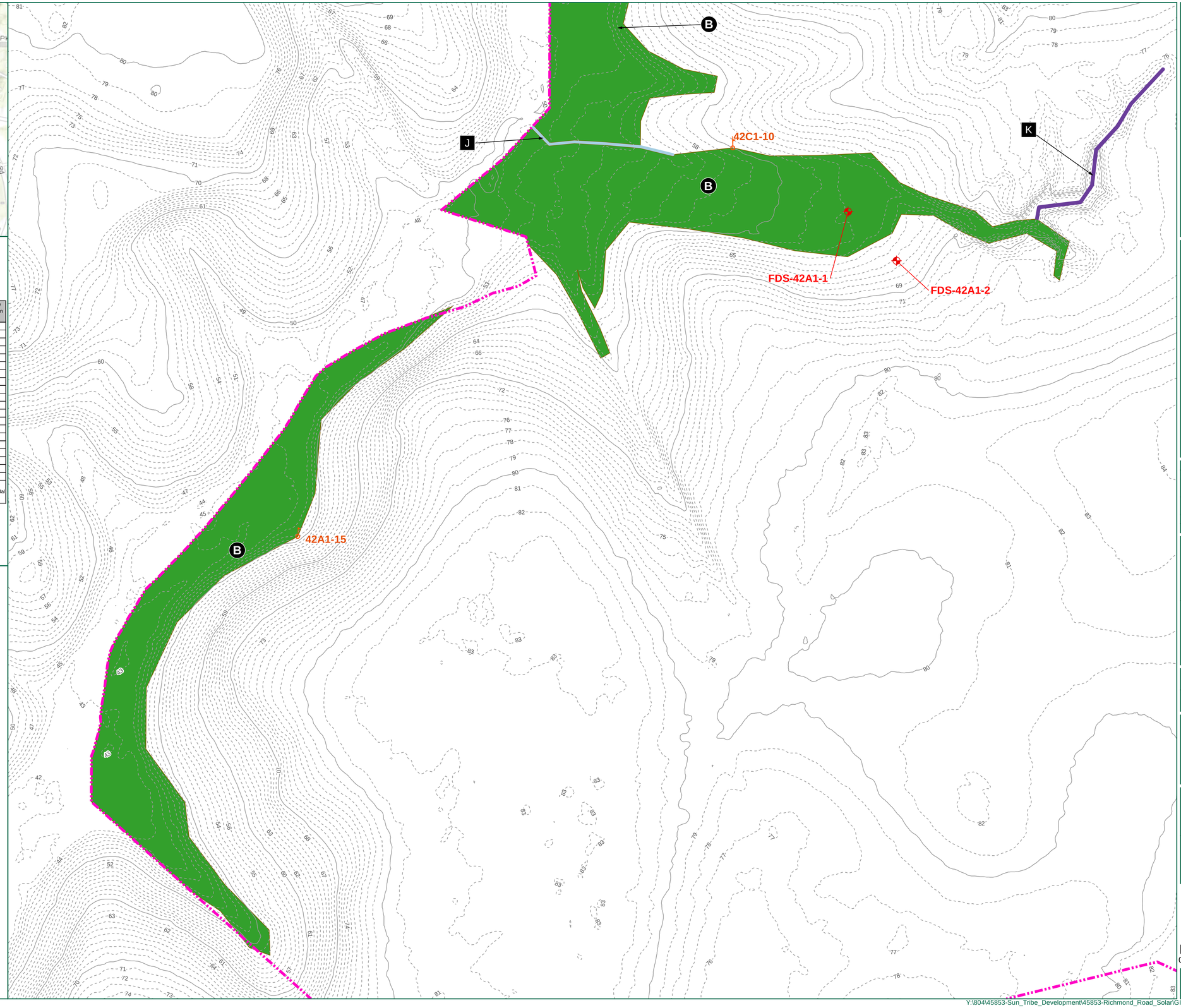

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REVISIONS

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DRAWING DESCRIPTION: FIGURE 4: WETLANDS AND WATERS DELINEATION MAP

SCALE (FEET)
0 50 100
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE: H:1 " = 50 '

SHEET NUMBER: 3 of 7

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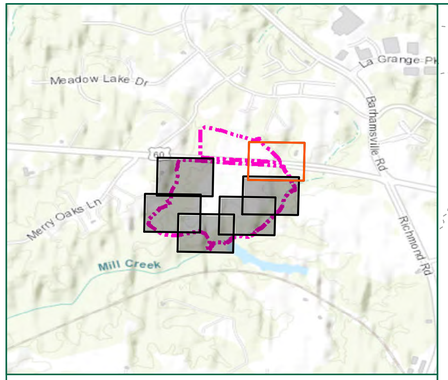

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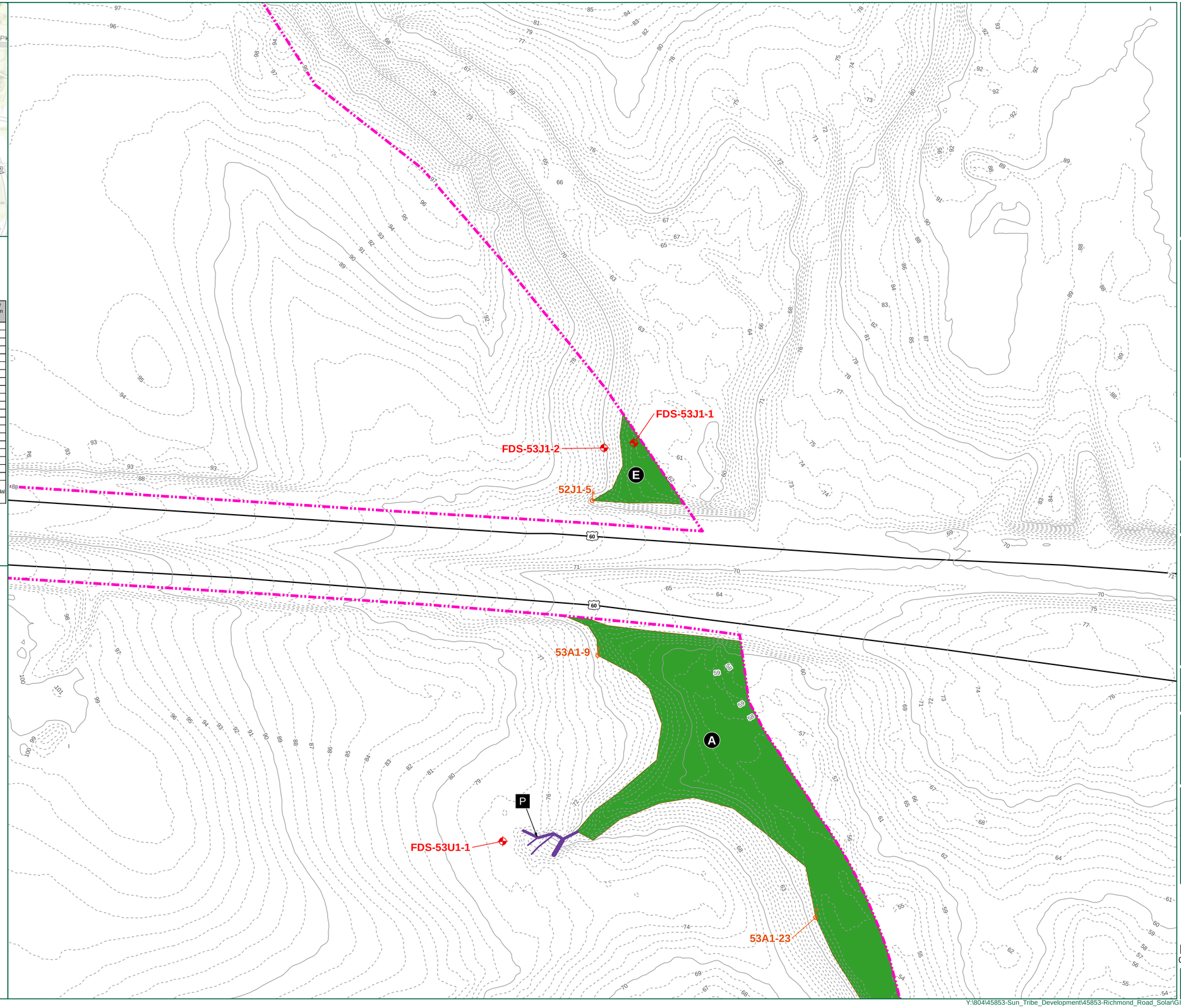

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0 50 100

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SCALE	SHEET NUMBER
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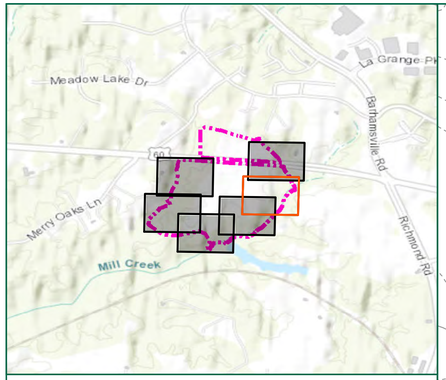

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Total	**545,143**	**566**	**11,674**	**44,268**	**1,848**	**2,793**	**91**	**0**	**19,871**	
Total Wetland Area =			**601,651 sq ft**			**13.81 ac**				
Total Stream Area =			**19,871 sq ft**			**0.46 ac**				
Total Stream Length =			**4,732 lf**							

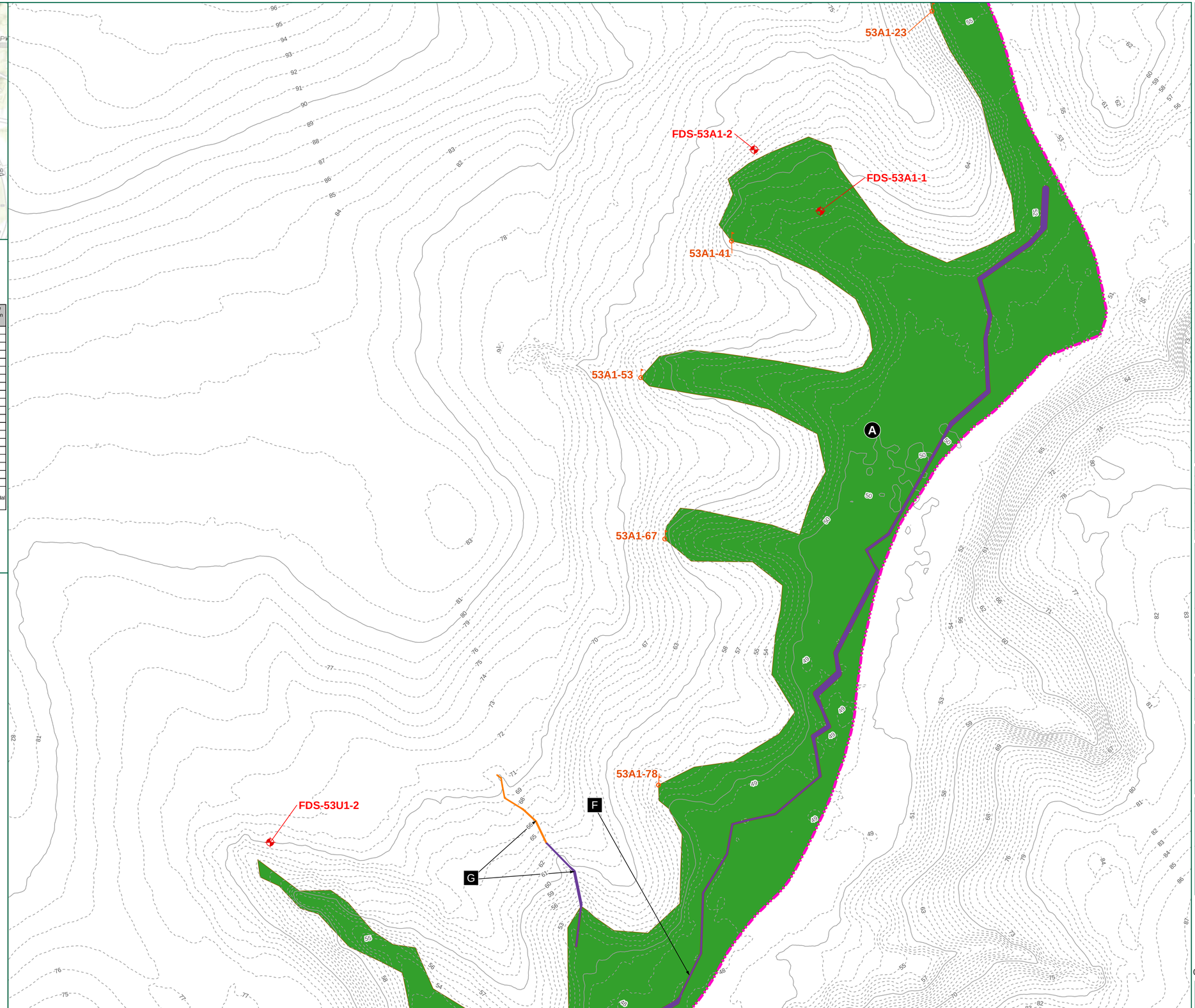
* T=Tidal; NT=Non-tidal; V=Vegetated; NV=Non-Vegetated; PFO=Palustrine Forested Wetland; PSS=Palustrine Scrub-Shrub Wetland; PEM=Palustrine Emergent Wetland; POW= Palustrine Open Water; EIW= Estuarine Intertidal Wetlands; R3= Upper Perennial Streams; R4=Intermittent Streams; R6 = Ephemeral Streams

Legend

- Project Study Limits- 139.5 Acres
- Stream Identifier
- Wetland Identifier
- Flag
- Field Data Station
- Perennial Stream (R3)
- Intermittent Stream (R4)
- Ephemeral Stream (R6)
- Culvert
- Palustrine Emergent (PEM) Wetland
- Palustrine Forested (PFO) Wetland
- Palustrine Scrub-Shrub (PSS) Wetland
- Palustrine Open Water (POW)

Topographic Contours

- Major- 10 Foot
- Minor- 1 Foot



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RICHMOND ROAD SOLAR
JAMES CITY COUNTY, VIRGINIA

DATE 11/03/2022

PROJECT NUMBER 45853

PROJECT NAME RICHMOND ROAD SOLAR

DESIGNED BY / DRAWN BY M.COOLEY

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DRAWING DESCRIPTION
FIGURE 4:
WETLANDS AND WATERS DELINEATION MAP

SCALE (FEET)
0 50 100
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE H:1 " = 50 '

SHEET NUMBER 5 of 7

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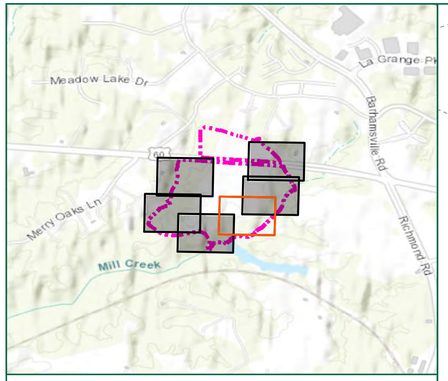

Resource Identification	Confirmation									Resource Description Notes*
	PFO (sq ft)	PSS (sq ft)	PEM (sq ft)	POW (sq ft)	R3 (lf)	R4 (lf)	R6 (lf)	Ditch (lf)	Stream (sq ft)	
A	394,026									NT/V
B	116,577									NT/V
C	31,049	566	9,676	44,268						NT/V
D			1,998							NT/V
E	3,491									NT/V
F					1,548	1,078			11,863	NT/NV
G						120	91		418	NT/NV
H						579			2,691	NT/NV
I						50			153	NT/NV
J					156				472	NT/NV
K						225			906	NT/NV
L					144				730	NT/NV
M						463			1,789	NT/NV
N						50			198	NT/NV
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Legend

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- Wetland Identifier
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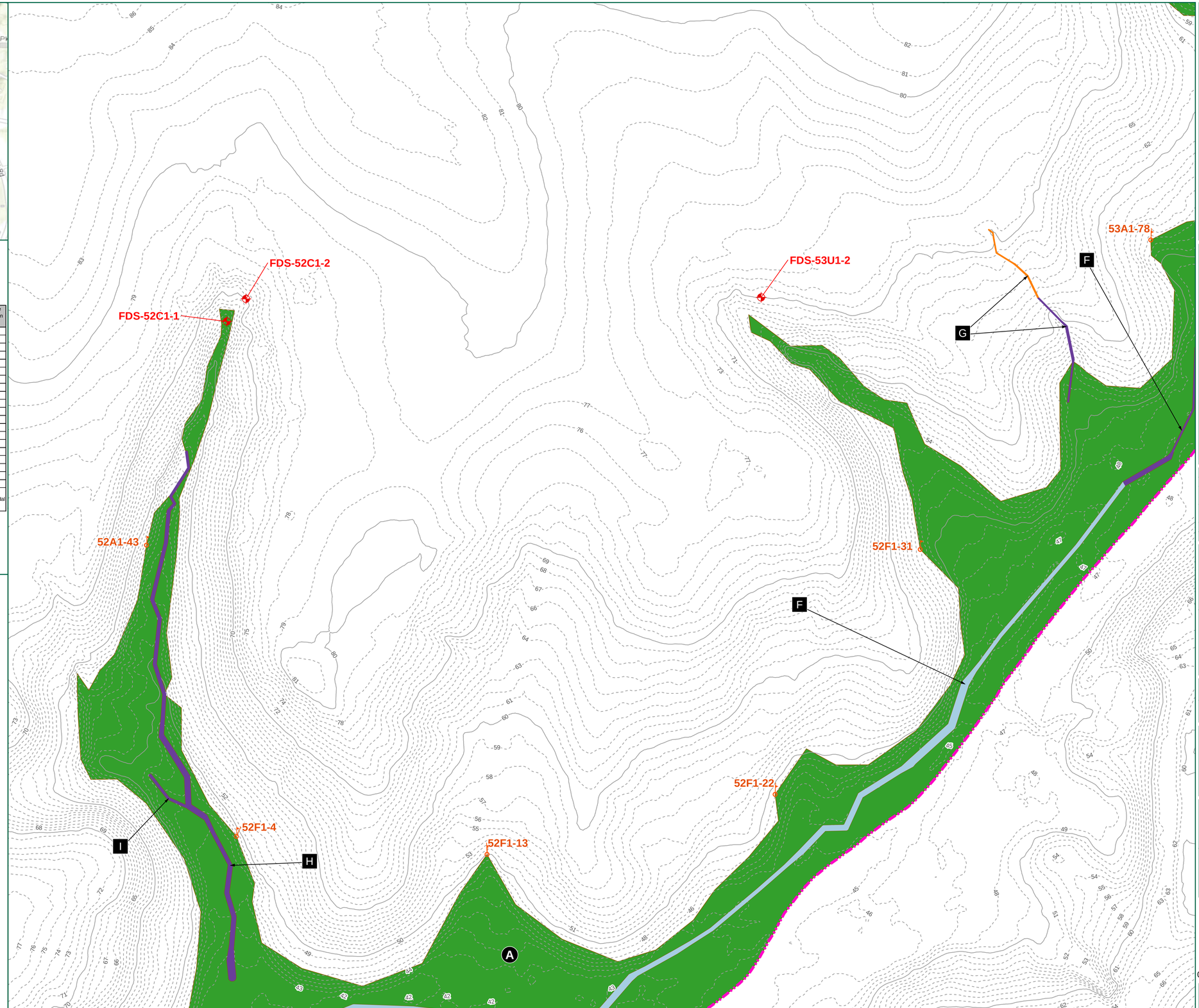
- Palustrine Open Water (POW)

Topographic Contours

- Major- 10 Foot
- Minor- 1 Foot



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JAMES CITY COUNTY, VIRGINIA

DATE: 11/03/2022
PROJECT NUMBER: 45853
PROJECT NAME: RICHMOND ROAD SOLAR
DESIGNED BY / DRAWN BY: M.COOLEY

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FIGURE 4:
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SCALE (FEET)
0 50 100
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H:1 " = 50 '	6 of 7

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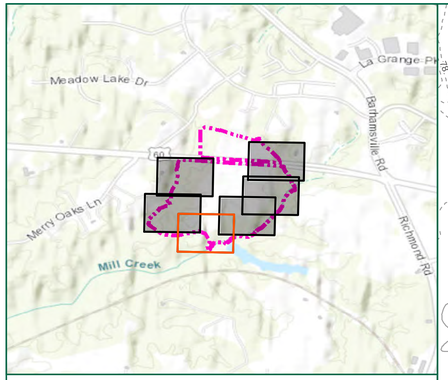

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Legend

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- Wetland Identifier
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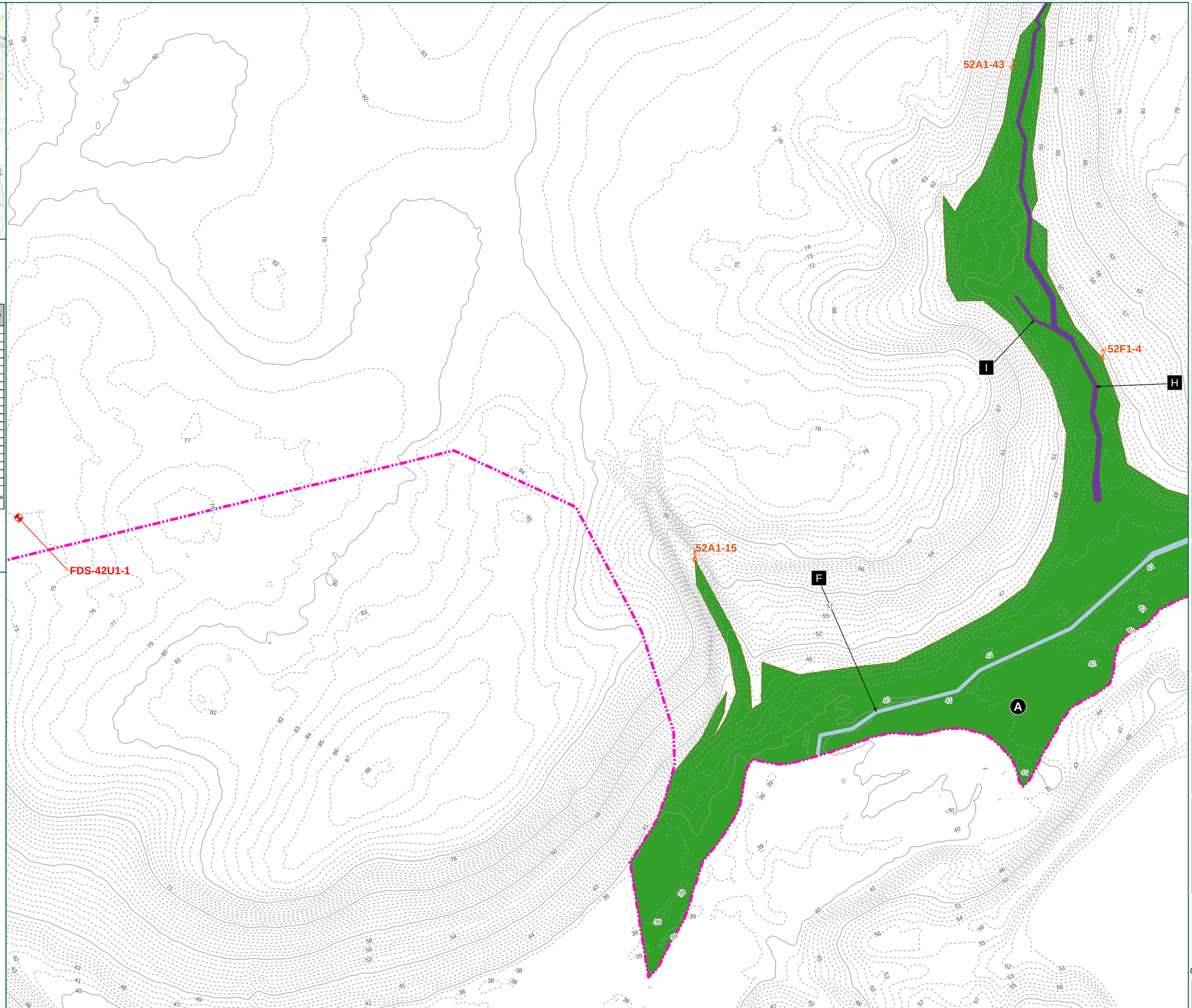
- Palustrine Scrub-Shrub (PSS) Wetland
- Palustrine Open Water (POW)

Topographic Contours

- Major- 10 Foot
- Minor- 1 Foot



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DATE: 11/03/2022

PROJECT NUMBER: 45853

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DESIGNED BY / DRAWN BY: M.COOLEY

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FIGURE 4:
WETLANDS AND WATERS DELINEATION MAP

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PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H:1 " = 50 '	7 of 7

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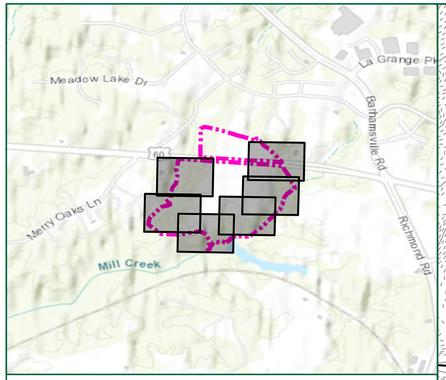

Legend

- Project Study Limits- 139.5 Acres
- Resource Protection Area
- Perennial Stream (R3)
- Intermittent Stream (R4)
- Ephemeral Stream (R6)
- Culvert
- Palustrine Emergent (PEM) Wetland
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- Palustrine Open Water (POW)

Topographic Contours

- Major- 10 Foot
- Minor- 1 Foot

Sheet 2

Sheet 3

Sheet 4

Sheet 5

Sheet 6

Sheet 7

Merry Oaks Ln

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FIGURE 5: RESOURCE PROTECTION AREA MAP

SCALE (FEET)

0 170 340

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H:1 " = 170 '	1 of 7

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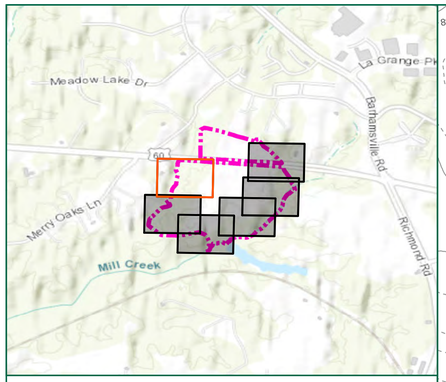

Legend

- Project Study Limits- 139.5 Acres
- Resource Protection Area
- Perennial Stream (R3)
- Intermittent Stream (R4)
- Ephemeral Stream (R6)
- Culvert
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Topographic Contours

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FIGURE 5: RESOURCE PROTECTION AREA MAP

SCALE (FEET)

0 50 100

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H:1 " = 50 '	2 of 7

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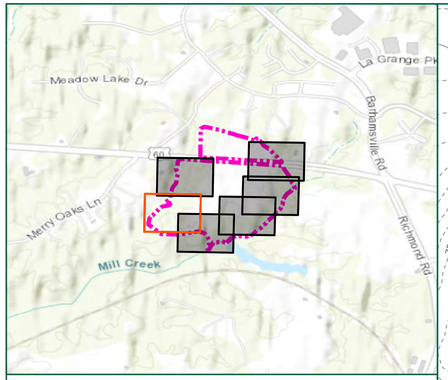

Legend

- Project Study Limits- 139.5 Acres
- Resource Protection Area
- Perennial Stream (R3)
- Intermittent Stream (R4)
- Ephemeral Stream (R6)
- Culvert
- Palustrine Emergent (PEM) Wetland
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Topographic Contours

- Major- 10 Foot
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DRAWING DESCRIPTION: FIGURE 5: RESOURCE PROTECTION AREA MAP

SCALE (FEET)

0 50 100

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H:1 " = 50 '	3 of 7

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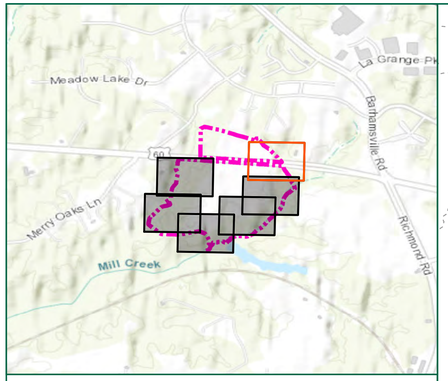

Legend

- Project Study Limits- 139.5 Acres
- RPA — Resource Protection Area
- Perennial Stream (R3)
- Intermittent Stream (R4)
- Ephemeral Stream (R6)
- Culvert
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Topographic Contours

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FIGURE 5: RESOURCE PROTECTION AREA MAP

SCALE (FEET)

0 50 100

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SCALE	SHEET NUMBER
H:1 " = 50 '	4 of 7

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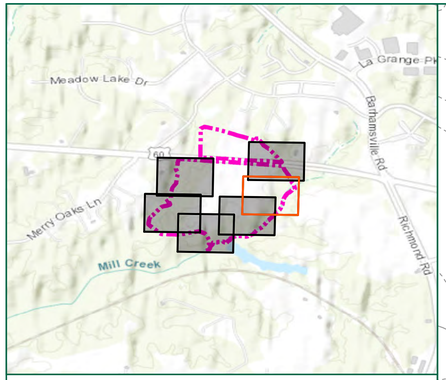

Legend

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FIGURE 5: RESOURCE PROTECTION AREA MAP

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0 50 100

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SCALE	SHEET NUMBER
H:1 " = 50 '	5 of 7

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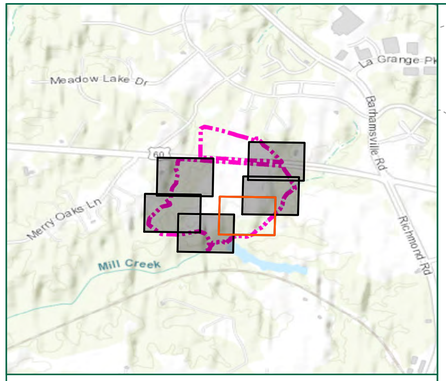

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DRAWING DESCRIPTION: FIGURE 5: RESOURCE PROTECTION AREA MAP

SCALE (FEET)

0 50 100

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SCALE: H:1 " = 50 '

SHEET NUMBER: 6 of 7

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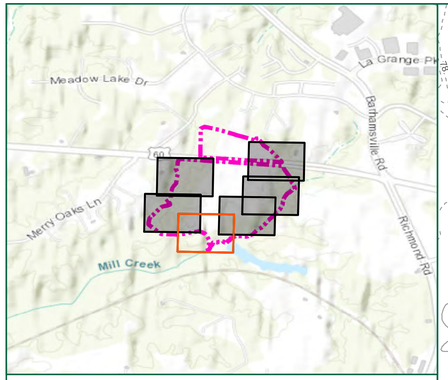

Legend

- Project Study Limits- 139.5 Acres
- RPA — Resource Protection Area
- Perennial Stream (R3)
- Intermittent Stream (R4)
- Ephemeral Stream (R6)
- Culvert
- Palustrine Emergent (PEM) Wetland
- Palustrine Forested (PFO) Wetland
- Palustrine Scrub-Shrub (PSS) Wetland
- Palustrine Open Water (POW)

Topographic Contours

- Major- 10 Foot
- Minor- 1 Foot

TIMMONS GROUP
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1001 Boulders Parkway, Suite 300
Richmond, VA 23225
TEL 804.200.6500
www.timmons.com

PROJECT NAME & LOCATION

RICHMOND ROAD SOLAR

JAMES CITY COUNTY, VIRGINIA

DATE: 11/03/2022

PROJECT NUMBER: 45853

PROJECT NAME: RICHMOND ROAD SOLAR

DESIGNED BY / DRAWN BY: M.COOLEY

1. Wetlands and waters within the project study limits have been located using submeter, Bluetooth GPS antennas by Timmons Group.
2. Wetlands and waters have not been confirmed by the U.S. Army Corps of Engineers until stamped.
3. Project limits are approximate.
4. Topography based on USGS LiDAR.
5. Cowardin Stream Classifications are based on NC DWQ Stream Identification form version 4.11.

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REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION: FIGURE 5: RESOURCE PROTECTION AREA MAP

SCALE (FEET)

0 50 100

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H:1 " = 50 '	7 of 7

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Appendix H – Conceptual Stormwater Plans and Memo

TETRA TECH

James City County
Stormwater and Resource Protection Division
107 Tewning Road
Williamsburg, Virginia 23188

June 30, 2023

Re: 8659 Richmond Road Solar Sun Tribe Solar Project
SUP 23-0012
Response to SRP Comments #1

Dear Stormwater and Resource Protection Division:

On behalf of Sun Tribe Development (Sun Tribe), Tetra Tech, Incorporated (Tetra Tech) is in receipt of James City County's comments regarding the proposed solar facility development located at 8659 Richmond Road, James City County, Virginia, dated June 1, 2023. The referenced correspondence is divided into Review Comments and SRP Division SUP Conditions. In response to Review Comments, Tetra Tech presents the below narrative of stormwater management methodology related to the proposed Richmond Road Solar Project (Project).

1.1 INTRODUCTION

Tetra Tech understands James City County (County) is requesting additional design detail related to the stormwater management for the proposed Project. This summary details the methodology and results used to comply with the Virginia Department of Environmental Quality (VADEQ) and the County's requirements. Still, it does not preclude other alternative compliance measures, BMPs, methodologies, or designs from being implemented by the proposed Project during the final engineering design, Site Plan review phase, construction, and operation. The descriptions provided herein are notional and intended only to demonstrate that the Project as formulated is capable of meeting VADEQ and County stormwater requirements.

The proposed development consists of a solar electric power generation facility situated on approximately 50 acres of primarily agricultural nature. Delineated aquatic resources surround the site on three sides (south, east, and west) and Richmond Road to the north. Topography at the project site ranges from very steep, erodible soils to relatively flat agricultural farmland.

Tetra Tech, Incorporated
4101 Cox Road, Suite 100, Glen Allen, Virginia 23060
Tel +804.290.4321 | tetratech.com

1.2 STORMWATER MANAGEMENT DESIGN

This summary specifically pertains to the post-development stormwater management (PCSM) considerations of the proposed Project. While Tetra Tech anticipates Erosion and Sediment Control (ESC) requirements can be met using much of the proposed PCSM infrastructure, it is understood that final design of the ESC program for the construction phase of the project will be undertaken during the Site Plan review phase.

Minimal grading is anticipated within the solar array fields chiefly due to the uniform nature of slopes and expected mechanical and foundation systems. Though mass grading isn't anticipated, Tetra Tech understands that all area within the proposed Limit of Disturbance (LOD) may be cleared of existing vegetation, timber, crops, and other infrastructure (if present). While minimization of disturbance to existing stabilized (vegetated) areas is expected, it is unknown at this time the limits of potential clearing which could be required to meet the project objectives and, accordingly, all area within the LOD is assumed to be a turf grass land cover type in the post-development condition. It is understood clearing within Resource Protection Areas shall, as required by the County, be limited to the minimum amount necessary to install stormwater management outfall facilities.

The project site is divided into five (5) drainage areas: A through E. Each drainage area is served by a proposed permanent structural pond feature and perimeter diversion ditches and/or swales. Please refer to Drawing No. C900 for detail (enclosed).

1.3 WATER QUANTITY CONSIDERATIONS

In compliance with SRP Division SUP Condition #4, solar panels have been considered to be unconnected impervious area for water quantity calculation purposes. Additionally, all gravel access roadways, equipment pads, and appurtenant features are considered to be unconnected impervious area. The National Engineering Handbook Chapter 9, Part 630 has been used to determine the adjusted Runoff Coeffients for the project accounting for unconnected impervious area. A summary of the results of these calculations is provided below in Table 1.

	Drainage Area No.				
	A	B	C	D	E
Drainage Area, ac	17.80	5.52	13.87	3.47	12.11
Impervious Area, ac	4.80	1.08	3.04	0.36	2.32
Percent impervious, %	27%	20%	22%	11%	19%
A (CN=39)*	11.20	4.13	2.86	1.66	9.52
B (CN=61)*				0.80	1.28
C (CN=74)*	6.12		8.23		1.03
D (CN=80)*	0.48	1.39	2.77	1.01	0.28
Composite pervious CN	52.1	49.4	68.0	55.9	45.3
Composite CN (NEH 630 [9-2])	63.9	58.4	74.2	60.1	54.8
Mean Slope, %	3.65	5.31	4.28	4.55	2.81
Flow length, ft	1176	583	1012	441	933
S	5.65	7.13	3.47	6.63	8.23
Tc, min	29.7	16.1	18.4	13.3	35.4
*Turf grass cover type, good condition: area (ac) per HSG					

Table 1: Water Quantity Summary

To demonstrate conceptual compliance with Channel Protection water quantity requirements promulgated under 9VAC25-870-66(B)(3)(a)9, the 1-year, 24-hour storm event, using the Energy Balance Equation, has been analyzed by Tetra Tech and verified to meet applicable requirements at each proposed pond discharge location. To demonstrate conceptual compliance with Flood Protection water quantity requirements promulgated under 9VAC25-870-66(C)(2)(b), the 10-year, 24-hour storm event has been analyzed by Tetra Tech and verified to meet applicable requirements (post-developed flow rate less than or equal to pre-development flow rate). Full reporting of these preliminary conceptual design efforts is available upon request.

1.4 WATER QUALITY CONSIDERATIONS

For utility-scale solar developments in Virginia, the standard of care regarding water quality to date has included the assignment of unused portions of the leased solar area to Conserved or Forested Open Space. This, historically, has fulfilled the requirements of the VADEQ related to Water Quality for solar developments. Tetra Tech understands the County's requirements differ from those of VADEQ, and has prepared preliminary Water Quality designs to demonstrate conceptual compliance with the County's requirements, which are:

- Proposed use of Forested Open Space within the leased area that is hydraulically disconnected from the solar development is not permitted to achieve Water Quality requirements.
- If Forested Open Space is utilized in a hydraulically-connected manner, a maximum of 25% of the required water quality requirements associated with the proposed development may be met through its use.
- The amount of phosphorous removal provided by the Project shall exceed the calculated compliance requirement by a minimum of 10% (110% removal requirements).

As currently schematically designed and depicted on Drawing No. C900-C904, enclosed, the Project does not propose the use of Forested Open Space. Instead, four (4) Level 1 Wet Ponds (per the Virginia BMP Clearinghouse Design Specifications) are proposed (Ponds A, B, C, and E), and several Dry Swales are proposed as indicated on the plan drawings. For the purposes of water quality, solar panels are considered impervious. A summary divided by drainage area is provided below as Table 2.

		Drainage Area No.					
		A	B	C	D	E	Total
	Drainage Area, ac	17.80	5.52	13.87	3.47	12.11	52.76
Turf grass cover type, good condition: area (ac) per HSG	A (CN=39)	8.24	3.16	2.34	1.38	7.66	22.78
	B (CN=61)				0.72	1.08	1.80
	C (CN=74)	4.28		6.14		0.77	11.19
	D (CN=80)	0.48	1.29	2.34	1.00	0.28	5.39
Impervious cover type: area (ac) per HSG	A (CN=98)	2.96	0.97	0.52	0.28	1.85	6.59
	B (CN=98)				0.08	0.20	0.28
	C (CN=98)	1.84		2.09		0.26	4.18
	D (CN=98)	0.00	0.11	0.43	0.01	0.00	0.55

Table 2: Water Quality Summary

Using the above data, the Virginia Runoff Reduction Method (VRRM) is used to demonstrate proposed compliance with water quality objectives. The output from the VRRM model is enclosed with this letter for the County's consideration of the Project's possible avenue for achieving water quality compliance.

Tetra Tech notes this methodology for meeting water quality objectives does not preclude the final engineering design of the proposed facility from seeking other acceptable routes of compliance, including the possible use of Forested Open Space.

Using the VRRM, enclosed, the required phosphorous removal is determined to be 20.80 pounds. After implementing the proposed structural water quality PCSM BMPs, a total reduction of 23.26 pounds is achieved, or greater than 110% of the requirement, which meets the County's SUP stipulation.

1.5 CLOSING

Tetra Tech has, at the request of Sun Tribe Development, undertaken a conceptual stormwater management design effort to demonstrate a schematic methodology of potential compliance measures the proposed Richmond Road Solar Project may pursue to meet both County and VADEQ requirements related to stormwater management. This effort indicates that the use of structural PCSM BMPs, both water quality and water quantity features, will result in the proposed development's compliance with the noted regulations. While this conceptual design does not encumber the final design efforts to adhere to the proposed methodology or solutions, it does demonstrate that the project, as formulated, is capable of meeting stormwater management objectives.

Please contact Alexander Deuson at 804-904-7068 or alex.deuson@tetratech.com with any questions or additional comments regarding this application for entitlement of a solar facility within James City County. Tetra Tech appreciated the County's attention to this matter.

Very Truly Yours,

Alexander Deuson

Alexander Deuson, P.E.
TETRA TECH, INCORPORATED

Attachments
Ec: Sun Tribe Development

DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - **Version 3.0**

☐ 2011 BMP Standards and Specifications ☑ 2013 Draft BMP Standards and Specifications

Project Name:
Date:
BMP Design Specifications List: 2013 Draft Stds & Specs

CLEAR ALL *(Ctrl+Shift+R)*

data input cells
constant values
calculation cells
final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	22.78	1.80	11.19	5.39	41.16
Impervious Cover (acres)	6.59	0.28	4.18	0.55	11.60
					52.76

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	**20.80**

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary

Forest/Open Space Cover (acres)	0.00
Weighted Rv (forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	41.16
Weighted Rv (turf)	0.18
% Managed Turf	78%
Impervious Cover (acres)	11.60
Rv (impervious)	0.95
% Impervious	22%
Site Area (acres)	**52.76**
Site Rv	**0.35**

Treatment Volume and Nutrient Loads

Treatment Volume (acre-ft)	1.5505
Treatment Volume (cubic feet)	67,541
TP Load (lb/yr)	42.44
TN Load (lb/yr) (Informational Purposes Only)	303.58

Drainage Area A

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)	8.24	0.00	4.28	0.48	13.00	0.18
Impervious Cover (acres)	2.96	0.00	1.84	0.00	4.80	0.95
				Total	17.80	

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. A (lb/yr)	15.64
Post Development Treatment Volume in D.A. A (ft^3)	24,893

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
1. Vegetated Roof (RR)													
1.a. Vegetated Roof #1 (Spec #5)	45				0	0	0	0		0.00	0.00	0.00	
1.b. Vegetated Roof #2 (Spec #5)	60				0	0	0	0		0.00	0.00	0.00	
2. Rooftop Disconnection (RR)													
2.a. Simple Disconnection to A/B Soils (Spec #1)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.b. Simple Disconnection to C/D Soils (Spec #1)	25			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.d. To Dry Well or French Drain #1, Micro-Infilration #1 (Spec #8)	50			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (Spec #8)	90			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.f. To Rain Garden #1, Micro-Bioretention #1 (Spec #9)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.g. To Rain Garden #2, Micro-Bioretention #2 (Spec #9)	80			0	0	0	0	50	0.00	0.00	0.00	0.00	
2.h. To Rainwater Harvesting (Spec #6)	0			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.i. To Stormwater Planter, Urban Bioretention (Spec #9, Appendix A)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	
3. Permeable Pavement (RR)													
3.a. Permeable Pavement #1 (Spec #7)	45			0	0	0	0	25	0.00	0.00	0.00	0.00	
3.b. Permeable Pavement #2 (Spec #7)	75				0	0	0	25		0.00	0.00	0.00	
4. Grass Channel (RR)													
4.a. Grass Channel A/B Soils (Spec #3)	20			0	0	0	0	15	0.00	0.00	0.00	0.00	
4.b. Grass Channel C/D Soils (Spec #3)	10			0	0	0	0	15	0.00	0.00	0.00	0.00	
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	20			0	0	0	0	15	0.00	0.00	0.00	0.00	
5. Dry Swale (RR)													
5.a. Dry Swale #1 (Spec #10)	40			0	0	0	0	20	0.00	0.00	0.00	0.00	
5.b. Dry Swale #2 (Spec #10)	60			0	0	0	0	40	0.00	0.00	0.00	0.00	
6. Bioretention (RR)													
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	

Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)				
0		0.00	0.00	0.00
0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)				
0	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)				
25	0.00	0.00	0.00	0.00
25		0.00	0.00	0.00
4. Grass Channel (RR)				
20	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00
5. Dry Swale (RR)				
25	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00
6. Bioretention (RR)				
40	0.00	0.00	0.00	0.00

6.b. Bioretention #2 or Micro-Bioretention #2 (Spec #9)	80			0	0	0	0	50	0.00	0.00	0.00	0.00	
7. Infiltration (RR)													
7.a. Infiltration #1 (Spec #8)	50			0	0	0	0	25	0.00	0.00	0.00	0.00	
7.b. Infiltration #2 (Spec #8)	90			0	0	0	0	25	0.00	0.00	0.00	0.00	
8. Extended Detention Pond (RR)													
8.a. ED #1 (Spec #15)	0			0	0	0	0	15	0.00	0.00	0.00	0.00	
8.b. ED #2 (Spec #15)	15			0	0	0	0	15	0.00	0.00	0.00	0.00	
9. Sheetflow to Filter/Open Space (RR)													
9.a. Sheetflow to Conservation Area, A/B Soils (Spec #2)	75			0	0	0	0	0	0.00	0.00	0.00	0.00	
9.b. Sheetflow to Conservation Area, C/D Soils (Spec #2)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	

60	0.00	0.00	0.00	0.00	
7. Infiltration (RR)					
15	0.00	0.00	0.00	0.00	
15	0.00	0.00	0.00	0.00	
8. Extended Detention Pond (RR)					
10	0.00	0.00	0.00	0.00	
10	0.00	0.00	0.00	0.00	
9. Sheetflow to Filter/Open Space (RR)					
0	0.00	0.00	0.00	0.00	
0	0.00	0.00	0.00	0.00	
0	0.00	0.00	0.00	0.00	

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. A (ft^3)	0	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr)	15.64	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	15.64	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. A (ft^3)	0	
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

10. Wet Swale (no RR)													
10.a. Wet Swale #1 (Spec #11)	0			0	0	0	0	20	0.00	0.00	0.00	0.00	
10.b. Wet Swale #2 (Spec #11)	0			0	0	0	0	40	0.00	0.00	0.00	0.00	
11. Filtering Practices (no RR)													
11.a.Filtering Practice #1 (Spec #12)	0			0	0	0	0	60	0.00	0.00	0.00	0.00	
11.b. Filtering Practice #2 (Spec #12)	0			0	0	0	0	65	0.00	0.00	0.00	0.00	
12. Constructed Wetland (no RR)													
12.a.Constructed Wetland #1 (Spec #13)	0			0	0	0	0	50	0.00	0.00	0.00	0.00	
12.b. Constructed Wetland #2 (Spec #13)	0			0	0	0	0	75	0.00	0.00	0.00	0.00	
13. Wet Ponds (no RR)													
13.a. Wet Pond #1 (Spec #14)	0	13.00	4.80	0	0	24,893	24,893	50	0.00	15.62	7.81	7.81	
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	0			0	0	0	0	45	0.00	0.00	0.00	0.00	
13.c. Wet Pond #2 (Spec #14)	0			0	0	0	0	75	0.00	0.00	0.00	0.00	
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	0			0	0	0	0	65	0.00	0.00	0.00	0.00	

10. Wet Swale (Coastal Plain) (no RR)				
25	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00
11. Filtering Practices (no RR)				
30	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00
12. Constructed Wetland (no RR)				
25	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00
13. Wet Ponds (no RR)				
30	0.00	111.76	33.53	78.23
20	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00

14. Manufactured Treatment Devices (no RR)													14. Manufactured BMP (no RR)				
14.a. Manufactured Treatment Device-Hydrodynamic	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
14.b. Manufactured Treatment Device-Filtering	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
14.c. Manufactured Treatment Device-Generic	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	4.80	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	13.00	AREA CHECK: OK.
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)	20.80	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr)	15.64	
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	7.81	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00	
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. A (lb/yr)	7.81	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. A (lb/yr)	7.83	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	33.53
TOTAL NITROGEN REMOVED IN D.A. A (lb/yr)	33.53

Drainage Area B

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)	3.16	0.00	0.00	1.29	4.45	0.18
Impervious Cover (acres)	0.97	0.00	0.00	0.11	1.08	0.95
				Total	5.53	

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. B (lb/yr)	4.16
Post Development Treatment Volume in D.A. B (ft^3)	6,616

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
1. Vegetated Roof (RR)													
1.a. Vegetated Roof #1 (Spec #5)	45				0	0	0	0		0.00	0.00	0.00	
1.b. Vegetated Roof #2 (Spec #5)	60				0	0	0	0		0.00	0.00	0.00	
2. Rooftop Disconnection (RR)													
2.a. Simple Disconnection to A/B Soils (Spec #1)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.b. Simple Disconnection to C/D Soils (Spec #1)	25			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.d. To Dry Well or French Drain #1, Micro-Infilration #1 (Spec #8)	50			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (Spec #8)	90			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.f. To Rain Garden #1, Micro-Bioretention #1 (Spec #9)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.g. To Rain Garden #2, Micro-Bioretention #2 (Spec #9)	80			0	0	0	0	50	0.00	0.00	0.00	0.00	
2.h. To Rainwater Harvesting (Spec #6)	0			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.i. To Stormwater Planter, Urban Bioretention (Spec #9, Appendix A)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	
3. Permeable Pavement (RR)													
3.a. Permeable Pavement #1 (Spec #7)	45			0	0	0	0	25	0.00	0.00	0.00	0.00	
3.b. Permeable Pavement #2 (Spec #7)	75				0	0	0	25		0.00	0.00	0.00	
4. Grass Channel (RR)													
4.a. Grass Channel A/B Soils (Spec #3)	20			0	0	0	0	15	0.00	0.00	0.00	0.00	
4.b. Grass Channel C/D Soils (Spec #3)	10			0	0	0	0	15	0.00	0.00	0.00	0.00	
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	20			0	0	0	0	15	0.00	0.00	0.00	0.00	
5. Dry Swale (RR)													
5.a. Dry Swale #1 (Spec #10)	40	3.25	0.98	0	2,196	3,295	5,491	20	0.00	3.45	1.79	1.65	13.a. Wet Pond #1
5.b. Dry Swale #2 (Spec #10)	60			0	0	0	0	40	0.00	0.00	0.00	0.00	
6. Bioretention (RR)													
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	

Practice	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)					
1.a. Vegetated Roof #1 (Spec #5)	0		0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)					
2.a. Simple Disconnection to A/B Soils (Spec #1)	0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1, Micro-Infilration #1 (Spec #8)	15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (Spec #8)	15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1, Micro-Bioretention #1 (Spec #9)	40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2, Micro-Bioretention #2 (Spec #9)	60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter, Urban Bioretention (Spec #9, Appendix A)	40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)					
3.a. Permeable Pavement #1 (Spec #7)	25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	25		0.00	0.00	0.00
4. Grass Channel (RR)					
4.a. Grass Channel A/B Soils (Spec #3)	20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	20	0.00	0.00	0.00	0.00
5. Dry Swale (RR)					
5.a. Dry Swale #1 (Spec #10)	25	0.00	24.65	13.56	11.09
5.b. Dry Swale #2 (Spec #10)	35	0.00	0.00	0.00	0.00
6. Bioretention (RR)					
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40	0.00	0.00	0.00	0.00

6.b. Bioretention #2 or Micro-Bioretention #2 (Spec #9)	80			0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration (RR)														**7. Infiltration (RR)**				
7.a. Infiltration #1 (Spec #8)	50			0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (Spec #8)	90			0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond (RR)														**8. Extended Detention Pond (RR)**				
8.a. ED #1 (Spec #15)	0			0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (Spec #15)	15			0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space (RR)														**9. Sheetflow to Filter/Open Space (RR)**				
9.a. Sheetflow to Conservation Area, A/B Soils (Spec #2)	75			0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area, C/D Soils (Spec #2)	50			0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	50			0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.98	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	3.25	AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. B (ft^3)	2,196	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. B (lb/yr)	4.16	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	1.79	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	2.36	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. B (ft^3)	2,196
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr	13.56

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

10. Wet Swale (no RR)														**10. Wet Swale (Coastal Plain) (no RR)**				
10.a. Wet Swale #1 (Spec #11)	0			0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	0			0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Filtering Practices (no RR)														**11. Filtering Practices (no RR)**				
11.a.Filtering Practice #1 (Spec #12)	0			0	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	0			0	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
12. Constructed Wetland (no RR)														**12. Constructed Wetland (no RR)**				
12.a.Constructed Wetland #1 (Spec #13)	0			0	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	0			0	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
13. Wet Ponds (no RR)														**13. Wet Ponds (no RR)**				
13.a. Wet Pond #1 (Spec #14)	0	1.20	0.10	3,295	0	4,419	4,419	50	1.65	0.71	1.18	1.18		30	11.09	5.05	4.84	11.30
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	0			0	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	0			0	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	0			0	0	0	0	65	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00

14. Manufactured Treatment Devices (no RR)													14. Manufactured BMP (no RR)				
14.a. Manufactured Treatment Device-Hydrodynamic	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
14.b. Manufactured Treatment Device-Filtering	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
14.c. Manufactured Treatment Device-Generic	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	1.08	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	4.45	AREA CHECK: OK.
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)	20.80	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. B (lb/yr)	4.16	
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	1.18	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	1.79	
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. B (lb/yr)	2.97	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. B (lb/yr)	1.18	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	13.56
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	4.84
TOTAL NITROGEN REMOVED IN D.A. B (lb/yr)	18.40

Drainage Area C

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)	2.34	0.00	6.14	2.34	10.82	0.21
Impervious Cover (acres)	0.52	0.00	2.09	0.43	3.04	0.95
				Total	13.86	

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. C (lb/yr)	11.80
Post Development Treatment Volume in D.A. C (ft^3)	18,785

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
1. Vegetated Roof (RR)													
1.a. Vegetated Roof #1 (Spec #5)	45				0	0	0	0		0.00	0.00	0.00	
1.b. Vegetated Roof #2 (Spec #5)	60				0	0	0	0		0.00	0.00	0.00	
2. Rooftop Disconnection (RR)													
2.a. Simple Disconnection to A/B Soils (Spec #1)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.b. Simple Disconnection to C/D Soils (Spec #1)	25			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.d. To Dry Well or French Drain #1, Micro-Infilration #1 (Spec #8)	50			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (Spec #8)	90			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.f. To Rain Garden #1, Micro-Bioretention #1 (Spec #9)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.g. To Rain Garden #2, Micro-Bioretention #2 (Spec #9)	80			0	0	0	0	50	0.00	0.00	0.00	0.00	
2.h. To Rainwater Harvesting (Spec #6)	0			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.i. To Stormwater Planter, Urban Bioretention (Spec #9, Appendix A)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	
3. Permeable Pavement (RR)													
3.a. Permeable Pavement #1 (Spec #7)	45			0	0	0	0	25	0.00	0.00	0.00	0.00	
3.b. Permeable Pavement #2 (Spec #7)	75				0	0	0	25		0.00	0.00	0.00	
4. Grass Channel (RR)													
4.a. Grass Channel A/B Soils (Spec #3)	20			0	0	0	0	15	0.00	0.00	0.00	0.00	
4.b. Grass Channel C/D Soils (Spec #3)	10			0	0	0	0	15	0.00	0.00	0.00	0.00	
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	20			0	0	0	0	15	0.00	0.00	0.00	0.00	
5. Dry Swale (RR)													
5.a. Dry Swale #1 (Spec #10)	40			0	0	0	0	20	0.00	0.00	0.00	0.00	
5.b. Dry Swale #2 (Spec #10)	60			0	0	0	0	40	0.00	0.00	0.00	0.00	
6. Bioretention (RR)													
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	

Practice	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)					
1.a. Vegetated Roof #1 (Spec #5)	0		0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)					
2.a. Simple Disconnection to A/B Soils (Spec #1)	0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1, Micro-Infilration #1 (Spec #8)	15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (Spec #8)	15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1, Micro-Bioretention #1 (Spec #9)	40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2, Micro-Bioretention #2 (Spec #9)	60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter, Urban Bioretention (Spec #9, Appendix A)	40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)					
3.a. Permeable Pavement #1 (Spec #7)	25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	25		0.00	0.00	0.00
4. Grass Channel (RR)					
4.a. Grass Channel A/B Soils (Spec #3)	20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	20	0.00	0.00	0.00	0.00
5. Dry Swale (RR)					
5.a. Dry Swale #1 (Spec #10)	25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	35	0.00	0.00	0.00	0.00
6. Bioretention (RR)					
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40	0.00	0.00	0.00	0.00

6.b. Bioretention #2 or Micro-Bioretention #2 (Spec #9)	80			0	0	0	0	50	0.00	0.00	0.00	0.00	
7. Infiltration (RR)													
7.a. Infiltration #1 (Spec #8)	50			0	0	0	0	25	0.00	0.00	0.00	0.00	
7.b. Infiltration #2 (Spec #8)	90			0	0	0	0	25	0.00	0.00	0.00	0.00	
8. Extended Detention Pond (RR)													
8.a. ED #1 (Spec #15)	0			0	0	0	0	15	0.00	0.00	0.00	0.00	
8.b. ED #2 (Spec #15)	15			0	0	0	0	15	0.00	0.00	0.00	0.00	
9. Sheetflow to Filter/Open Space (RR)													
9.a. Sheetflow to Conservation Area, A/B Soils (Spec #2)	75			0	0	0	0	0	0.00	0.00	0.00	0.00	
9.b. Sheetflow to Conservation Area, C/D Soils (Spec #2)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	

60	0.00	0.00	0.00	0.00
7. Infiltration (RR)				
15	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00
8. Extended Detention Pond (RR)				
10	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space (RR)				
0	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. C (ft^3)	0	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. C (lb/yr)	11.80	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	0.00	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	11.80	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. C (ft^3)	0
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

10. Wet Swale (no RR)													
10.a. Wet Swale #1 (Spec #11)	0			0	0	0	0	20	0.00	0.00	0.00	0.00	
10.b. Wet Swale #2 (Spec #11)	0			0	0	0	0	40	0.00	0.00	0.00	0.00	
11. Filtering Practices (no RR)													
11.a.Filtering Practice #1 (Spec #12)	0			0	0	0	0	60	0.00	0.00	0.00	0.00	
11.b. Filtering Practice #2 (Spec #12)	0			0	0	0	0	65	0.00	0.00	0.00	0.00	
12. Constructed Wetland (no RR)													
12.a.Constructed Wetland #1 (Spec #13)	0			0	0	0	0	50	0.00	0.00	0.00	0.00	
12.b. Constructed Wetland #2 (Spec #13)	0			0	0	0	0	75	0.00	0.00	0.00	0.00	
13. Wet Ponds (no RR)													
13.a. Wet Pond #1 (Spec #14)	0	10.82	3.04	0	0	18,785	18,785	50	0.00	11.79	5.89	5.89	
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	0			0	0	0	0	45	0.00	0.00	0.00	0.00	
13.c. Wet Pond #2 (Spec #14)	0			0	0	0	0	75	0.00	0.00	0.00	0.00	
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	0			0	0	0	0	65	0.00	0.00	0.00	0.00	

10. Wet Swale (Coastal Plain) (no RR)				
25	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00
11. Filtering Practices (no RR)				
30	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00
12. Constructed Wetland (no RR)				
25	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00
13. Wet Ponds (no RR)				
30	0.00	84.34	25.30	59.04
20	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00

14. Manufactured Treatment Devices (no RR)													14. Manufactured BMP (no RR)				
14.a. Manufactured Treatment Device-Hydrodynamic	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
14.b. Manufactured Treatment Device-Filtering	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
14.c. Manufactured Treatment Device-Generic	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	3.04	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	10.82	AREA CHECK: OK.
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)	20.80	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. C (lb/yr)	11.80	
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	5.89	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	0.00	
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. C (lb/yr)	5.89	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. C (lb/yr)	5.91	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	0.00
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	25.30
TOTAL NITROGEN REMOVED IN D.A. C (lb/yr)	25.30

Drainage Area D

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)	1.38	0.72	0.00	1.00	3.10	0.19
Impervious Cover (acres)	0.28	0.08	0.00	0.01	0.37	0.95
				Total	3.47	

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. D (lb/yr)	2.17
Post Development Treatment Volume in D.A. D (ft^3)	3,458

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
1. Vegetated Roof (RR)													
1.a. Vegetated Roof #1 (Spec #5)	45				0	0	0	0		0.00	0.00	0.00	
1.b. Vegetated Roof #2 (Spec #5)	60				0	0	0	0		0.00	0.00	0.00	
2. Rooftop Disconnection (RR)													
2.a. Simple Disconnection to A/B Soils (Spec #1)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.b. Simple Disconnection to C/D Soils (Spec #1)	25			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.d. To Dry Well or French Drain #1, Micro-Infilration #1 (Spec #8)	50			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (Spec #8)	90			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.f. To Rain Garden #1, Micro-Bioretention #1 (Spec #9)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.g. To Rain Garden #2, Micro-Bioretention #2 (Spec #9)	80			0	0	0	0	50	0.00	0.00	0.00	0.00	
2.h. To Rainwater Harvesting (Spec #6)	0			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.i. To Stormwater Planter, Urban Bioretention (Spec #9, Appendix A)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	
3. Permeable Pavement (RR)													
3.a. Permeable Pavement #1 (Spec #7)	45			0	0	0	0	25	0.00	0.00	0.00	0.00	
3.b. Permeable Pavement #2 (Spec #7)	75				0	0	0	25		0.00	0.00	0.00	
4. Grass Channel (RR)													
4.a. Grass Channel A/B Soils (Spec #3)	20			0	0	0	0	15	0.00	0.00	0.00	0.00	
4.b. Grass Channel C/D Soils (Spec #3)	10			0	0	0	0	15	0.00	0.00	0.00	0.00	
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	20			0	0	0	0	15	0.00	0.00	0.00	0.00	
5. Dry Swale (RR)													
5.a. Dry Swale #1 (Spec #10)	40			0	0	0	0	20	0.00	0.00	0.00	0.00	
5.b. Dry Swale #2 (Spec #10)	60			0	0	0	0	40	0.00	0.00	0.00	0.00	
6. Bioretention (RR)													
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	

Practice	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)					
1.a. Vegetated Roof #1 (Spec #5)	0		0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)					
2.a. Simple Disconnection to A/B Soils (Spec #1)	0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1, Micro-Infilration #1 (Spec #8)	15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (Spec #8)	15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1, Micro-Bioretention #1 (Spec #9)	40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2, Micro-Bioretention #2 (Spec #9)	60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter, Urban Bioretention (Spec #9, Appendix A)	40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)					
3.a. Permeable Pavement #1 (Spec #7)	25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	25		0.00	0.00	0.00
4. Grass Channel (RR)					
4.a. Grass Channel A/B Soils (Spec #3)	20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (Spec #3)	20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	20	0.00	0.00	0.00	0.00
5. Dry Swale (RR)					
5.a. Dry Swale #1 (Spec #10)	25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	35	0.00	0.00	0.00	0.00
6. Bioretention (RR)					
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40	0.00	0.00	0.00	0.00

6.b. Bioretention #2 or Micro-Bioretention #2 (Spec #9)	80			0	0	0	0	50	0.00	0.00	0.00	0.00	

60	0.00	0.00	0.00	0.00

7. Infiltration (RR)													
7.a. Infiltration #1 (Spec #8)	50			0	0	0	0	25	0.00	0.00	0.00	0.00	
7.b. Infiltration #2 (Spec #8)	90			0	0	0	0	25	0.00	0.00	0.00	0.00	

7. Infiltration (RR)				
15	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00

8. Extended Detention Pond (RR)													
8.a. ED #1 (Spec #15)	0			0	0	0	0	15	0.00	0.00	0.00	0.00	
8.b. ED #2 (Spec #15)	15			0	0	0	0	15	0.00	0.00	0.00	0.00	

8. Extended Detention Pond (RR)				
10	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00

9. Sheetflow to Filter/Open Space (RR)													
9.a. Sheetflow to Conservation Area, A/B Soils (Spec #2)	75			0	0	0	0	0	0.00	0.00	0.00	0.00	
9.b. Sheetflow to Conservation Area, C/D Soils (Spec #2)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	

9. Sheetflow to Filter/Open Space (RR)				
0	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. D (ft^3)	0	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. D (lb/yr)	2.17	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr)	0.00	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr)	2.17	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. D (ft^3)	0
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

10. Wet Swale (no RR)													
10.a. Wet Swale #1 (Spec #11)	0			0	0	0	0	20	0.00	0.00	0.00	0.00	
10.b. Wet Swale #2 (Spec #11)	0			0	0	0	0	40	0.00	0.00	0.00	0.00	

10. Wet Swale (Coastal Plain) (no RR)				
25	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00

11. Filtering Practices (no RR)													
11.a.Filtering Practice #1 (Spec #12)	0			0	0	0	0	60	0.00	0.00	0.00	0.00	
11.b. Filtering Practice #2 (Spec #12)	0			0	0	0	0	65	0.00	0.00	0.00	0.00	

11. Filtering Practices (no RR)				
30	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00

12. Constructed Wetland (no RR)													
12.a.Constructed Wetland #1 (Spec #13)	0			0	0	0	0	50	0.00	0.00	0.00	0.00	
12.b. Constructed Wetland #2 (Spec #13)	0			0	0	0	0	75	0.00	0.00	0.00	0.00	

12. Constructed Wetland (no RR)				
25	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00

13. Wet Ponds (no RR)													
13.a. Wet Pond #1 (Spec #14)	0			0	0	0	0	50	0.00	0.00	0.00	0.00	
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	0			0	0	0	0	45	0.00	0.00	0.00	0.00	
13.c. Wet Pond #2 (Spec #14)	0			0	0	0	0	75	0.00	0.00	0.00	0.00	
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	0			0	0	0	0	65	0.00	0.00	0.00	0.00	

13. Wet Ponds (no RR)				
30	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00

14. Manufactured Treatment Devices (no RR)													14. Manufactured BMP (no RR)				
14.a. Manufactured Treatment Device-Hydrodynamic	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
14.b. Manufactured Treatment Device-Filtering	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
14.c. Manufactured Treatment Device-Generic	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)	20.80	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. D (lb/yr)	2.17	
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr)	0.00	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr)	0.00	
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. D (lb/yr)	0.00	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. D (lb/yr)	2.17	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr)	0.00
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr)	0.00
TOTAL NITROGEN REMOVED IN D.A. D (lb/yr)	0.00

Drainage Area E

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)	7.66	1.08	0.77	0.28	9.79	0.16
Impervious Cover (acres)	1.85	0.20	0.26	0.00	2.31	0.95
				Total	12.10	

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. E (lb/yr)	8.66
Post Development Treatment Volume in D.A. E (ft^3)	13,790

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
1. Vegetated Roof (RR)													
1.a. Vegetated Roof #1 (Spec #5)	45				0	0	0	0		0.00	0.00	0.00	
1.b. Vegetated Roof #2 (Spec #5)	60				0	0	0	0		0.00	0.00	0.00	
2. Rooftop Disconnection (RR)													
2.a. Simple Disconnection to A/B Soils (Spec #1)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.b. Simple Disconnection to C/D Soils (Spec #1)	25			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.d. To Dry Well or French Drain #1, Micro-Infilration #1 (Spec #8)	50			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (Spec #8)	90			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.f. To Rain Garden #1, Micro-Bioretention #1 (Spec #9)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.g. To Rain Garden #2, Micro-Bioretention #2 (Spec #9)	80			0	0	0	0	50	0.00	0.00	0.00	0.00	
2.h. To Rainwater Harvesting (Spec #6)	0			0	0	0	0	0	0.00	0.00	0.00	0.00	
2.i. To Stormwater Planter, Urban Bioretention (Spec #9, Appendix A)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	
3. Permeable Pavement (RR)													
3.a. Permeable Pavement #1 (Spec #7)	45			0	0	0	0	25	0.00	0.00	0.00	0.00	
3.b. Permeable Pavement #2 (Spec #7)	75				0	0	0	25		0.00	0.00	0.00	
4. Grass Channel (RR)													
4.a. Grass Channel A/B Soils (Spec #3)	20			0	0	0	0	15	0.00	0.00	0.00	0.00	
4.b. Grass Channel C/D Soils (Spec #3)	10			0	0	0	0	15	0.00	0.00	0.00	0.00	
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	20			0	0	0	0	15	0.00	0.00	0.00	0.00	
5. Dry Swale (RR)													
5.a. Dry Swale #1 (Spec #10)	40	9.79	2.31	0	5,516	8,274	13,790	20	0.00	8.65	4.50	4.15	13.a. Wet Pond #1
5.b. Dry Swale #2 (Spec #10)	60			0	0	0	0	40	0.00	0.00	0.00	0.00	
6. Bioretention (RR)													
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	

Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)				
0		0.00	0.00	0.00
0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)				
0	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)				
25	0.00	0.00	0.00	0.00
25		0.00	0.00	0.00
4. Grass Channel (RR)				
20	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00
5. Dry Swale (RR)				
25	0.00	61.91	34.05	27.86
35	0.00	0.00	0.00	0.00
6. Bioretention (RR)				
40	0.00	0.00	0.00	0.00

6.b. Bioretention #2 or Micro-Bioretention #2 (Spec #9)	80			0	0	0	0	50	0.00	0.00	0.00	0.00	
7. Infiltration (RR)													
7.a. Infiltration #1 (Spec #8)	50			0	0	0	0	25	0.00	0.00	0.00	0.00	
7.b. Infiltration #2 (Spec #8)	90			0	0	0	0	25	0.00	0.00	0.00	0.00	
8. Extended Detention Pond (RR)													
8.a. ED #1 (Spec #15)	0			0	0	0	0	15	0.00	0.00	0.00	0.00	
8.b. ED #2 (Spec #15)	15			0	0	0	0	15	0.00	0.00	0.00	0.00	
9. Sheetflow to Filter/Open Space (RR)													
9.a. Sheetflow to Conservation Area, A/B Soils (Spec #2)	75			0	0	0	0	0	0.00	0.00	0.00	0.00	
9.b. Sheetflow to Conservation Area, C/D Soils (Spec #2)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	50			0	0	0	0	0	0.00	0.00	0.00	0.00	

60	0.00	0.00	0.00	0.00	
7. Infiltration (RR)					
15	0.00	0.00	0.00	0.00	
15	0.00	0.00	0.00	0.00	
8. Extended Detention Pond (RR)					
10	0.00	0.00	0.00	0.00	
10	0.00	0.00	0.00	0.00	
9. Sheetflow to Filter/Open Space (RR)					
0	0.00	0.00	0.00	0.00	
0	0.00	0.00	0.00	0.00	
0	0.00	0.00	0.00	0.00	

TOTAL IMPERVIOUS COVER TREATED (ac)	2.31	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	9.79	AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. E (ft^3)	5,516	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. E (lb/yr)	8.66	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr)	4.50	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr)	4.16	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. E (ft^3)	5,516
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr)	34.05

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

10. Wet Swale (no RR)													
10.a. Wet Swale #1 (Spec #11)	0			0	0	0	0	20	0.00	0.00	0.00	0.00	
10.b. Wet Swale #2 (Spec #11)	0			0	0	0	0	40	0.00	0.00	0.00	0.00	
11. Filtering Practices (no RR)													
11.a.Filtering Practice #1 (Spec #12)	0			0	0	0	0	60	0.00	0.00	0.00	0.00	
11.b. Filtering Practice #2 (Spec #12)	0			0	0	0	0	65	0.00	0.00	0.00	0.00	
12. Constructed Wetland (no RR)													
12.a.Constructed Wetland #1 (Spec #13)	0			0	0	0	0	50	0.00	0.00	0.00	0.00	
12.b. Constructed Wetland #2 (Spec #13)	0			0	0	0	0	75	0.00	0.00	0.00	0.00	
13. Wet Ponds (no RR)													
13.a. Wet Pond #1 (Spec #14)	0			8,274	0	8,274	8,274	50	4.15	0.00	2.08	2.08	
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	0			0	0	0	0	45	0.00	0.00	0.00	0.00	
13.c. Wet Pond #2 (Spec #14)	0			0	0	0	0	75	0.00	0.00	0.00	0.00	
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	0			0	0	0	0	65	0.00	0.00	0.00	0.00	

10. Wet Swale (Coastal Plain) (no RR)					
25	0.00	0.00	0.00	0.00	
35	0.00	0.00	0.00	0.00	
11. Filtering Practices (no RR)					
30	0.00	0.00	0.00	0.00	
45	0.00	0.00	0.00	0.00	
12. Constructed Wetland (no RR)					
25	0.00	0.00	0.00	0.00	
55	0.00	0.00	0.00	0.00	
13. Wet Ponds (no RR)					
30	27.86	0.00	8.36	19.50	
20	0.00	0.00	0.00	0.00	
40	0.00	0.00	0.00	0.00	
30	0.00	0.00	0.00	0.00	

14. Manufactured Treatment Devices (no RR)													14. Manufactured BMP (no RR)				
14.a. Manufactured Treatment Device-Hydrodynamic	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
14.b. Manufactured Treatment Device-Filtering	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
14.c. Manufactured Treatment Device-Generic	0			0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	2.31	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	9.79	AREA CHECK: OK.
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)	20.80	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. E (lb/yr)	8.66	
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr)	2.08	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr)	4.50	
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. E (lb/yr)	6.58	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. E (lb/yr)	2.09	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr)	34.05
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr)	8.36
TOTAL NITROGEN REMOVED IN D.A. E (lb/yr)	42.41

Site Results (Water Quality Compliance)

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	4.80	1.08	3.04	0.37	2.31	OK.
IMPERVIOUS COVER TREATED (ac)	4.80	1.08	3.04	0.00	2.31	OK.
MANAGED TURF AREA (ac)	13.00	4.45	10.82	3.10	9.79	OK.
MANAGED TURF AREA TREATED (ac)	13.00	4.45	10.82	0.00	9.79	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft^3)	67,541

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft^3)	0	2,196	0	0	5,516	7,712
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	15.64	4.16	11.80	2.17	8.66	42.44
TP LOAD REDUCTION ACHIEVED (lb/yr)	7.81	2.97	5.89	0.00	6.58	23.26
TP LOAD REMAINING (lb/yr)	7.83	1.18	5.91	2.17	2.09	19.18
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	33.53	18.40	25.30	0.00	42.41	119.64

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	42.44	
TP LOAD REDUCTION REQUIRED (lb/yr)	20.80	
TP LOAD REDUCTION ACHIEVED (lb/yr)	23.26	
TP LOAD REMAINING (lb/yr):	19.18	
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	0.00	**

** TARGET TP REDUCTION EXCEEDED BY 2.45 LB/YEAR **

Total Nitrogen (For Information Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	303.58
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	119.64
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	183.94



REFERENCE NOTES

1. TOPOGRAPHY OBTAINED FROM THE NATIONAL MAP LIDAR POINT CLOUD (LPC) PROGRAM "USGS_LPC_VA_UPPERMIDDLENECK_2018_D18" IN LAS FORMAT. LPC DATA THINNED TO 0.5' CONTOUR INTERAVAL.
2. STREAMS AND WETLANDS SHOWN HEREON OBTAINED FROM RICHMOND ROAD SOLAR, LLC, "45853.032-R-WETD-RICHMOND ROAD.DWG"
3. PROPERTY LINE DATA OBTAINED FROM JAMES CITY COUNTY "RICHMOND ROAD PARCEL.SHP"

STORMWATER NOTES

1. STORMWATER MANAGEMENT PLAN SHOWN HEREON IS CONCEPTUAL AND REPRESENTATIVE OF ONE METHODOLOGY OF COMPLIANCE WITH VADEQ AND JAMES CITY COUNTY REQUIREMENTS. THIS PLAN SHALL NOT PRECLUDE ALTERNATIVE MEASURES OF COMPLIANCE DESIGNED DURING FINAL PREPARATION OF CONSTRUCTION DRAWINGS.
2. SOLAR FACILITY LAYOUT SHOWN HEREON IS SCHEMATIC; REFER TO SITE LAYOUT PLANS FOR DESIGN OF SOLAR SYSTEM.
3. ALL ROADS SHALL BE GRAVELED WITH VDOT 21A STONE OR APPROVED EQUIVALENT.
4. DISTURBANCE OF THE RPA BUFFER SHOWN HEREON SHALL BE ONLY AS PERMITTED BY JAMES CITY COUNTY AND FOR THE EXPRESS PURPOSE OF INSTALLING STORMWATER MANAGEMENT OUTFALL FACILITIES.
5. REFER TO STORMWATER MEMORANDUM FOR DETAIL OF METHODOLOGY AND VRRM COMPLIANCE.
6. ALL POST CONSTRUCTION STORMWATER MANAGEMENT FEATURES SHALL BE INSTALLED IN CONFORMANCE WITH THE VIRGINIA STORMWATER BMP CLEARINGHOUSE DESIGN SPECIFICATIONS.
7. REFER TO DETAILS, SHEET C901
8. CHANNEL AND FLOOD PROTECTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH 870-66(B)(3)(A) AND 870-66(C)(2)(B)

NORTH

PLAN

SCALE: 1" = 100'

0 100' 200'

SUN TRIBE DEVELOPMENT
107 5TH STREET SOUHEAST
CHARLOTTESVILLE, VIRGINIA 22901

TETRA TECH, INCORPORATED
4101 COX ROAD, SUITE 100
GLEN ALLEN, VIRGINIA 23060

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

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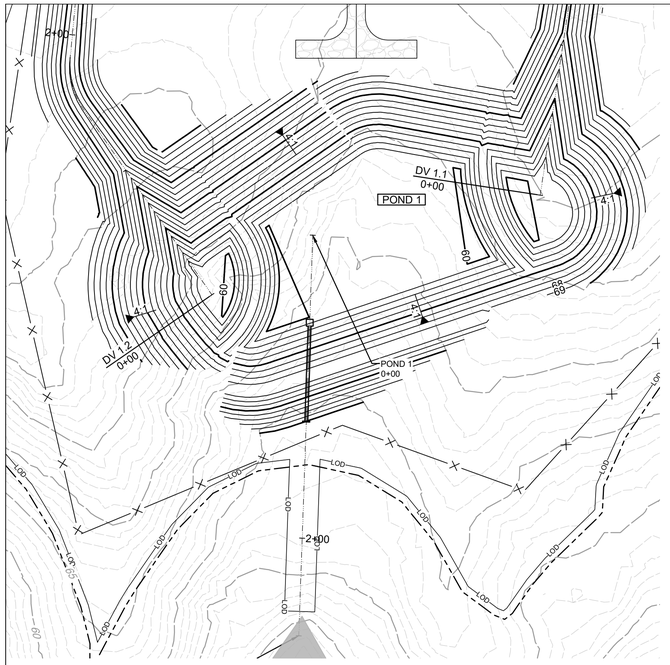
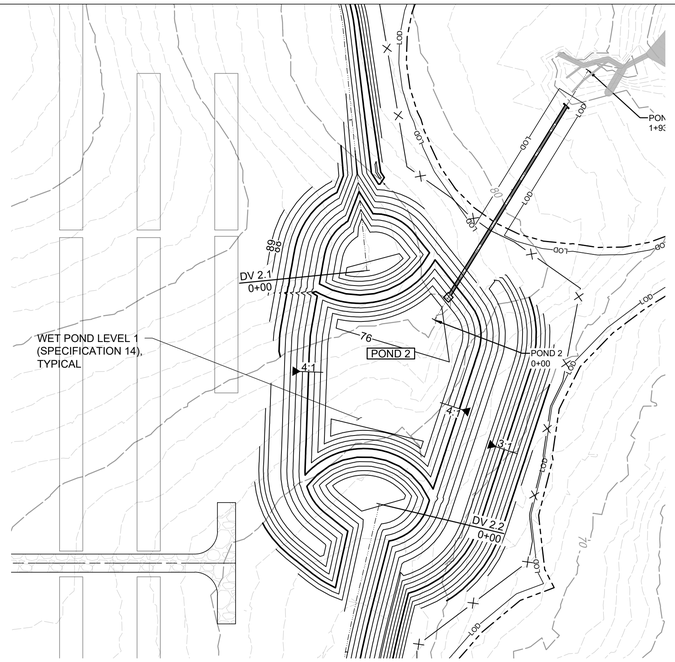
DRAWING NO: C900



NORTH

POND 1 PLAN

SCALE: 1" = 50' 0 50' 100'



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POND 2 PLAN

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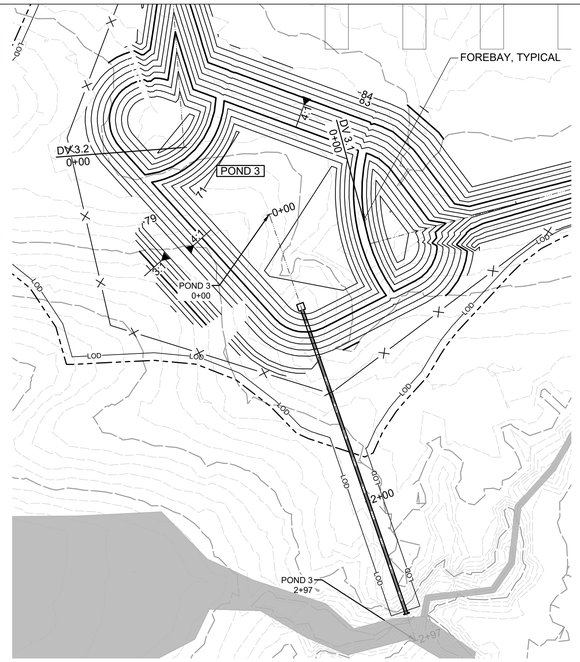

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POND 3 PLAN

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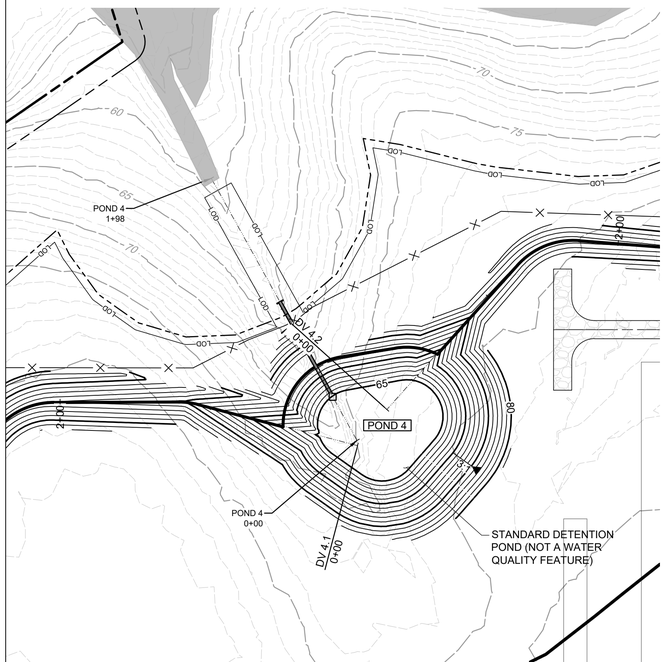

NORTH

POND 4 PLAN

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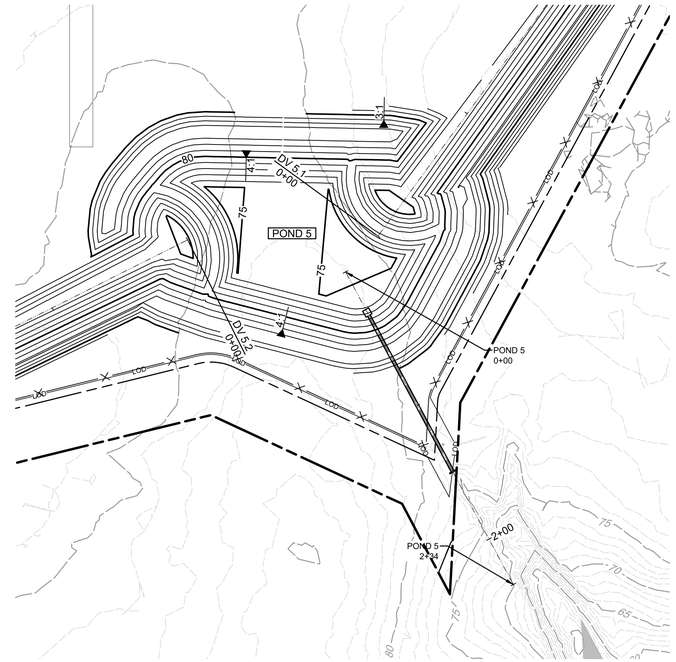

NORTH

POND 5 PLAN

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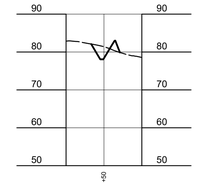

SECTION A-A

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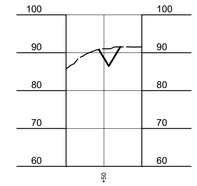

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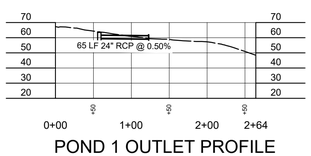

POND 1 OUTLET PROFILE

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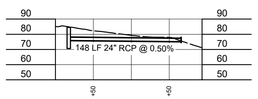

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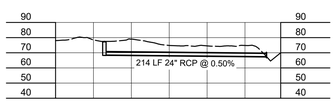

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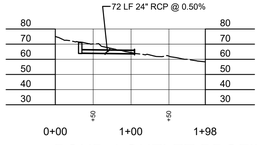

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SCALE H:1"=100'; V:1"=50'



POND 5 OUTLET PROFILE

SCALE H:1"=100'; V:1"=50'

SUN TRIBE DEVELOPMENT
107 5TH STREET SOUTHEAST
CHARLOTTESVILLE, VIRGINIA 22901

TETRA TECH, INCORPORATED
4101 COX ROAD, SUITE 100
GLEN ALLEN, VIRGINIA 23060

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

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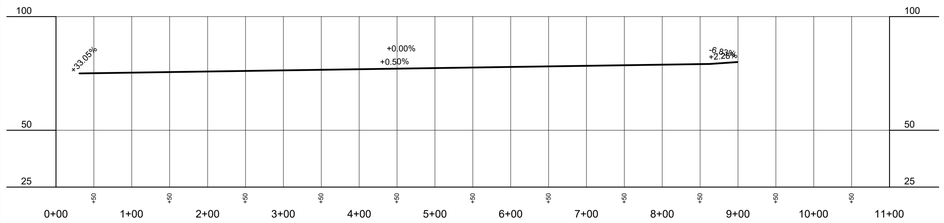

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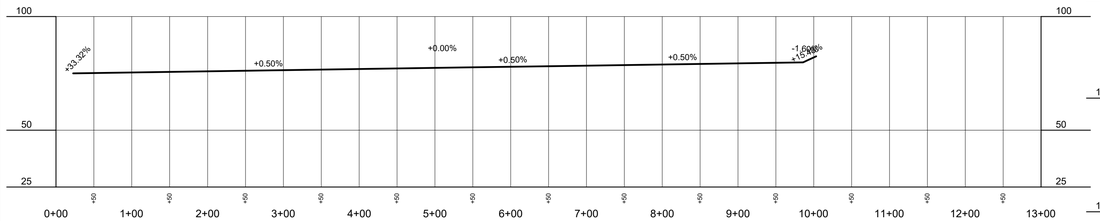

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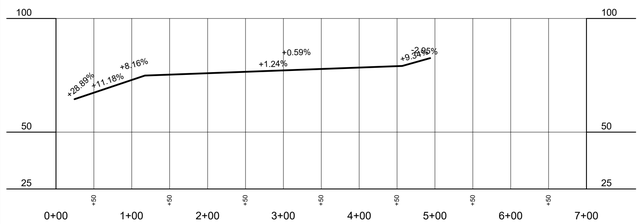

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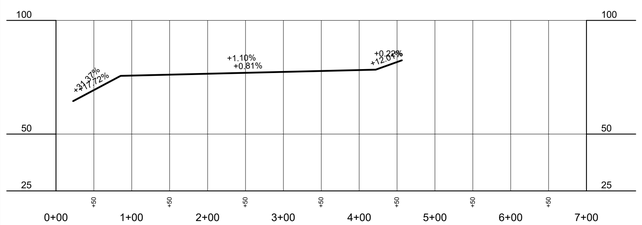

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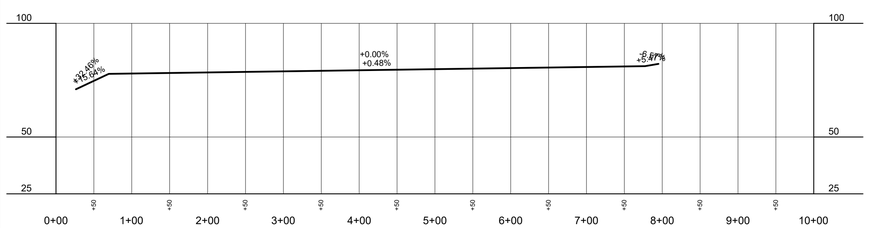

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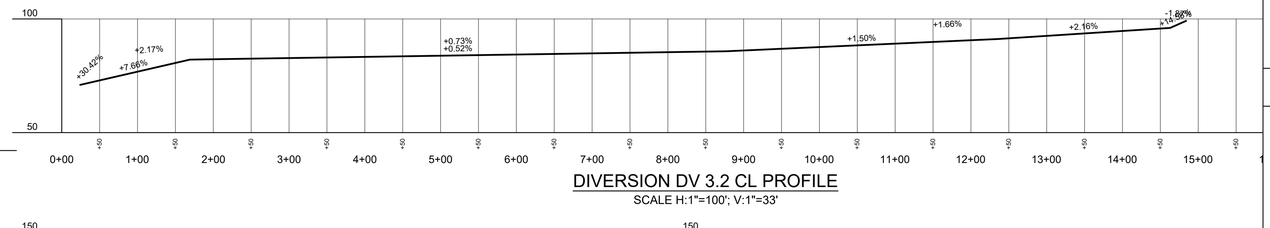

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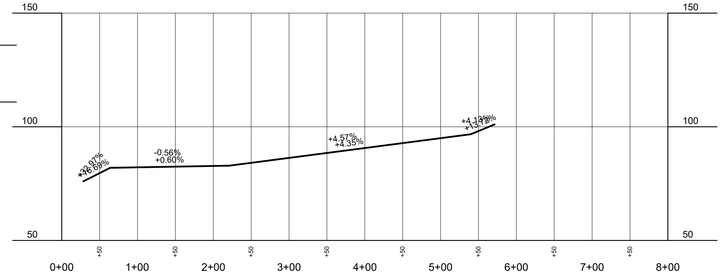

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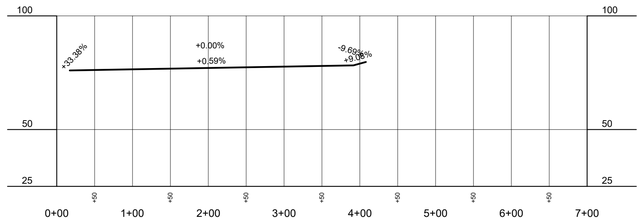

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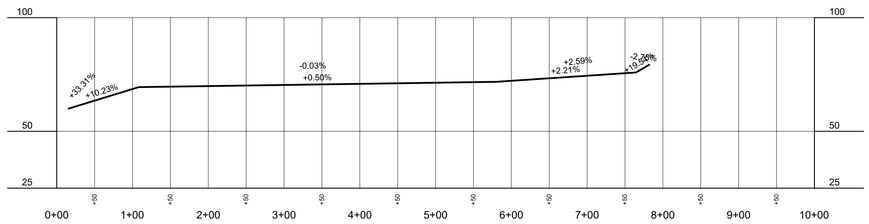

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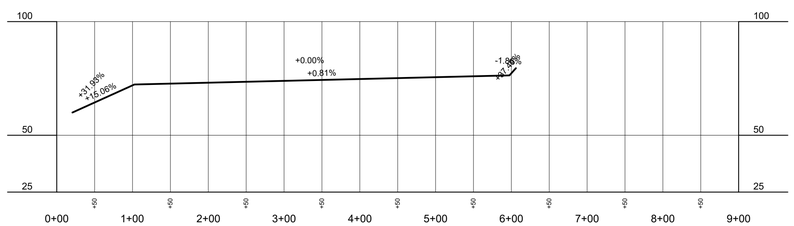

DIVERSION DV 1.2 CL PROFILE

SCALE H:1"=100'; V:1"=33'

SUN TRIBE DEVELOPMENT
107 5TH STREET SOUTHEAST
CHARLOTTESVILLE, VIRGINIA 22901

TETRA TECH, INCORPORATED
4101 Cox ROAD, SUITE 100
GLEN ALLEN, VIRGINIA 23060

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

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DRAWING NO: C902

DA B

DA C

DA D

DA E

DA A

DRAINAGE AREA

REFERENCE NOTES

1. TOPOGRAPHY OBTAINED FROM THE NATIONAL MAP LIDAR POINT CLOUD (LPC) PROGRAM "USGS_LPC_VA_UPPERMIDDLENECK_2018_D18" IN LAS FORMAT. LPC DATA THINNED TO 0.5' CONTOUR INTERAVAL.
2. STREAMS AND WETLANDS SHOWN HEREON OBTAINED FROM RICHMOND ROAD SOLAR, LLC, "45853.032-R-WETD-RICHMOND ROAD.DWG"
3. PROPERTY LINE DATA OBTAINED FROM JAMES CITY COUNTY "RICHMOND ROAD PARCEL.SHP"

STORMWATER NOTES

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2. SOLAR FACILITY LAYOUT SHOWN HEREON IS SCHEMATIC; REFER TO SITE LAYOUT PLANS FOR DESIGN OF SOLAR SYSTEM.
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5. REFER TO STORMWATER MEMORANDUM FOR DETAIL OF METHODOLOGY AND VRRM COMPLIANCE.
6. ALL POST CONSTRUCTION STORMWATER MANAGEMENT FEATURES SHALL BE INSTALLED IN CONFORMANCE WITH THE VIRGINIA STORMWATER BMP CLEARINGHOUSE DESIGN SPECIFICATIONS.
7. REFER TO DETAILS, SHEET C901

NORTH

PLAN
SCALE: 1" = 100'

0 100' 200'

SUN TRIBE DEVELOPMENT
107 12TH STREET SOUTHEAST
CHARLOTTESVILLE, VIRGINIA 22901

TETRA TECH, INCORPORATED
4101 COX ROAD, SUITE 100
GLEN ALLEN, VIRGINIA 23060

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

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DRAWING NO: C903



REFERENCE NOTES

1. TOPOGRAPHY OBTAINED FROM THE NATIONAL MAP LIDAR POINT CLOUD (LPC) PROGRAM "USGS_LPC_VA_UPPERMIDDLENECK_2018_D18" IN LAS FORMAT. LPC DATA THINNED TO 0.5' CONTOUR INTERAVAL.
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STORMWATER NOTES

1. STORMWATER MANAGEMENT PLAN SHOWN HEREON IS CONCEPTUAL AND REPRESENTATIVE OF ONE METHODOLOGY OF COMPLIANCE WITH VADEQ AND JAMES CITY COUNTY REQUIREMENTS. THIS PLAN SHALL NOT PRECLUDE ALTERNATIVE MEASURES OF COMPLIANCE DESIGNED DURING FINAL PREPARATION OF CONSTRUCTION DRAWINGS.
2. SOLAR FACILITY LAYOUT SHOWN HEREON IS SCHEMATIC; REFER TO SITE LAYOUT PLANS FOR DESIGN OF SOLAR SYSTEM.
3. ALL ROADS SHALL BE GRAVELED WITH VDOT 21A STONE OR APPROVED EQUIVALENT.
4. DISTURBANCE OF THE RPA BUFFER SHOWN HEREON SHALL BE ONLY AS PERMITTED BY JAMES CITY COUNTY AND FOR THE EXPRESS PURPOSE OF INSTALLING STORMWATER MANAGEMENT OUTFALL FACILITIES.
5. REFER TO STORMWATER MEMORANDUM FOR DETAIL OF METHODOLOGY AND VRRM COMPLIANCE.
6. ALL POST CONSTRUCTION STORMWATER MANAGEMENT FEATURES SHALL BE INSTALLED IN CONFORMANCE WITH THE VIRGINIA STORMWATER BMP CLEARINGHOUSE DESIGN SPECIFICATIONS.
7. REFER TO DETAILS, SHEET C901

SUN TRIBE DEVELOPMENT
107 12TH STREET SOUHEAST
CHARLOTTESVILLE, VIRGINIA 22901

TETRA TECH, INCORPORATED
4101 Cox ROAD, SUITE 100
GLEN ALLEN, VIRGINIA 23060

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	06/30/23	TTI	TTI	ISSUED FOR REVIEW

NOT FOR CONSTRUCTION

PAPER SIZE: 22X34

SCALE: AS SHOWN

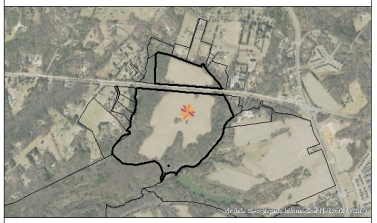
DRAWING TITLE: STORMWATER MANAGEMENT POST-DEVELOPMENT DRAINAGE AREA MAP

DRAWING NO: C904

Appendix I – Soil Survey



VICINITY MAP - STATE



VICINITY MAP - COUNTY



NOTES

According to the Agriculture Assets Map (SSURGO) found in the James City County Natural and Cultural Assets Plan, only 3.68 acres of the proposed area within the limits of disturbance contains Class 1 soils, and only 2.62 acres of the area within the limits of disturbance contains Class 2 soils. The 2.62 acres of Class 2 soils are existing mature vegetation and are not currently in agricultural crop production.

LEGEND

- PROJECT PARCEL BOUNDARY
- CONCEPTUAL LIMITS OF DISTURBANCE
- POINT OF INTERCONNECTION (37.402633, -76.81876)

AGRICULTURE SUITABILITY (SSURGO)

- Non-Irrigated Capability Class I (Over pervious surfaces)
- Non-Irrigated Capability Class II (Over pervious surfaces)

Sun Tribe DEVELOPMENT
107 5TH STREET SOUTHEAST
CHARLOTTESVILLE, VA 22902
WWW.SUNTRIBESOLAR.COM

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	03/17/2023	E TURNER	TF RANDS	CONCEPTUAL DESIGN FOR SPECIAL USE PERMIT APPLICATION
B	04/18/2023	E TURNER	TF RANDS	UPDATED SITE MAPS
C	06/26/2023	E TURNER	TF RANDS	UPDATED SITE MAPS

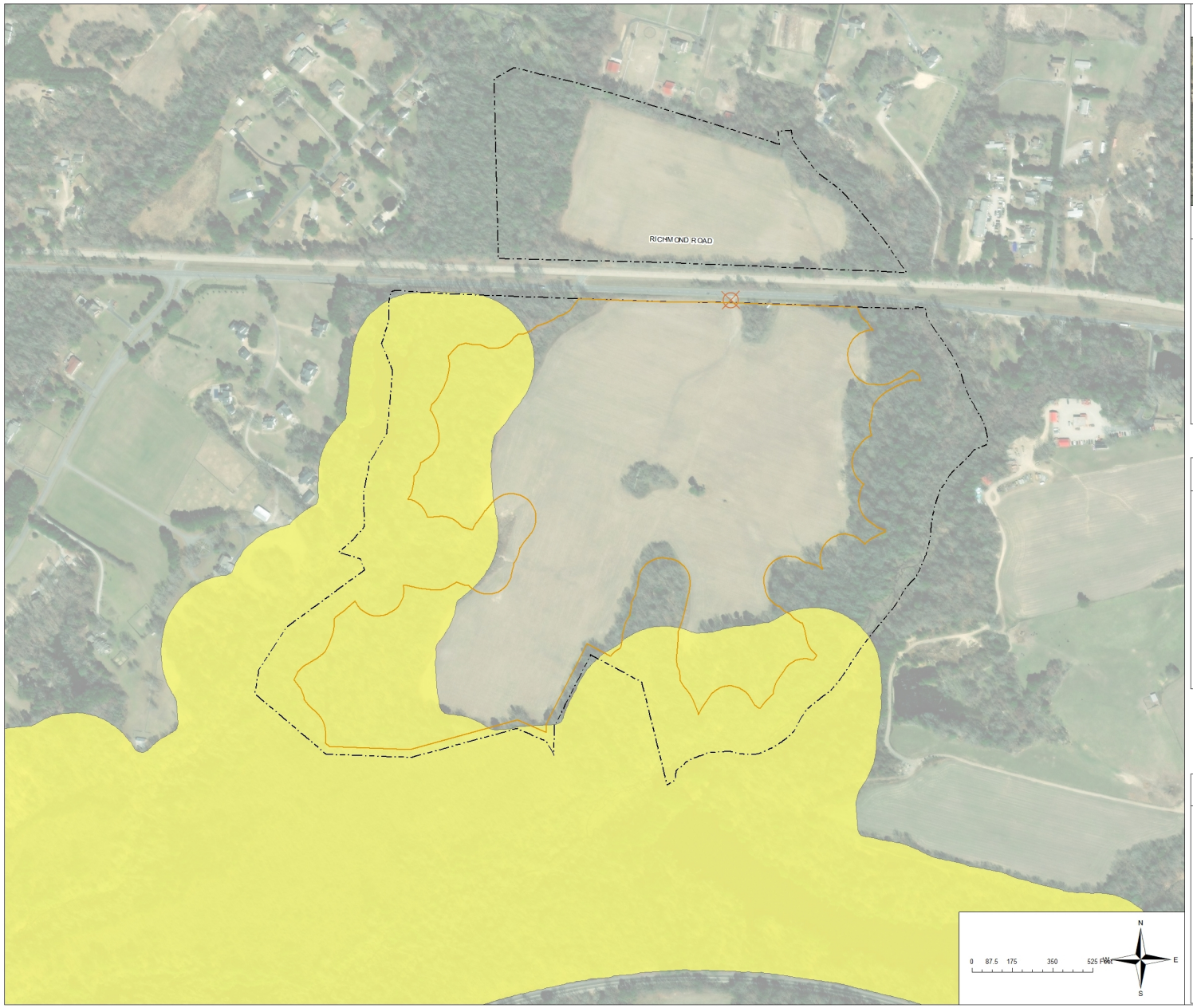
NOT FOR CONSTRUCTION

PAPER SIZE: 34x22

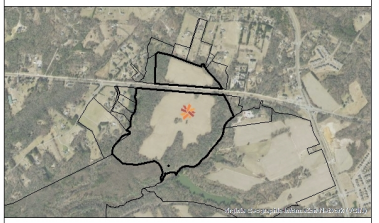
SCALE: 1 " = 175 '

DRAWING TITLE: JCC SSURGO CLASSIFICATION

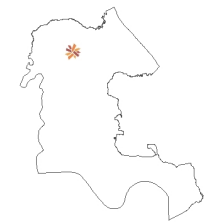
DRAWING NO: P106



VICINITY MAP - 1" = 2000'



VICINITY MAP - COUNTY



NOTES

LEGEND

PROJECT PARCEL BOUNDARY

CONCEPTUAL LIMITS OF DISTURBANCE

POINT OF INTERCONNECTION (37.402633, -76.81876)

HABITATCORE RANK

Best

Lowest

Sun Tribe DEVELOPMENT

107 5TH STREET SOUTHEAST
CHARLOTTESVILLE, VA 22902
WWW.SUNTRIBESOLAR.COM

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM

JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	03/17/2023	E TURNER	T FRANCIS	CONCEPTUAL DESIGN FOR SPECIAL USE PERMIT APPLICATION
B	04/18/2023	E TURNER	T FRANCIS	UPDATED SITE MAPS
C	06/26/2023	E TURNER	T FRANCIS	UPDATED SITE MAPS

NOT FOR CONSTRUCTION

PAPER SIZE: 34x22

SCALE: 1 " = 208 '

DRAWING TITLE: JCC HABITAT CORES

DRAWING NO: P108

Appendix J – Landscape Plan

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: Sun Tribe Development

FROM: Bryan McKnight, PLA

DATE: 6/29/2023

RE: Landscape Plan Proposal for Vegetated Buffer

NOTES:

Sun Tribe Development has engaged the Landscape Architecture team at Timmons Group to prepare a landscape plan for vegetated buffers as well as pollinator seeding areas at the proposed facility in James City County named the Richmond Road Solar Facility.

The need for a vegetative buffer has been identified along Richmond Road as well as at the rear perimeter of the project. The buffer that runs along Richmond Road is designated as a wooded Community Character Corridor (CCC) by the 2045 Comprehensive Plan. Timmons Group consulted the City's zoning ordinance for landscaping standards and approved plant lists, and has prepared a layout that we believe achieves the same performance as laid out in the standards for materials and ratios in the ordinance.

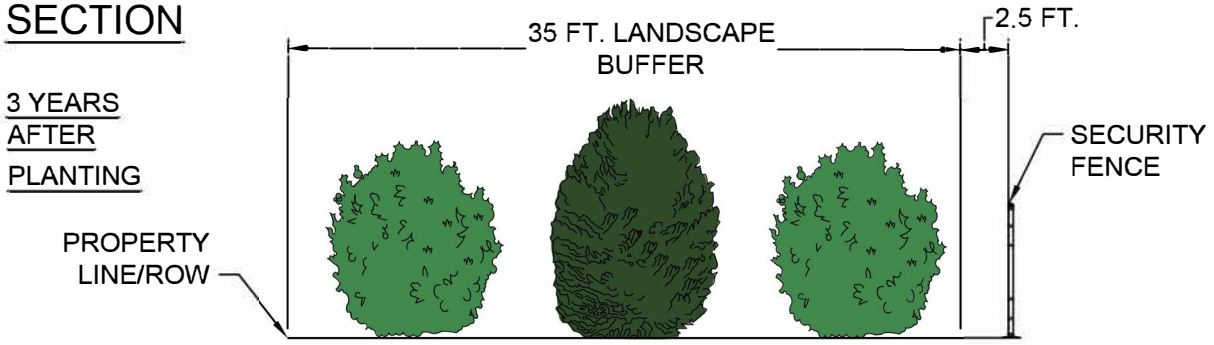
The following notes and details illustrate shrub and tree layouts for the 50' wide wooded CCC buffer as well as the 35' wide screening buffer along the rear side of the project. All trees shall be planted at a minimum of 8' height and all shrubs shall be planted at a minimum of 22" height. Species shall be selected based on Size and Mixture Requirements and Concept Plant List provided. All species selected are either varieties of native species or well-adapted non-native and non-invasive species. Substitutions may be acceptable based on nursery availability. Consult with landscape architect prior to substitution. All plant material shall meet requirements of Division 4, Section 24 of the James County Zoning Ordinance. Existing vegetation will be retained in lieu of proposed planting where it adequately screens the facility from adjacent properties.

Additionally, the need for pollinator-friendly herbaceous vegetation has been identified at the facility. In order to meet this requirement, general recommendations are provided for locations and seed mixes. The Virginia Pollinator Smart Program serves as the guiding document for those recommendations.

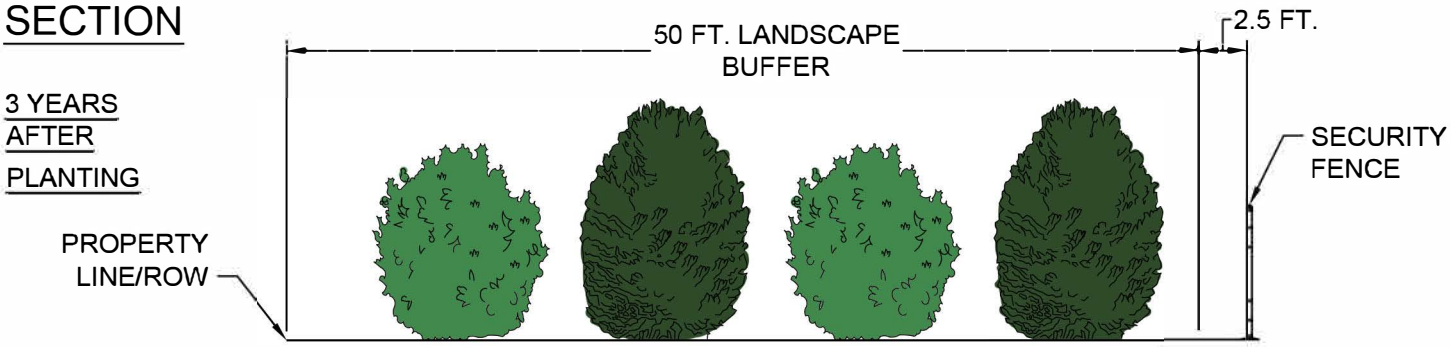
BUFFER PLANTING NOTES

- LAYOUT PROPOSED PER SECTION 24 OF JAMES CITY COUNTY ZONING ORDINANCE.
- PROPOSED BUFFER/SCREENING COMPRISES EVERGREEN, ORNAMENTAL, AND DECIDUOUS SHADE TREES AS WELL AS EVERGREEN AND DECIDUOUS SHRUBS.
- MINIMUM OF ONE (1) TREE AND THREE (3) SHRUBS MUST BE PLANTED PER 400 SF.
- BUFFER PLANTING SHALL NOT BE PROVIDED WHERE EXISTING VEGETATION PROVIDES ADEQUATE PERIMETER SCREENING.

SECTION



SECTION



SIZE AND MIXTURE REQUIREMENTS - GENERAL LANDSCAPE AREAS

PERCENTAGE	OF	SHALL BE
AT LEAST 35%	TREES	MINIMUM CALIPER OF 2.5" AT PLANTING
MINIMUM OF 15% AND MAXIMUM OF 25%	TREES	ORNAMENTAL TREES
AT LEAST 35%	TREES	EVERGREEN TREES WHICH WILL ACHIEVE A MINIMUM HEIGHT OF 40 FEET AT MATURITY
AT LEAST 40%	TREES	DECIDUOUS SHADE TREES WHICH WILL ACHIEVE A MINIMUM HEIGHT OF 50 FEET AT MATURITY
AT LEAST 35%	SHRUBS	EVERGREEN

CONCEPT PLANT LIST

BOTANICAL NAME	COMMON NAME	MINIMUM HEIGHT AT PLANTING	TYPICAL HEIGHT AT MATURITY
ORNAMENTAL TREES			
CHIONANTHUS VIRGINICUS	FRINGE TREE	8 FT.	30 FT.
AMELANCHIER CANADENSIS	SERVICEBERRY	8 FT.	30 FT.
MEDIUM EVERGREEN TREES			
ILEX X 'CONAF' OAKLEAF	RED HOLLY/OAKLEAF HOLLY	8 FT.	20 FT.
THUJA OCCIDENTALIS 'TECHNY'	EASTERN ARBORVITAE	8 FT.	15 FT.
JUNIPERUS VIRGINIANA 'BRODIE'	EASTERN RED CEDAR	8 FT.	25 FT.
MEDIUM DECIDUOUS TREES			
CARPINUS CAROLINIANA	IRONWOOD	8 FT.	35 FT.
MAGNOLIA X SOULANGEANA	SAUCER MAGNOLIA	8 FT.	25 FT.
MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	8 FT.	35 FT.
EVERGREEN SHRUBS			
MYRICA CERIFERA	SOUTHERN WAX MRYTLE	22 IN.	10-15 FT.
ILEX CRENATA	JAPANESE HOLLY	22 IN.	8-10 FT.
ILEX GLABRA	INKBERRY	22 IN.	6-8 FT.
DECIDUOUS SHRUBS			
ILEX VERTICILLATA 'WINTER RED'	WINTERBERRY HOLLY	22 IN.	6-8 FT.
ILEX VERTICILLATA 'SOUTHERN GENTLEMAN'	WINTERBERRY HOLLY	22 IN.	8-10 FT.
LINDERA BEZOIN	SPICEBUSH	22 IN.	8-12 FT.
VIBURNUM DENTATUM 'SYNNESTVEDT'	CHICAGO LUSTRE ARROWWOOD VIBURNUM	22 IN.	8-10 FT.

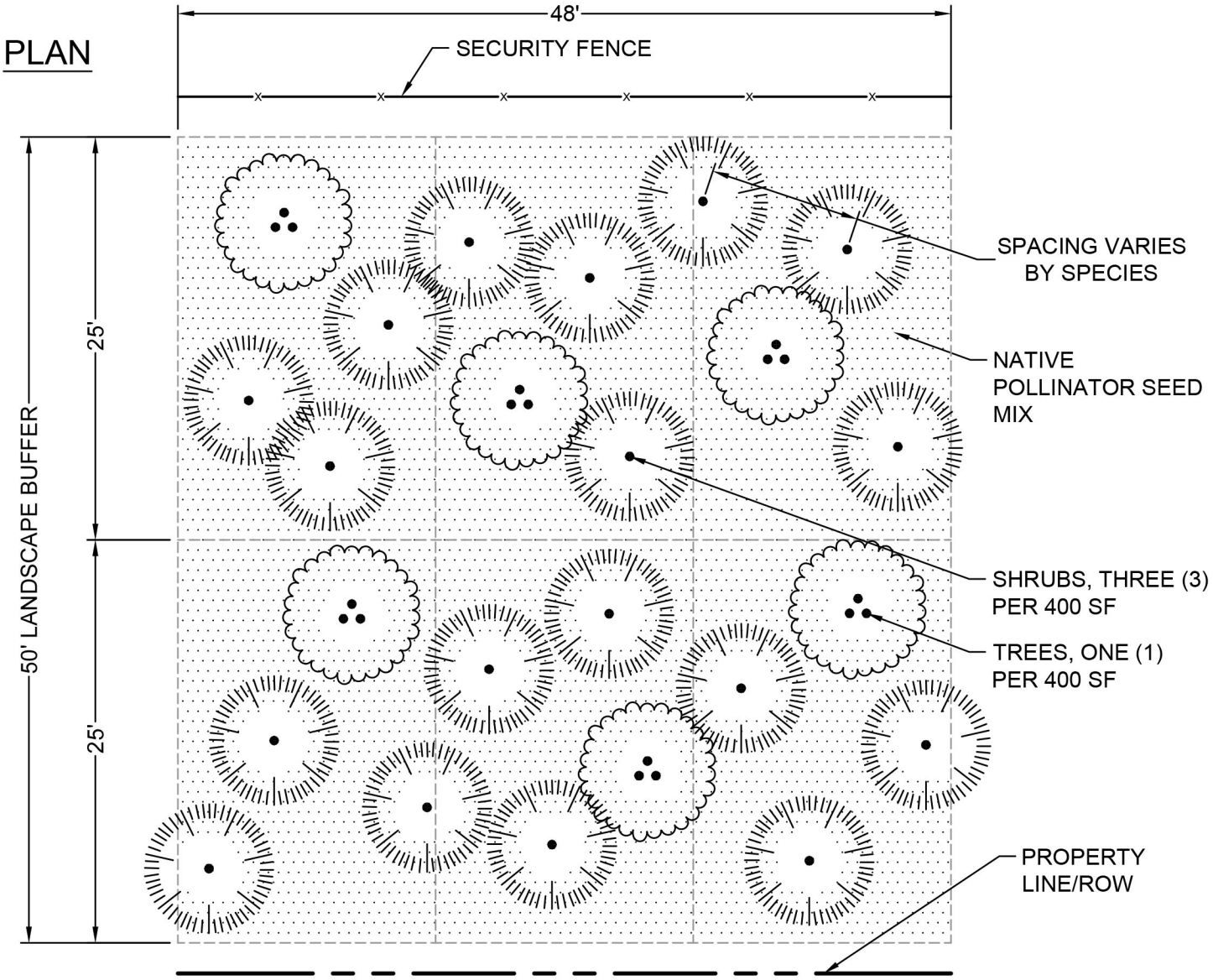
NOTE:

- PLANT MINIMUM ONE (1) ILEX VERTICILLATA 'SOUTHERN GENTLEMAN' IN EACH GROUPING OF ILEX VERTICILLATA 'WINTER RED' IN ORDER TO PRODUCE RED BERRIES IN WINTER.

BUFFER PLANTING TEMPLATE: RICHMOND ROAD

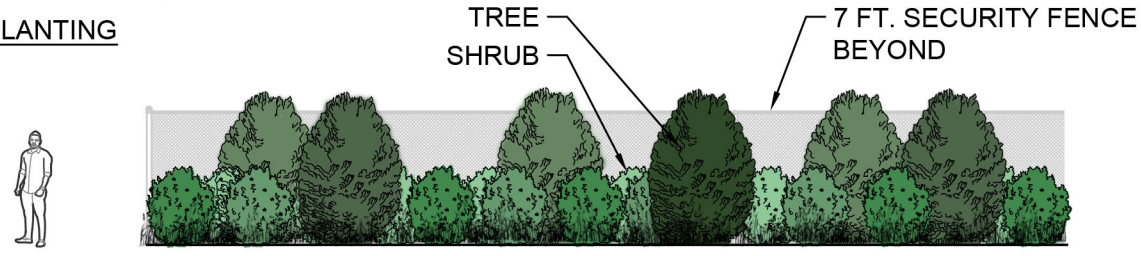
1" = 10'

PLAN

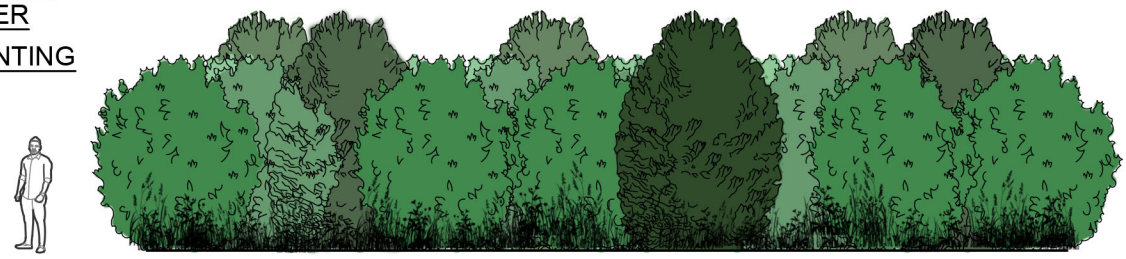


ELEVATION

AT PLANTING



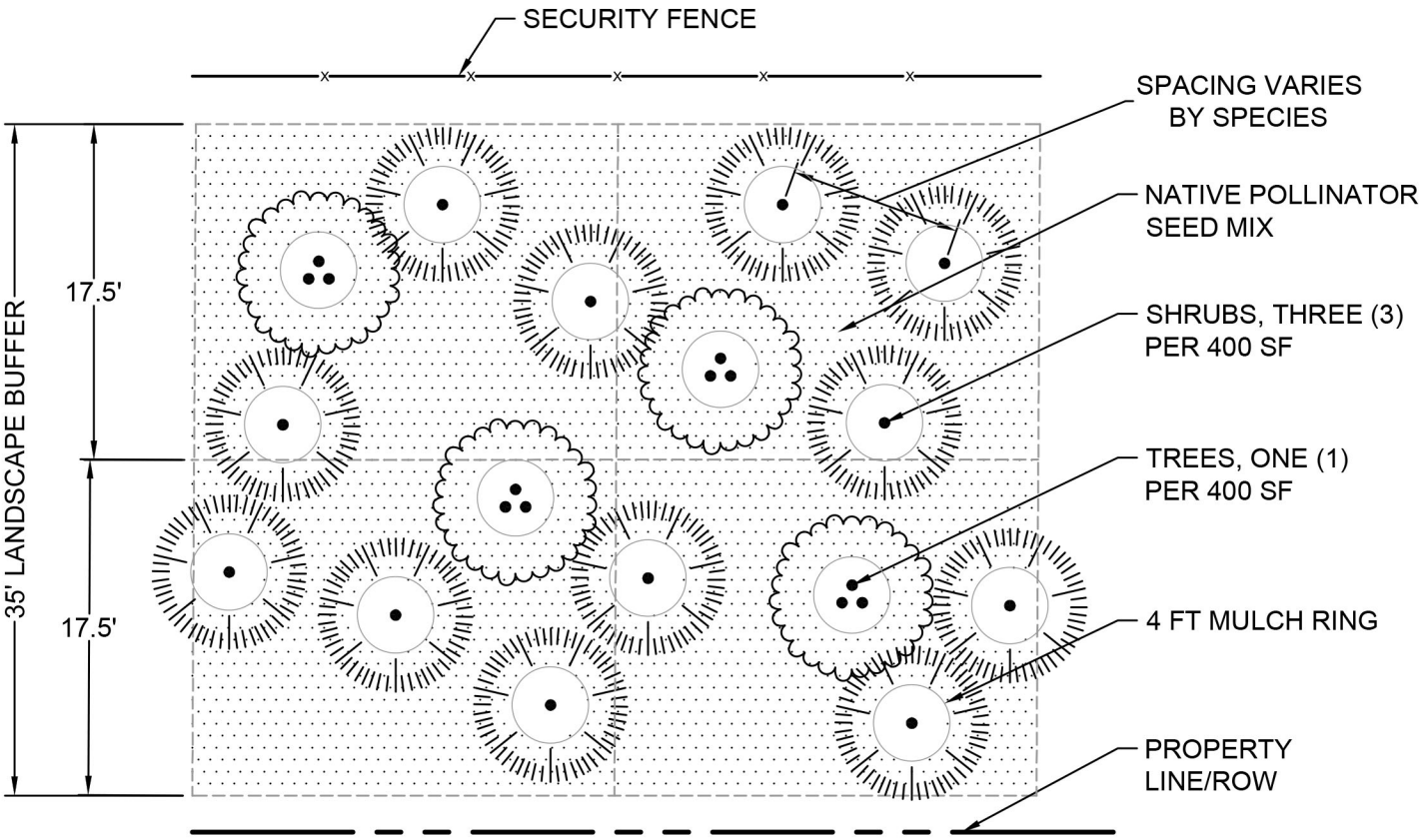
3 YEARS AFTER PLANTING



BUFFER PLANTING: REAR BUFFER

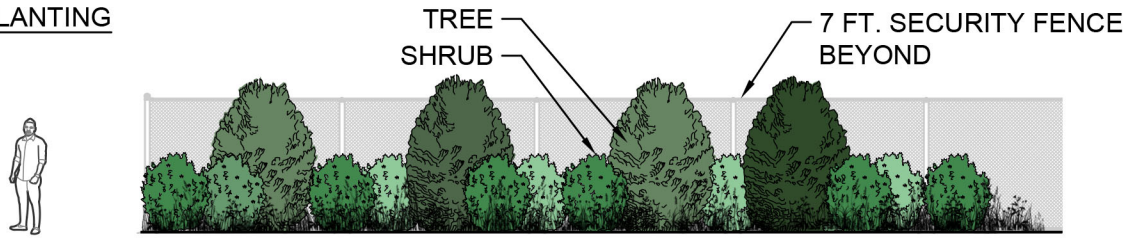
1" = 10'

PLAN

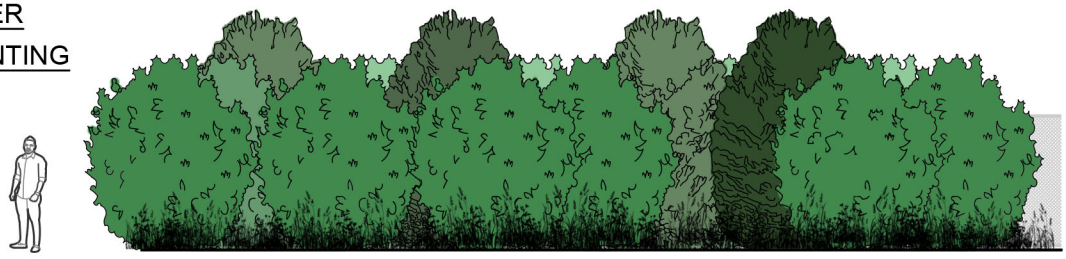


ELEVATION

AT PLANTING

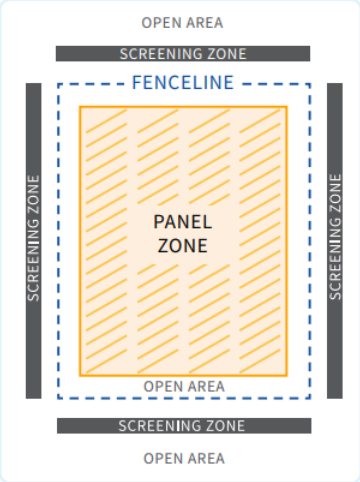


3 YEARS AFTER PLANTING



POLLINATOR SEEDING PLAN

The establishment of native, pollinator-friendly vegetation is key to soil stabilization and providing ecological and aesthetic function in the design of the Richmond Road Solar facility. Proposed pollinator habitats will host a wide variety of native bees, butterflies, moths, and avian pollinators, which are crucial to Virginia's ecology and agriculture. To that end pollinator seeding is recommended in distinct zones within the project area. The site will be broken into three main zones: the Panel Zone, Open Area, and Screening Zone (see diagram below). Virginia's Pollinator-Smart program served as the framework for developing our approach to plant selection within those three zones.



Panel Zone: The Panel Zones refers to the area directly underneath the panels as well as in the rows between solar arrays. For maintenance ease, this area also includes a 10' offset from the perimeter of the outermost panels. The panel height restricts options for plant species within this zone. Vegetation recommendations for this zone do not exceed 2' in height. Recommended vegetation for this zone will meet the following criteria:

- More than 75 percent of this zone will be planted with a seed mix comprised of at least 50 percent native species
- The seed mix should contain at least 1 native grass species
- Species selected for this zone should be shade-tolerant

Open Area: The Open Area refers to the area between the panel zone and the perimeter security fence. This area does not include any stormwater facilities. Because the panels do not restrict the vegetation height in this area, a greater diversity of species may be planted in this area. Recommended vegetation for this zone will meet the following criteria in at least 75 percent of the Open Area:

- 20 or more species that can be found on Virginia's Solar Site Native Plant Finder
- At least 3 native species flowering during each of the same flowering periods (spring, early summer, late summer, and fall)

Screening Zone: The screening zone refers to the vegetated buffers proposed along Richmond Road as well as along the rear perimeter of the site. As with the Open Area, a greater diversity of

species may be planted in this area due to the lack of height restriction. Recommended vegetation for this zone will meet the following criteria:

- 75 percent or more of the total number of plants being planted will be native
- Vegetation will be shade tolerant in order to grow amongst woody vegetation proposed within the buffers.

Appendix K – Conceptual Traffic Analysis and Entrance Exhibit

Dewberry

MEMORANDUM

DATE: March 20th, 2023

TO: Sun Tribe Development

FROM: Gerard Mrykalo, P.E., PTOE - Dewberry Engineers Inc.

SUBJECT: Richmond Road (US Route 60) Solar Farm

1. Introduction/Project Background

As requested by Sun Tribe Development, Dewberry Engineers Inc. has prepared a traffic memorandum in support of a future, proposed 5 MW_{ac} Solar Photovoltaic (PV) Generation Facility located along US Route 60 in Toano, Virginia. A project location map is shown in **Figure 1** below.



Figure 1: Proposed Project Location Map

The purpose of this memorandum is to discuss potential traffic impacts due to construction of the Solar PV Generation Facility. The memorandum includes discussion of trip generation and traffic impacts for the proposed site during construction operations and includes general recommendations for assessing and mitigating these traffic impacts.

2. Site-Generated Traffic

General construction traffic for a site of this size is expected to consist of the following:

- Component deliveries (i.e., solar panels, earthwork equipment, construction waste removal, modules, etc.) via single-unit and/or semi-trucks
- Passenger vehicles carrying personnel, tools, and minor equipment to and around the proposed development site

Construction would be anticipated to last approximately three to six months with the frequency

of trucks and personnel accessing the site varying over the course of construction. The first and final months of construction are anticipated to average one to two trucks per day. The peak construction period would be expected to occur during the one-to-two-month period in the middle of construction. During the first half of the peak construction period, it is estimated that the site would experience about two to three trucks per day (i.e., weekdays Monday – Friday) delivering materials. Deliveries are anticipated to be staggered to meet construction needs and should be scheduled to occur during the non-peak travel periods.

In addition, the construction site would be expected to have an estimated 35 employees during the peak period of construction. It would be expected that some employees will carpool to the site, with an assumed average vehicle occupancy of 1.5. As a result, 24 passenger vehicle trips (24 inbound AM vehicles, 24 outbound PM vehicles) would be anticipated to access the site per day during the peak period of construction. All construction staging, parking, and assembly areas would be expected to be within the project limits, south of Route 60.

All deliveries and personnel would be expected to access the site from the existing and/or proposed improved driveway located along eastbound Route 60 approximately 3,100' west of the Route 30 intersection.

Following the construction of the site, maintenance of the site would likely occur on a monthly, quarterly, and annual basis for different circumstances. Panel washings and general maintenance would be anticipated to occur a few times a year. This may require the presence of approximately three workers at the site during those times. During the growing season, it would be anticipated that one to two vehicles per week will access the site for lawn maintenance. Therefore, operation and maintenance of the site would not be expected to generate significant traffic volumes or volumes to the level expected during the construction phase of the project.

3. Recommendations

Based on the assumptions listed above, Dewberry makes the following recommendations for this project:

Roadway Operations, Safety, and Design

- Route 60, which provides direct access to the project site, should be reviewed to include a geometric analysis, an intersection capacity analysis, and an analysis of traffic counts from the most recent Virginia Department of Transportation (VDOT) Annual Average Weekday Traffic (AAWDT) and Vehicle Classification Estimates. Based on a preliminary review and observation of existing traffic conditions on Route 60, the addition of the site construction traffic is not anticipated to result in operational degradation along Route 60, given the existing excess capacity along the roadway. In other words, Route 60 is not congested to a point that the addition of the construction traffic would cause congestion issues.
- The project site's construction entrance(s) are recommended to be constructed with entrance widths to accommodate WB-67 trucks accessing the site.

- Route 60 at this location is a median-divided highway. Since vehicles will be unable to access the project site directly from westbound Route 60, it is recommended multiple options be explored at the appropriate time to determine the best way to accommodate the limited access highway. These options could include but not limited to; analysis in Auto Turn at the median crossover just west of the project site to determine the size of design vehicle that can be accommodated, development of a Traffic and Access Management Plan that takes this into account or potential use of temporary traffic control measures to accommodate westbound traffic. For vehicles exiting the site, all traffic must turn right onto eastbound Route 60. Median openings near/at the Route 30 intersection do not appear to be able to accommodate u-turns for large trucks to access westbound Route 60, this should be planned for during the development of a Construction Traffic and Access Management Plan.
- The rolling terrain along eastbound Route 60, shown in **Figure 2**, can present a challenge for stopping sight distance. A preliminary sight distance analysis was conducted, in which the sight distance available was measured to be approximately 800 feet. After reviewing VDOT requirements for stopping sight distance for a low volume commercial entrance 495 ft is the requirement per appendix F of the VDOT Road Design Manual. This minimum appears to be satisfied utilizing publicly available topographic data as shown on the conceptual entrance exhibit.



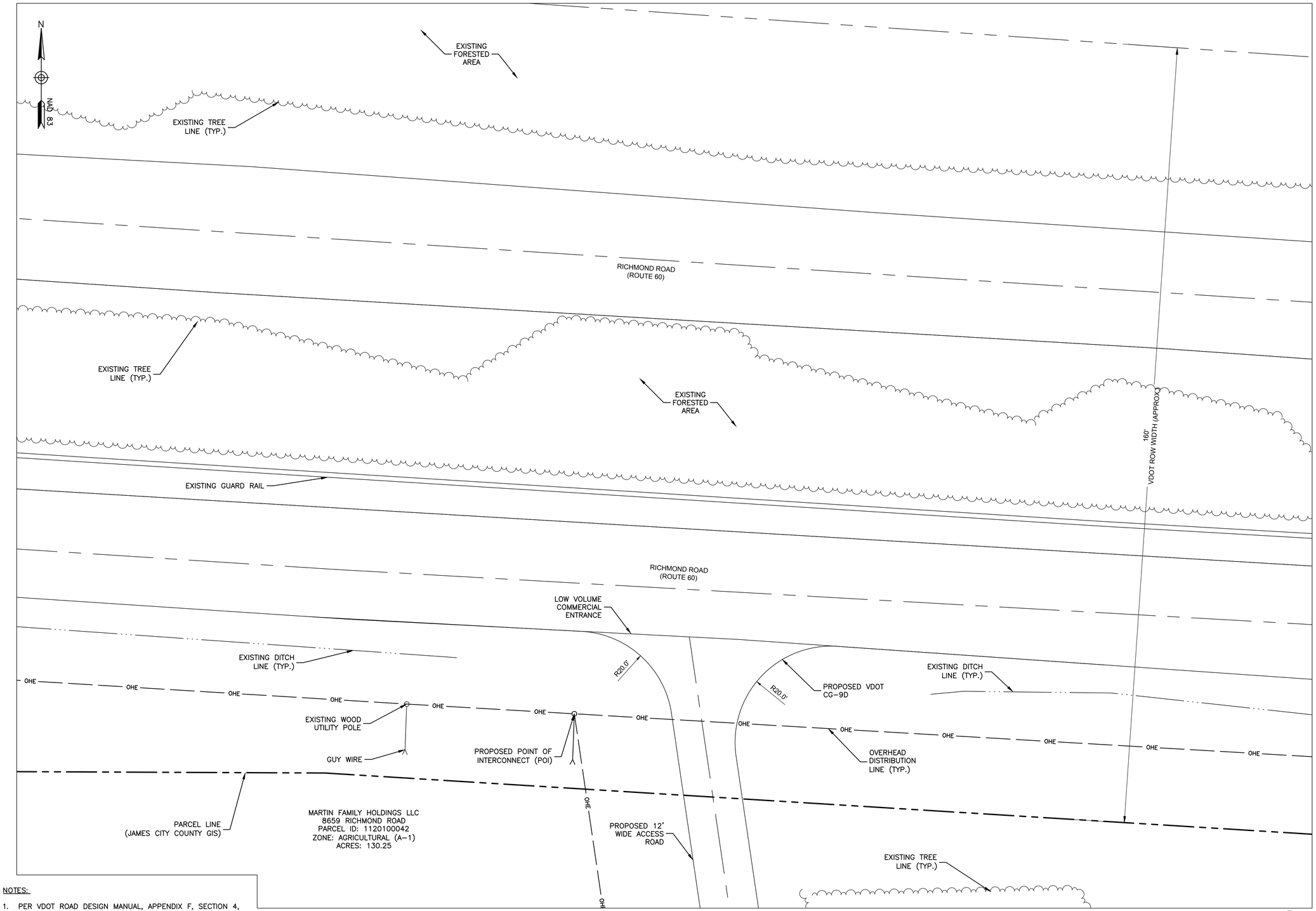
Figure 2: Sight Distance looking west along eastbound Route 60 from existing driveway

Construction Work Zone Elements

- A Transportation Management Plan (TMP), as required by VDOT IIM-LD-241.7, should

be developed to identify work zone impacts in an effort to promote work zone mobility in a manner that is safe for both motorists and construction personnel.

- A Temporary Traffic Control (TTC) Plan should be developed to facilitate roadway users through the anticipated work zone area along Route 60. Depending on construction duration, either Figure TTC-4.2 (stationary operation on shoulder) or Figure TTC-6.2 (shoulder closure with a barrier operation) from the Virginia Work Area Protection Manual should be utilized to develop the TTC Plan.
- Warning signs are recommended along eastbound Route 60, in conformance with the Virginia Work Area Protection Manual, to alert drivers to potential turning vehicles during construction.
- If all construction staging, parking, and assembly areas cannot be accommodated within the project boundaries, coordination should take place during the permitting phase with the Authority Having Jurisdiction (AHJ) over the project to make alternative arrangements that will limit impacts to the surrounding community.
- A Construction Traffic and Access Management Plan should be developed in advance of the construction phase of the project to address the findings in the review of the existing transportation facilities, and to establish safe and feasible routing, signing, and other measures. Preparation of the plan should include consideration of the following: (i) prescribing truck routes to/from the project site, (ii) details of traffic safety signing plan, (iii) limiting impacts to residents and community events, and (iv) Emergency services access to the site. This process should include conversations with the AHJ to minimize impacts to school traffic and provide opportunities for input and coordination with local emergency services.
- Prior to beginning construction, it is suggested to coordinate with VDOT to perform a field assessment to document existing conditions of the construction route roadways and intersections. In addition, it is important to coordinate closely with VDOT and the AHJ throughout the construction phase to mitigate potential impacts to traffic operations on Route 60. Based on a preliminary field investigation, the existing pavement is bituminous asphalt, and in moderate condition. The existing pavement markings are thermoplastic material supplemented by raised pavement markers.
- VDOT will require a surety bond to be posted to protect the integrity of the roadway pavement. The developer will be responsible for ongoing maintenance during construction as well as repairs post construction.
- Given there is no existing right turn lane along eastbound Route 60 into the site, additional warning signs are likely warranted during construction to warn of slow-moving vehicles.



NOTES:

1. PER VDOT ROAD DESIGN MANUAL, APPENDIX F, SECTION 4, THIS ENTRANCE IS CONSIDERED TO BE A LOW VOLUME COMMERCIAL ENTRANCE DURING NORMAL OPERATIONS AND WILL BE REQUIRED TO PROVIDE STOPPING SIGHT DISTANCE

2. EXISTING FEATURES OBTAINED FROM JAMES CITY COUNTY GIS AND GOOGLE EARTH IMAGERY. DEWBERRY HAS NOT PERFORMED A SURVEY OR RESEARCHED THIS PARCEL.

ENTRANCE PLAN 1

SCALE: 1"=20' FOR 11x17
1"=10' FOR 22x34

0' 10' 20'

Sun Tribe DEVELOPMENT

RICHMOND ROAD SOLAR

EXHIBIT

Dewberry®

Dewberry Engineers Inc.
4805 Lake Brook Drive, Suite 200
Glen Allen, VA 23060
Phone: 804.290.7957
Fax: 804.290.7928
www.dewberry.com

DRAWN BY:	RAY
REVIEWED BY:	AMD
CHECKED BY:	AMD
PROJECT NUMBER:	50160638
SITE ADDRESS:	

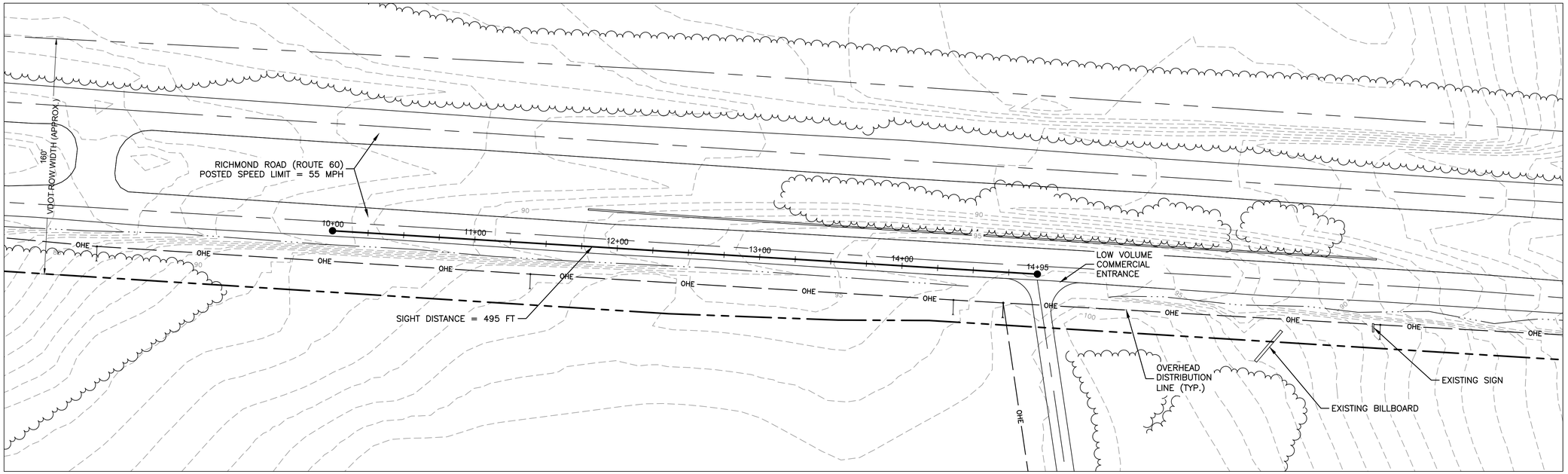
RICHMOND ROAD
TOANA, VA 23168

SHEET TITLE

ENTRANCE PLAN

SHEET NUMBER

C-1



SIGHT DISTANCE PLAN

1

SCALE: 1"=80' FOR 11x17
1"=40' FOR 22x34

0' 40' 80'

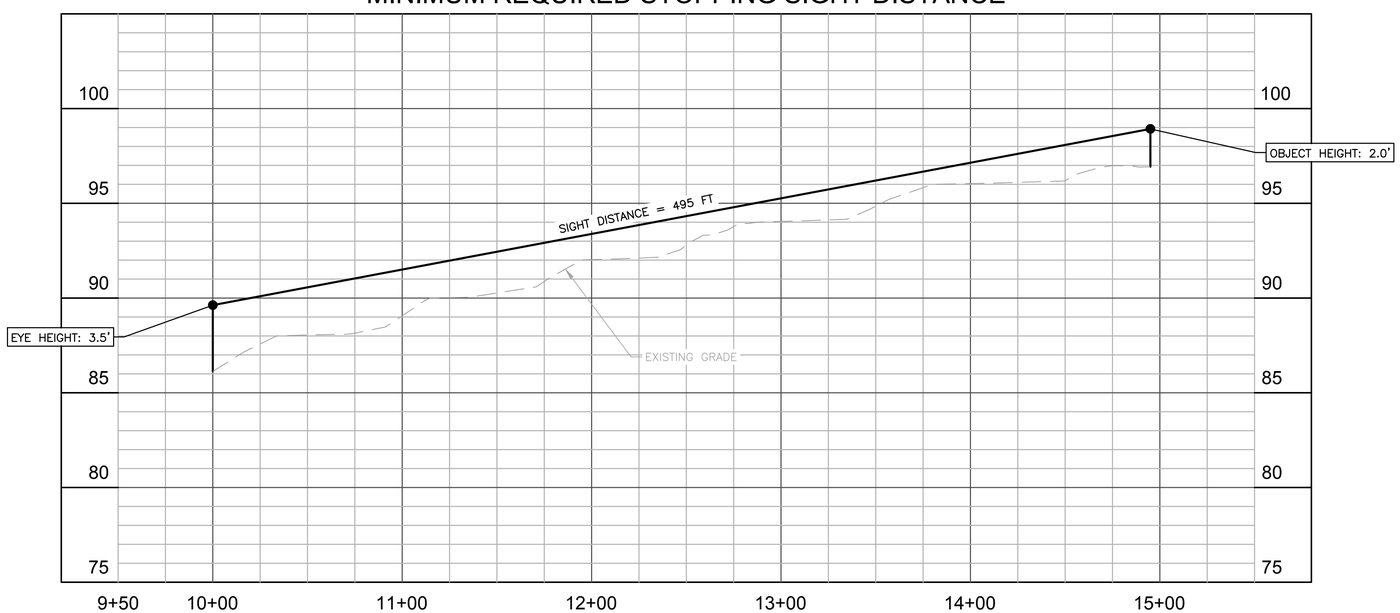
N

NAD 83

NOTES:

1. PER VDOT ROAD DESIGN MANUAL, APPENDIX F, SECTION 4, THIS ENTRANCE IS CONSIDERED TO BE A LOW VOLUME COMMERCIAL ENTRANCE DURING NORMAL OPERATIONS AND WILL BE REQUIRED TO PROVIDE STOPPING SIGHT DISTANCE.
2. EXISTING CONTOURS OBTAINED FROM JAMES CITY COUNTY GIS.

MINIMUM REQUIRED STOPPING SIGHT DISTANCE



SIGHT DISTANCE

2

HORIZONTAL SCALE: 0' 40' 80'

VERTICAL SCALE: 0' 4' 8'

Sun Tribe DEVELOPMENT

RICHMOND ROAD SOLAR

EXHIBIT

Dewberry®

Dewberry Engineers Inc.
4805 Lake Brook Drive, Suite 200
Glen Allen, VA 23060
Phone: 804.290.7957
Fax: 804.290.7928
www.dewberry.com

DRAWN BY:	RAY
REVIEWED BY:	AMD
CHECKED BY:	AMD
PROJECT NUMBER:	50160638
SITE ADDRESS:	

RICHMOND ROAD
TOANA, VA 23168

SHEET TITLE

SIGHT DISTANCE
PLAN AND PROFILES

SHEET NUMBER

C – 2

Appendix L – Decommissioning Plan and Estimate

Richmond Road LLC, SOLAR DECOMISSIONING COST ESTIMATE

Project Location Richmond Road, James City County, Virginia
37.402371, -76.818705

Project Engineer Walter C. Bronson

Item No.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST	NOTES
	MOBILIZATION / DEMOBILIZATION / DECOM FEES					
1	Fee	1.00	LS	$ 10,000.00	$10,000.00	
	CIVIL INFRASTRCUTURE					
2	Removal of 7 foot tall fencing	7,700.00	LF	$ 3.20	$24,640.00	
3	Regrade equipment pad areas	500.00	SF	$ 0.70	$350.00	No equipment pads depicted in Site Plan. Assumed a 15'x10' switchgear pad and 10'x10' transformer pad. Doubleded for extra pads potentially needed.
4	Stabilization of disturbed area	1.00	ACRE	$ 3,000.00	$3,000.00	Hydroseeding of Road area, equipment pad areas = 0.73 ac. Rounded up to 1 acre for any conduit, fence, or pier foundations to be removed.
	STRUCTURAL INFRASTRCUTURE					
5	Removal of steel posts, section varies assumed W8x21 section	880.00	EA	$ 7.00	$6,160.00	Next Tracker cut sheet says ~160 piers / MW. 5.5 MW system
6	Transportation and disposal of steel posts	85.00	TON	$ 4.00	$340.00	Estimated W8x21 section, 9' length; 880 piers
7	Removal, transportation, and disposal of inverter posts	36.00	EA	$ 8.00	$288.00	QTY per SLD.
8	Removal, transportation and disposal of array racking	242.00	TON	$ 70.00	$16,940.00	44 tons per MW assumed, 5.5 MW system
9	Removal, transportation and disposal of concrete pads	20.00	CY	$ 105.00	$2,100.00	Estimated number and dimensions of equip. pads
	ELECTRICAL COLLECTION / TRANSMISSION INFRASTRUCTURE					
10	Removal, transportation, and disposal of photovoltaic modules	17,160.00	EA	$ 8.50	$145,860.00	
11	Removal, transportation, and disposal of DC combiner boxes	36.00	EA	$ 8.00	$288.00	1 box for each inverter
12	Removal, transportation, and disposal of inverters	36.00	EA	$ 17.00	$612.00	36 inverters per Single Line Diagram
13	Removal, transportation, and disposal of 2,000kVa transformers	2.00	EA	$ 800.00	$1,600.00	
14	Removal and disposal of electrical wires from arrays to Inverters	4,500.00	LF	$ 0.25	$1,125.00	No conceptual conduit routing given.
15	Removal and disposal of electrical wires and conduits from Transformers to ULD	2,600.00	LF	$ 14.00	$36,400.00	
16	Removal and disposal DAS / Scada equipment	1.00	EA	$ 1,400.00	$1,400.00	
	SITE RESTORATION					
17	Perimeter controls	7,700.00	LF	$ 1.50	$11,550.00	

	SALVAGE VALUE					
1	Moldels	17,160.00	EA	$ 35.00	$600,600.00	Module reuse
2	Inverters	36.00	EA	$ 18.00	$648.00	Based on assumed inverter and weight of salvageable material - Low grade non-PC boards rate
3	DC Combiner Boxes	36.00	EA	$ 0.33	$11.88	Scrap internal components
4	2,000 kVa transformers	2.00	EA	$ 3,500.00	$7,000.00	Copper Transformer rate
5	Electrical wires from arrays to Inverters	4,500.00	LF	$ 1.18	$5,310.00	Scrap Cable
6	Electrical wires and conduits from Transformers to ULD	2,600.00	LF	$ 1.45	$3,770.00	Scrap Cable
7	Scrap Steel	675.00	Ton	$ 100.00	$67,500.00	Shredded steel Scrap Rate
	Salvage Value				$684,839.88	

Totals

Mob / Demob / Decom Fees	$10,000.00
Civil Infrastructure	$27,990.00
Structural Infrastructure	$25,828.00
Electrical Collection / Tranmission Infrastructure	$187,285.00
Site Restoration	$11,550.00
Grand Total	**$262,653.00**
Salvage Value	**$684,839.88**

DECOMMISSIONING PLAN
RICHMOND ROAD SOLAR
JAMES CITY COUNTY, VIRGINIA

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1. INTRODUCTION

The Richmond Road Solar Project ("Project"), is a solar photovoltaic power generating facility on approximately 134.25 acres of land in James City County, Virginia. This conceptual plan outlines the responsible parties and timeframes for proper removal of Project facilities at the end of the useful life of the Project, or when the project is otherwise abandoned.

2. PROJECT COMPONENTS

Photovoltaic power generating systems are arrays of solar panels containing a material that converts solar radiation into direct current ("DC") electricity. The Project uses inverters to convert the direct current to alternating current ("AC"), which is required for connecting and injecting power into the electrical grid.

The project will consist of photovoltaic modules affixed to a low-profile, single-axis, tracking system. The racking system typically uses a "rammed post" technique for installing the steel posts directly into the soil, eliminating the need for concrete footings. In different sections of the facility the cabling will be, (1) affixed to the underside of the photovoltaic panels, (2) run in cable tray or another above-ground cable management system, or (3) directly buried to conduct electricity generated by the solar panels to the grid. The system is designed to operate efficiently without interruption during a lifespan of more than thirty years.

The photovoltaic modules will be mounted on racking along a north/south axis, which will be connected to a drive system to rotate the modules. Electrical equipment, including inverters and transformers are grouped throughout the site. Inverters convert the low voltage DC electricity generated by the modules to AC electricity. The transformers then step up the voltage of the AC electricity to match the grid voltage. A medium voltage, underground AC circuit connects the Project transformers to the electrical grid.

2.1. ACCESS ROADS

Existing site access off Richmond Road will be used to access the Project. Internal to the site, an improved maintenance road will be located through the Project to provide maintenance access to the solar equipment, and other areas of the site as required by James City County. The perimeter of the Project property will be secured, and controlled access gates will be located at the Project entrance.

The Richmond Road Solar Project will be an unmanned facility. All internal access roads will be designed to accommodate a vehicular load of 75,000 lbs. and will be finished with an all-weather gravel surface (aggregate basecourse).

2.2. FENCING AND RACKING POSTS

As described above, the solar array construction consists primarily of ramming galvanized steel piles into the ground. Typically, the piles are embedded 7-10 feet into the ground, however the piles may go deeper based on soil types and geotechnical conditions.

3. DECOMMISSIONING PLAN

At the time the Project permanently ceases to operate, the Project Owner ("the Owner") will perform decommissioning activities to remove all above ground equipment and materials, and equipment and materials below the surface up to a depth of forty-eight (48) inches, related to the operation of a solar PV project and restore the property to a condition similar to its condition prior to construction. The following activities discuss the steps taken after the Project is disconnected from the utility power grid.

3.1. PLANNING AND PERMITTING

Governmental regulations at the time of decommissioning may require specific plans and permits to be in place prior to site decommissioning activities. The Owner will develop a comprehensive, site-specific plan based on this conceptual Decommissioning Plan to follow during the deconstruction process. The Owner will identify and acquire all local, state, and federal permits required for this work. The Owner will identify subcontractor(s) and waste/recycling companies during the planning phase.

3.2. REMOVAL OF PV EQUIPMENT

3.2.1. All PV modules will be removed and repurposed, recycled, or disposed of in accordance with applicable law and then-current environmental standards.

3.2.2. Above ground racking support structures will be removed. Below ground piles will be removed entirely where practical. Any such structures that cannot practically be pulled out (for example, posts embedded in bedrock) will be cut at least 48" below grade and the remainder will be left in place and covered. This will avoid excessive land disturbance during removal and allow agricultural activities to resume over top of the material.

3.2.3. All power collection equipment including cabling, combiner boxes, inverters, transformers, control cabinets, and switchgear will be removed from the site and repurposed, recycled or disposed of at a licensed disposal facility.

3.2.4. Underground cables buried at least 48" will remain in place. All above ground cable will be removed from the site. This will allow agricultural activities to resume over top of the material.

3.2.5. All concrete foundations will be broken up to a depth of at least 48", and debris will be removed from the site.

3.3. SITE RESTORATION

3.3.1. The site fence will be pulled out and removed from the site.

3.3.2. Gravel access roads and staging areas will remain until all other materials have been removed from the site to facilitate decommissioning activities. Once equipment removal is concluded, the road material may be left in place at landowner's request or removed from the site. Replacement fill will be graded to follow the contours of the site.

3.3.3. Any disturbed areas will be covered with topsoil, consistent with the composition of the soil prior to construction of the Project.

3.3.4. Existing access shall be left in place so that the property owner can continue to access their property.

3.3.5. Any vegetation planted as buffers and screening for the facility will remain to the extent they do not inhibit or otherwise interfere with decommissioning or site restoration activities.

3.4. ADDITIONAL PLAN NOTES

3.4.1. Decommissioning construction shall conform to any applicable noise-level restrictions.

3.4.2. Environmental mitigation measures similar to those employed during the construction phase of the Project shall be implemented to reduce environmental effects during the decommissioning.

3.4.3. James City County and all stakeholders shall be notified thirty days in advance of any action to decommission the Project.

3.4.4. The Owner shall provide proof of disposal to James City County or other agencies upon request.

4. DECOMMISSIONING SCHEDULE

The Project is intended to operate for a term of 30 years with the potential for two (2) additional five (5) year periods. The Project will sublease the property for a term of up to 40 years. At the end of the sublease term, the Project will cease operation of the facility and execute the Decommissioning Plan agreed to by Project and James City County. The duration of decommissioning activities will be approximately 8-12 months following receipt of any necessary permits or approvals.

Appendix M – FAA Notice Criteria Tool

Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

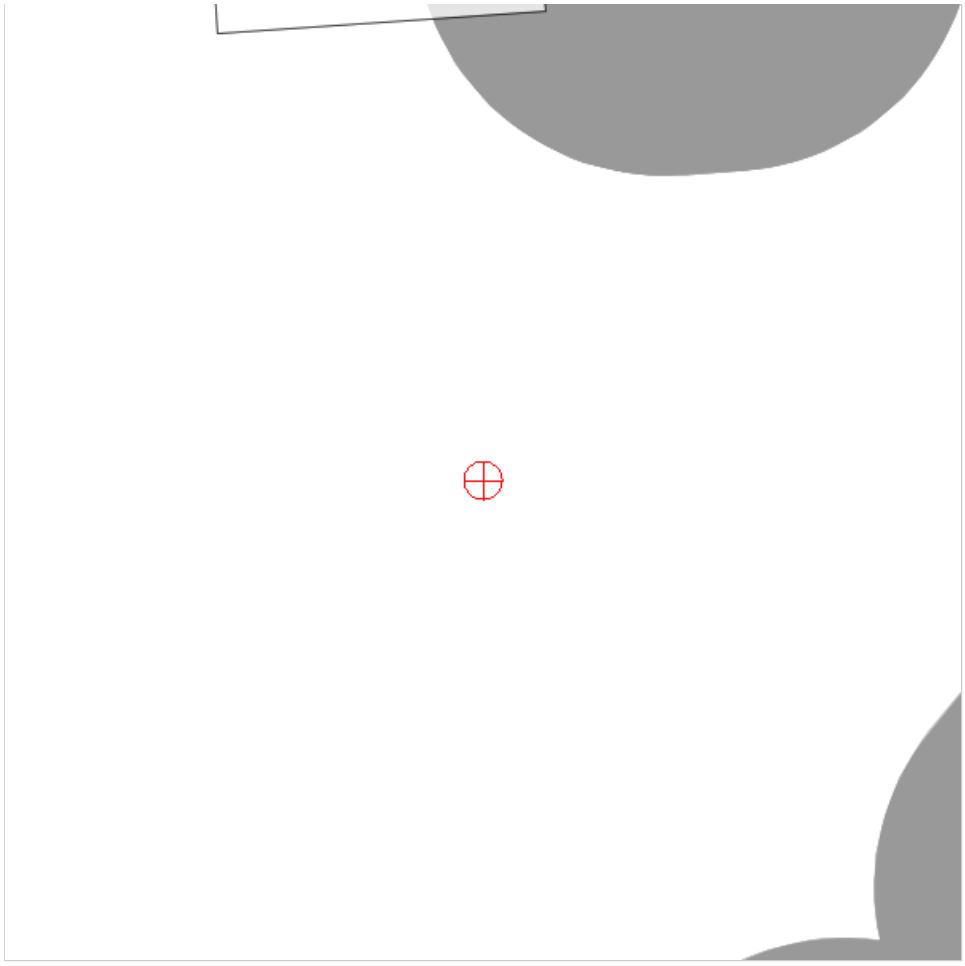
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 23 M 51.92 S N
Longitude:	76 Deg 49 M 17.92 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	79 (nearest foot)
Structure Height :	17 (nearest foot)
Is structure on airport:	(●) No ( ) Yes

Results

You do not exceed Notice Criteria.



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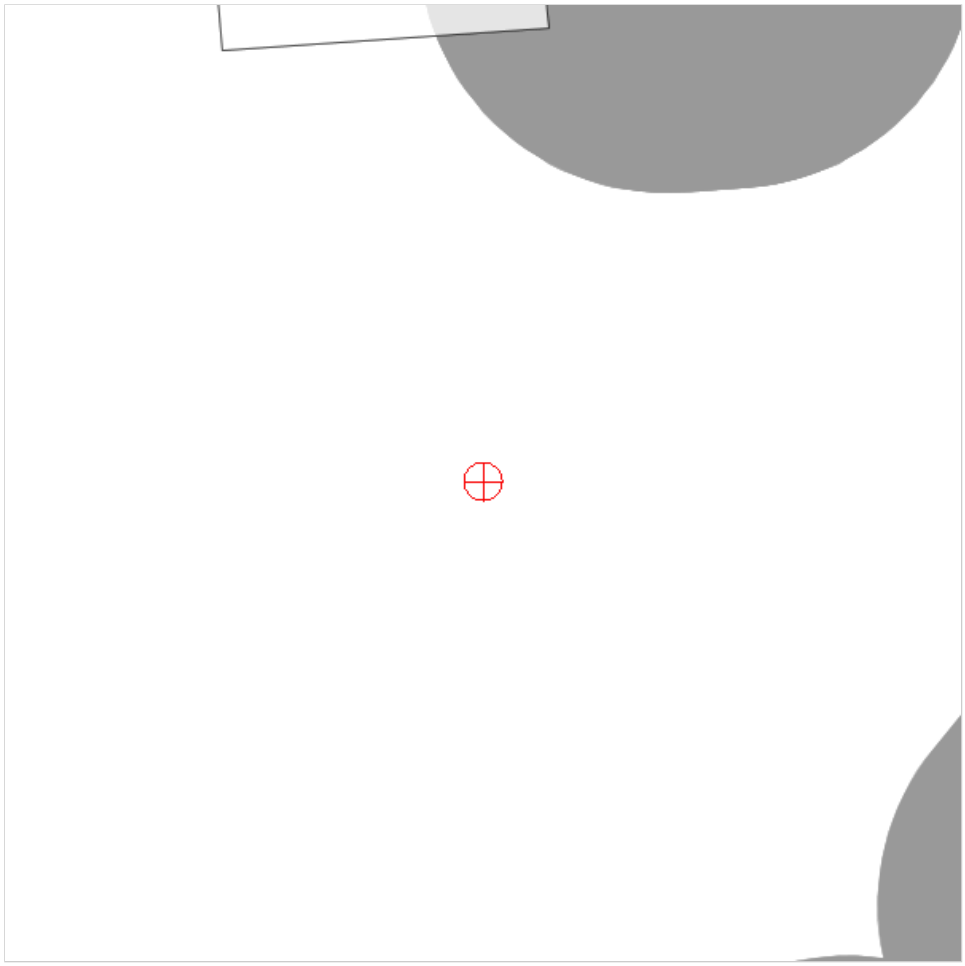
The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 24 M 5.16 S N
Longitude:	76 Deg 49 M 21.37 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	79 (nearest foot)
Structure Height :	17 (nearest foot)
Is structure on airport:	(●) No ( ) Yes

Results

You do not exceed Notice Criteria.



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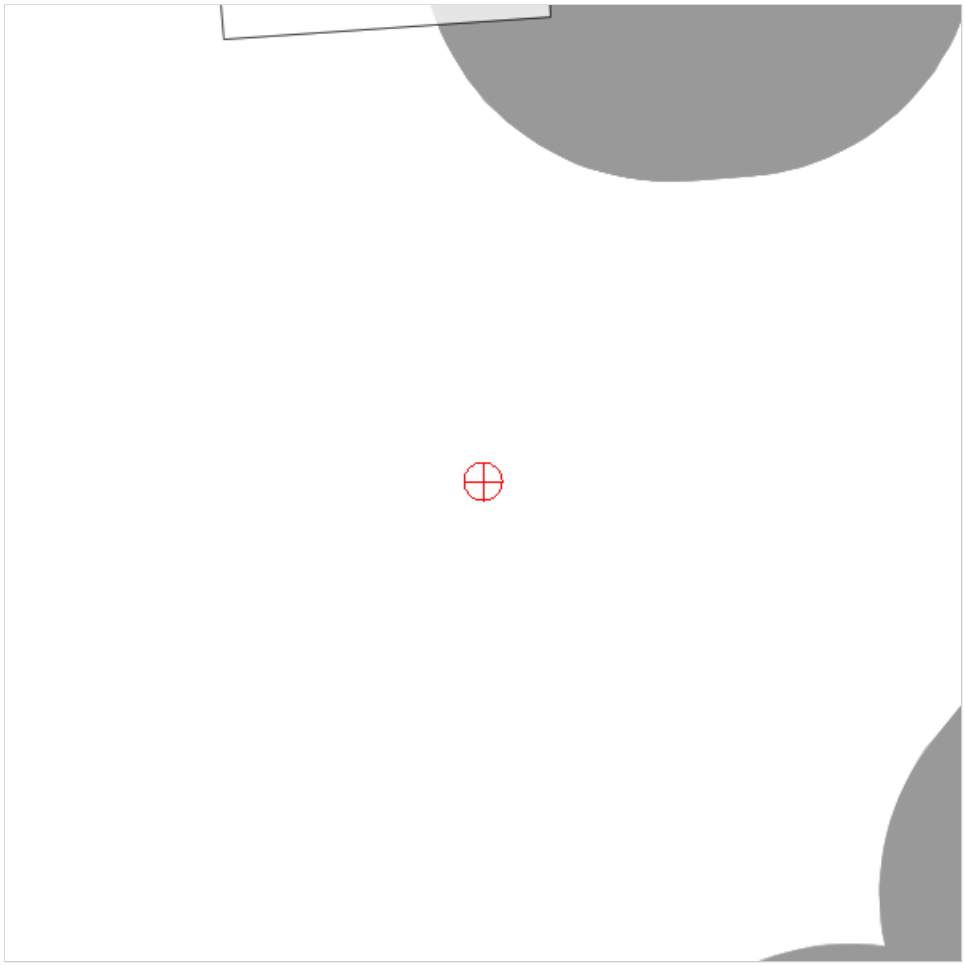
The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 23 M 55.87 S N
Longitude:	76 Deg 49 M 23.12 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	80 (nearest foot)
Structure Height :	17 (nearest foot)
Is structure on airport:	(•) No ( ) Yes

Results

You do not exceed Notice Criteria.



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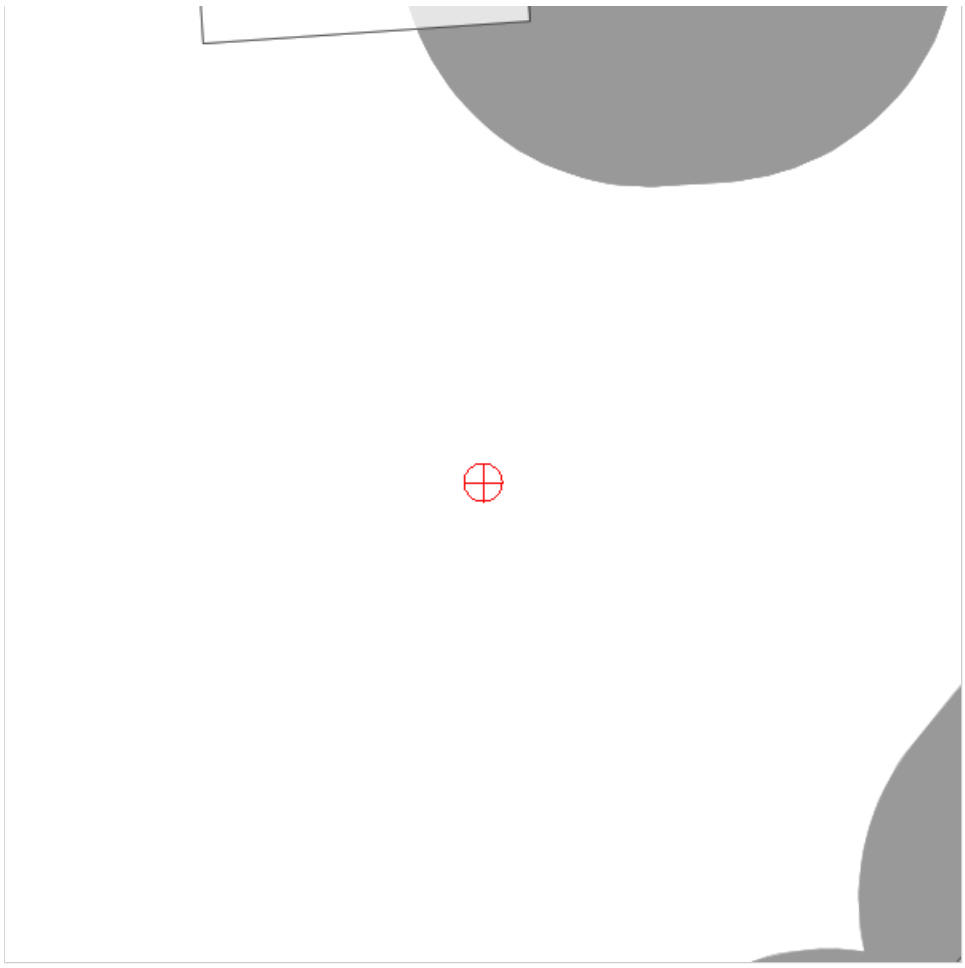
The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 23 M 59.13 S N
Longitude:	76 Deg 49 M 2.46 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	78 (nearest foot)
Structure Height :	17 (nearest foot)
Is structure on airport:	(●) No ( ) Yes

Results

You do not exceed Notice Criteria.



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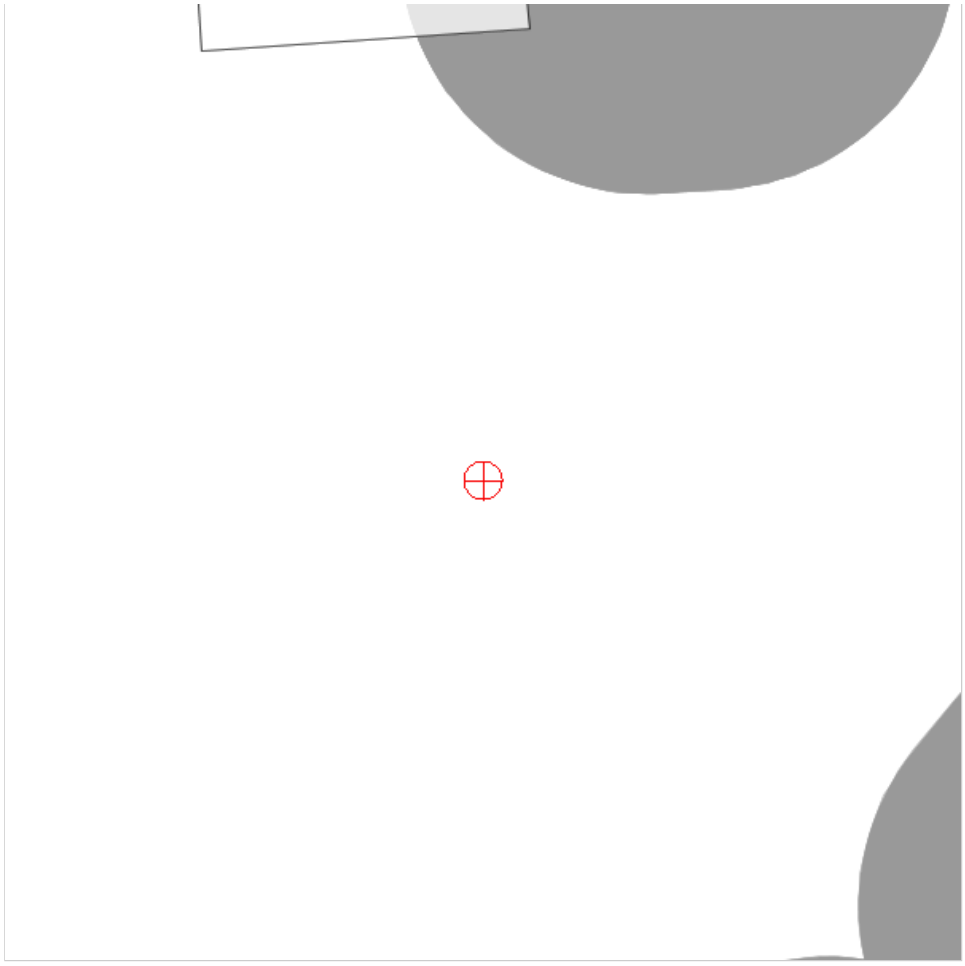
The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 24 M 6.75 S N
Longitude:	76 Deg 49 M 1.96 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	84 (nearest foot)
Structure Height :	17 (nearest foot)
Is structure on airport:	(●) No ( ) Yes

Results

You do not exceed Notice Criteria.



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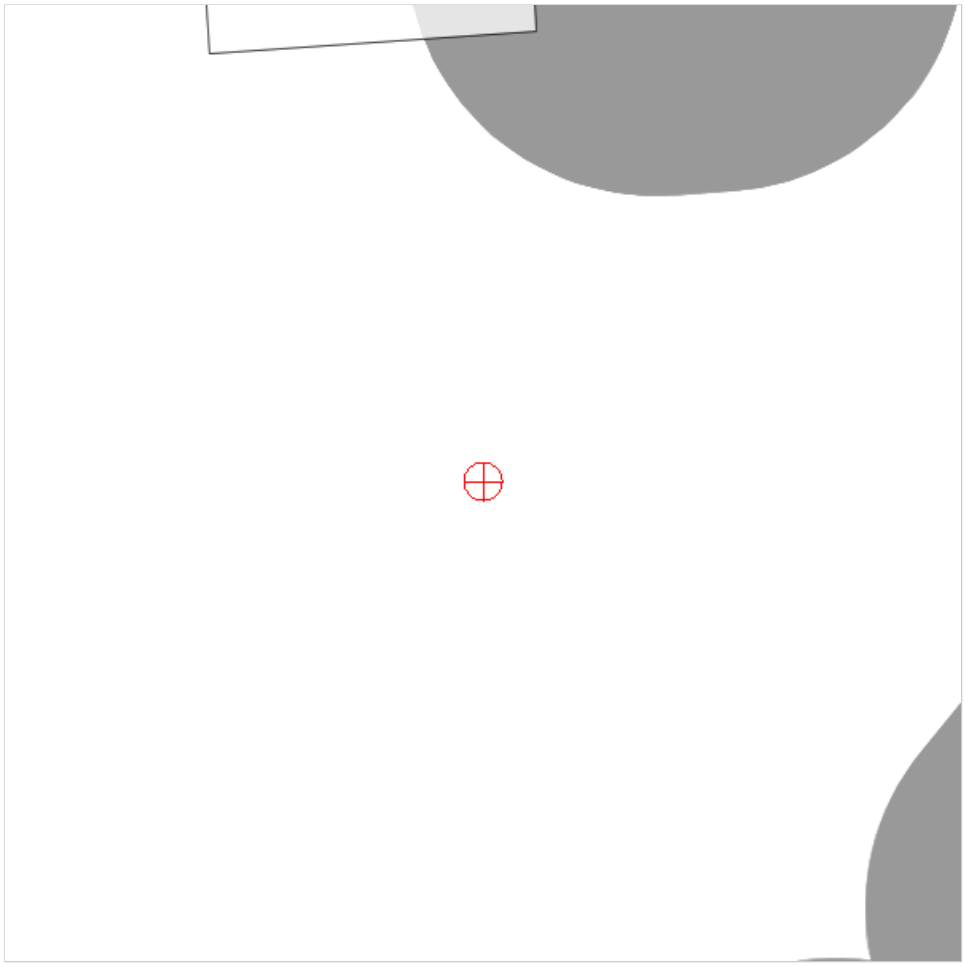
The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 24 M 7.26 S N
Longitude:	76 Deg 49 M 9.12 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	96 (nearest foot)
Structure Height :	17 (nearest foot)
Is structure on airport:	(●) No ( ) Yes

Results

You do not exceed Notice Criteria.



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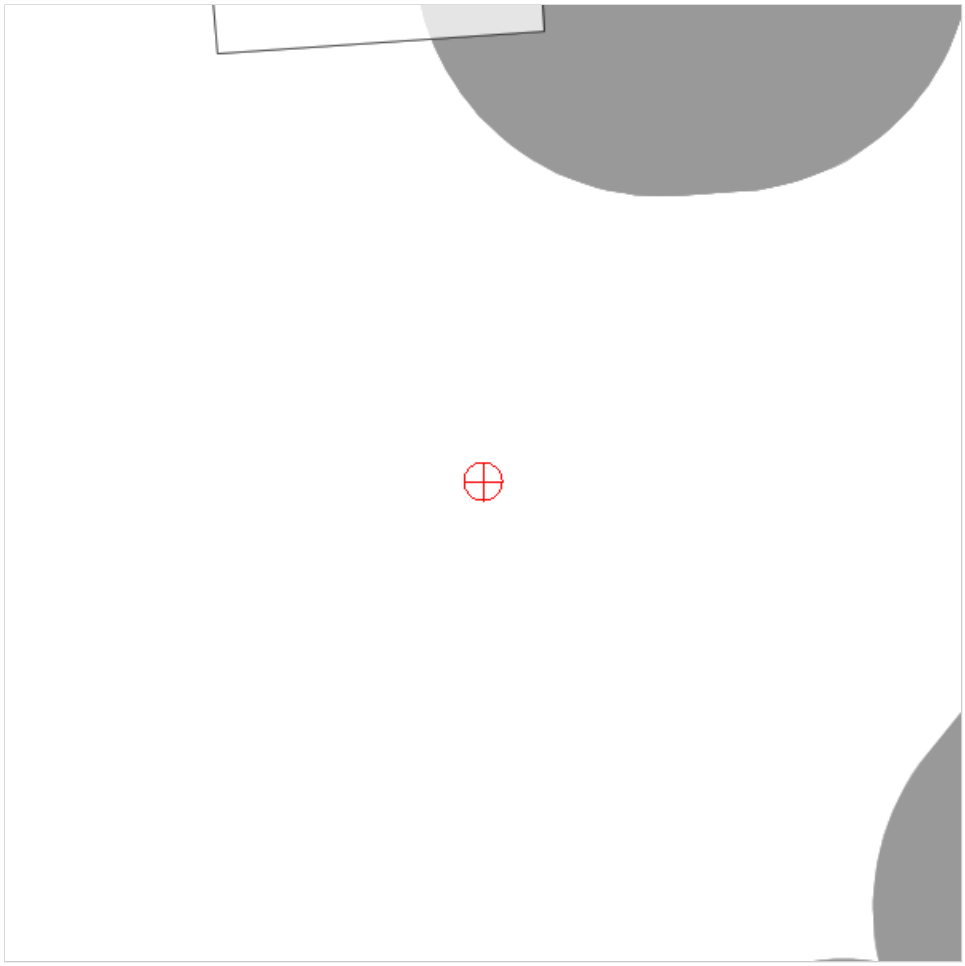
The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 24 M 7.83 S N
Longitude:	76 Deg 49 M 16.72 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	92 (nearest foot)
Structure Height :	17 (nearest foot)
Is structure on airport:	(•) No ( ) Yes

Results

You do not exceed Notice Criteria.



Appendix N – Glint/Glare Analysis

FORGESOLAR GLARE ANALYSIS

Project: **Richmond Road Solar**

Proposed 5MW utility-scale single axis tracker solar array off Richmond Road

Site configuration: **Initial Estimate-temp-0**

Created 21 Mar, 2023
Updated 21 Mar, 2023
Time-step 1 minute
Timezone offset UTC-5
Site ID 86678.15298
Category 1 MW to 5 MW
DNI peaks at 1,000.0 W/m^2
Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	14,340,000.0

Total annual glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Richmond Road Eastbound	0	0.0	0	0.0
Richmond Road Westbound	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 11	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV array 1
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 50.0°
Resting angle: 10.0°
Ground Coverage Ratio: 0.35
Rated power: 5000.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	37.402168	-76.816962	82.46	0.00	82.46
2	37.402390	-76.821221	91.19	0.00	91.19
3	37.402075	-76.822423	87.18	0.00	87.18
4	37.402083	-76.822873	81.02	0.00	81.02
5	37.400950	-76.823463	80.41	0.00	80.41
6	37.400745	-76.821736	82.41	0.00	82.41
7	37.399722	-76.822305	75.08	0.00	75.08
8	37.399126	-76.822970	81.67	0.00	81.67
9	37.399160	-76.824504	76.73	0.00	76.73
10	37.397967	-76.824461	82.54	0.00	82.54
11	37.397736	-76.821468	77.49	0.00	77.49
12	37.399773	-76.820374	83.83	0.00	83.83
13	37.399663	-76.817209	72.50	0.00	72.50

Route Receptors

Name: Richmond Road Eastbound
Path type: One-way (toward increasing index)
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	37.403253	-76.827168	90.03	0.00	90.03
2	37.402333	-76.814229	75.24	0.00	75.24
3	37.403253	-76.827168	90.03	0.00	90.03

Name: Richmond Road Westbound
Path type: One-way (toward increasing index)
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	37.402691	-76.815152	70.30	0.00	70.30
2	37.403594	-76.827104	91.29	0.00	91.29
3	37.402691	-76.815152	70.30	0.00	70.30

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	37.403125	-76.825620	92.58	0.00
OP 2	2	37.402852	-76.822337	72.77	0.00
OP 3	3	37.402698	-76.819354	94.33	0.00
OP 4	4	37.402289	-76.814419	76.31	0.00
OP 5	5	37.400244	-76.814076	81.70	0.00
OP 6	6	37.397994	-76.816007	61.89	0.00
OP 7	7	37.400380	-76.825813	80.27	0.00
OP 8	8	37.401556	-76.825598	83.67	0.00
OP 9	9	37.402494	-76.825083	87.51	0.00
OP 10	10	37.404079	-76.823796	78.65	0.00
OP 11	11	37.403892	-76.818539	94.36	0.00

Obstruction Components

Name: Existing Mature Vegetation
Top height: 60.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	37.402101	-76.816440	73.14
2	37.399544	-76.816761	58.43
3	37.402101	-76.816440	73.14

Name: Existing Mature Vegetation
Top height: 60.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	37.399561	-76.816761	58.86
2	37.398163	-76.819615	77.31
3	37.399578	-76.819615	79.12
4	37.399595	-76.820173	79.26
5	37.397635	-76.821246	77.90
6	37.397481	-76.819916	42.86
7	37.399561	-76.816761	58.86

Name: Existing Mature Vegetation
Top height: 60.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	37.400754	-76.822748	84.33
2	37.400243	-76.822812	78.99
3	37.399851	-76.822383	72.51
4	37.399237	-76.823199	81.77
5	37.399323	-76.824615	70.24
6	37.397839	-76.824551	82.42
7	37.397908	-76.825023	79.02
8	37.399476	-76.825023	47.73
9	37.399834	-76.824078	55.95
10	37.400754	-76.822748	84.33

Name: Existing Mature Vegetation
Top height: 60.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	37.397806	-76.824375	82.45
2	37.397585	-76.821393	77.24
3	37.397806	-76.824375	82.45

Name: New Vegetative Screening
Top height: 8.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	37.402646	-76.820860	89.71
2	37.402374	-76.816933	83.15
3	37.402646	-76.820860	89.71

Name: New Vegetative Screening
Top height: 8.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	37.402629	-76.820946	90.29
2	37.402254	-76.822898	84.06
3	37.400840	-76.823714	73.42
4	37.400720	-76.822727	84.10
5	37.400840	-76.823778	66.88
6	37.402271	-76.822941	83.23
7	37.402629	-76.820946	90.29

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	14,340,000.0

Total annual glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Richmond Road Eastbound	0	0.0	0	0.0
Richmond Road Westbound	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0

PV: PV array 1 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Richmond Road Eastbound	0	0.0	0	0.0
Richmond Road Westbound	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0

PV array 1 and Richmond Road Eastbound

Receptor type: Route
No glare found

PV array 1 and Richmond Road Westbound

Receptor type: Route
No glare found

PV array 1 and OP 1

Receptor type: Observation Point
No glare found

PV array 1 and OP 2

Receptor type: Observation Point
No glare found

PV array 1 and OP 3

Receptor type: Observation Point
No glare found

PV array 1 and OP 4

Receptor type: Observation Point
No glare found

PV array 1 and OP 5

Receptor type: Observation Point
No glare found

PV array 1 and OP 6

Receptor type: Observation Point
No glare found

PV array 1 and OP 7

Receptor type: Observation Point
No glare found

PV array 1 and OP 8

Receptor type: Observation Point
No glare found

PV array 1 and OP 9

Receptor type: Observation Point
No glare found

PV array 1 and OP 10

Receptor type: Observation Point
No glare found

PV array 1 and OP 11

Receptor type: Observation Point
No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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Appendix O – SUP Requirement Waiver Request

John Townsend
Sun Tribe Development
107 5th Street SE
Charlottesville, VA 22902

March 20, 2023

Paul Holt
Director of Community Development/Planning – James City County
101 Mounts Bay Road, Building A
Williamsburg, VA 23185

Re: Richmond Road Solar, SUP Requirement Waiver Request

Dear Mr. Holt and the Community Development/Planning Department,

Please accept this letter pursuant to James City County's Zoning Ordinance Section 24-23 as a written request to waive certain application submission requirements for the proposed Richmond Road Solar project (the Project). The Project is located at 8659 Richmond Road. We have outlined the specific provisions we request to be waived long with a brief description of why we believe they do not apply to Richmond Road Solar as proposed.

- *24-23 (a)(1)(a) Traffic Impact Analysis* – As an operational solar facility, Richmond Road Solar is expected to generate minimal traffic, with fewer than two trips per month, far below the identified 100 weekday peak hour trip threshold for this requirement. However, during the five-month construction period, peak delivery days may result in 25-40 daily trips to and from the project site. To manage this traffic, a Construction Traffic Management Plan will be developed and submitted to James City County for review and approval alongside the site plan. In response to VDOT county officials' request for an overview of traffic conditions and ingress/egress during preliminary project review, Dewberry was commissioned to prepare an entrance analysis exhibit and conceptual traffic report.

- *24-23 (a)(1)(b) Water and Sewer Impact Survey* – The Project does not propose any new water or sewer service to the site.

- *24-23 (a)(1)(d/e) Public Facilities Report* – The Project is proposed as a temporary land use for power generation that connects to the existing electrical gride on the site. No other public facilities are required, and County facility impacts are not anticipated during the

Project's operations and maintenance phase. Additionally, no on-site nor off-site public facilities are required for the Project.

- *24-23 (a)(1)(f) Phase 1A Archaeological Study* – County staff have confirmed that the Project is not identified as being an ultra- or highly-sensitive area on the James City County archaeological assessment, therefore this requirement is not applicable.

- *24-23 (a)(1)(g) Preliminary Natural Resource Inventory* – County staff have confirmed that the Project is not located in the B1, B2, or B3 area, therefore this requirement is not applicable.

- *24-23 (a)(1)(h) Fiscal Impact Study* – The Project does not include residential dwelling units, therefore this requirement is not applicable. Please see the "Direct Revenue to James City County" and "Economic Development" sections of the Project's narrative for additional information on tax revenue and fiscal contribution.

- *24-23 (a)(1)(i) Parks and Recreation Information* – The Project will have no effect on James City County's Parks and Recreation, therefore this requirement is not applicable.

Thank you for your consideration of our application. Should you have any questions, please don't hesitate to contact me to discuss.

Sincerely,



John Townsend
Project Developer
john.townsend@suntribedevelopment.com
720.244.1924

Appendix P – Surrounding Landowners

Parcel ID	Landowner	Property Address	MapID
1120100042A	HARRIS, MONIKO	8730 RICHMOND RD	1
1130100013	GREENSPRINGS MATERIALS LLC	8589 RICHMOND RD	2
1120300001	MASSIE, LINDA G TRUSTEE & GARY M TRUSTEE	8644 MERRY OAKS LN	3
1210100032	STEWLO LLC	8509 RICHMOND RD	4
1120100038	MCKOWN, RICHARD D	8796 MERRY OAKS LN	5
1120200004	HESLINK, JOHN S JR	PO BOX 176	6
1120700001	LOYA, JUAN & MIRIAM	8731 RICHMOND RD	7
1120700002	HART, MARY	8735 RICHMOND RD	8
1120700003	BROCK, JASON M & DONNA L	8739 RICHMOND RD	9
1120700004	KING, WILLIAM E JR & CAITLIN M	8741 RICHMOND RD	10
1210100004	WALLS, CHARLES S IV & DONNA L	143 OLD STAGE RD	11
1210100004B	WALLS, CHARLES & DONNA	143 OLD STAGE RD	12
1210100024	ROBINSON, WILLIE	8619 RICHMOND RD	13
1210100029	TAYLOR, WILLIAM C &	8589 RICHMOND RD	14
1210500004	MILLER, SCOTT C & LINDA A	8636 RICHMOND RD	15
1210500005A	HESLINK, JOHN S SR & LINDA C LIFE ESTATE	139 OLD STAGE RD	16
1140100001	MARTIN FAMILY HOLDINGS LLC	8659 A RICHMOND RD	17

Appendix Q – Certification of County Treasurer

JAMES CITY COUNTY

Payment Distribution

COPY

Print Date: 3/14/2023

Records Printed: 1

Account: 2308292 - MARTIN FAMILY HOLDINGS LLC
Payment Date: 05/16/2022 Fiscal Year: 2022
Calculation Date: 05/13/2022
Payment Amount: $3,938.76

Reference ID: RCS Batch Register
Reference: RCS Transaction: 12146095
Unallocated Cash: $0.00

Comment: spAR_CreateARPaymentForRSBatch_JITY
Invoice #: 169271 Due Date: 06/06/2022

Real Estate

Tax Year	Item Identifier	Description	Category	Paid
2021	02970	8659 RICHMOND ROAD	Tax/Misc.Fe	$3,938.76
				$3,938.76

Unallocated Cash: $0.00

Total Paid: $3,938.76

IF PAID BY CREDIT/DEBIT CARD, A CONVENIENCE FEE
WAS ASSESSED AT THE TIME OF PAYMENT

JAMES CITY COUNTY

Payment Distribution

COPY

Print Date: 3/14/2023

Records Printed: 1

Account: 2308292 - MARTIN FAMILY HOLDINGS LLC
Payment Date: 11/29/2022 Fiscal Year: 2023
Calculation Date: 11/28/2022
Payment Amount: $3,891.87

Reference ID: RCS Batch Register
Reference: RCS Transaction: 4086011
Unallocated Cash: $0.00

Comment: spAR_CreateARPaymentForRSBatch_JITY
Invoice #: 203545 Due Date: 12/05/2022

Real Estate

Tax Year	Item Identifier	Description	Category	Paid
2022	02970	8659 RICHMOND ROAD	Tax/Misc.Fe	$3,891.87
				$3,891.87

Unallocated Cash: $0.00

Total Paid: $3,891.87

IF PAID BY CREDIT/DEBIT CARD, A CONVENIENCE FEE
WAS ASSESSED AT THE TIME OF PAYMENT

SEMI-ANNUAL REAL ESTATE TAX BILL
County of James City, Virginia

Bill Number:	203545
Tax Period:	Jan - Jun 2023

Due Date:	06/05/2023
Account No.	2308292

Jennifer D. Tomes, Treasurer
PO Box 8701
Williamsburg VA 23187

PROPERTY OWNERS ON JULY1
MARTIN FAMILY HOLDINGS LLC

Property Location
8659 RICHMOND ROAD
Legal Description
ADJ W C RANKIN

LRSN
02970
Map No.
1120100042
Acres
130.2500

ASSESSMENT AS OF JULY 1						TAX		CREDITS	TAXES DUE
Fair Market Value			Taxable Value			Tax Rate	Annual Tax	Senior/Disabled	2nd Half Due 06/05/2023
Land	Improvements	Total	Land	Improvements	Total				
937,800	0	937,800	937,800	0	937,800	0.830	7,783.74	0.00	3,891.87

1. For questions about real estate assessments, please contact the Real Estate Assessor's Office at (757) 253-6650. Questions concerning payments should be directed to the Treasurer's Office at (757) 253-6705.

2. PLEASE NOTE NEW ACCOUNT NUMBER. TO ENSURE PAYMENT IS PROCESSED CORRECTLY, THIS NUMBER MUST BE USED WHEN PAYING ONLINE THROUGH YOUR BANK. PLEASE SEND PAYMENT TO THE NEW ADDRESS SHOWN ON BACK.

3. Real Estate taxes are billed on a fiscal year and due twice annually. The first half taxes are due on December 5th of each year and the second half taxes are due on June 5th of each year.

4. If you have a Mortgage on your property and the Mortgage holder is escrowing funds for the payment of Real Estate Taxes, it is important that you immediately forward this bill to your Mortgage Company for payment

5. **Real Estate Exemption.** The elderly or disabled may be eligible for a real estate exemption if: (1) They are 65 or older or permanently disabled; and (2) meet financial criteria established by local ordinance. Please see reverse side for more details.

COPY

PLEASE SEE REVERSE FOR FURTHER INFORMATION.

DELINQUENT AMOUNTS	
Year	Amount
2022	0.00
2021	0.00
2020	0.00
2019	0.00
2018	0.00
2017	0.00
2016	0.00
2015	0.00
2014	0.00
2013	0.00
2012	0.00
2011	0.00
2010	0.00
Prior	0.00
Other Assess	0.00
Misc Fees	0.00
Credits	0.00
TOTAL	3,891.87

Please make checks payable to James City County Treasurer and return the portion below with your payment. Drop boxes are located at the Treasurer's Office front door, at the Satellite Services Office, and in the Government Center parking lot. Payments submitted by drop box on the due date will be considered on time.

Account Number : 2308292 **Bill Number :** 203545 **LRSN:** 02970

ASSESSMENT AS OF JULY 1					
Fair Market Value			Taxable Value		
Land	Improvements	Total	Land	Improvements	Total
937,800	0	937,800	937,800	0	937,800

Bill Year 2022	Balance Due
Current Taxes Due	3,891.87
Amount Delinquent	0.00
Other Assessments	0.00
Miscellaneous Fees	0.00
Payments/Credits	0.00
Total due by 06/05/2023	3,891.87

☐ Has Your Address Changed? If so check this box and complete the change of address section on the back

Daytime Telephone #:

MARTIN FAMILY HOLDINGS LLC
1010 MARNEY CT
HENRICO, VA 23229-6079

Appendix R – Visual Renderings

WESTBOUND ROUTE 60 - YEAR 0

Sun Tribe SOLAR



Richmond Road Solar | **VS2**

AT PLANTING

PHOTOS TAKEN 04/19/2023

JAMES CITY COUNTY, VA

Photos by Timmons Group

WESTBOUND ROUTE 60 - YEAR 5

Sun Tribe SOLAR



Richmond Road Solar | **VS2**

5 YEARS

PHOTOS TAKEN 04/19/2023

JAMES CITY COUNTY, VA

Photos by Timmons Group

WESTBOUND ROUTE 60 - YEAR 10

Sun Tribe SOLAR



Richmond Road Solar | **VS2**

10 YEARS

PHOTOS TAKEN 04/19/2023

JAMES CITY COUNTY, VA

Photos by Timmons Group

EASTBOUND ROUTE 60 - YEAR 0

Sun Tribe SOLAR



Richmond Road Solar | **VS6**

AT PLANTING

PHOTOS TAKEN 04/19/2023

JAMES CITY COUNTY, VA

Photos by Timmons Group

EASTBOUND ROUTE 60 - YEAR 5

Sun Tribe SOLAR



Richmond Road Solar	VS6
5 YEARS	
PHOTOS TAKEN 04/19/2023	
JAMES CITY COUNTY, VA	

Photos by Timmons Group

EASTBOUND ROUTE 60 - YEAR 10

Sun Tribe SOLAR



Richmond Road Solar | **VS6**

10 YEARS

PHOTOS TAKEN 04/19/2023

JAMES CITY COUNTY, VA

Photos by Timmons Group

VIRGINIA VICINITY MAP



RICHMOND ROAD SOLAR

5 MW AC SOLAR PV SYSTEM

JAMES CITY COUNTY, VIRGINIA

JAMES CITY COUNTY VICINITY MAP



DRAWING SET CONTENTS	
DRAWING TITLE	DRAWING NUMBER
COVER SHEET	P001
MASTER PLAN	P100
SITE PLAN	P101
ADJACENT PARCELS	P102
EXISTING CONTOURS	P103
EXISTING SLOPE	P104
SOIL TYPES	P105
AGRICULTURE SUITABILITY	P106
HABITAT CORES	P107
LANDSCAPE PLAN	P200
ENTRANCE PLAN	C-1
SIGHT DISTANCE	C-2
STORMWATER MANAGEMENT PLAN	C900
POND ENLARGEMENTS	C901
DITCH AND SWALE PROFILES	C902
PRE-DEV DRAINAGE AREA PLAN	C903
POST-DEV DRAINAGE AREA PLAN	C904

PROJECT OVERVIEW	
PARCEL ID	1120100042 & 1140100001
LANDOWNER	MARTIN FAMILY HOLDINGS, LLC
ZONING	A1
PARCEL AREA	134.25 ACRES
SPECIAL USE PERMIT BOUNDARY	67.97 ACRES
CONCEPTUAL LIMITS OF DISTURBANCE	67.97 ACRES
CONCEPTUAL FENCED AREA	61.15 ACRES

DEVELOPMENT TEAM	
LEAD DEVELOPER	JOHN TOWNSEND 720-244-1924
DEVELOPMENT ENGINEER	AVERY CLEMENS
DESIGN MANAGER	ELI TURNER

Sun Tribe DEVELOPMENT
107 5TH STREET SOUTHEAST
CHARLOTTESVILLE, VA 22902
WWW.SUNTRIBESOLAR.COM

RICHMOND ROAD SOLAR, LLC
5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	03/07/2023	E.TURNER	TFRANCIS	CONCEPTUAL DESIGN FOR SPECIAL USE PERMIT APPLICATION
B	04/18/2023	E.TURNER	TFRANCIS	UPDATED SITE MAPS
C	06/15/2023	E.TURNER	TFRANCIS	UPDATED PER JCC COMMENT LETTER
D	08/22/2023	A.CLEMENS	TFRANCIS	UPDATED TO INCLUDE PARCEL 1141100001

PE STAMP:

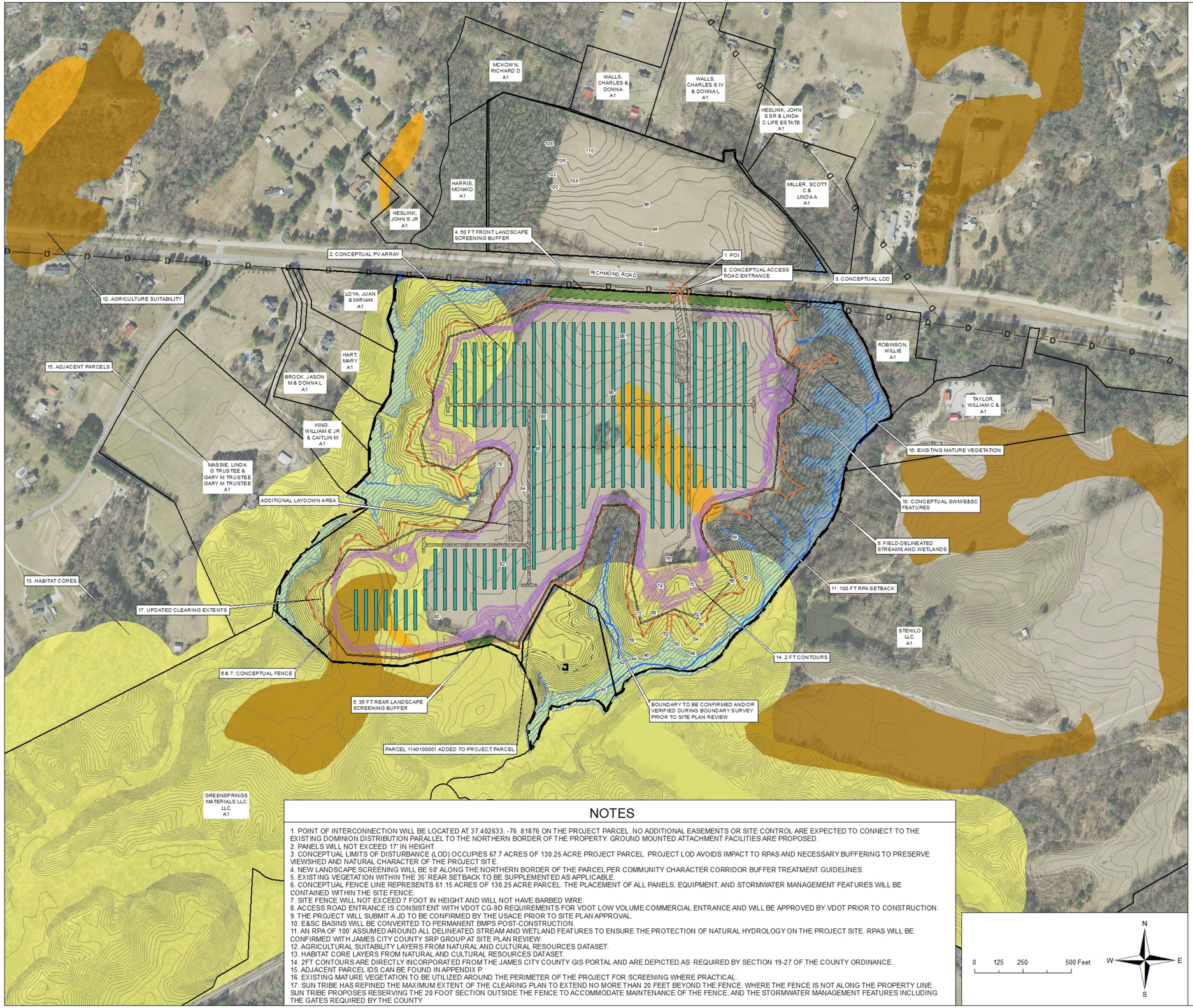
NOT FOR CONSTRUCTION

34x22

NTS

COVER SHEET

P001



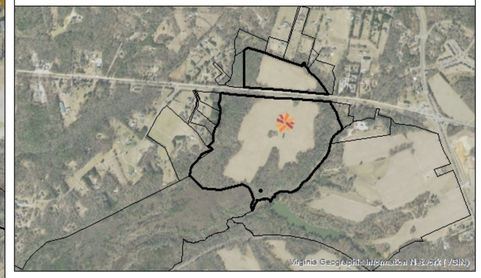
NOTES

1. POINT OF INTERCONNECTION WILL BE LOCATED AT 37.402633, -76. 81876 ON THE PROJECT PARCEL. NO ADDITIONAL EASEMENTS OR SITE CONTROL ARE EXPECTED TO CONNECT TO THE EXISTING DOMINION DISTRIBUTION PARALLEL TO THE NORTHERN BORDER OF THE PROPERTY. GROUND MOUNTED ATTACHMENT FACILITIES ARE PROPOSED.
2. PANELS WILL NOT EXCEED 17' IN HEIGHT.
3. CONCEPTUAL LIMITS OF DISTURBANCE (LOD) OCCUPIES 67.7 ACRES OF 130.25 ACRE PROJECT PARCEL. PROJECT LOD AVOIDS IMPACT TO RPAS AND NECESSARY BUFFERING TO PRESERVE VIEWSHED AND NATURAL CHARACTER OF THE PROJECT SITE.
4. NEW LANDSCAPE SCREENING WILL BE 50' ALONG THE NORTHERN BORDER OF THE PARCEL PER COMMUNITY CHARACTER CORRIDOR BUFFER TREATMENT GUIDELINES.
5. EXISTING VEGETATION WITHIN THE 35' REAR SETBACK TO BE SUPPLEMENTED AS APPLICABLE.
6. CONCEPTUAL FENCE LINE REPRESENTS 61.15 ACRES OF 130.25 ACRE PARCEL. THE PLACEMENT OF ALL PANELS, EQUIPMENT, AND STORMWATER MANAGEMENT FEATURES WILL BE CONTAINED WITHIN THE SITE FENCE.
7. SITE FENCE WILL NOT EXCEED 7 FOOT IN HEIGHT AND WILL NOT HAVE BARBED WIRE.
8. ACCESS ROAD ENTRANCE IS CONSISTENT WITH VDOT CG-9D REQUIREMENTS FOR VDOT LOW VOLUME COMMERCIAL ENTRANCE AND WILL BE APPROVED BY VDOT PRIOR TO CONSTRUCTION.
9. THE PROJECT WILL SUBMIT A JD TO BE CONFIRMED BY THE USACE PRIOR TO SITE PLAN APPROVAL.
10. E&SC BASINS WILL BE CONVERTED TO PERMANENT BMPS POST-CONSTRUCTION.
11. AN RPA OF 100' ASSUMED AROUND ALL DELINEATED STREAM AND WETLAND FEATURES TO ENSURE THE PROTECTION OF NATURAL HYDROLOGY ON THE PROJECT SITE. RPAS WILL BE CONFIRMED WITH JAMES CITY COUNTY SRP GROUP AT SITE PLAN REVIEW.
12. AGRICULTURAL SUITABILITY LAYERS FROM NATURAL AND CULTURAL RESOURCES DATASET.
13. HABITAT CORE LAYERS FROM NATURAL AND CULTURAL RESOURCES DATASET.
14. 2FT CONTOURS ARE DIRECTLY INCORPORATED FROM THE JAMES CITY COUNTY GIS PORTAL AND ARE DEPICTED AS REQUIRED BY SECTION 19-27 OF THE COUNTY ORDINANCE.
15. ADJACENT PARCEL IDS CAN BE FOUND IN APPENDIX P.
16. EXISTING MATURE VEGETATION TO BE UTILIZED AROUND THE PERIMETER OF THE PROJECT FOR SCREENING WHERE PRACTICAL.
17. SUN TRIBE HAS REFINED THE MAXIMUM EXTENT OF THE CLEARING PLAN TO EXTEND NO MORE THAN 20 FEET BEYOND THE FENCE, WHERE THE FENCE IS NOT ALONG THE PROPERTY LINE. SUN TRIBE PROPOSES RESERVING THE 20 FOOT SECTION OUTSIDE THE FENCE TO ACCOMMODATE MAINTENANCE OF THE FENCE, AND THE STORMWATER MANAGEMENT FEATURES INCLUDING THE GATES REQUIRED BY THE COUNTY.

JAMES CITY COUNTY VICINITY MAP



1" = 2,000' VICINITY MAP



THE INFORMATION DEPICTED ON THIS SHEET IS TO SUPPORT A SPECIAL USE PERMIT APPLICATION AND IS TO BE USED FOR PLANNING PURPOSES ONLY.

LEGEND

- POINT OF INTERCONNECTION (37.402633, -76. 81876)
- CONCEPTUAL PV ARRAY
- CONCEPTUAL LIMITS OF DISTURBANCE
- PROPOSED INTERCONNECTION ATTACHMENT FACILITIES
- D D EXISTING DISTRIBUTION LINE
- CONCEPTUAL NEW LANDSCAPE SCREENING BUFFER
- CONCEPTUAL FENCE
- CONCEPTUAL ACCESS ROAD
- FIELD-DELINEATED STREAMS & WETLANDS
- 100 FOOT RPA BUFFER AROUND STREAMS AND WETLANDS
- PROJECT PARCEL BOUNDARY (GIS) EXACT LOCATION AND BOUNDARIES TO BE CONFIRMED WITH FIELD SURVEY
- PARCEL BOUNDARY SETBACK (FRONT: 75 FEET, SIDE: 15 FEET, REAR: 35 FEET)
- CONCEPTUAL STORMWATER FEATURES AND GRADING
- ADJACENT PARCEL BOUNDARIES
- EXISTING 2FT CONTOURS (JCC GIS)

AGRICULTURE SUITABILITY (SSURGO)

- NON-IRRIGATED CAPABILITY CLASS I (OVER PERVIOUS SURFACES)
- NON-IRRIGATED CAPABILITY CLASS II (OVER PERVIOUS SURFACES)

HABITAT CORES

- BEST - NOT PRESENT IN MAP VIEW
- NOT PRESENT IN MAP VIEW
- NOT PRESENT IN MAP VIEW
- NOT PRESENT IN MAP VIEW
- LOWEST - IN MAP VIEW

Sun Tribe DEVELOPMENT
107 5TH STREET SOUTHEAST
CHARLOTTESVILLE, VA 22902
WWW.SUNTRIBESOLAR.COM

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	03/17/2023	E.TURNER	T.FRANCIS	CONCEPTUAL DESIGN FOR SPECIAL USE PERMIT APPLICATION
B	06/15/2023	E.TURNER	T.FRANCIS	UPDATED PER JCC COMMENT LETTER
C	06/26/2023	A.CLEMENS	T.FRANCIS	UPDATED TO INCLUDE PARCEL 1140100001

PE STAMP:

NOT FOR CONSTRUCTION

PAPER SIZE: 34x22

SCALE: 1 " = 250 '

DRAWING TITLE: MASTER PLAN

DRAWING NO.: P100

CONCEPTUAL PV ARRAY

50 FT FRONT LANDSCAPE SCREENING BUFFER

RICHMOND ROAD

POI

CONCEPTUAL ACCESS ROAD ENTRANCE

CONCEPTUAL LOD

EXISTING MATURE VEGETATION

CONCEPTUAL SWM/E&SC FEATURES

FIELD-DELINEATED STREAMS AND WETLANDS

100 FT RPA SETBACK

2 FT CONTOURS

BOUNDARY TO BE CONFIRMED AND/OR VERIFIED DURING BOUNDARY SURVEY PRIOR TO SITE PLAN REVIEW

PARCEL 1140100001 ADDED TO PROJECT PARCEL

35 FT REAR LANDSCAPE SCREENING BUFFER

CONCEPTUAL FENCE

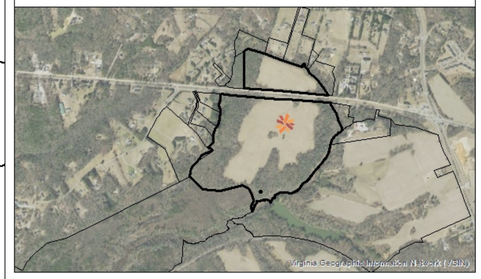
0 70 140 280 Feet

N W E S

JAMES CITY COUNTY VICINITY MAP



1" = 2,000' VICINITY MAP



THE INFORMATION DEPICTED ON THIS SHEET IS TO SUPPORT A SPECIAL USE PERMIT APPLICATION AND IS TO BE USED FOR PLANNING PURPOSES ONLY.

LEGEND

- POINT OF INTERCONNECTION (37.402633, -76. 81876)
- CONCEPTUAL PV ARRAY
- CONCEPTUAL LIMITS OF DISTURBANCE
- PROPOSED INTERCONNECTION ATTACHMENT FACILITIES
- EXISTING DISTRIBUTION LINE
- CONCEPTUAL NEW LANDSCAPE SCREENING BUFFER
- CONCEPTUAL FENCE
- CONCEPTUAL ACCESS ROAD
- CONCEPTUAL STORMWATER FEATURES AND GRADING
- FIELD-DELINEATED STREAMS & WETLANDS
- 100 FOOT RPA BUFFER AROUND STREAMS AND WETLANDS
- PARCEL BOUNDARY SETBACK (FRONT: 75 FEET, SIDE: 15 FEET, REAR: 35 FEET)
- EXISTING 2FT CONTOURS (JCC GIS)
- PROJECT PARCEL BOUNDARY (GIS) EXACT LOCATION AND BOUNDARIES TO BE CONFIRMED WITH FIELD SURVEY

Sun Tribe DEVELOPMENT
107 5TH STREET SOUTHEAST
CHARLOTTESVILLE, VA 22902
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RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	03.17.2023	E.TURNER	T.FRANCIS	CONCEPTUAL DESIGN FOR SPECIAL USE PERMIT APPLICATION
B	06.19.2023	E.TURNER	T.FRANCIS	UPDATED PER JCC COMMENT LETTER

PE STAMP:

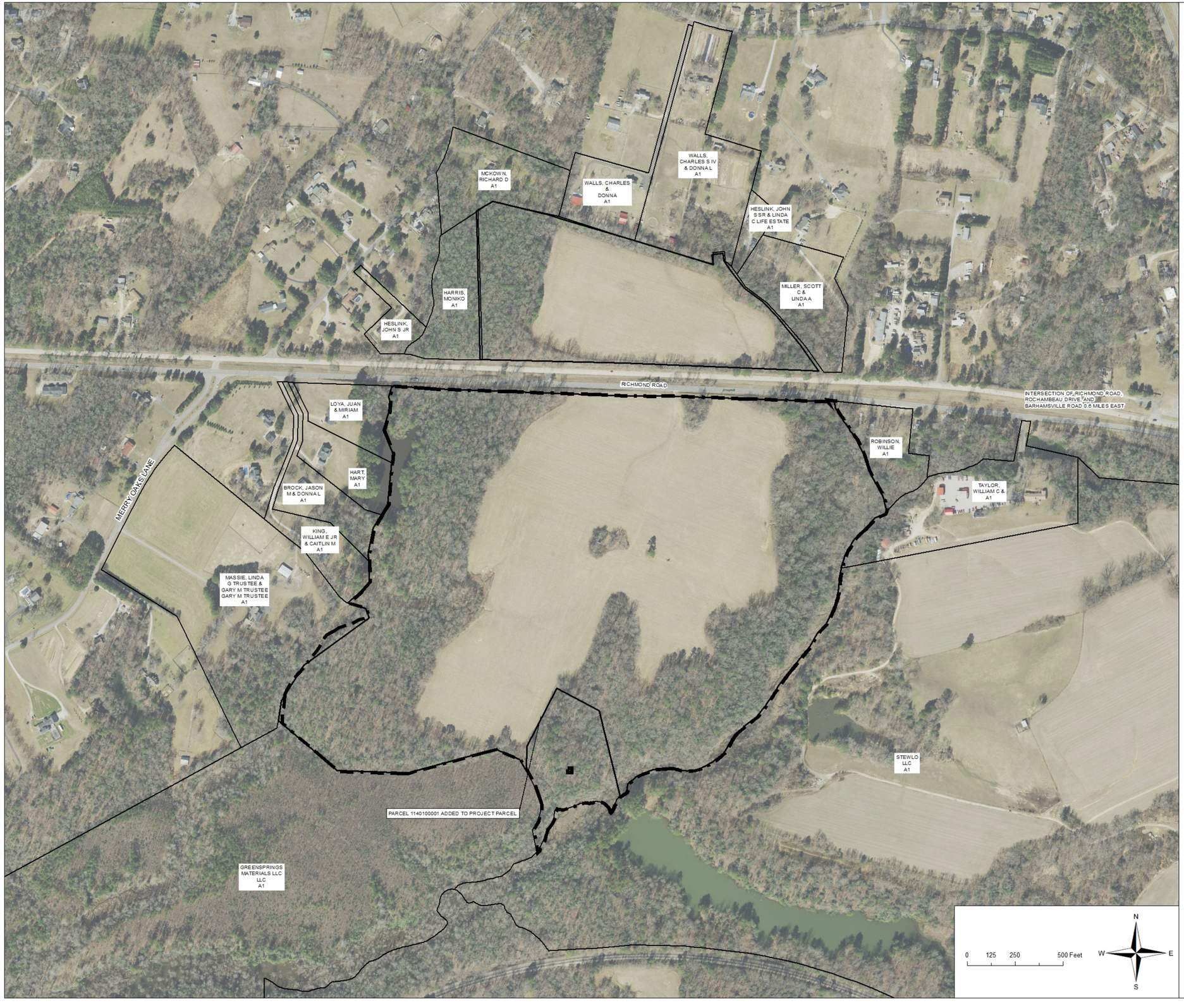
NOT FOR CONSTRUCTION

PAPER SIZE: 34x22

SCALE: 1 " = 140 '

DRAWING TITLE: SITE PLAN

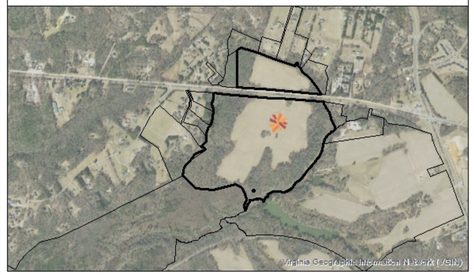
DRAWING NO: P101



JAMES CITY COUNTY VICINITY MAP



1" = 2,000' VICINITY MAP



LEGEND

ADJACENT PARCEL BOUNDARIES

PROJECT PARCEL BOUNDARY (GIS) EXACT LOCATION AND BOUNDARIES TO BE CONFIRMED WITH FIELD SURVEY

Sun Tribe DEVELOPMENT
107 5TH STREET SOUTHEAST
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RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM

JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	03/07/2023	E TURNER	TFRANCIS	CONCEPTUAL DESIGN FOR SPECIAL USE PERMIT APPLICATION
B	04/06/2023	E TURNER	TFRANCIS	UPDATED SITE MAPS
C	06/05/2023	E TURNER	TFRANCIS	UPDATED PER JCC COMMENT LETTER

NOT FOR CONSTRUCTION

PAPER SIZE: 34x22

SCALE: 1 " = 250 '

DRAWING TITLE: ADJACENT PARCELS

DRAWING NO.: P102

RICHMOND ROAD

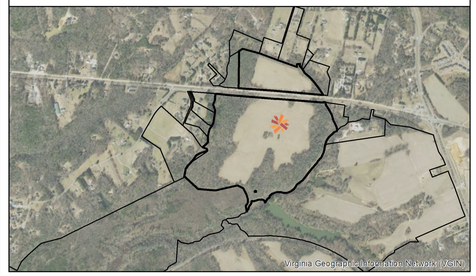
0 87.5 175 350 Feet

N W E S

JAMES CITY COUNTY VICINITY MAP



1" = 2,000' VICINITY MAP



LEGEND

EXISTING 2FT CONTOURS (JCC GIS)

PROJECT PARCEL BOUNDARY (GIS) EXACT LOCATION AND BOUNDARIES TO BE CONFIRMED WITH FIELD SURVEY

Sun Tribe DEVELOPMENT

107 5TH STREET SOUTHEAST
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RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	03/17/2023	E.TURNER	T.FRANCIS	CONCEPTUAL DESIGN FOR SPECIAL USE PERMIT APPPLICATION
B	04/18/2023	E.TURNER	T.FRANCIS	UPDATED SITE MAPS
C	06/15/2023	E.TURNER	T.FRANCIS	UPDATED PER JCC COMMENT LETTER

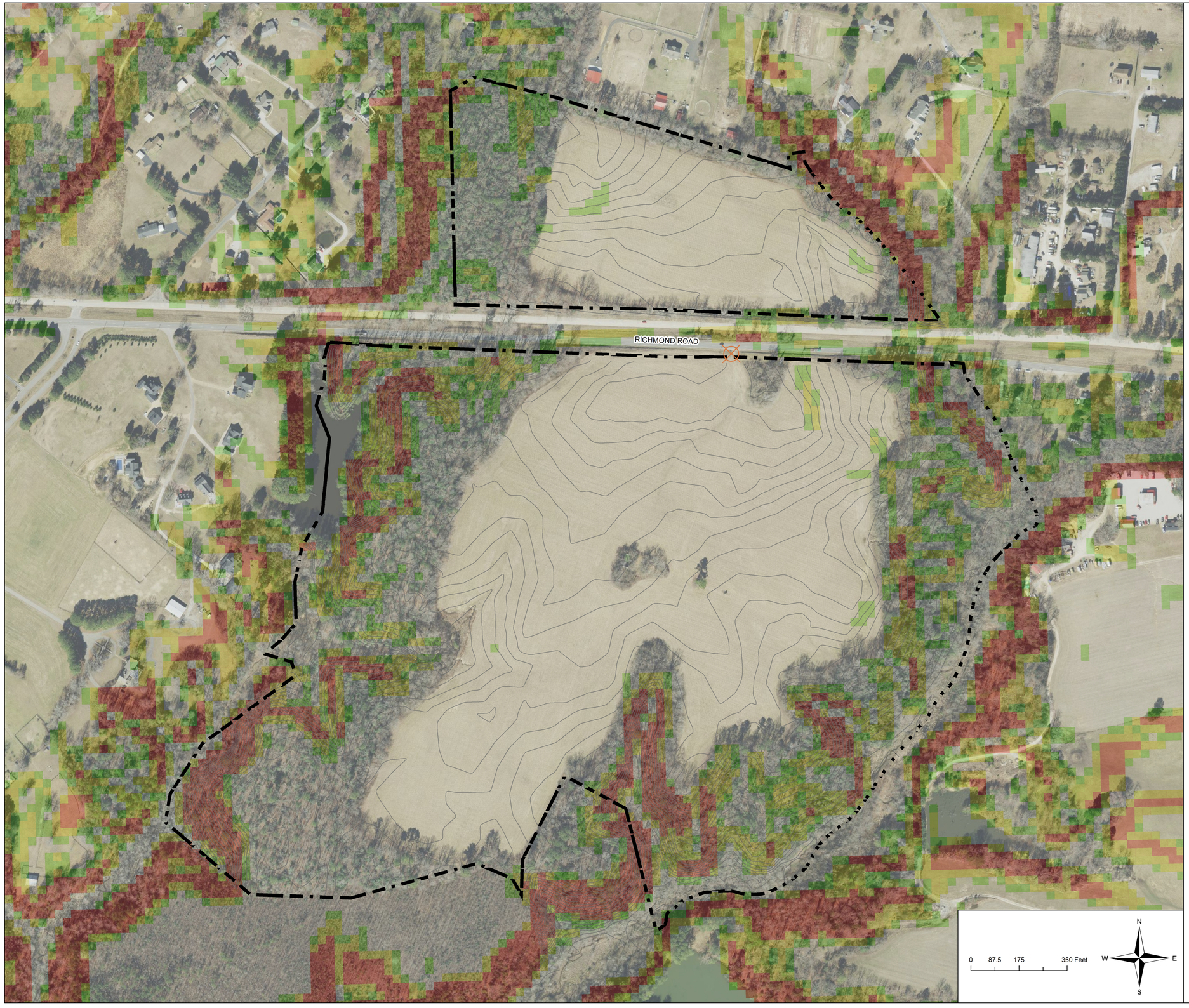
NOT FOR CONSTRUCTION

PAPER SIZE: 34X22

SCALE: 1 " = 175 '

DRAWING TITLE: EXISTING CONTOURS

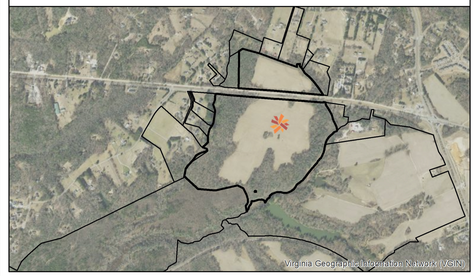
DRAWING NO: P103



JAMES CITY COUNTY VICINITY MAP



1" = 2,000' VICINITY MAP



LEGEND

SLOPE

- 8-10%
- 10-12%
- 12-15%
- >15%
- POINT OF INTERCONNECTION (37.402633, -76.81876)
- EXISTING 2FT CONTOURS (JCC GIS)
- PROJECT PARCEL BOUNDARY (GIS) EXACT LOCATION AND BOUNDARIES TO BE CONFIRMED WITH FIELD SURVEY

Sun Tribe DEVELOPMENT
107 5TH STREET SOUTHEAST
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RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV.	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	09/15/2023	E.TURNER	T.FRANCIS	UPDATED PER JCC COMMENT LETTER

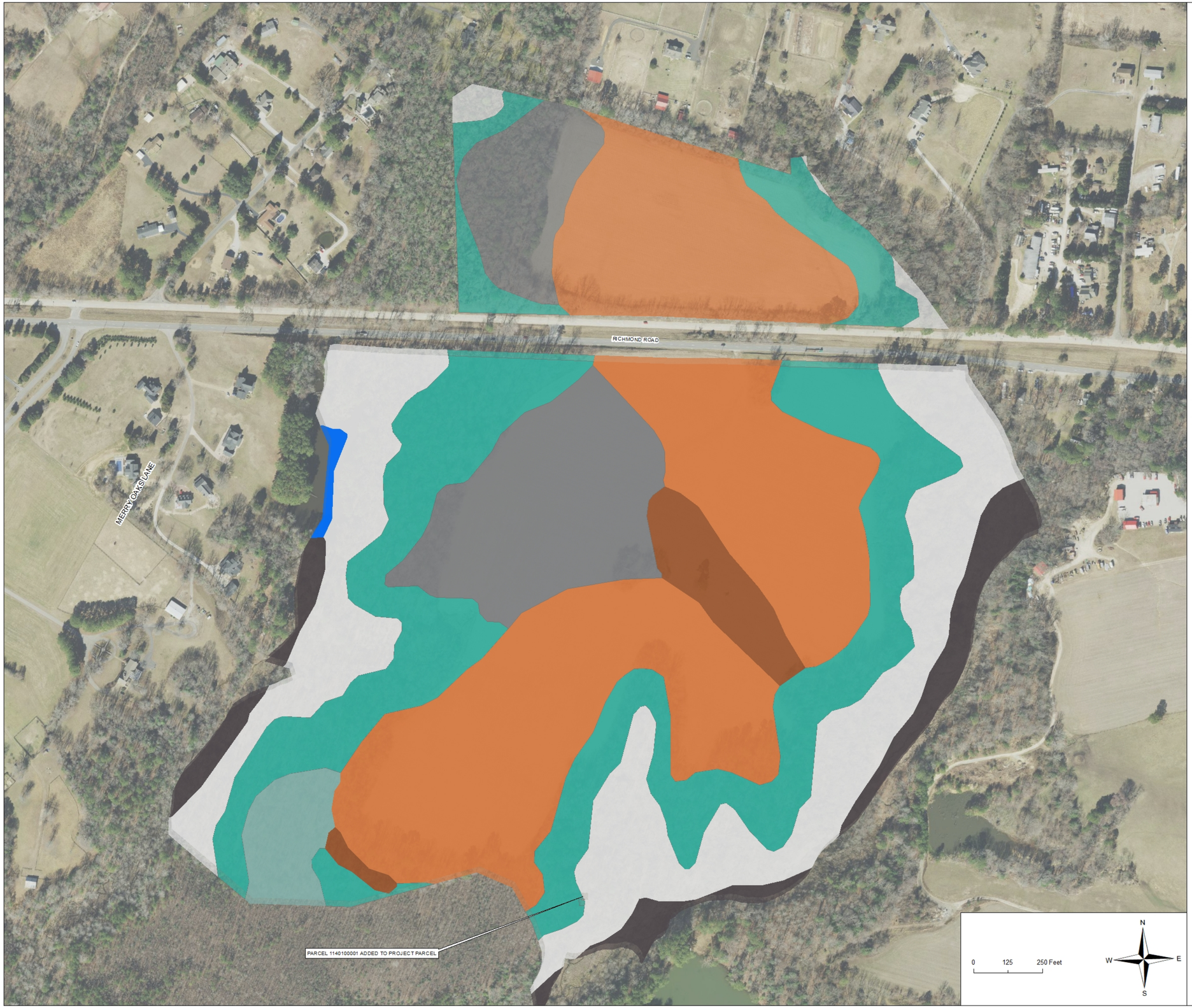
NOT FOR CONSTRUCTION

PAPER SIZE: 34x22

SCALE: 1 " = 175 '

DRAWING TITLE: EXISTING SLOPE

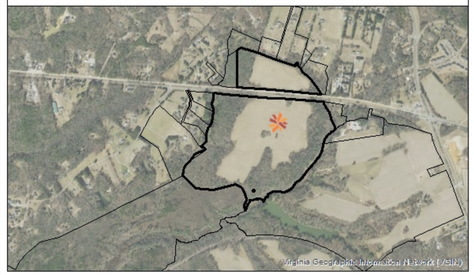
DRAWING NO: P104



JAMES CITY COUNTY VICINITY MAP



1" = 2,000' VICINITY MAP



LEGEND

- Craven-Uchee complex, 6 to 10 percent slopes
- Emporia complex, 15 to 25 percent slopes
- Johnston complex
- Kempsville-Emporia fine sandy loams, 2 to 6 percent slopes
- Slagle fine sandy loam, 0 to 2 percent slopes
- Slagle fine sandy loam, 2 to 6 percent slopes
- Suffolk fine sandy loam, 2 to 6 percent slopes
- Water

Sun Tribe DEVELOPMENT
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JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	03/17/2023	E.TURNER	T.FRANCIS	CONCEPTUAL DESIGN FOR SPECIAL USE PERMIT APPLICATION
B	06/16/2023	E.TURNER	T.FRANCIS	UPDATED SITE MAPS
C	08/15/2023	E.TURNER	T.FRANCIS	UPDATED PER JCC COMMENT LETTER

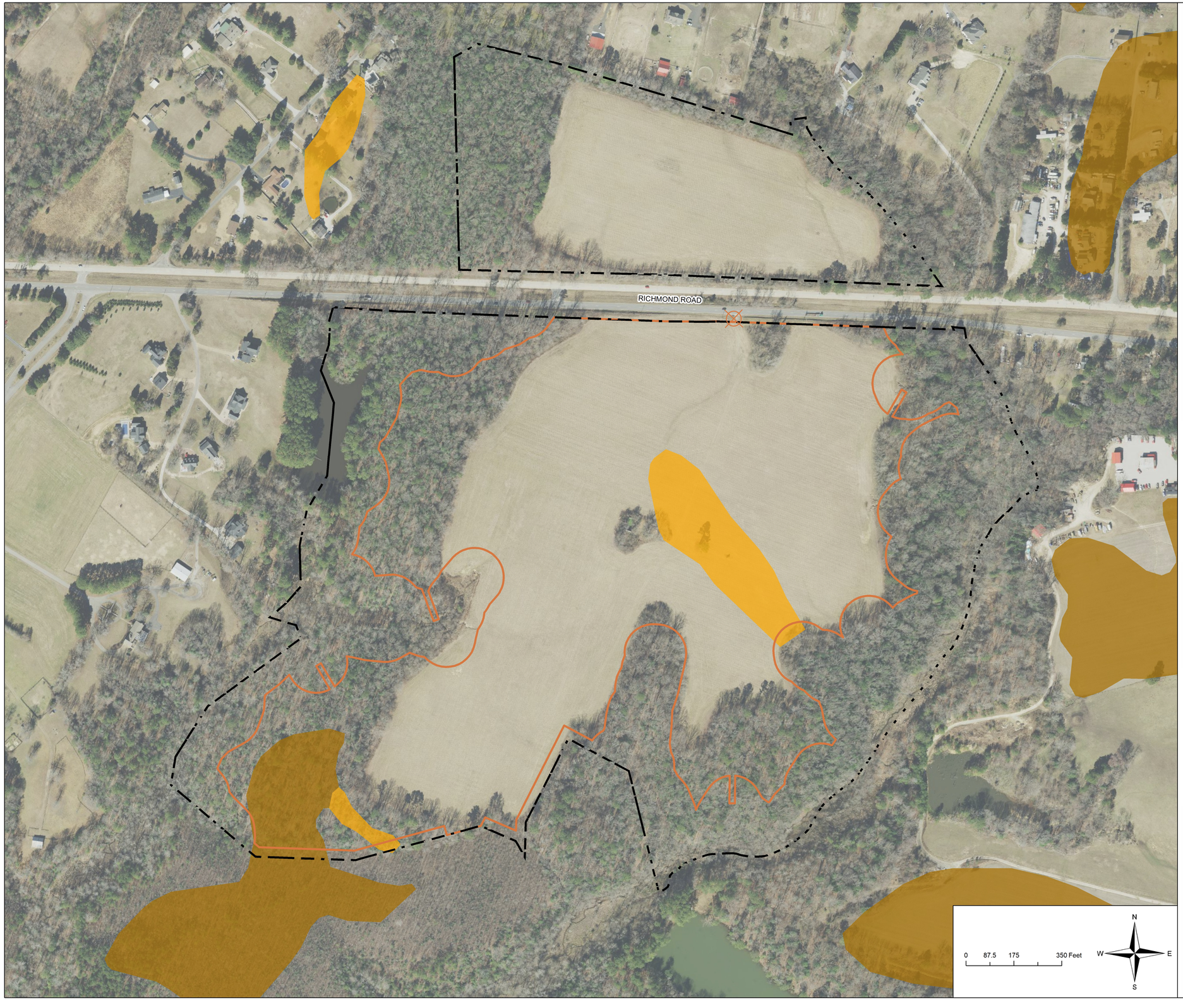
NOT FOR CONSTRUCTION

PAPER SIZE: 34x22

SCALE: 1 " = 175 '

DRAWING TITLE: SOIL TYPES

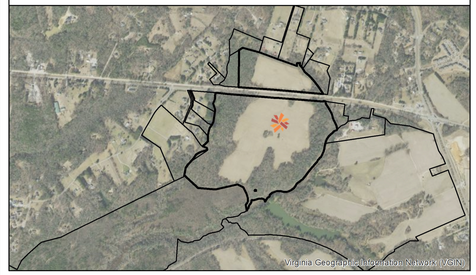
DRAWING NO: P105



JAMES CITY COUNTY VICINITY MAP



1" = 2,000' VICINITY MAP



NOTES

1. ACCORDING TO THE AGRICULTURE ASSETS MAP (SSURGO) FOUND IN THE JAMES CITY COUNTY NATURAL AND CULTURAL ASSETS PLAN, ONLY 3.68 ACRES OF THE PROPOSED AREA WITHIN THE LIMITS OF DISTURBANCE CONTAINS CLASS 1 SOILS, AND ONLY 2.62 ACRES OF THE AREA WITHIN THE LIMITS OF DISTURBANCE CONTAINS CLASS 2 SOILS. THE 2.62 ACRES OF CLASS 2 SOILS ARE EXISTING MATURE VEGETATION AND ARE NOT CURRENTLY IN AGRICULTURAL CROP PRODUCTION.

LEGEND

AGRICULTURE SUITABILITY (SSURGO)

- NON-IRRIGATED CAPABILITY CLASS I (OVER PERVIOUS SURFACES)
- NON-IRRIGATED CAPABILITY CLASS II (OVER PERVIOUS SURFACES)
- POINT OF INTERCONNECTION (37.402633, -76.81876)
- CONCEPTUAL LIMITS OF DISTURBANCE
- PROJECT PARCEL BOUNDARY (GIS)
- EXACT LOCATION AND BOUNDARIES TO BE CONFIRMED WITH FIELD SURVEY

Sun Tribe DEVELOPMENT
107 5TH STREET SOUTHEAST
CHARLOTTESVILLE, VA 22902
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RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	06/15/2023	E.TURNER	T.FRANCIS	UPDATED PER JCC COMMENT LETTER

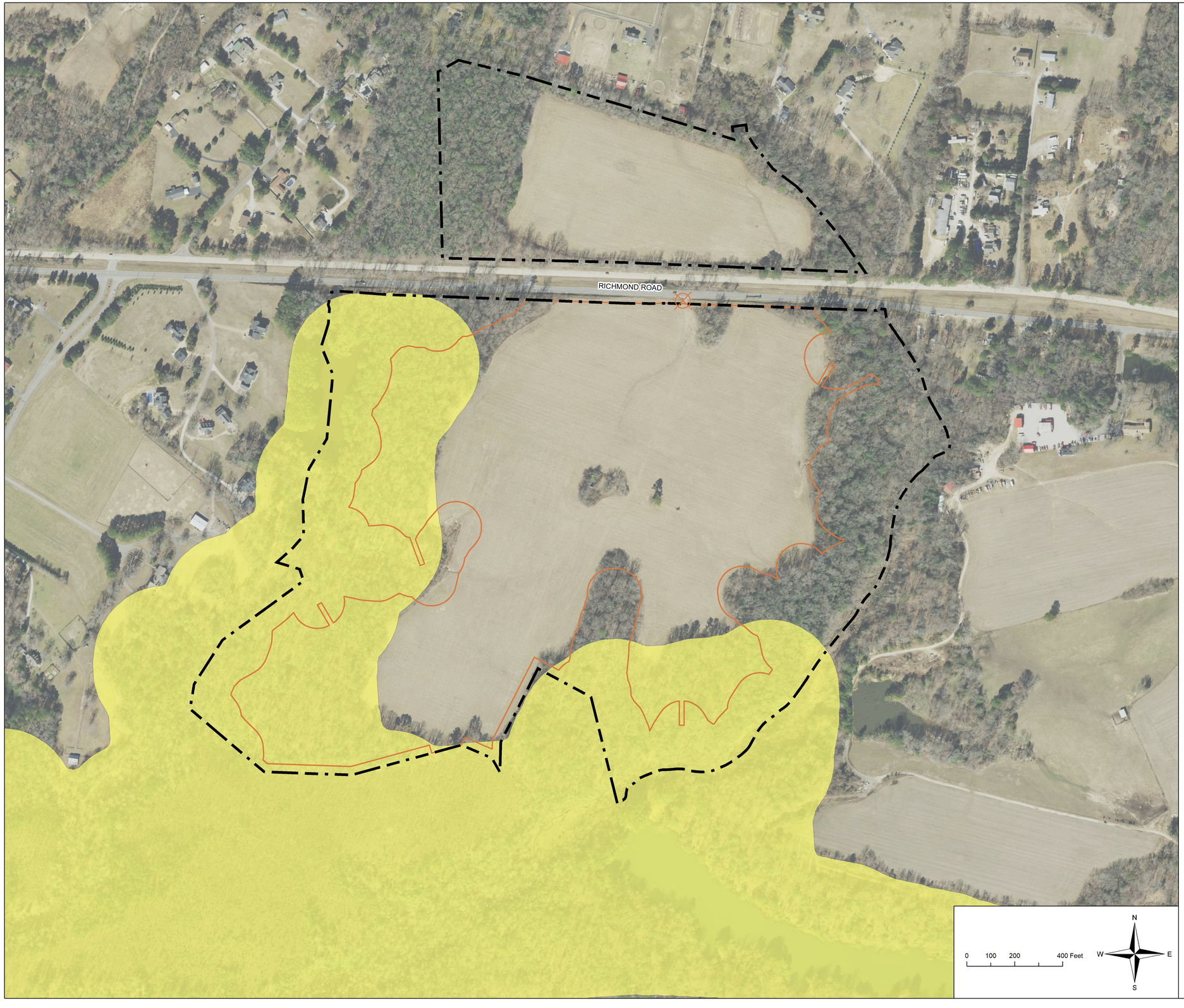
NOT FOR CONSTRUCTION

PAPER SIZE: 34x22

SCALE: 1 " = 175 '

DRAWING TITLE: AGRICULTURE SUITABILITY

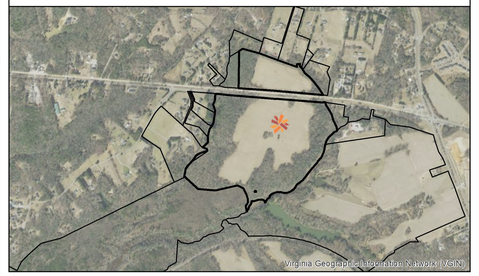
DRAWING NO: P106



JAMES CITY COUNTY VICINITY MAP



1" = 2,000' VICINITY MAP



NOTES

1. JCC PROVIDED NATURAL AND CULTURAL ASSETS GIS LAYER. HABITAT CORES ARE OVERLAID WITH THE PROJECT LOCATION.
2. THE CONCEPTUAL LIMITS OF DISTURBANCE INTERSECTS WITH THE LOWEST RANKED HABITAT CORE ONLY.

LEGEND

HABITAT CORES

- BEST - NOT PRESENT IN MAP VIEW
- NOT PRESENT IN MAP VIEW
- NOT PRESENT IN MAP VIEW
- NOT PRESENT IN MAP VIEW
- LOWEST - IN MAP VIEW
- POINT OF INTERCONNECTION (37.402633, -76.81876)
- CONCEPTUAL LIMITS OF DISTURBANCE
- PROJECT PARCEL BOUNDARY (GIS) EXACT LOCATION AND BOUNDARIES TO BE CONFIRMED WITH FIELD SURVEY

Sun Tribe DEVELOPMENT
107 5TH STREET SOUTHEAST
CHARLOTTESVILLE, VA 22902
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RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	06/15/2023	E.TURNER	T.FRANCIS	UPDATED PER JCC COMMENT LETTER

NOT FOR CONSTRUCTION

PAPER SIZE: 34x22

SCALE: 1 " = 200 '

DRAWING TITLE: JCC HABITAT CORES

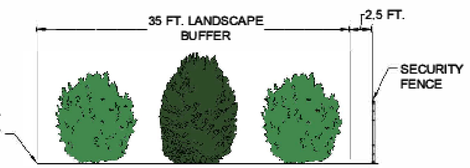
DRAWING NO: P107

BUFFER PLANTING NOTES

- LAYOUT PROPOSED PER SECTION 24 OF JAMES CITY COUNTY ZONING ORDINANCE.
- PROPOSED BUFFER/SCREENING COMPRISES EVERGREEN, ORNAMENTAL, AND DECIDUOUS SHADE TREES AS WELL AS EVERGREEN AND DECIDUOUS SHRUBS.
- MINIMUM OF ONE (1) TREE AND THREE (3) SHRUBS MUST BE PLANTED PER 400 SF.
- BUFFER PLANTING SHALL NOT BE PROVIDED WHERE EXISTING VEGETATION PROVIDES ADEQUATE PERIMETER SCREENING.

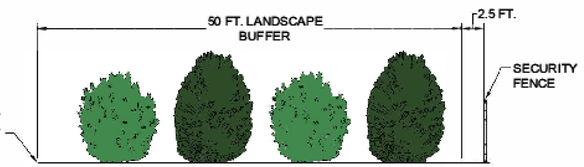
SECTION

3 YEARS AFTER PLANTING



SECTION

3 YEARS AFTER PLANTING



SIZE AND MIXTURE REQUIREMENTS - GENERAL LANDSCAPE AREAS

PERCENTAGE	OF	SHALL BE
AT LEAST 35%	TREES	MINIMUM CALIPER OF 2.5" AT PLANTING
MINIMUM OF 15% AND MAXIMUM OF 25%	TREES	ORNAMENTAL TREES
AT LEAST 35%	TREES	EVERGREEN TREES WHICH WILL ACHIEVE A MINIMUM HEIGHT OF 40 FEET AT MATURITY
AT LEAST 40%	TREES	DECIDUOUS SHADE TREES WHICH WILL ACHIEVE A MINIMUM HEIGHT OF 50 FEET AT MATURITY
AT LEAST 35%	SHRUBS	EVERGREEN

LEGEND

SEE APPENDIX J FOR FULL LANDSCAPE MEMO AND POLLINATOR PLAN.

Sun Tribe DEVELOPMENT

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RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM

JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	06/15/2023	E.TURNER	T.FRANCIS	UPDATED PER JCC COMMENT LETTER

PE STAMP:

NOT FOR CONSTRUCTION

PAPER SIZE: 34x22

SCALE: NTS

DRAWING TITLE: LANDSCAPE PLAN

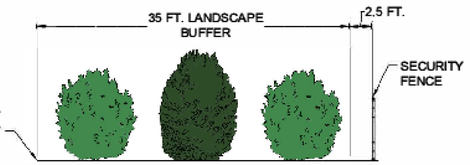
DRAWING NO: P200

BUFFER PLANTING NOTES

- LAYOUT PROPOSED PER SECTION 24 OF JAMES CITY COUNTY ZONING ORDINANCE.
- PROPOSED BUFFER/SCREENING COMPRISES EVERGREEN, ORNAMENTAL, AND DECIDUOUS SHADE TREES AS WELL AS EVERGREEN AND DECIDUOUS SHRUBS.
- MINIMUM OF ONE (1) TREE AND THREE (3) SHRUBS MUST BE PLANTED PER 400 SF.
- BUFFER PLANTING SHALL NOT BE PROVIDED WHERE EXISTING VEGETATION PROVIDES ADEQUATE PERIMETER SCREENING.

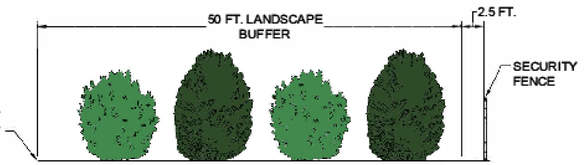
SECTION

3 YEARS AFTER PLANTING



SECTION

3 YEARS AFTER PLANTING



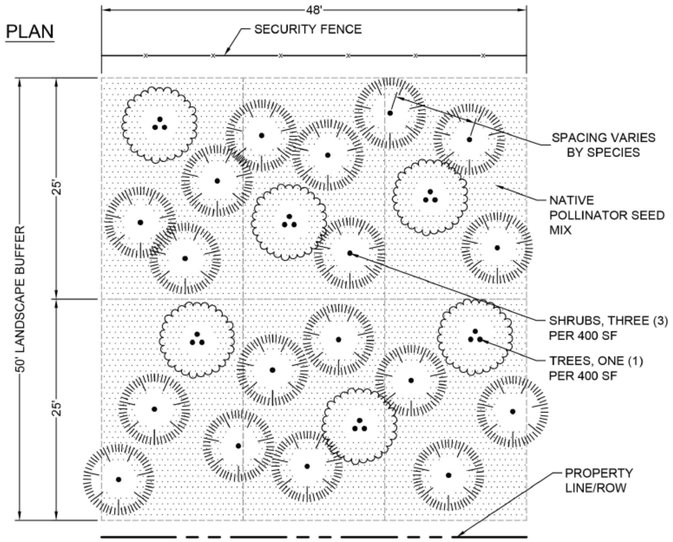
SIZE AND MIXTURE REQUIREMENTS - GENERAL LANDSCAPE AREAS

PERCENTAGE	OF	SHALL BE
AT LEAST 35%	TREES	MINIMUM CALIPER OF 2.5" AT PLANTING
MINIMUM OF 15% AND MAXIMUM OF 25%	TREES	ORNAMENTAL TREES
AT LEAST 35%	TREES	EVERGREEN TREES WHICH WILL ACHIEVE A MINIMUM HEIGHT OF 40 FEET AT MATURITY
AT LEAST 40%	TREES	DECIDUOUS SHADE TREES WHICH WILL ACHIEVE A MINIMUM HEIGHT OF 50 FEET AT MATURITY
AT LEAST 35%	SHRUBS	EVERGREEN

BUFFER PLANTING TEMPLATE: RICHMOND ROAD

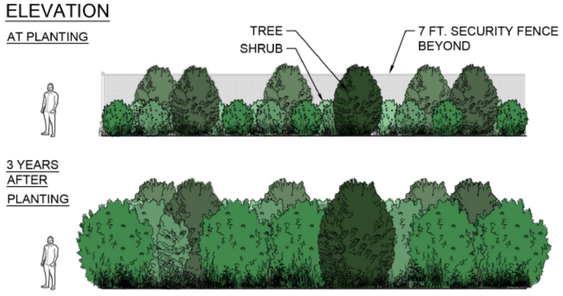
1" = 10'

PLAN



ELEVATION

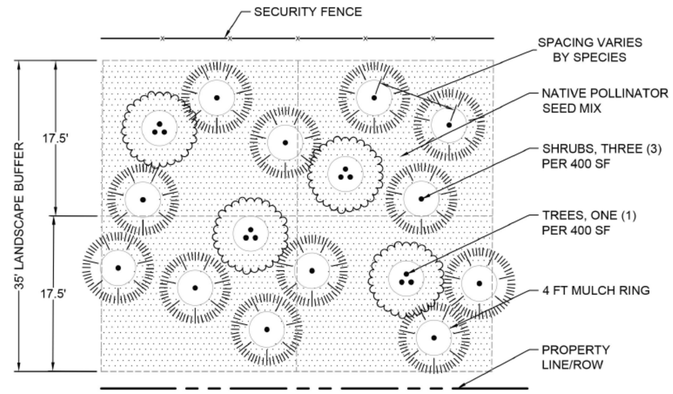
AT PLANTING



BUFFER PLANTING: REAR BUFFER

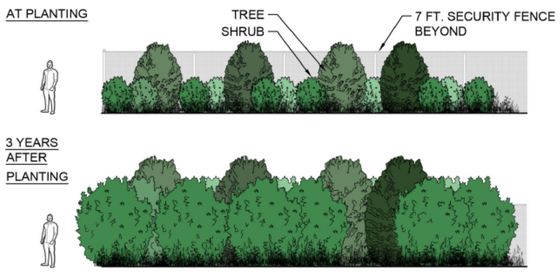
1" = 10'

PLAN



ELEVATION

AT PLANTING



SEE APPENDIX J FOR FULL LANDSCAPE MEMO AND POLLINATOR PLAN.

Sun Tribe DEVELOPMENT

107 5TH STREET SOUTHEAST
CHARLOTTESVILLE, VA 22902
WWW.SUNTRIBESOLAR.COM

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM

JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

REV	DATE	DRAWN BY	APPROVED BY	DESCRIPTION
A	06/15/2023	E.TURNER	T.FRANCIS	UPDATED PER JCC COMMENT LETTER

PE STAMP:

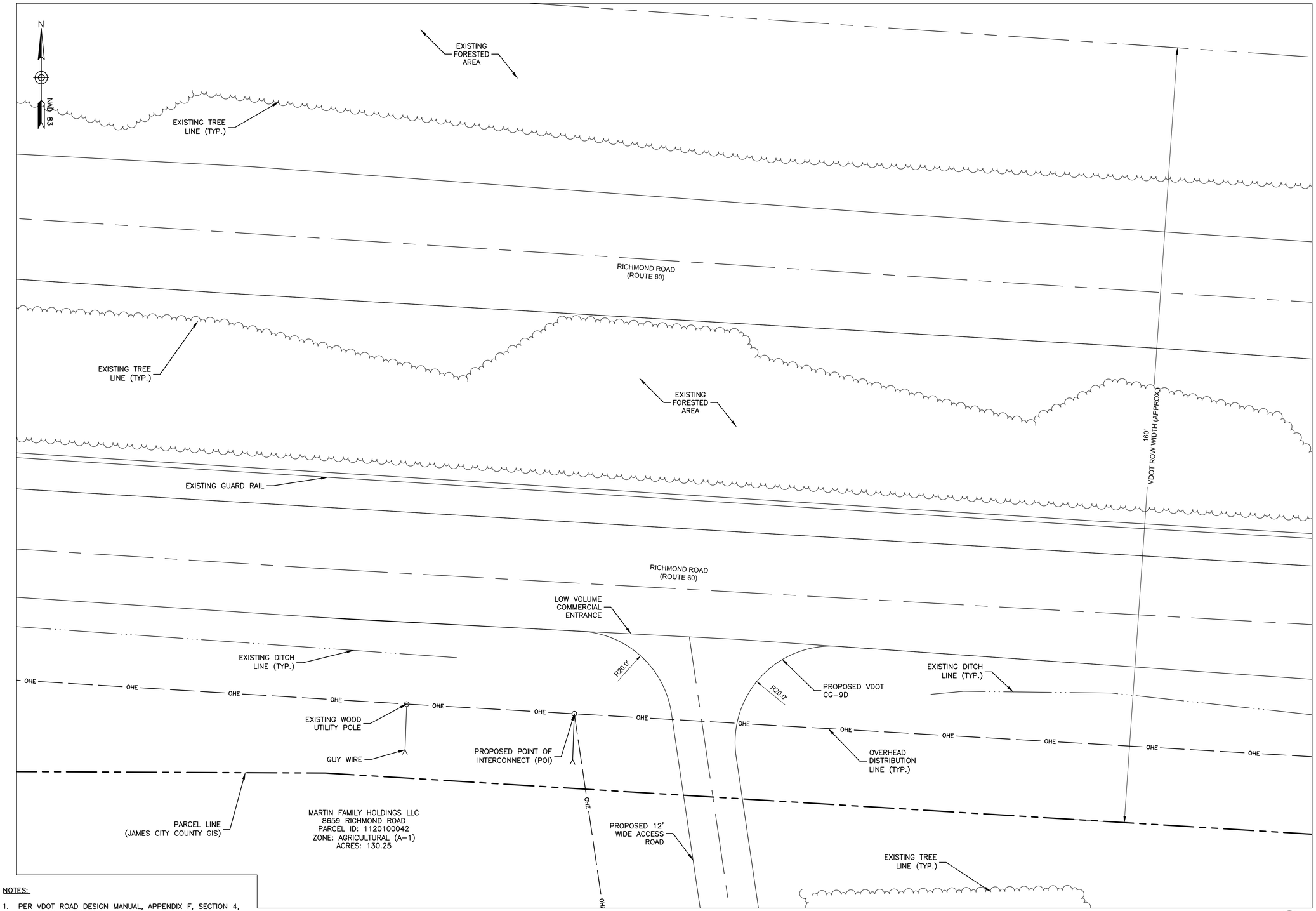
NOT FOR CONSTRUCTION

PAPER SIZE: 34x22

SCALE: NTS

DRAWING TITLE: LANDSCAPE PLAN

DRAWING NO: P200



NOTES:

1. PER VDOT ROAD DESIGN MANUAL, APPENDIX F, SECTION 4, THIS ENTRANCE IS CONSIDERED TO BE A LOW VOLUME COMMERCIAL ENTRANCE DURING NORMAL OPERATIONS AND WILL BE REQUIRED TO PROVIDE STOPPING SIGHT DISTANCE

2. EXISTING FEATURES OBTAINED FROM JAMES CITY COUNTY GIS AND GOOGLE EARTH IMAGERY. DEWBERRY HAS NOT PERFORMED A SURVEY OR RESEARCHED THIS PARCEL.

ENTRANCE PLAN 1

SCALE: 1"=20' FOR 11x17
1"=10' FOR 22x34

0' 10' 20'

Sun Tribe DEVELOPMENT

RICHMOND ROAD SOLAR

EXHIBIT

Dewberry®

Dewberry Engineers Inc.
4805 Lake Brook Drive, Suite 200
Glen Allen, VA 23060
Phone: 804.290.7957
Fax: 804.290.7928
www.dewberry.com

DRAWN BY:	RAY
REVIEWED BY:	AMD
CHECKED BY:	AMD
PROJECT NUMBER:	50160638
SITE ADDRESS:	

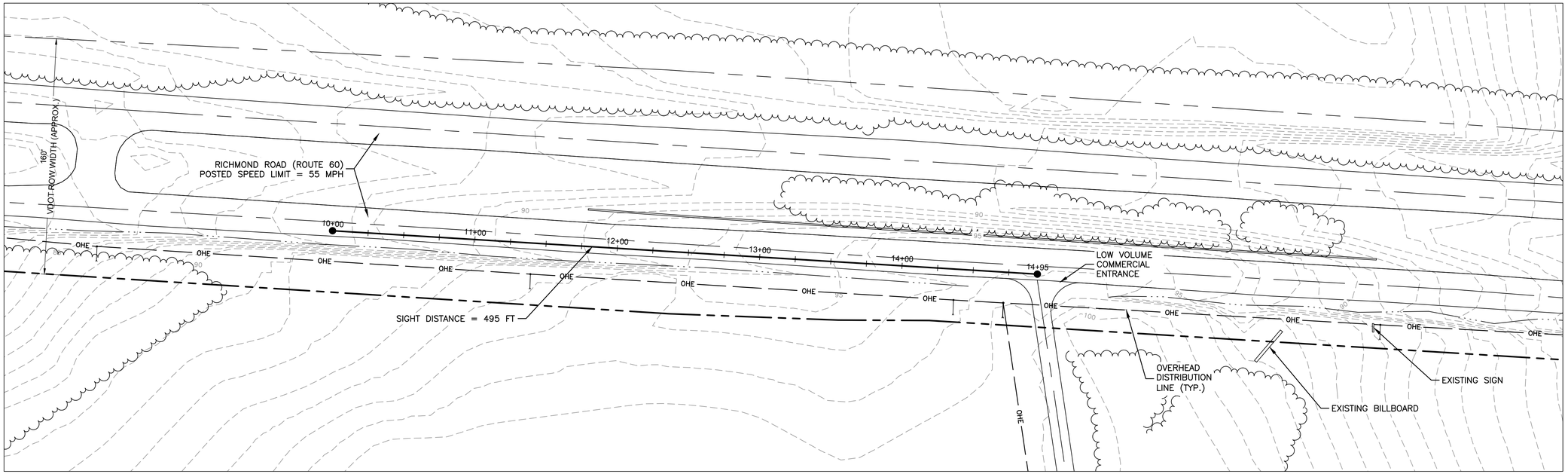
RICHMOND ROAD
TOANA, VA 23168

SHEET TITLE

ENTRANCE PLAN

SHEET NUMBER

C-1



SIGHT DISTANCE PLAN

1

SCALE: 1"=80' FOR 11x17
1"=40' FOR 22x34

0' 40' 80'

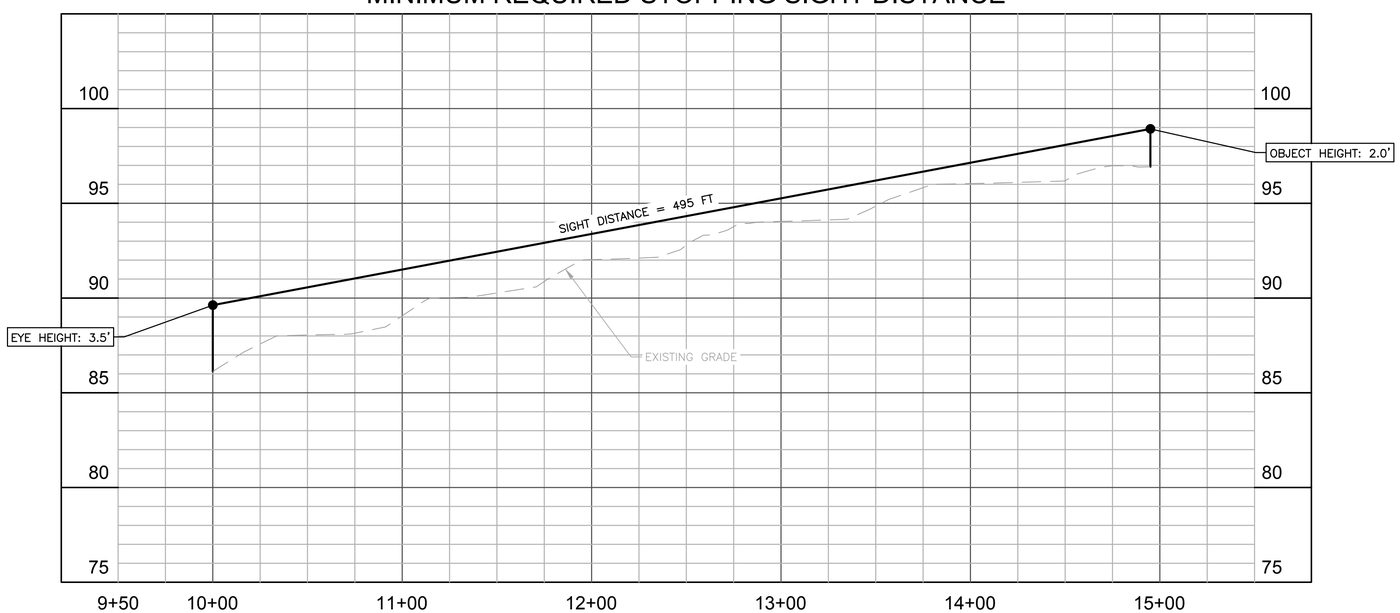
N

NAD 83

NOTES:

1. PER VDOT ROAD DESIGN MANUAL, APPENDIX F, SECTION 4, THIS ENTRANCE IS CONSIDERED TO BE A LOW VOLUME COMMERCIAL ENTRANCE DURING NORMAL OPERATIONS AND WILL BE REQUIRED TO PROVIDE STOPPING SIGHT DISTANCE.
2. EXISTING CONTOURS OBTAINED FROM JAMES CITY COUNTY GIS.

MINIMUM REQUIRED STOPPING SIGHT DISTANCE



SIGHT DISTANCE

2

HORIZONTAL SCALE: 0' 40' 80'

VERTICAL SCALE: 0' 4' 8'

Sun Tribe DEVELOPMENT

RICHMOND ROAD SOLAR

EXHIBIT

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RICHMOND ROAD
TOANA, VA 23168

SHEET TITLE

SIGHT DISTANCE
PLAN AND PROFILES

SHEET NUMBER

C – 2



REFERENCE NOTES

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3. PROPERTY LINE DATA OBTAINED FROM JAMES CITY COUNTY "RICHMOND ROAD PARCEL.SHP"

STORMWATER NOTES

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2. SOLAR FACILITY LAYOUT SHOWN HEREON IS SCHEMATIC; REFER TO SITE LAYOUT PLANS FOR DESIGN OF SOLAR SYSTEM.
3. ALL ROADS SHALL BE GRAVELED WITH VDOT 21A STONE OR APPROVED EQUIVALENT.
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5. REFER TO STORMWATER MEMORANDUM FOR DETAIL OF METHODOLOGY AND VRRM COMPLIANCE.
6. ALL POST CONSTRUCTION STORMWATER MANAGEMENT FEATURES SHALL BE INSTALLED IN CONFORMANCE WITH THE VIRGINIA STORMWATER BMP CLEARINGHOUSE DESIGN SPECIFICATIONS.
7. REFER TO DETAILS, SHEET C901
8. CHANNEL AND FLOOD PROTECTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH 870-66(B)(3)(A) AND 870-66(C)(2)(B)

NORTH

PLAN

SCALE: 1" = 100'

0 100' 200'

SUN TRIBE DEVELOPMENT
107 5TH STREET SOUHEAST
CHARLOTTESVILLE, VIRGINIA 22901

TETRA TECH, INCORPORATED
4101 COX ROAD, SUITE 100
GLEN ALLEN, VIRGINIA 23060

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

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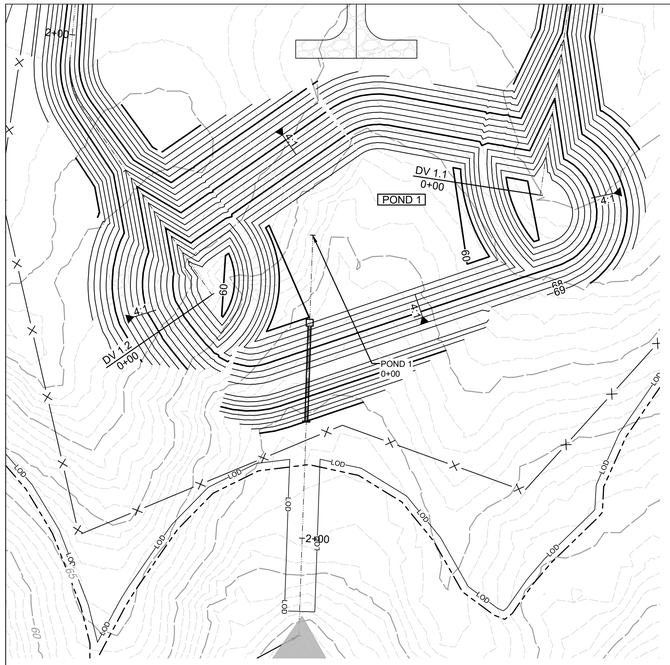
DRAWING TITLE: STORMWATER MANAGEMENT PLAN

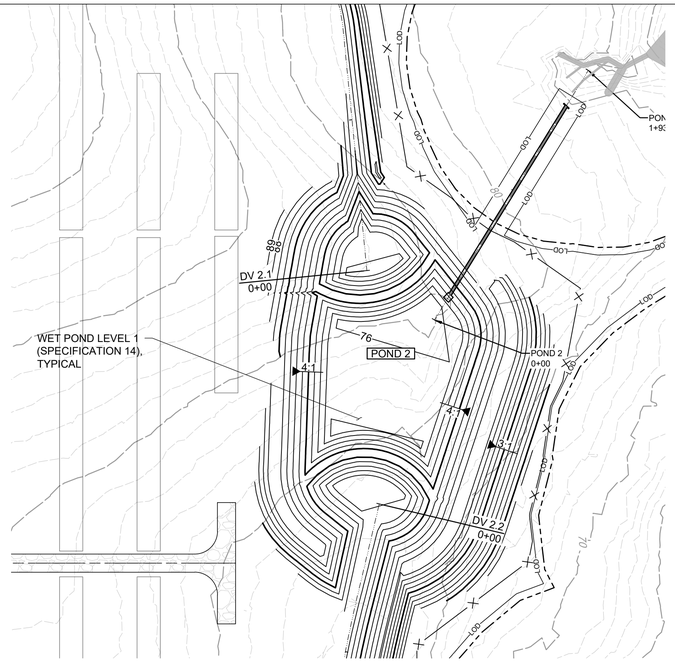
DRAWING NO: C900



NORTH

POND 1 PLAN

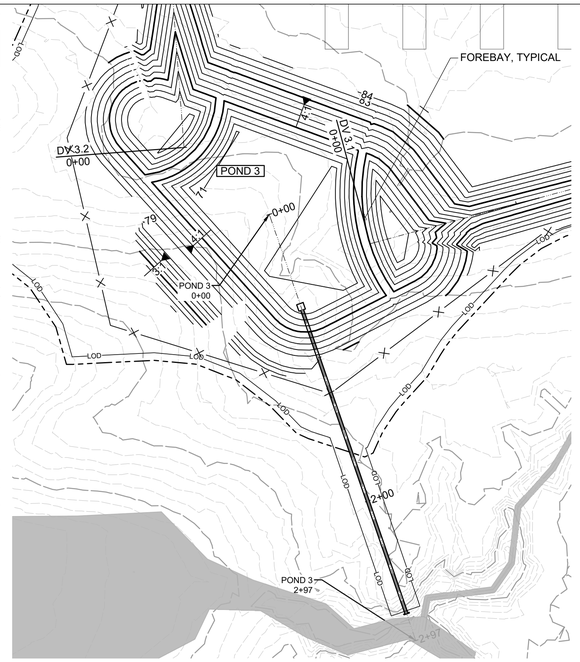
SCALE: 1" = 50' 0 50' 100'



NORTH

POND 2 PLAN

SCALE: 1" = 50' 0 50' 100'



NORTH

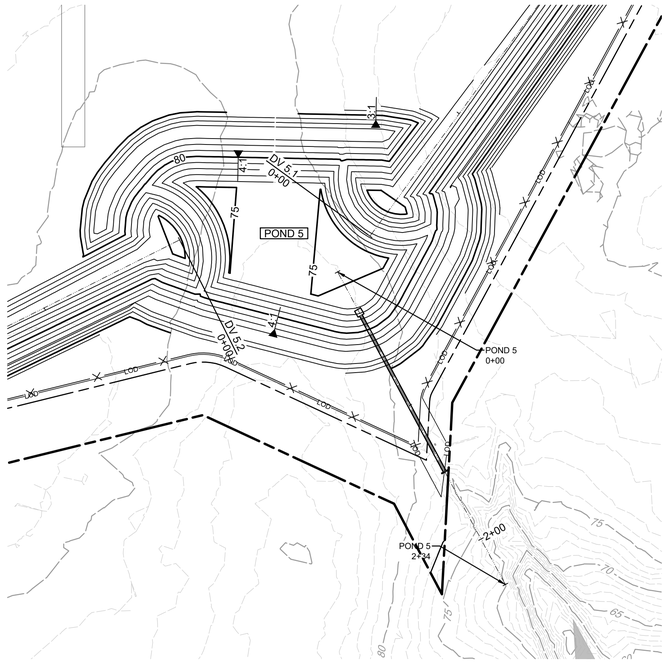
POND 3 PLAN

SCALE: 1" = 50' 0 50' 100'

NORTH

POND 4 PLAN

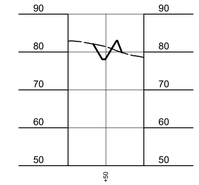
SCALE: 1" = 50' 0 50' 100'



NORTH

POND 5 PLAN

SCALE: 1" = 50' 0 50' 100'



SECTION A-A

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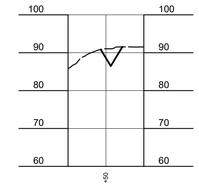

SECTION B-B

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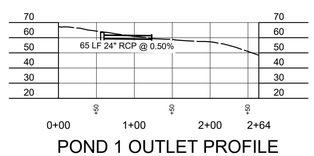

POND 1 OUTLET PROFILE

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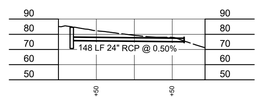

POND 2 OUTLET PROFILE

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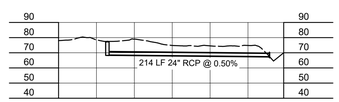

POND 3 OUTLET PROFILE

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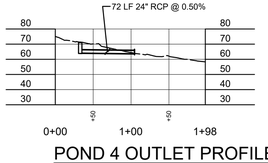

POND 4 OUTLET PROFILE

SCALE H:1"=100'; V:1"=50'



POND 5 OUTLET PROFILE

SCALE H:1"=100'; V:1"=50'

REVISION HISTORY

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SCALE: AS SHOWN

DRAWING TITLE: STORMWATER MANAGEMENT POND PLAN ENLARGEMENTS

DRAWING NO: C901

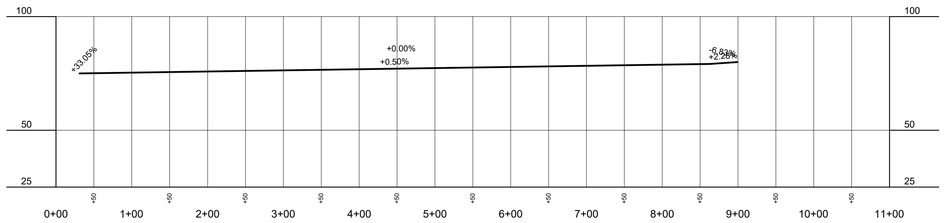
SUN TRIBE DEVELOPMENT
107 5TH STREET SOUTHEAST
CHARLOTTESVILLE, VIRGINIA 22901

TETRA TECH, INCORPORATED
4101 COX ROAD, SUITE 100
GLEN ALLEN, VIRGINIA 23060

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM

JAMES CITY COUNTY, VIRGINIA



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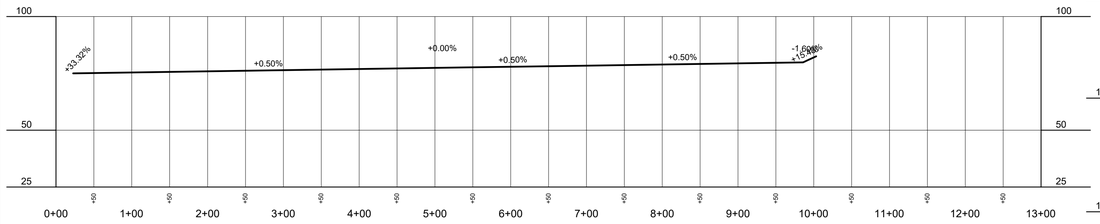

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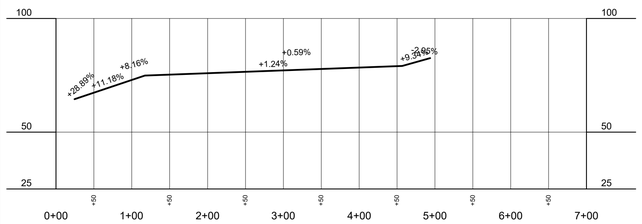

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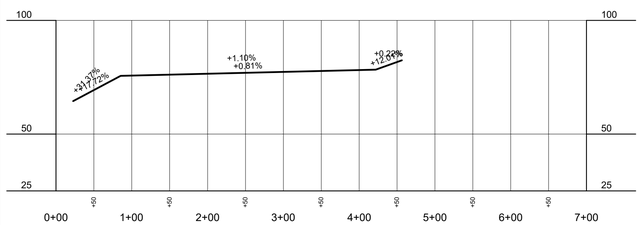

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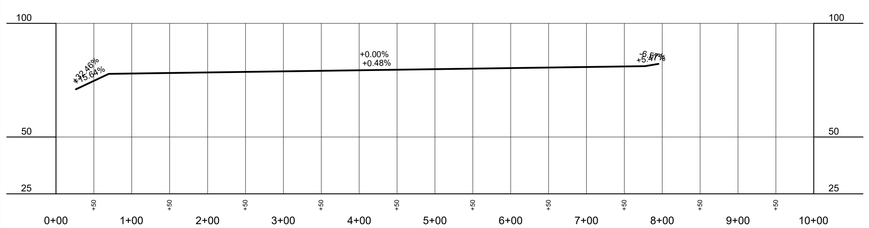

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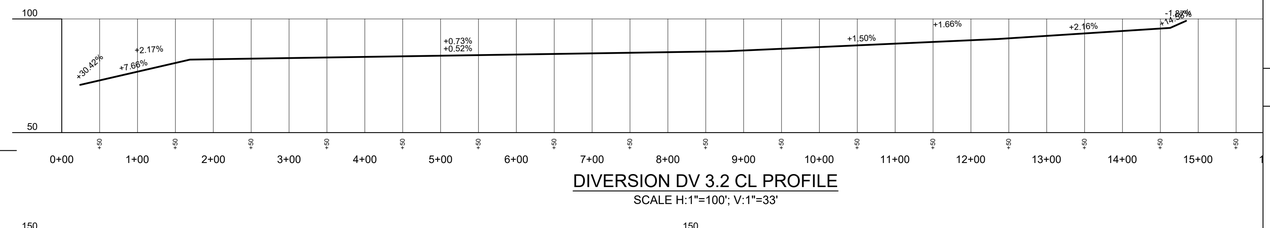

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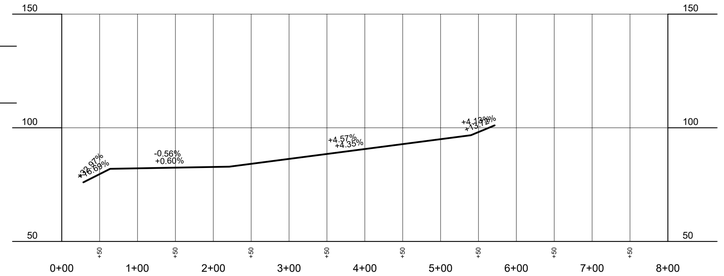

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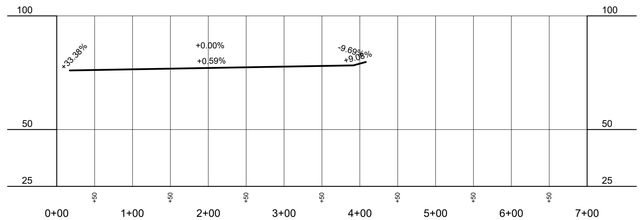

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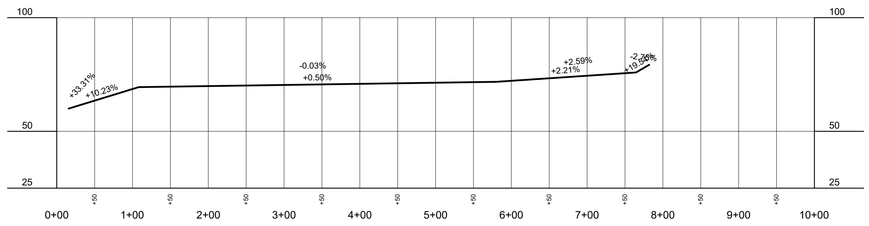

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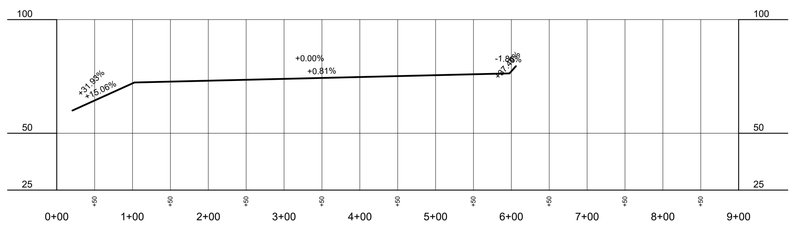

DIVERSION DV 1.2 CL PROFILE

SCALE H:1"=100'; V:1"=33'

SUN TRIBE DEVELOPMENT
107 5TH STREET SOUTHEAST
CHARLOTTESVILLE, VIRGINIA 22901

TETRA TECH, INCORPORATED
4101 Cox ROAD, SUITE 100
GLEN ALLEN, VIRGINIA 23060

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

REVISION HISTORY

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SCALE: AS SHOWN

DRAWING TITLE: STORMWATER MANAGEMENT DITCH AND SWALE PROFILES

DRAWING NO: C902

DA B

DA C

DA D

DA E

DA A

DRAINAGE AREA

REFERENCE NOTES

1. TOPOGRAPHY OBTAINED FROM THE NATIONAL MAP LIDAR POINT CLOUD (LPC) PROGRAM "USGS_LPC_VA_UPPERMIDDLENECK_2018_D18" IN LAS FORMAT. LPC DATA THINNED TO 0.5' CONTOUR INTERAVAL.
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NORTH

PLAN
SCALE: 1" = 100'

0 100' 200'

SUN TRIBE DEVELOPMENT
107 12TH STREET SOUTHEAST
CHARLOTTESVILLE, VIRGINIA 22901

TETRA TECH, INCORPORATED
4101 COX ROAD, SUITE 100
GLEN ALLEN, VIRGINIA 23060

RICHMOND ROAD SOLAR, LLC

5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

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SCALE: AS SHOWN

DRAWING TITLE: STORMWATER MANAGEMENT PRE-DEVELOPMENT DRAINAGE AREA MAP

DRAWING NO: C903



REFERENCE NOTES

1. TOPOGRAPHY OBTAINED FROM THE NATIONAL MAP LIDAR POINT CLOUD (LPC) PROGRAM "USGS_LPC_VA_UPPERMIDDLENECK_2018_D18" IN LAS FORMAT. LPC DATA THINNED TO 0.5' CONTOUR INTERAVAL.
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5 MW AC SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

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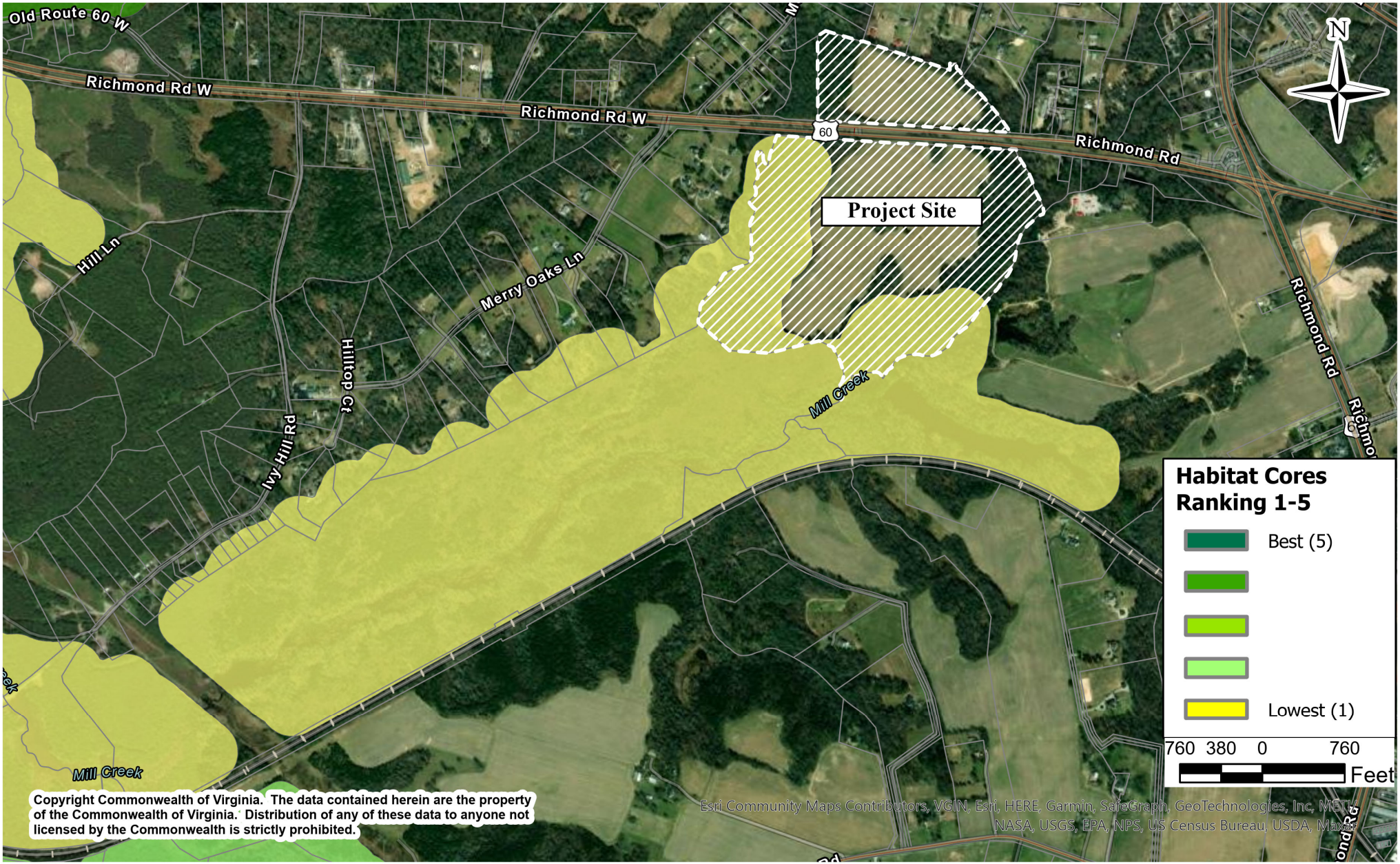
PAPER SIZE: 22X34

SCALE: AS SHOWN

DRAWING TITLE: STORMWATER MANAGEMENT POST-DEVELOPMENT DRAINAGE AREA MAP

DRAWING NO: C904

JCC-SUP-23-0012
8659 Richmond Road & 8659A Richmond Road
Richmond Road Solar



Evaluation of Important Agricultural Soils



United States Department of Agriculture: Natural Resource Conservation Service
https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx pulled August 4, 2023

Evaluation of Important Agricultural Soils

Soil Data Available

Name	Area Symbol	Data Availability	Version
James City and York Counties and the City of Williamsburg, Virginia	VA695	Tabular and Spatial, complete	Survey Area: Version 20, Aug 29, 2022 Tabular: Version 18, Aug 29, 2022 Spatial: Version 10, Aug 29, 2022

Tables — Farmland Classification — Summary By Map Unit

Summary by Map Unit — James City and York Counties and the City of Williamsburg, Virginia (VA695)

Summary by Map Unit — James City and York Counties and the City of Williamsburg, Virginia (VA695)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
11C	Craven-Uchee complex, 6 to 10 percent slopes	Farmland of statewide importance	30.9	23.7%
15E	Emporia complex, 15 to 25 percent slopes	Not prime farmland	22.7	17.4%
17	Johnston complex	Not prime farmland	4.6	3.5%
19B	Kempsville-Emporia fine sandy loams, 2 to 6 percent slopes	All areas are prime farmland	47.1	36.1%
29A	Slagle fine sandy loam, 0 to 2 percent slopes	All areas are prime farmland	4.0	3.1%
29B	Slagle fine sandy loam, 2 to 6 percent slopes	All areas are prime farmland	17.8	13.6%
31B	Suffolk fine sandy loam, 2 to 6 percent slopes	All areas are prime farmland	2.9	2.3%
W	Water	Not prime farmland	0.4	0.3%
Totals for Area of Interest			**130.3**	**100.0%**

Description — Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options — Farmland Classification

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

AOI = Area of Interest

United States Department of Agriculture: Natural Resource Conservation Service
https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx pulled August 4, 2023

Sun Tribe Development
107 5th Street Southeast
Charlottesville, VA 22902

August 17, 2023

Mr. Jim Wallace
District Manager, Colonial SWCD
205 C Bulifants Blvd.
Williamsburg, VA, 23188

Re: Colonial Soil and Water Conservation District's comments regarding SUP-23-0012, 8659 Richmond Road Solar Project provided via email to Suzanne Yeats of James City County, dated Monday May 15, 2023 2:53 PM.

Dear Mr. Wallace,

Thank you for your provision of the comments referenced above. Sun Tribe Development appreciates the thoughtful review of our application materials, and the opportunity to answer questions and best serve the County. Please see the following pages containing Sun Tribe's responses to your comments.

We look forward to continuing our working relationship with the Colonial Soil and Water Conservation District and welcome any additional feedback prior to the public hearings. Thank you for your time and consideration.

Sincerely,

John Townsend
john.townsend@suntribedevelopment.com
M 720-244-1924 | **T** 800-214-4579 ext. 754

Jim Wallace with the Colonial Soil and Water Conservation District provided the following five comments, shown below in *italics*, to Suzanne Yeats of James City County via email on May 15, 2023 regarding the proposed Richmond Road Solar project (the "Project"). These comments were provided to Sun Tribe Development ("Sun Tribe") on August 4, 2023. Sun Tribe is pleased to provide the below responses , shown in **bold**, in addition to having met in-person with Mr. Wallace and other members of the Colonial Soil and Water Conservation district on July 25, 2023.

1. *There were several mentions of ground cover that will stabilize the site, but I didn't see any specifics related to species. The soils on this site are sandy, so matching the vegetation type to the soil conditions is important. The plan did mention "pollinator species" and "native" plants, but I'd like to know more details.*

   Sun Tribe Response: Sun Tribe consulted with Timmons group, an industry leading engineering firm based in Richmond, Virginia, that specializes in solar project siting and design, to provide a landscape and pollinator plan. Timmons' professional landscape architect recommends a two-part approach to groundcover stabilization, one during construction and one post construction. During construction, temporary stabilization mixes will likely be used. Erosion and sediment control plans and requirements may dictate the seed mixes for fast establishing groundcover. Post construction and during the recommended growing season, the cover crop is knocked back from 1-2 feet to less than 1 foot, and then slower-growing, deep rooted, pollinator seed mixes would be applied. During site plan review, Ernst Seed, Monarch Vegetation Services Inc, or a similar resource with experience with Virginia solar facilities, will be consulted in conjunction with James City County planning/landscape department to determine the appropriate mix for the soil types on site. The proposed plan is based on language from the Virginia Pollinator Smart Program scorecard. Sun Tribe has attached the pollinator plan to this document for your reference.

2. *The plan mentioned using growth regulators to prevent the vegetation from growing fast due a concern about mowing frequency, however I would be more concerned about how the vegetation will be fed (fertilizer) to insure an adequate stabilization. Can fertilizer be applied around the steel support posts and electrical connections without creating a corrosion issue?*

   Sun Tribe Response: Manure, compost, or similar fertilizers may be used to encourage swift groundcover establishment during or after land disturbing activities e.g. construction. Fertilizers are typically not used during the operational phase of the facility since excessive vegetative growth creates additional maintenance action e.g., mowing.

3. *The plan frames the project as an environmentally friendly and passive. In reality, it's a ~70 acre construction site. For the life of this project, the prime farmland will be covered with impervious panels, which will concentrate stormwater flows. After decommissioning of the project, the prime farmland soils will be "prime" in name only, as the function, and true value of these soils will be destroyed for generations due to topsoil loss and decompaction.*

   Sun Tribe Response: A common misconception is that solar panels create impervious ground surfaces similar to sidewalks, parking lots or roadways, which is not an accurate representation of how rainwater on the site behaves. Solar panels at these facilities typically sit several feet or more above established, deep rooted groundcover on racking that rotates on an east-west axis throughout the day. Rainwater passes between individual panels, and each row of panels (typically spaced 15

feet or more apart), reaches the ground, and infiltrates into the soil. In many cases, established groundcover, including native pollinator species, manages rain fall events as effectively or more effectively than planted agricultural fields.

The proposed facility has been carefully designed to avoid impacts to wetlands, streams and riparian areas, it offers numerous environmental benefits, its low visual profile and quiet operations preserve the rural, open-space character of the area, and will be removed at the end of the project's life in order to enable the land to be returned to its previous agricultural use. During construction, as with any land disturbing activity in James City County, protection measures, monitoring, and numerous permits will apply to ensure compliance with local, state, and federal guidelines. For the operational life of the project, the rotating panels, with adequate row spacing, will not concentrate water flows the way a typical impervious surface would – and the long term, deep-rooted groundcover will go even further and dissipate and infiltrate stormwater from the panels. Topsoil is left in place to the extent practical and retained and respread on-site where grading is necessary, and will be left in place during decommissioning. Unlike more intensive types of development, such as a residential housing development, modern solar facilities can be readily removed. Concerns about soil health and productivity are addressed using the same techniques implemented by commercial farming such as discing and tilling, plus the addition of fertilizer, lime, manure, or other nutrients.

4. *Using Lidar elevation data to evaluate slopes, the forested areas surrounding the agricultural fields host dramatic topographical changes, which are believed to be headcuts, however it is uncertain if those headcuts are active or if they've stabilized. Either way, increased stormwater flows will likely continue to create pressure on receiving streams.*

   Sun Tribe Response: The project is subject to rigorous stormwater, erosion and sediment control best-practices as required by State and County regulations, and will be required to adhere to all such erosion and sediment control and stormwater management regulations as part of the County site plan approval process, Department of Environmental Quality ("DEQ") stormwater permitting process, and County erosion and sediment control permitting. These permitting processes require extensive downstream analysis and reduction of post-construction flows compared to pre-construction. Steep slope areas will either have runoff diverted away from them or be analyzed to meet regulations requiring that post-construction stormwater flows are reduced. The long term, deep-rooted groundcover discussed above will also help dissipate and infiltrate stormwater flowing to these areas. In James City County pre-construction site walk, and head cut stabilization, is coordinated with the JCC Stormwater and Resource Protection Division before site plan approval.

5. *Stormwater calculations appear to be based on a 1" rainfall event, which may be standard or required practice. However, rainfall events of recent years have become more intense, suggesting the 1" rainfall benchmark may be insufficient.*

   Sun Tribe Response: Sun Tribe utilized DEQ's VRRM spreadsheet to perform preliminary water quality calculations to assess the phosphorus reduction requirements of the project; this spreadsheet is based on the 1-inch of rainfall standard. Water quantity calculations to determine the rate and volume of runoff allowed are not based on this rainfall event, and instead are required to investigate larger storms such as the 2-, 10-, 100-year storms. Detention ponds and other BMPs will be sized and routed based on the water quantity requirements and larger storms. As referenced

above, the project is subject to rigorous stormwater, erosion and sediment control best-practices as required by State and County regulations, and – prior to construction – will be required to adhere to all such erosion and sediment control and stormwater management regulations as part of the County site plan approval process, DEQ stormwater permitting process, and County erosion and sediment control permitting.

R E S O L U T I O N

VIRGINIA CODE SECTION 15.2-2232 ACTION ON CASE NO. SUP-23-0012.

8659 & 8659A RICHMOND ROAD – RICHMOND ROAD SOLAR

WHEREAS, in accordance with Section 15.2-2232 of the Code of Virginia, a public utility facility, whether publicly or privately owned, shall not be constructed, established, or authorized, unless and until the general location or approximate location, character, and extent thereof has been submitted to and approved by the Planning Commission as being substantially in accord with the adopted Comprehensive Plan or part thereof; and

WHEREAS, Martin Family Holdings, LLC (the "Owners"), own property located at 8659 & 8659A Richmond Road, further identified as James City County Real Estate Tax Map Parcel No. 1120100042 and 1140100001, and zoned A-1, General Agricultural (the "Property"); and

WHEREAS, Mr. John Townsend of Sun Tribe Development, on behalf of the Owners, has applied for a Special Use Permit (SUP) to allow for the construction of a 5 megawatt (MW) solar electrical generation facility on the Property as shown on a plan titled "Richmond Road Solar" dated August 25, 2023; and

WHEREAS, in accordance with Section 15.2-2204 of the Code of Virginia and Section 24-9 of the James City County Zoning Ordinance, a public hearing was advertised, adjacent property owners notified, and a hearing scheduled for Case No. SUP-23-0012.

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of James City County, Virginia, for the reasons expressed in the written minutes which shall be transmitted to the Board of Supervisors, finds that the general or approximate location, character, and extent of the public utility facility shown in Case No. SUP-23-0012 is substantially in accord with the adopted Comprehensive Plan and applicable parts thereof.

_____
Frank Polster
Chairman, Planning Commission

ATTEST:

_____
Paul D. Holt, III
Secretary

Adopted by the Planning Commission of James City County, Virginia, this 6th day of September 2023.

R E S O L U T I O N

VIRGINIA CODE SECTION 15.2-2232 ACTION ON CASE NO. SUP-23-0012.

8659 & 8659A RICHMOND ROAD – RICHMOND ROAD SOLAR

WHEREAS, in accordance with Section 15.2-2232 of the Code of Virginia, a public utility facility, whether publicly or privately owned, shall not be constructed, established, or authorized, unless and until the general location or approximate location, character, and extent thereof has been submitted to and approved by the Planning Commission as being substantially in accord with the adopted Comprehensive Plan or part thereof; and

WHEREAS, Martin Family Holdings, LLC (the "Owners"), own property located at 8659 & 8659A Richmond Road, further identified as James City County Real Estate Tax Map Parcel No. 1120100042 and 1140100001, and zoned A-1, General Agricultural (the "Property"); and

WHEREAS, Mr. John Townsend of Sun Tribe Development, on behalf of the Owners, has applied for a Special Use Permit (SUP) to allow for the construction of a 5 megawatt (MW) solar electrical generation facility on the Property as shown on a plan titled "Richmond Road Solar" dated August 25, 2023; and

WHEREAS, in accordance with Section 15.2-2204 of the Code of Virginia and Section 24-9 of the James City County Zoning Ordinance, a public hearing was advertised, adjacent property owners notified, and a hearing scheduled for Case No. SUP-23-0012.

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of James City County, Virginia, for the reasons expressed in the written minutes which shall be transmitted to the Board of Supervisors, finds that the general or approximate location, character, and extent of the public utility facility shown in Case No. SUP-23-0012 is not substantially in accord with the adopted Comprehensive Plan and applicable parts thereof.

_____
Frank Polster
Chairman, Planning Commission

ATTEST:

_____
Paul D. Holt, III
Secretary

Adopted by the Planning Commission of James City County, Virginia, this 6th day of September 2023.

SUMMARY FACTS

Applicants:	Mr. Ryan Stephenson, AES Consulting Engineers, Mr. Phillip Martin, HHHunt Homes, Mr. Hans Klinger, HHHunt Homes
Landowners:	Mr. George M. Hankins and Ms. Sharon H. Dunn
Proposal:	Rezoning of approximately 220 acres from A-1, General Agricultural to R-2, General Residential, Cluster Overlay with Proffers, to allow for up to 582 residential dwellings consisting of 443 single-family detached units and 139 single-family attached units. Accompanying this rezoning is a request for a Special Use Permit (SUP) to allow for a density of up to 3.74 dwelling units per acre.
Location:	8290 Richmond Road
Tax Map/Parcel No.:	1240100011
Current Zoning:	A-1, General Agricultural
Proposed Zoning:	R-2, General Residential, Cluster Overlay, with Proffers
Project Acreage:	+/- 220.03 acres
Comprehensive Plan:	Low Density Residential
Primary Service Area: (PSA)	Inside
Staff Contact:	Terry Costello, Senior Planner

PUBLIC HEARING DATES

Planning Commission: September 6, 2023, 6:00 p.m.

Board of Supervisors: October 10, 2023, 5:00 p.m. (Tentative)

FACTORS FAVORABLE

1. Staff finds the proposed primary use for this rezoning, and those requested by the SUP, align with the recommended primary uses for the Low Density Designation in the adopted 2045 Comprehensive Plan.

2. Staff finds the proposal to be consistent with some recommendations in the adopted 2045 Comprehensive Plan.

3. The applicants have proffered transportation improvements to the entrance of the proposed development and its intersection with Richmond Road. Pedestrian connections to the adjacent White Hall development and Stonehouse Elementary School, and sidewalks on both sides of the internal public rights-of-way are also proffered.

4. Proffered recreational amenities are consistent with the James City County Parks and Recreation Master Plan.

5. The applicants have proffered a 150-foot Community Character Corridor (CCC) buffer, a 150-foot naturally forested buffer, and a five-acre preserved prime agricultural land to be set aside for community gardens.

6. The proposal requires a minimum of six density points, and the applicant has offered six-and-a-half density points.

7. See Impact Analysis on Pages 10-13.

8. See Comprehensive Plan Analysis on Pages 14-18.

FACTORS UNFAVORABLE

1. The application does not fully meet all the required density bonus points. See Bonus Item Option C on Page 3.

2. The proposal does not pass the Adequate Public Schools Facilities Test. See Page 6.

3. The proposal does not pass the Adequate Transportation Facilities Test. See Pages 5-6.

4. The cash contributions for community impacts that are proffered are not consistent with the information generated from the County's Fiscal Impact Model. See Pages 15-17.

5. This proposal does not align with the recommendations on workforce and affordable housing as stated in the 2045 Comprehensive Plan. See Page 4.

6. See Impact Analysis on Pages 10-13.

7. See Comprehensive Plan Analysis on Pages 14-18.

SUMMARY STAFF RECOMMENDATION

Staff recommends that the Planning Commission recommend denial of the proposed rezoning and SUP application. Should the Planning Commission recommend approval, proposed proffers and SUP conditions are included for review.

PROJECT DESCRIPTION

Mr. Ryan Stephenson on behalf of Mr. George Hankins and Ms. Sharon Dunn, has applied to rezone approximately 220.03 acres of land located at 8290 Richmond Road from A-1, General Agricultural, to R-2, General Residential, Cluster Overlay, with Proffers. An SUP is required for a cluster development seeking more than one unit per acre but less than four units per acre. This application includes the following:

- The proposal is for 582 residential dwellings, with 443 single-family detached units and 139 multi-family units (townhomes).

- The parcel has approximately 61.26 acres of nondevelopable area which includes 58.76 acres of Resource Protection Area (RPA) and two-and-a-half acres of steep slopes (outside the RPA). The net developable area of the parcel is approximately 155.77 acres.

- This project proposes a density of up to 3.74 units per acre. In accordance with Section 24-549(a) of the Zoning Ordinance, the Board of Supervisors may grant a SUP for residential cluster developments of more than two units per acre, but no more than four units per acre.

- The applicants are proposing pedestrian connections to the White Hall Subdivision and Stonehouse Elementary School. Pedestrian accommodations will be provided on both sides of each public right-of-way located on the property. In accordance with the Pedestrian Accommodation Master Plan, the project will have a multiuse path along the frontage on Richmond Road.

- There is a 150-foot CCC buffer that is proposed along Richmond Road. A minimum 150-foot buffer of natural forest adjacent to the CCC buffer on the southwestern portion of the property is shown on the Master Plan.

- There is approximately a two-acre area designated on the Master Plan preserved Hardwood Forestland. No less than five acres is proposed to be preserved as Prime Agricultural Land adjacent to the CCC buffer on the northwestern portion of the property as shown on the Master Plan.

- The proposal meets the Parks and Recreation Master Plan guidelines by providing one playground, 2.05 acres of park land, 2,800 feet of biking/jogging trails, a 25-meter competition pool, and one multiuse field.

- The proposal dedicates up to three acres (along School Lane) for future use by the Williamsburg-James City County (WJCC) School Division.

- At least 10% of the dwelling units permitted on the property shall be offered for sale at prices that are targeted at households earning 80% to 120% of the Area Median Income (AMI).

- Road improvements are proposed at the entrance on Route 60 and are as follows:

    - One southbound left-turn lane
    - Northbound right-turn lane on Route 60
    - Two exit lanes from the property

- The applicants have proposed cash contributions in order to mitigate impacts on the County from the development. The applicants have also proffered additional cash contributions per lot for the restoration of deteriorated streams on the property.

Residential Cluster Density Bonuses

The Residential Cluster Overlay District is intended "to achieve innovative and quality designs of residential developments above one dwelling unit per acre that provide avenues for affordable and workforce housing, minimize environmental impacts, provide for usable and meaningful open space, and provide recreation amenities within a more practical and efficient development." Further, to achieve densities greater than three units per acre, it is expected that the development will provide community benefits such as "mixed-cost housing, affordable and workforce housing, unusual environmental protection or development that adheres to the principles of open space development design."

The development is required to have at least 35% of the developable acreage as open space and six density bonus points. The Master Plan shows that the developable acreage set aside as open space is approximately 55.26 acres, which is 35.5% of the total acreage. The applicants have offered six-and-a-half density points. The density bonus points are listed as follows, with staff comments in italics.

- Bonus Item Option C: Undertaking or funding a stream restoration project or stormwater management facility retrofit within the same subwatershed, as identified by an approved watershed management plan or by the Stormwater and Resource Protection (SRP) Division. (Bonus Point 1.5)

  Proffer No. 13 offers an additional $500 per lot to be paid to the County for use in stream restoration efforts located within the construction easement as shown on the Master Plan. Staff finds that this proffer does not fully meet the intent of the bonus item to undertake or fully fund a project. There is no mechanism stated in the proffer that the amount would be adjusted each year due to inflation. The total collected would be $291,000 and it would be over several years. Staff finds that the application does not fully meet the intent of this bonus item.

- Bonus Item Option D: Meeting a majority of items (a)-(d) in Section 24-551. Open space development design elements, as determined by the Planning Director. (Bonus Point 1.5)

  The layout of the development is of a compact design with pedestrian access on both sides. The area of development is mostly contained with previously farmed fields, limiting clearing of existing forest lands. The development will have a mixture of townhomes and single-family detached units with a variety of lot sizes. Some of the units front on open space and there is access

to the open space via sidewalks and trails. Credit has been given for this density bonus point.

- Bonus Item Option H: Preserving a single area of healthy, mature, mixed hardwood forestland at least two acres in size within the developable portion of the site. (Bonus Point 1)

  There is an area on the eastern portion of the property that borders Williamsburg Christian Academy that is noted on the Master Plan as the "Mature Woodland Preserve". The applicants have been provided documentation by a Certified Arborist that the area conforms to these conditions. A Protective Deed has been proffered for this area to restrict the cutting of trees. Credit has been given for this density bonus.

- Bonus Point Option I: Retaining a single area of agricultural land designated on the United States (U.S.) Department of Agriculture (USDA) maps to be of prime or statewide importance that is at least five acres in size. (Bonus Point 1)

  The Master Plan includes an area towards the entrance of the property labeled "Community Garden Area". This area will be restricted to agricultural uses only for the residents. A Protective Deed has been proffered for this area. Credit has been given for this density bonus.

- Bonus Point Option K: Providing pedestrian accommodations on one side of all internal roadways, where this would exceed the requirements set forth in Section 24-35 of the Zoning Ordinance. (Bonus Point 1)

  Sidewalks will be provided on both sides of all public rights-of-way. Credit has been given for this density bonus.

- Bonus Point Option L: Developing binding design guidelines for the development that include superior architectural and design standards. Design guidelines shall be reviewed and approved by the Planning Director. (Bonus Point .5)

  The design guidelines submitted have been reviewed and approved by the Planning Director. Credit has been given for this density bonus.

No density bonus is allowed for improvement, designs, or actions that are otherwise required by County, State, or Federal Law.

Housing Affordability Analysis

The 2045 Comprehensive Plan encourages inclusion of affordable and workforce units within new residential developments. Per the Comprehensive Plan recommendations, at least 20% of the development's proposed new dwellings should be offered for sale at prices that are targeted at workers with incomes up to 80% of AMI level as determined by the U.S. Department of Housing and Urban Development. The applicants have proffered that at least 10% (up to 59) of the dwelling units shall be offered for sale at prices that are targeted at households earning 80% to 120% of the AMI. As written, the proffer would allow all of these units to be offered for sale at prices targeted to households earning 120% of the AMI. The table below provides the sales prices affordable at distinct percentages of AMI, which is currently $100,500.

Affordable Sales Price by AMI %

% AMI	Upper limit of the sales price affordable to this AMI level (2023 Prices)
30%	$108,250
60%	$213,900
80%	$284,250
100%	$354,800
120%	$425,250

Public Transportation: Vehicular

The scale of this proposal requires the submittal of a Transportation Impact Analysis (TIA). The TIA examines the existing conditions of vehicular traffic, including Level of Service (LOS), with a focus on the roads and intersections serving and impacted by the proposed development. The study projects that the development would generate 482 P.M. peak hour trips and approximately 4,977 daily trips.

The property fronts on Richmond Road which is a four-lane road with a median in this area. There will be a single entrance to the development at the existing crossover at the Bicast Publishing Company site. The entrance road will be a public right-of-way. The segment of Richmond Road along this development is currently operating at a LOS A-C and is anticipated to remain operating at these acceptable LOS through 2045.

The TIA analyzed the following intersections with varying degrees:

- Route 60 Richmond Road/Route 30 Barhamsville Road/Route 30 Rochambeau Drive
- Route 60 Richmond Road/VCA Andersons Corner Animal Hospital/Hickory Neck Boulevard
- Route 60 Richmond Road/Bicast Publishing Company
- Route 30 Rochambeau Drive/Preston Lane/Geddy Terrace
- Route 30 Rochambeau Drive/Hickory Neck Boulevard

The study included the following improvements to the existing crossover/proposed subdivision access intersection:

- One southbound left-turn lane on Route 60
- One northbound right-turn lane on Route 60
- Two exit lanes on Hankins-Dunn access: shared left/through and right-turn

The County adopted the Adequate Transportation Facilities Test by resolution on August 14, 2018. This policy requires a proposed SUP or rezoning to be tested during the application process to ensure that transportation facilities are adequate to mitigate traffic impacts.

Transportation improvements proffered include the entrance improvements to the development. There are unacceptable LOS that may occur at full buildout with no mitigating improvements proposed. They are as follows:

- The LOS for the P.M. peak hour westbound left-turn movement out of the White Hall development drops from a LOS “D” to a LOS “E”. The LOS for the P.M. peak hour eastbound left-turn movement drops from an acceptable LOS “C” to a LOS “D”.
- The P.M. peak hour eastbound left/right-turn from the Bicast Publishing Company site drops from an acceptable LOS “B” under existing conditions to a LOS “E” at buildout with the Stonehouse development and the Hazelwood Project included, (although this only affects 10 vehicles in the P.M. peak hour.
- The P.M. peak hour westbound left-turn out of the proposed Hankin-Dunn development will experience a LOS “F” from the onset.

The Virginia Department of Transportation (VDOT) has also expressed concerns over some of the minor street left-turning movements. However, as stated in their comments, this analysis does not consider that vehicles are likely to use the medians along Richmond Road to make two-stage turns - from the minor road to the median, and then from the median to Richmond Road. Based on a quick analysis, VDOT finds that this would result in a significant amount of this delay being reduced.

The applicants have stated in their response to the County and VDOT concerns that these are minor street lefts/throughs that inherently have

increasing delay/decreasing LOS with increasing major street traffic. The alternative for minor street left/throughs on a median highway like Richmond Road is to divert on a right-turn and make a U-turn at the next crossover and thus avoid stopped delay.

However, staff find that these impacts that are stated in the TIA are not mitigated for the proposed development. Therefore, this proposal does not pass the Adequate Transportation Facilities Test.

Schools

The County adopted the Adequate Public Schools Facilities Test by resolution on June 23, 1998. A proposed rezoning or SUP application for residential development is required to show that the schools which would serve the future development currently have adequate design capacity to accommodate the existing student population plus the additional schoolchildren generated by the development. The schools shall be deemed adequate if the projected student population does not exceed 100% of the design capacity.

However, if the affected public schools currently exceed design capacity, but the schools' student population will be brought under design capacity within three years of the time of the application's review through either physical improvements programmed in the Capital Improvements Program (CIP), and/or through a redistricting plan that was approved by the School prior to application, then the application will be deemed to have passed the test.

The proposed development is anticipated to generate an additional 186 students per the estimate in the applicant's CIS (see Page 10 in Attachment No. 8). As illustrated in the following table, the 186 students projected from the development would not cause the enrollment levels for Toano Middle or Warhill High Schools to exceed effective capacity. However, it would contribute to an enrollment level exceeding the effective capacity at Stonehouse Elementary School. The applicants have stated in the CIS, that with this extra capacity within the entire Elementary School System, the addition of 82 elementary school students from this development keeps the overall elementary school capacity under 100%.

There are no current CIP applications for an expansion to Stonehouse Elementary School nor is there a redistricting plan. Thus, this proposal does not pass the Adequate Public Schools Facilities Test.

Student Enrollment and School Capacity, WJCC Schools 2022

School	*Effective Capacity*	*Enrollment 2022-23*	*Projected Students Generated*	*Enrollment + Projected Students*
Stonehouse Elementary School	747	802	+82	884
Toano Middle School	790	678	+43	721
Warhill High School	1,441	1,325	+61	1,386

Parks and Recreation

This proposal includes up to 582 residential units. As illustrated in the following table on Page 7, the applicants are proffering to meet the development guidelines provided within the James City County Parks and Recreation Development Guidelines.

James City County Parks and Recreation Development Guidelines Comparison

Minimum Requirement (units)	*Minimum Required*	*Proffered or Shown on Master Plan*
Parkland Acreage	2.04 acres	2.05 acres
Biking/Jogging Trails	2,798.07 square feet.	2,800 square feet
Playground	1	1
Sport Court or Pool	1	1 Pool
Multiuse Field	1	1

Proffers

Voluntary proffers have been offered by the applicants to mitigate the development's impact on County resources. Staff has reviewed these proffers for enforceability and for their effectiveness in mitigating the impacts. Comments are provided in italics.

- Recitals.

  There is no reference to the applicable section of the County Code.

- Proffer No. 1 Conceptual Master Plan.

  There is no reference to the applicable section of the Zoning Ordinance.

- Proffer No. 4 Cash Contributions for Community Impacts. A contribution of $9,046 for each dwelling unit other than Workforce units, and a contribution of $6,332.20 for each Workforce unit shall be made to the County.

  In alignment with the Board of Supervisors resolution directing staff to use the County's Fiscal Impact Model, information provided by the applicants was used to analyze the fiscal impacts of this development. Staff was then able to run the model to determine the capital impacts per unit. The amount for single-family detached is $25,061.35 and $14,202.08 for single-family attached. Staff finds that the amount proffered by the applicants does not fully mitigate the fiscal impacts of the proposed development.

- Proffer No. 5 Mixed Cost Housing Units. At least 10% of the dwelling units permitted on the Property shall be offered for sale at prices that are targeted at households earning 80% to 120% of AMI.

  There is no documentation offered that would confirm that this proffer would be met; therefore, this proffer does not fully meet the intent of the Cluster Overlay District by offering affordable workforce and mixed-income housing.

- Proffer No. 9 Community Character Corridor Buffer. There shall be a minimum of 150-foot-wide CCC buffer along Route 60 frontage of the Property.

  There is no information provided as to whether the buffer would be bonded, and/or when the buffer would be installed. This proffer does not fully meet the intent of the Cluster Overlay District by preserving vegetative buffers along roads and scenic views.

- Proffer No. 10 Naturally Forested Buffer. There shall be a minimum 150-foot buffer of natural forest adjacent to the CCC buffer on the southwestern portion of the property shown on the Master Plan.

There is no information provided as to whether the buffer would be bonded, and/or when the buffer would be installed. This proffer does not fully meet the intent of the Cluster Overlay District by preserving vegetative buffers along roads and scenic views.

- Proffer No. 13 Stream Restoration Funding. An additional $500 per lot shall be paid to the County for use in stream restoration efforts.

  This proffer is linked to Density Bonus Item Option C: Undertaking or funding a stream restoration project. The intent of this bonus item is that a project would be funded or completed by the applicants. This proffer as stated is intended to assist in the funding. There is also no mechanism suggested that this dollar amount would be adjusted each year to reflect any increase or decrease in the Marshall and Swift Building Cost Index. The amount collected would not be enough to completely fund or undertake a project, therefore this proffer does not fully meet the requirement for the density bonus.

- Proffer No. 15 Pedestrian Connections to Adjacent Properties. The Owner shall provide pedestrian connections between the property and the adjacent properties.

  No information is provided as to when the plan would be required to be submitted to the Director of Planning for approval, or when these connections would be installed. This proffer does not fully meet the intent of the Cluster Overlay District by designing efficient pedestrian circulation to include trail systems.

- Proffer No. 16 Streetscape Guidelines. The Owner shall provide and install streetscape improvements.

  There is no information provided about whether these improvements will be bonded, or when they will be installed.

- Proffer No. 17 Recreation. The following recreational facilities shall be provided at a minimum: one playground, 2.05 acres of park land, 2,800 feet of biking/jogging trails, one 25-meter competition pool and one multiuse rectangular field.

  The proffer states that the location of the recreational facilities is to be approved by the Development Review Committee. However, the amenities are shown on the Master Plan and are typically approved by the Director of Planning. There is no information provided as to when the plan needs to be submitted for these amenities, if the amenities will be bonded, and when the amenities will be installed.

- Proffer No. 18 Sidewalks. There shall be sidewalks installed on both sides of each public street. The Owner shall construct a hard surface multiuse trail along Route 60.

  There is no information provided as to the sidewalks being shown on a plan of development, if bonding will be required, or when the sidewalks will be installed.

- Proffer No. 19 Curb and Gutter. Streets within the property shall be constructed with curb and gutter, provided; however, this requirement may be waived or modified along those segments of street where structures are not planned.

  There is no information given as to who may waive the requirement.

- Proffer No. 21 Dedication of Land to WJCC Schools. The Owner shall convey up to three acres of land in the location generally shown on the Master Plan to WJCC School Board to be used for site and/or building improvements.

  It has not yet been determined if the three acres are developable. If the three acres are developable, this area could be used for

teacher parking, parent pick-up, or the relocation of the bus loop and possible expansion of Stonehouse Elementary School. While the WJCC School System is aware of this proposed proffer, to date, they have not indicated a desire or need for this additional land.

PLANNING AND ZONING HISTORY

The current zoning for the property, A-1, General Agricultural, has been in place since the 1980s. There have been no legislative cases associated with this property.

The property has been owned by the Hankins family and in agricultural use for decades.

SURROUNDING ZONING AND DEVELOPMENT

North: R-2, General Residential Cluster Development
PL, Public Land
B-1, General Business

West: A-1, General Agricultural
B-1, General Business
M-1, Limited Business/Industrial

South: M-2, General Industrial

East: R-1, Limited Residential

The subject property is located south of the White Hall Subdivision and Stonehouse Elementary School, north of Hankins Industrial Park and Jacob's Industrial Center, abuts the Wellington Subdivision to the east, and abuts Richmond Road to the west.

IMPACT ANALYSIS

Impacts/Potentially Unfavorable Conditions	**Status** *(No Mitigation Required/Mitigated/Not Fully Mitigated)*	**Considerations/Proposed Mitigation of Potentially Unfavorable Conditions**
Please note the information in the Status column indicated below does not include information from the Financial Impacts of Residential Units section of this staff report.		
Public Transportation: Vehicular	Not Fully Mitigated	- See discussion on Pages 5-6.
Public Transportation: Pedestrian/Bicycle	Mitigated	- The County's *Pedestrian Accommodation Master Plan* requires a multiuse path along Richmond Road. The *Regional Bikeways Map* proposes a bike lane along the frontage of Richmond Road. - Pursuant to Section 24-35 of the Zoning Ordinance, the proposed improvements shown on these maps are required to be shown on the construction plan and installed at development. **Proffers** - Proffer No. 18 states that a multiuse path along Richmond Road will be constructed in accordance with the Master Plan.
Public Safety	No Mitigation Required	- Fire Station No. 1 on the corner of Forge Road and Richmond Road serves this area of the County and is approximately 4 miles from this property. - The proposal does not generate impacts that require mitigation to the County's emergency services or facilities.
Public Schools	Not Mitigated	- See discussion on Page 6.
Public Parks and Recreation	Mitigated	- See discussion on Pages 6-7.
Public Libraries and Cultural Centers	No Mitigation Required	- The proposal does not generate impacts that require mitigation to public libraries or cultural centers.
Groundwater and Drinking Water Resources	Mitigated	- The James City Service Authority (JCSA) has reviewed and approved this conceptual proposal on the Master Plan, as well as the projected water and sewer flows within the CIS. - JCSA regulations require the submittal of water conservation standards to be reviewed and approved by the JCSA prior to any development on the property.

Impacts/Potentially Unfavorable Conditions	Status *(No Mitigation Required/Mitigated/Not Fully Mitigated)*	Considerations/Proposed Mitigation of Potentially Unfavorable Conditions
Please note the information in the Status column indicated below does not include information from the Financial Impacts of Residential Units section of this staff report.		
		Conditions - Condition No. 2 requires the submittal of an overall master water and sanitary sewer plan for the property, to be reviewed and approved by JCSA prior to any subdivision or development on the property.
Watersheds, Streams, and Reservoirs	Mitigated	- The Master Plan shows a conceptual layout for Stormwater Management Facilities, which includes Best Management Plans. The property is located within the Ware Creek watershed, which does have a currently adopted Watershed Management Plan. - Currently there is some stream deterioration on the northeastern part of the property due to the development of Stonehouse Elementary School. The applicants have submitted proffers granting the County a construction easement as well as contributing to the cost of the project. (This item is included in the Density Points Analysis). **Proffers** - Proffer No. 13 offers $500 per lot to be collected for use in stream restoration efforts. - Proffer No. 22 dedicates a construction easement for the benefit of the County for the restoration of deteriorated streams as shown on the Master Plan. **Proposed SUP Conditions** - Condition No. 3 requires the submittal of nutrient management plans for each single-family unit and all common areas.

Impacts/Potentially Unfavorable Conditions	**Status** *(No Mitigation Required/Mitigated/Not Fully Mitigated)*	**Considerations/Proposed Mitigation of Potentially Unfavorable Conditions**
Please note the information in the Status column indicated below does not include information from the Financial Impacts of Residential Units section of this staff report.		
Cultural/Historic	No Mitigation required	- Per the County's Geographic Information System, this property is identified as a Moderate sensitive area on the James City County archaeological assessment, meaning no archaeological study is required for this application as part of the legislative submittal. Per Section 19-27 of the Subdivision Ordinance, an archaeological study and natural resource inventory will be required at the development plan stage.
Nearby and Surrounding Properties	Mitigated	- This parcel is surrounded by residential, commercial, and public lands. - This parcel is located adjacent to White Hall Subdivision, Wellington Subdivision, Stonehouse Elementary School, and Hankins Industrial Park and Jacobs Industrial Park. - There is a large area to the south and east that is a RPA which will serve as a large buffer to Hankins and Jacobs Industrial Parks and the Wellington Subdivision. - There will be a large buffer to include the mature woodland preserve adjacent to Williamsburg Christian Academy. - Staff finds this proposal compatible with the character of the existing surrounding development. **Proffers** Proffer No. 10 offers a minimum 150-foot-wide buffer of natural forest adjacent to the CCC buffer on the southwestern portion of the property as shown on the Master Plan. This will also screen the RV/Boat/Vehicle Storage from Richmond Road.

Impacts/Potentially Unfavorable Conditions	**Status** *(No Mitigation Required/Mitigated/Not Fully Mitigated)*	**Considerations/Proposed Mitigation of Potentially Unfavorable Conditions**
Please note the information in the Status column indicated below does not include information from the Financial Impacts of Residential Units section of this staff report.		
Community Character	Mitigated	- The applicants have offered design guidelines for all development on the property in accordance with Section 24-549, Density Standards. These guidelines have been reviewed and approved by the Planning Director. **Proffers** - Proffer No. 9 offers a minimum 150-foot-wide CCC buffer along Richmond Road. - Proffer No. 11 offers at a minimum of two acres that shall be designated as preserved hardwood forest as shown on the Master Plan. - Proffer No. 12 preserves no less than five acres designated as Prime Agricultural Land. - Proffer No. 14 requires the installation of landscaping in the median along the Richmond Road frontage to the development. - Proffer No. 15 requires pedestrian connection between the White Hall Development and Stonehouse Elementary School. - Proffer No. 16 provides streetscape improvements in accordance with the County's Streetscape Guidelines. - Proffer No. 18 provides for sidewalks on both sides of all public rights-of-way. **Proposed SUP Conditions** - Condition No. 4 states that a Design Review Board must be established to enforce the Design Guidelines.

NATURAL AND CULTURAL ASSETS

The site is identified as having natural and cultural assets on the Natural & Cultural Assets Plan maps (and/or other supplemental resources such as Virginia Lands and Energy Navigator (VaLENS) as follows:

ASSET	PRESENCE	IMPACT
Habitat Core	-Present on-site (see Attachment No. 5)	-All habitat cores identified in the Natural & Cultural Assets Plan are important ecologically. Of the 1-5 ranking system used in the Plan, the core on this property is ranked in the 2 category (with 1 being the lowest priority). -The portion of this parcel identified as habitat core is approximately 107 acres. This acreage is approximately 35% of the overall 310 acres in this habitat core. -Some of the habitat core acreage is located within the RPA and thus protected.
Corridors	Not applicable	Not applicable
Agricultural Assets	-Present on site (see Attachment No. 6)	-Approximately 97 acres or 44.1% of the property is rated prime farmland.

2045 COMPREHENSIVE PLAN

The property is designated Low Density Residential on the adopted 2045 Comprehensive Plan Land Use Map and is adjacent to properties designated as General Industrial to the east and south (Toano Business Center and Hankins Industrial Park), Federal, State, County Land to the north (Stonehouse Elementary School), and Low Density Residential to the north and west (White Hall, Windsor Ridge, Wellington Subdivisions). The following general guidance is stated for the Low Density Residential Designation:

- Land designated Low Density Residential are "located in the PSA where public services and utilities exist or are expected to be expanded to serve the sites over the next 20 years. The lands have natural characteristics such as terrain and soils suitable for residential development." Principle uses included single-family and multi-family units, cluster or cottage homes, and recreation areas. Recommended density from one unit per acre up to four units per acre if particular public benefits are provided. These include mixed-cost housing, affordable and workforce housing, enhanced environmental protection, or development that adheres to the principles of open space design.

  Staff finds that the proposed primary use is partially consistent with the recommendations for this designation. The applicant has proffered 10% of the units as affordable and mixed-income housing. Staff find that the development adheres to the principles of open space design.

The Comprehensive Plan's Land Use Development Standards are to be used in conjunction with the land use descriptions when considering any new development. The following residential development standards are applicable for Low Density Residential:

- Permit new development where such developments are compatible with the character of adjoining uses and where the impacts can be adequately addressed.

  The proposed development is adjacent to the White Hall Subdivision and Wellington Subdivision. The design guidelines proposed are very similar in nature to those in the White Hall Subdivision.

- Locate residential uses immediately adjacent to non-residential, major roads, agricultural and forestal uses, and other conflicting uses only where the conflicts are adequately addressed.

  The property is surrounded by a large area of RPA on the eastern and southern portion which will serve as a buffer to Hankins and Jacobs Industrial Parks.

- The timing and density of development will depend on the availability of and adequacy of public services, utilities, and facilities, and the maintenance of an acceptable LOS of roads and other public services.

  Some impacts to parks and recreation, JCSA, and SRP have been identified and mitigated, there are other impacts that are not fully mitigated. These include transportation, schools, and fiscal impacts.

- The need for public services and facilities generated by a development should be met or mitigated by that development.

  Stonehouse Elementary School is currently over capacity by 55 students. This proposal is projected to add an additional 82 students. The impacts on the schools are not fully mitigated.

- Developing the site in accordance with open space design standards.

  The layout of the development is of a compact design with pedestrian access on both sides. The area of development is mostly contained within previously farmed fields, limiting clearing of existing forest lands. The development will have a mixture of townhomes and single-family detached units with a variety of lot sizes. Some of the units are fronted on open space and there is access to the open space via sidewalks and trails. There is a 150-foot-wide community character buffer along Richmond Road, a 150-foot-wide naturally forested buffer adjacent to the CCC buffer on the southwestern portion of the property, a two-acre mature woodland preserve, and a five-acre preserved agricultural area known as the community garden area on the Master Plan.

- In addition to the open space design standards, the proposal should provide enhanced environmental protection.

  There are SUP conditions for water conservation measures and nutrient management plans. The applicants are proffering a preserved Hardwood Forest area, and a 150-foot-wide buffer of natural forest adjacent to the CCC buffer.

- Minimize the impact of development proposals on overall mobility and traffic safety.

  There are pedestrian connections proposed to the Whitehall development and Stonehouse Elementary School. There will be sidewalks on both sides of all internal public rights-of-way.

- Affordable workforce housing should be provided in accordance with the Comprehensive Plan, Zoning Ordinance, and any other adopted policies and regulations.

  New residential development as stated in the Housing Chapter of the Comprehensive Plan, encourages housing at a range of income levels with at least 20% targeted to workers with incomes up to 80% of AMI. The applicants have proffered 10% of the dwelling units will be offered targeting households earning 80% to 120% of AMI.

Financial Impacts of Residential Units

The 2045 Comprehensive Plan includes Goals, Strategies and Actions (GSA) LU5, which states “continue land use planning and perform

development review consistent with the capacity of existing and planned public facilities and services and the County's ability to provide such facilities and services." Land Use GSA 5.3 provides guidance for the County to ensure that developments subject to rezoning or special use permit review mitigate their impacts. Information on impacts and the mitigation provided by this application are included below.

In alignment with the Comprehensive Plan, on February 28, 2023, the Board of Supervisors adopted a resolution directing staff to use the County's Fiscal Impact Model to assess the following for proposed developments:

- The fiscal impact to the County (both operating and capital budget) for the residential and nonresidential components of the project; and
- The incremental capital costs for public facilities for the residential component of the project.

Overall Impact (Capital and Operating)
Per the Fiscal Impact Model, the development is projected to result in a net fiscal impact to the County through the year 2045 that is negative $5,264,658 (see Attachment 10 for additional details).

Capital Costs
Per the Fiscal Impact Model, the following are projected public facility impacts attributable to the proposed residential component of the project through 2045.

Table 1-Per Unit Fiscal Residential Impacts Information

Category	Residential Impact	Mitigation through current application
Roadways	SFD $112.79 SFA $ 86.12	See Note 1
Parks and Recreation	SFD $3,795.86 SFA $2,511.11	See Note 1
Fire and Emergency Services	SFD $1,149.45 SFA $ 760.40	See Note 1
Police	SFD $723.49 SFA $478.62	See Note 1
Library	SFD $480.63 SFA $317.95	See Note 1
General Government	SFD $143.22 SFA $ 94.74	See Note 1
General Services	SFD $268.48 SFA $177.61	See Note 1
Courts	SFD $844.93 SFA $558.96	See Note 1
Schools	SFD $17,542.50 SFA $ 9,216.56	See Note 1 and 2
TOTAL	SFD $25,061.35 SFA $14,202.08	See Note 1 and 2

SFD - Single Family Detached
SFA - Single Family Attached

Note 1: The applicants have proffered cash contributions for community impacts on the County from the physical development and operation of the Property. The proffered amounts are $9,046 for each dwelling unit on the Property other than Workforce units and a contribution of $6,332.20 for each Workforce unit shall be made. These amounts are to be adjusted according to the Marshall and Swift Building Costs Index on a yearly basis.

Note 2: The applicants have proffered a dedication of up to three acres of land shown on the Master Plan for use by the WJCC Schools. This area can be used for site and/or building improvements to Stonehouse Elementary School.

The applicants have provided a narrative on Pages 14-15 of the Community Impact Statement (Attachment No. 8) further describing the items above.

Overall, staff finds that the application does not fully mitigate the fiscal impacts of the proposed development, and therefore is not consistent with the guidance in the Comprehensive Plan regarding the mitigation of impacts.

Goals, Strategies and Actions

Staff reviewed the application to determine if the proposal aligns with the Comprehensive Plan's GSAs. The analysis is as follows.

Land Use

- GSA LU4 - Direct growth into designated growth areas in an efficient and low-impact manner by:
    - GSA LU4.2 - Provide for low density and moderate density residential development in appropriate locations inside the PSA and prohibit such development on rural lands outside the PSA.

    The proposed development is within the PSA and designated Low Density Residential.

- GSA LU2 - Promote pedestrian, bicycle, and automotive linkages between adjacent land uses where practical.

    The proposed development will have a multiuse path along Richmond Road, sidewalks on both sides of all internal public rights-of-way, and will have pedestrian connections to the White Hall development and Stonehouse Elementary School.

- GSA LU5.3 - Ensure that developments are subject to zoning or special use permit review to mitigate their impacts through the following means:
    - GSA LU5.2.3 - Permit higher densities and more intensive development in accordance with the Future Land Use Map where existing public facilities and services are adequately provided.

        Staff finds that while some impacts to parks and recreation, JCSA, and SRP have been identified and mitigated, there are other impacts that are not mitigated. These include transportation, schools, and fiscal impacts.

    - GSA LU5.3.1 - Requiring sufficient documentation to determine the impacts of a proposed development.

        Staff finds that there are several proffers that are lacking sufficient detail to determine whether the impact will be mitigated. These items include, but are not limited to, timing of installation of improvements, bonding of improvements, and required documentation to verify that the proffers have been completed.

Transportation

- GSA T1.2 – Expect new developments to follow recommended densities, intensities, and development patterns that will maintain an acceptable level of service.

    There are some minor street lefts/throughs turns that are projected to have a LOS below an acceptable "C". There are no

improvements proposed to mitigate any of these impacts.

- GSA T1.2.2 - Provide a high degree of interconnectivity within new developments.

  There is only one entrance to the property which does not provide any alternative routes for emergency access. There are pedestrian connections to adjacent properties, sidewalks and trails proposed.

Housing

- GSA H2.1 - Guide new developments to incorporate high housing quality and design.

  This development provides a range of home types and prices, including open space, recreational amenities, connections between residential developments, trails, and sidewalks.

Community Character

- GSA CC1 - Preserve and enhance entrance corridors and roads that promote the rural, natural, or historic character of the County.

  This proposal includes a 150-foot-wide CCC buffer, a 150-foot-wide naturally forested buffer, a community garden area, and a two-acre mature woodland preserve.

- GSA CC3 - Preserve and enhance neighborhood and community appearance.

  This proposal has design guidelines that have been reviewed and approved by the Director of Planning. The applicant will install streetscapes in accordance with the County's Streetscape Guidelines policy.

STAFF RECOMMENDATION

Staff recommends that the Planning Commission recommend denial of the proposed rezoning and SUP application. Should the Planning Commission recommend approval of this application, staff has included the proposed proffers and SUP conditions for review.

TC/ap
RZ22-4_SUP22-6HnknsDunn

Attachments:
1. Proposed SUP Conditions
2. Proposed Proffers
3. Location Map
4. Proposed Master Plan
5. Exhibit - Habitat Core
6. Exhibit - Prime Farmland
7. Proposed Design Guidelines
8. Community Impact Statement
9. Traffic Impact Analysis
10. Fiscal Impact Analysis
11. Mature Forest Report
12. Public Input

Proposed conditions for SUP-22-0026 Hankins-Dunn Property

1. This Special Use Permit (the "SUP") shall be valid for the cluster development at a density of 3.74 dwelling units per acre located at 8290 Richmond Road, , and further identified as James City County Real Estate Tax Map No. 1240100011. Development of the Property shall be in accordance with the Master Plan titled: "Hankins-Dunn Property 8290 Richmond Road" and dated October 26, 2022 (the "Master Plan"), with any deviation considered per Section 24-23(a)(2) of the Zoning Ordinance, as amended.

2. Water and Sewer Master Plan. A Water and Sewer Master Plan must be submitted for review and approval by the James City Service Authority Director for the Property prior to the submission of any development plans for the Property.

3. Nutrient Management Plan. The Owner shall develop and implement a turf management plan ("Nutrient Management Plan") for the maintenance of lawns and landscaping on the Property to limit nutrient runoff into Ware Creek and its tributaries from the Property. Nutrient Management Plans shall be done for all single-family detached and attached units, along with all common areas. The Nutrient Management Plan shall be prepared by a landscape architect licensed to practice in Virginia. Each Nutrient Management Plan shall be submitted for review and approval by the Stormwater and Resource Protection Director or designee prior to final certificate of occupancy for each residential unit. The Nutrient Management Plan shall include terms permitting enforcement by either the Owners Association or the County.

4. Design Guidelines and Review. The Property shall be developed in accordance with the design standards submitted as "White Hall Design Standards" on August 8, 2023. The Owner shall establish a Design Review Board to review all building plans and building elevations for conformity with the White Hall Design Standards. Once approved, the White Hall Design Standards may not be amended without the approval of the Development Review Committee.

5. Severability. This SUP is not severable. Invalidation of any word, phrase, clause sentence or paragraph shall invalidate the remainder.

3rd Submittal 2023-08-15

Tax Parcel: 1240100011

Prepared By: Vernon M. Geddy, III, Esquire (VSB No: 21902)
Geddy, Harris, Franck & Hickman
1177 Jamestown Road
Williamsburg, VA 2318

PROFFERS

THESE PROFFERS are made this 25th day of August, 2023 by GEORGE M. HANKINS, JR. and SHARON H. DUNN (together with their successors in title and assigns, the "Owner") and HHH LAND, LLC, a Virginia limited liability company.

RECITALS

A. Owner is the owner of a parcel of land located in James City County, Virginia, with an address of 8290 Richmond Road and being Tax Parcel No. 1240100011, containing approximately 220.026 acres, more or less, and being more particularly described on Schedule A hereto (the “Property”).

B. HHH Land, LLC has contracted to purchase the Property contingent upon approval of the requested rezoning. Upon taking title to the Property, HHH Land, LLC shall be an “Owner” as defined herein.

C. The Property is designated Low Density Residential on the County’s Comprehensive Plan Land Use Map, is within the Primary Service Area and is now zoned A-1. Owner has applied to rezone the Property from A-1 to R-2, with proffers and with a residential cluster development overlay.

C. Owner has submitted to the County a master plan entitled “Plan for Rezoning Hankins-Dunn Property 8290 Richmond Road” prepared by AES Consulting Engineers

dated October 26, 2022, last revised July 21, 2023 (the “Master Plan”) for the Property in accordance with the County Zoning Ordinance.

D. Owners desire to offer to the County certain conditions on the development of the Property not generally applicable to land zoned R-2 in the form of the following Proffers.

NOW, THEREFORE, for and in consideration of the approval of the requested rezoning, and pursuant to Section 15.2-2303 of the Code of Virginia, 1950, as amended, and the County Zoning Ordinance, Owner agrees that it shall meet and comply with all the following conditions in developing the Property. If the requested rezoning is not granted by the County, these Proffers shall be null and void.

CONDITIONS

1. Conceptual Master Plan. Development of the property shall be in general conformance with the Master Plan, which Master Plan is conceptual in nature, with only minor changes thereto that the Development Review Committee determines do not change the basic concept or character of the development.

2. Density. There shall be a maximum of 582 single family attached and detached units on the property.

3. Owners Association. There shall be an organized master owner’s association for the development (the “Association”) in accordance with Virginia law in which all property owners in the development, by virtue of their property ownership, shall be members. The articles of incorporation, bylaws and restrictive covenants (together, the "Governing Documents") creating and governing the Association shall be submitted to and reviewed by the County Attorney for consistency with this Proffer. The

Governing Documents shall require that the Association adopt an annual maintenance budget, which shall include a reserve for capital components, and all other common areas (including open spaces) under the jurisdiction of the Association, shall require each purchaser of a lot to make a capital contribution to the Association and shall require that the Association (i) assess all members for the maintenance of all properties owned or maintained by the Association and (ii) file liens on members' properties for non-payment of such assessments. The Governing Documents shall provide that at such time as 75% of the Lots permitted on the Property designated on the Master Plan have been conveyed to purchasers other than builders, the declarant's right to unilaterally appoint and remove members of the Board of Directors of the Association shall terminate and the Board shall thereafter be elected by the lot owners (including the declarant). The requirements of this proffer may be met through annexation of the land into an existing owners' association with the same or similar restrictions as detailed herein.

4. Cash Contributions for Community Impacts: A contribution of $9,046 for each dwelling unit on the Property other than Workforce Units (as defined in Condition 5) and a contribution of $6,332.20 for each Workforce Unit shall be made to the James City County in order to mitigate impacts on the County from the physical development and operation of the Property. The contribution described above shall be paid to the County for each dwelling unit on the Property after completion of the final inspection and prior to the time of the issuance of any certificate of occupancy for the dwelling unit in question. The per dwelling unit contribution amounts shall consist of the amounts set forth above plus any adjustments included in the Marshall and Swift Building Costs

Index (the "Index") from 2023 to the year a payment is made if payments are made after on or after January 1, 2024. In no event shall the per dwelling unit contribution be adjusted to a sum less than the amount set forth in this Section. If the Index is not available, a reliable government or other independent publication evaluating information heretofore used in determining the Index (approved in advance by the County Manager of Financial Management Services) shall be relied upon in establishing an inflationary factor for purposes of increasing the per dwelling unit contribution to approximate the rate of annual inflation in the County.

5. Mixed Cost Housing Units: At least 10% of the dwelling units permitted on the Property shall be offered for sale at prices that are targeted at households earning 80% to 120% of the Area Median Income as determined by the U.S. Department of Housing and Urban Development (“AMI”) as determined annually by the by the County’s Office of Housing and Community Development (the “Workforce Units”).

6. Road Construction and Dedications. Road improvements and/or dedications shall be made as follows at the property entrance on Route 60:

a. One southbound left turn lane (200 feet storage, 200 feet taper).

b. One inbound lane into the property.

c. Northbound right turn lane on Rt. 60 (100 feet storage, 200 feet taper).

d. Two exit lanes from the property: shared left/through and right turn

e. The turn lanes and tapers proffered hereby shall be constructed in accordance with Virginia Department of Transportation ("VDOT") standards and shall be completed or their completion bonded in from satisfactory to the County Attorney prior to the issuance of any building permits for development on the Property.

7. Private Alleys. All private alleys on the Property shall conform to VDOT construction standards and shall be maintained by the Homeowner's Association. The pavement section design must follow the applicable traffic count and loading design parameters for VDOT roads.

8. Underground Utilities. Except for junction boxes, meters, pedestals, transformers, and existing overhead utility lines, all new utility lines shall be installed underground.

9. Community Character Corridor Buffer. There shall be a minimum 150' wide Community Character Corridor (CCC) Buffer along the Route 60 frontage of the Property in accordance with the County's Community Character Corridor Buffer Treatment guidelines. Owner shall submit a landscape plan for this buffer during site plan review process for review and approval of the Director of Planning.

10. Naturally Forested Buffer. There shall be a minimum 150' buffer of natural forest adjacent to the CCC Buffer on the southwestern portion of the property as shown on the Master Plan. This buffer shall be allowed to grow from natural regeneration but may be supplemented with additional vegetation to achieve a natural forest appearance. Owner shall submit a landscape plan for this buffer during site plan review process for review and approval of the Director of Planning.

11. Mature Hardwood Forestland Preservation. No less than 2.0 acres shall be designated as preserved Hardwood Forestland in the general location as shown on the Master Plan. With the first plan submittal, a protective deed shall be submitted to the Director of Planning for review and shall be recorded prior to the issuance of the first certificate of occupancy for a dwelling unit on the Property. The protective deed shall restrict the cutting of trees within this preserved area with limited exceptions.

12. Prime Agricultural Land Preservation. No less than 5.0 acres shall be designed as preserved Prime Agricultural Land in the general location as shown on the Master Plan. With the first plan submittal, a protective deed shall be submitted to the Director of Planning for review and shall be executed and recorded prior to the issuance of the first certificate of occupancy for a dwelling unit on the Property. The protective deed shall restrict use of this preserved area to agricultural uses only.

13. Stream Restoration Funding. At the time when cash proffers are paid for each lot, an additional $500 per lot shall be paid to the County for use in stream restoration efforts located within the construction easement dedicated and more fully described in proffer #22 below.

14. Route 60 Median Landscaping. Owner, subject to the approval from VDOT, shall install landscaping in the Route 60 median along the Route 60 frontage to the development. This landscaping shall be designed to complement the Community corridor buffer landscaping and shall include trees, shrubs, and groundcovers in accordance with a plan submitted to and approved by the Director of Planning. The

median shall be planted, or the planting bonded, prior to the County being obligated to issue certificates of occupancy for dwelling units in the development.

15. Pedestrian Connections to Adjacent Properties. Owner shall provide pedestrian connections between the Property and the adjacent properties generally as shown on the Master Plan. Alternate locations may be determined at final design as approved by the Director of Planning.

16. Streetscape Guidelines. The Owner shall provide and install streetscape improvements in accordance with the applicable provisions of the County's Streetscape Guidelines policy. Street trees and other streetscape improvements shall be installed at the time of home construction. The streetscape improvements shall be shown on development plans for that portion of the property and submitted to the Director of Planning for approval during the site plan approval process.

17. Recreation. The following recreational facilities shall be provided at a minimum: 1 playground, 2.05 acres of park land, 2,800 ft of biking/jogging trails, one 25-meter competition pool and 1 multi-use rectangular field. The exact locations of the facilities proffered hereby and the equipment to be provided at such facilities shall be subject to the approval of the Development Review Committee.

18. Sidewalks. There shall be sidewalks installed on both sides of each public streets located in the Property (these may be in right of way or outside of right of way in a pedestrian access easement). Owner shall construct a hard surface multi-use trail along the Route 60 road frontage of the Property with a design approved by the Director of Planning.

19. Curb and Gutter. Streets (but not private alleys) within the Property shall be constructed with curb and gutter, provided, however, this requirement may be waived or modified along those segments of street, including entrance roads, where structures are not planned.

20. Master Stormwater Management Plan. Owner shall submit to the County a Master Stormwater Management Plan (MSWMP) no less than three (3) months in advance of the of the site construction plan for any project that is proposed as a multi-phase plan of development, to include the stormwater management BMP ponds, and, where appropriate and feasible, low impact design techniques, for review and approval by the Stormwater and Resource Protection Division. Owner acknowledges that concurrent submittals of the MSWMP and site construction plan will not be accepted. The MSWMP may be revised and/or updated during the development of the Property with prior approval of the Stormwater and Resource Protection Division. The County shall not be obligated to approve any final development plans for the Property until the master stormwater management plan has been approved by the Stormwater and Resource Protection Division. The MSWMP, as revised and/or updated, shall be implemented in all development plans for the Property. Areas of disconnected Forested Open Space per DEQ Specification #2, used for the purposes of lowering the water quality requirement total but not actually treating areas of development will not be approved.

21. Dedication of Land to Williamsburg-James City County Schools. Owner shall convey up to 3.0 acres of land in the location generally shown on the Master Plan to Williamsburg-James City County School Board to be used for site and/or building

improvements to Stonehouse Elementary School. Such conveyance shall be made upon the request of the School Board. Within 45 days of the receipt of such a request Owner shall cause to be prepared and submitted to the County any required subdivision or boundary line adjustment plat. The actual conveyance shall be made within five business days of final approval of the plat. If this conveyance is not requested before the last subdivision plat is recorded, this obligation will become null and void.

22. Dedication of Construction Easement. Owner shall dedicate a construction easement for the benefit of James City County for the restoration of deteriorated streams as generally shown on the Master Plan. With the first development plan submittal, a deed of easement shall be submitted to the Director of Planning for review and shall be executed and recorded prior to the County being obligated to issue the first certificate of occupancy for a dwelling unit on the Property. The intention of the easement is to allow James City County the legal authority to repair the downstream channels from stormwater runoff from Stonehouse Elementary School.

23. Severability. The unenforceability, elimination, revision or amendment of any proffer set forth herein, in whole or in part, shall not affect the validity or enforceability of any of the other proffers or the unaffected part of any such proffer.

[*signatures appear on following pages*]

WITNESS the following signatures and seals:

OWNER:

GEORGE M. HANKINS, JR.

STATE OF Virginia
CITY/COUNTY OF Virginia Beach, to-wit:

The foregoing instrument was acknowledged before me this 25th day of August, 2023 by GEORGE M. HANKINS, JR.

NOTARY PUBLIC

My commission expires: May 31, 2024
Registration No.: 7758786

LINDSEY NICOLE BERRY
NOTARY PUBLIC
REG. # 7758786
MY COMMISSION EXPIRES
MAY 31, 2024
COMMONWEALTH OF VIRGINIA

OWNER:

Sharon H Dunn
SHARON H. DUNN

STATE OF Virginia
CITY/COUNTY OF Virginia Beach, to-wit:

The foregoing instrument was acknowledged before me this 25 day of AUGUST, 2023 by SHARON H. DUNN.

Lindsey N Berry
NOTARY PUBLIC

My commission expires: May 31, 2024
Registration No.: 7758786

LINDSEY NICOLE BERRY
NOTARY PUBLIC
REG. # 7758786
MY COMMISSION EXPIRES
MAY 31, 2024
COMMONWEALTH OF VIRGINIA

APPLICANT:

HHH Land, LLC, a Virginia Limited liability company

By: HHHunt Corporation
Its: Manager

By: _____
Title: Vice President

Commonwealth
STATE OF Virginia
CITY/COUNTY OF Henrico, to-wit:

The foregoing instrument was acknowledged before me this 25 day of August, 2023 by Jonathan Ridout, Vice President of HHHunt Corporation, a Virginia corporation, as Manager of HHH Land, LLC, a Virginia Limited liability company on behalf of the company.

_____
NOTARY PUBLIC

My commission expires: 4/30/2025
Registration No.: 7727076

BRITTANY NICOLE MCCAULEY NOTARY PUBLIC REG. #7727076 MY COMMISSION EXPIRES 04/30/2025 COMMONWEALTH OF VIRGINIA

Schedule A

SURVEYED PROPERTY DESCRIPTION 8290 RICHMOND ROAD

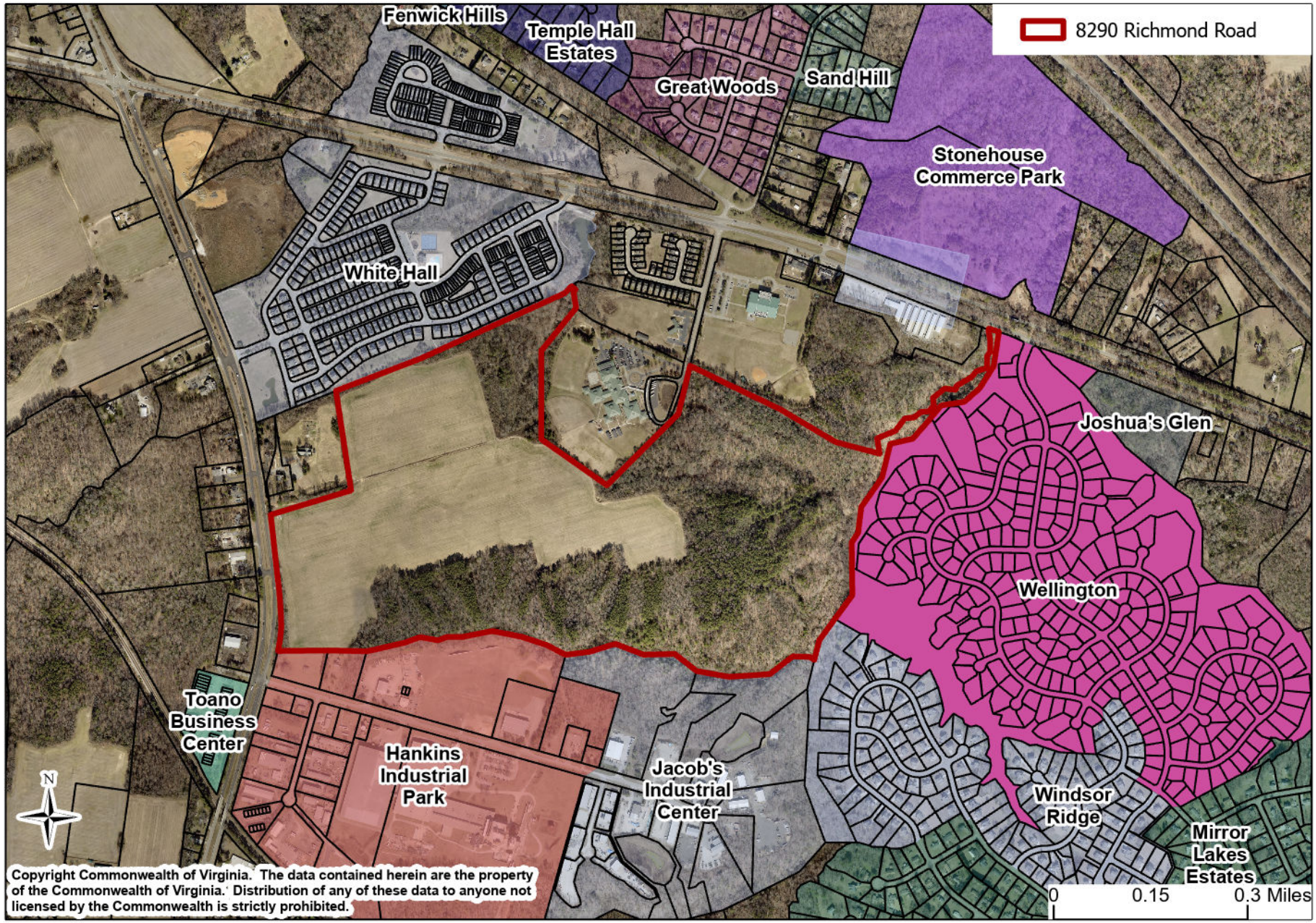
ALL THAT CERTAIN PIECE OR PARCEL OF LAND SITUATE LYING AND BEING IN THE COUNTY OF JAMES CITY, VIRGINIA AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT LYING ON THE EASTERLY RIGHT-OF-WAY OF U.S. ROUTE #60 (RICHMOND ROAD-VARIABLE WIDTH R/W) BEING A CORNER TO THIS PARCEL AND LANDS NOW OR FORMERLY STANDING IN THE NAME OF HUNTERS HORN ASSOCIATES, FROM WHICH AN IRON PIPE FOUND BEARS N89°52'15"W, A DISTANCE OF 1.80'; THENCE LEAVING THE LINE OF HUNTER HORN ASSOCIATES AND WITH THE RIGHT-OF-WAY OF U.S. ROUTE #60 ON A CURVE TO THE LEFT HAVING A RADIUS OF 1,185.92', A DELTA ANGLE OF 19°27'08", A LENGTH OF 402.63', A CHORD OF 400.70' AND A CHORD BEARING OF N02°59'21"E TO A POINT; THENCE N06°44'13"W, A DISTANCE OF 713.25' TO AN IRON ROD FOUND, BEING A CORNER TO THIS PARCEL AND LANDS NOW OR FORMERLY STANDING IN THE NAME OF HICKORY NECK CHURCH OF BLISSLAND PARISH; THENCE LEAVING THE RIGHT-OF-WAY OF U.S. ROUTE #60 AND WITH THE LINE OF HICKORY NECK CHURCH OF BLISSLAND PARISH, N73°27'52"E, A DISTANCE OF 686.37' TO AN IRON ROD FOUND; THENCE N08°21'58"W, A DISTANCE OF 832.08' TO AN IRON ROD FOUND, BEING A CORNER TO THIS PARCEL, HICKORY NECK CHURCH OF BLISSLAND PARISH AND LYING ON THE LINE OF LANDS NOW OR FORMERLY STANDING IN THE NAME OF WHITE HALL FOUNDATION INC.; THENCE LEAVING THE LINE OF HICKORY NECK CHURCH OF BLISSLAND PARIISH AND WITH THE LINE OF WHITE HALL FOUNDATION INC. N69°06'33"E, A DISTANCE OF 738.88' TO AN IRON ROD FOUND; THENCE N65°37'06"E, A DISTANCE OF 1,296.31' TO A POINT BEING THE APPROXIMATE CENTERLINE OF A STREAM AND A CORNER TO THIS PARCEL, WHITE HALL FOUNDATION INC. AND LANDS NOW OR FORMERLY STANDING IN THE NAME OF FAITH FELLOWSHIP INCORPORATED; THENCE LEAVING THE LINE OF WHITE HALL FOUNDATION INC. AND WITH THE LINE OF FAITH FELLOWSHIP INCORPORATED WITH A SURVEY LINE ALONG THE CENTERLINE OF STREAM, S28°58'53"W, A DISTANCE OF 57.24' TO A POINT; THENCE S53°59'12"E, A DISTANCE OF 137.96' TO A BEECH STUMP FOUND, LYING ON THE LINE OF FAITH FELLOWSHIP INCORPORATED, BEING A CORNER TO THIS PARCEL AND LANDS NOW OR FORMERLY STANDING IN THE NAME OF WILLIAMSBURG-JAMES CITY COUNTY PUBLIC SCHOOLS; THENCE LEAVING THE LINE OF FAITH FELLOWSHIP INCORPORATED AND WITH THE LINE OF WILLIAMSBURG-JAMES CITY COUNTY PUBLIC SCHOOLS, S38°30'48"W, A DISTANCE OF 450.00' TO AN IRON ROD SET; THENCE S00°29'12"E, A DISTANCE OF 723.14' TO AN IRON ROD FOUND; THENCE S55°29'12"E, A DISTANCE OF 655.19' TO AN IRON ROD SET; THENCE N44°30'48"E, A DISTANCE OF 823.89' TO AN IRON ROD FOUND; THENCE N13°07'08"E, A DISTANCE OF 406.26' TO AN IRON ROD FOUND BEING A CORNER TO THIS PARCEL AND LANDS NOW OR FORMERLY STANDING IN THE NAME OF WILLIAMSBURG CHRISTIAN ACADEMY INC.; THENCE LEAVING THE LINE OF WILLIAMSBURG-JAMES CITY COUNTY

PUBLIC SCHOOLS AND WITH THE LINE OF WILLIAMSBURG CHRISTIAN ACADEMY INC., S64°28'48"E, A DISTANCE OF 339.39' TO AN IRON ROD FOUND; THENCE S64°57'38"E, A DISTANCE OF 475.04' TO AN IRON ROD FOUND; THENCE S59°54'46"E, A DISTANCE OF 529.70' TO AN IRON PIPE FOUND; THENCE S75°45'00"E, A DISTANCE OF 213.11' TO AN IRON PIPE FOUND; THENCE CONTINUE ALONG SAID LINE, A DISTANCE OF 159.29' TO A POINT BEING THE BEGINNING OF A SURVEY LINE AT THE APPROXIMATE CENTERLINE OF A STREAM; THENCE WITH SAID SURVEY LINE ALONG THE CENTERLINE OF THE STREAM (STREAM IS THE PROPERTY LINE), N09°51'36"W, A DISTANCE OF 127.30' TO A POINT; THENCE N67°05'47"E, A DISTANCE OF 160.84' TO A POINT; THENCE N37°03'32"E, A DISTANCE OF 128.56' TO A POINT; THENCE N83°16'55"E, A DISTANCE OF 74.51' TO A POINT; THENCE N51°08'57"E, A DISTANCE OF 73.23' TO A POINT; THENCE N86°44'13"E, A DISTANCE OF 62.08' TO A POINT; THENCE N39°08'40"E, A DISTANCE OF 68.53' TO A POINT; THENCE N10°47'58"W, A DISTANCE OF 56.60' TO A POINT; THENCE N50°01'00"E, A DISTANCE OF 125.58' TO A POINT; THENCE S83°37'10"E, A DISTANCE OF 90.48' TO A POINT; THENCE N13°33'43"E, A DISTANCE OF 34.17' TO A POINT; THENCE N59°27'13"E, A DISTANCE OF 141.57' TO A POINT; THENCE N38°21'21"E, A DISTANCE OF 60.38' TO A POINT; THENCE N72°01'16"E, A DISTANCE OF 91.98' TO A POINT; THENCE N00°25'59"W, A DISTANCE OF 93.53' TO A POINT; THENCE N33°24'23"E, A DISTANCE OF 45.50' TO A POINT; THENCE N00°12'49"W, A DISTANCE OF 93.11' TO A POINT; THENCE N10°03'27"W, A DISTANCE OF 87.19' TO AN IRON ROD SET, BEING A CORNER TO THIS PARCEL, WILLIAMSBURG CHRISTIAN ACADEMY INC. AND LYING ON THE SOUTHERLY RIGHT-OF-WAY OF STATE ROUTE #30 (ROCHAMBEAU DRIVE 250' MINIMUM R/W); THENCE LEAVING THE LINE OF WILLIAMSBURG CHRISTIAN ACADEMY INC. AND ALONG THE RIGHT-OF-WAY OF STATE ROUTE #30, S68°58'43"E, A DISTANCE OF 93.73' TO AN IRON ROD SET BEING A CORNER TO THIS PARCEL AND WELLINGTON SUBDIVISION SECTION ONE; THENCE LEAVING THE RIGHT-OF-WAY OF STATE ROUTE #30 AND WITH THE LINE OF WELLINGTON SUBDIVISION SECTION ONE, S08°22'35"W, A DISTANCE OF 287.50' TO A POINT; THENCE S32°25'35"W, A DISTANCE OF 215.00' TO A POINT; THENCE S48°30'35"W, A DISTANCE OF 166.00' TO A POINT; THENCE S80°50'35"W, A DISTANCE OF 193.20' TO A POINT; THENCE S39°30'35"W, A DISTANCE OF 356.00' TO A POINT, BEING A CORNER TO THIS PARCEL AND WELLINGTON SUBDIVISION SECTION THREE; THENCE WITH THE LINE OF WELLINGTON SUBDIVISION SECTION THREE, S77°30'35"W, A DISTANCE OF 187.32' TO A POINT; THENCE S14°45'35"W, A DISTANCE OF 284.00' TO A POINT; THENCE S35°20'35"W, A DISTANCE OF 294.00' TO A POINT; THENCE S07°00'35"W, A DISTANCE OF 212.50' TO A POINT; THENCE S33°30'35"W, A DISTANCE OF 94.50' TO A POINT; THENCE S00°39'25"E, A DISTANCE OF 430.00' TO A POINT, BEING A CORNER TO THIS PARCEL AND LANDS NOW OR FORMERLY STANDING IN THE NAME OF BOCA LAND INVESTORS, LLC; THENCE WITH THE LINE OF BOCA LAND INVESTORS, LLC, S36°09'53"W, A DISTANCE OF 462.46' TO A POINT BEING A CORNER TO THIS PARCEL AND LANDS NOW OR FORMERLY STANDING IN THE NAME OF WINDSOR RIDGE SECTION 2A; THENCE S13°38'18"W, A DISTANCE OF 160.13' TO A POINT LYING ON THE LINE OF

WINDSOR RIDGE SECTION 2A AT THE BEGINNING OF A SURVEY LINE, BEING A CORNER TO THIS PARCEL AND LANDS NOW OR FORMERLY STANDING IN THE NAME OF TAYLOR BUILDING, LLC; THENCE LEAVING THE LINE OF WINDSOR RIDGE SECTION 2A AND WITH THE LINE OF TAYLOR BUILDING, LLC ON A SURVEY LINE, N57°05'17"W, A DISTANCE OF 45.83' TO A POINT; THENCE CONTINUING WITH A SURVEY LINE BEING GENERALLY ALONG A STREAM (STREAM IS THE PROPERTY LINE) N88°26'09"W, A DISTANCE OF 138.16' TO A POINT; THENCE S52°13'03"W, A DISTANCE OF 236.10' TO A 12” ASH; THENCE S86°04'41"W, A DISTANCE OF 332.10' TO A POINT; THENCE N79°55'45"W, A DISTANCE OF 270.90' TO A POINT; THENCE N51°55'48"W, A DISTANCE OF 226.36' TO A POINT; THENCE S88°43'52"W, A DISTANCE OF 254.34' TO A POINT; THENCE N69°03'01"W, A DISTANCE OF 247.88' TO A POINT; THENCE S72°54'40"W, A DISTANCE OF 222.36' TO A POINT; THENCE S82°51'17"W, A DISTANCE OF 194.34' TO A POINT; THENCE N63°06'50"W, A DISTANCE OF 180.42' TO A POINT; THENCE N71°50'52"W, A DISTANCE OF 212.95' TO A POINT; THENCE N79°01'51"W, A DISTANCE OF 241.83' TO A POINT; THENCE S78°54'50"W, A DISTANCE OF 250.19' TO A POINT; THENCE S89°47'44"W, A DISTANCE OF 124.57' TO A POINT; THENCE S69°12'18"W, A DISTANCE OF 76.17' TO A POINT; THENCE N80°03'23"W, A DISTANCE OF 150.42' TO A MAPLE STUMP BEING A CORNER TO THIS PARCEL AND LANDS NOW OR FORMERLY STANDING IN THE NAME OF NICE COMMERCIAL PROPERTIES, LLC AND BEING THE TERMINUS OF THE SURVEY LINE; THENCE WITH THE LINE OF NICE COMMERCIAL PROPERTIES, S70°22'56"W, A DISTANCE OF 133.37' TO A 24” MAPLE; THENCE S76°47'28"W, A DISTANCE OF 237.72' TO A 26” MAPLE; THENCE S78°16'46"W, A DISTANCE OF 80.33' TO AN IRON PIPE FOUND, BEING A CORNER TO THIS PARCEL AND LANDS NOW OR FORMERLY STANDING IN THE NAME OF HUNTERS HORN ASSOCIATES; THENCE LEAVING THE LINE OF NICE COMMERCIAL PROPERTIES AND ALONG THE LINE OF HUNTERS HORN ASSOCIATES N89°52'15"W, A DISTANCE OF 312.35' TO AN IRON ROD FOUND; THENCE CONTINUE ALONG SAID LINE, A DISTANCE OF 410.70' TO A POINT, BEING THE POINT AND PLACE OF BEGINNING CONTAINING 9,584,315 SQUARE FEET OR 220.026 ACRES, MORE OR LESS.

Z-22-0004 / SUP-22-0026 8290 Richmond Road
Hankins-Dunn Rezoning



NOTE:
SIDEWALKS AND TRAILS/PATHS SHALL BE PROVIDED THROUGHOUT IN ORDER TO PROMOTE PEDESTRIAN INTERCONNECTIVITY.

NOTE:
RECREATION AREAS INCLUDED WITH THIS DEVELOPMENT (AT A MINIMUM) SHALL INCLUDE THE FOLLOWING:
- ONE (1) PLAYGROUND
- 2.05 ACRES OF PARK LAND
- 2,800 FT OF BIKING/JOGGING TRAILS
- ONE (1) 25-METER COMPETITION POOL
- ONE (1) MULTI-USE RECTANGULAR FIELD

OPEN SPACE CALCULATIONS:

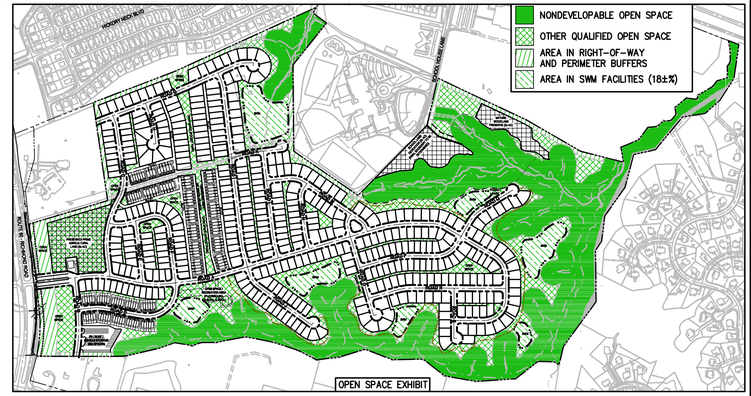
– TOTAL SITE AREA	220.026± AC
– NONDEVELOPABLE OPEN SPACE	61.260± AC
– DEVELOPABLE AREA	155.766± AC
– DEVELOPABLE OPEN SPACE REQUIRED	54.518± AC (35%)
– DEVELOPABLE OPEN SPACE PROVIDED	55.262± AC (35.5%)
AREA USED TO ACHIEVE DENSITY BONUS POINTS (SIDEWALKS)	4.420± AC
AREA IN REQUIRED RIGHT-OF-WAY AND PERIMETER BUFFERS	9.286± AC
AREA IN STORMWATER MANAGEMENT FACILITIES	9.367± AC
OTHER QUALIFYING OPEN SPACE AREAS	32.189± AC
– TOTAL NONDEVELOPABLE AND DEVELOPABLE OPEN SPACE	116.862± AC

LEGEND

25% OR GREATER SLOPES:

GRAPHIC SCALE
200' 0' 200' 400'
SCALE: 1" = 200'

N



OPEN SPACE EXHIBIT

DENSITY BONUS POINTS PROPOSED (6 REQUIRED) PER JCC ORDINANCE SECTION 24-549:
- BONUS ITEM OPTION C – UNDERTAKING OR FUNDING A STREAM RESTORATION PROJECT OR STORMWATER MANAGEMENT FACILITY RETROFIT WITHIN THE SAME SUB-WATERSHED, AS IDENTIFIED BY AN APPROVED WATERSHED MANAGEMENT PLAN OR BY THE STORMWATER AND RESOURCE PROTECTION DIVISION (1.5 POINTS)
- BONUS ITEM OPTION D – ADHERING TO OPEN SPACE DEVELOPMENT DESIGN ELEMENTS (1.5 POINTS)
- BONUS ITEM OPTION H – PRESERVING A SINGLE AREA OF HEALTH, MATURE, MIXED HARDWOOD FORESTLAND AT LEAST TWO ACRES IN SIZE WITH THE DEVELOPABLE PORTION OF THE SITE. THE PLANNING DIRECTOR MAY REQUEST THAT THE DEVELOPER PROVIDE CONFIRMATION, PREPARED BY A CERTIFIED HORTICULTURALIST, THAT THESE QUALITIES ARE PRESENT (1 POINT).
- BONUS ITEM OPTION I – RETAINING A SINGLE AREA OF AGRICULTURAL LAND DESIGNATED ON THE USDA MAPS TO BE OF PRIME OR STATEWIDE IMPORTANCE THAT IS AT LEAST FIVE ACRES IN SIZE. (1 POINT)
- BONUS ITEM OPTION K – PROVIDING PEDESTRIAN ACCOMMODATIONS ON ONE SIDE OF ALL INTERNAL ROADWAYS, WHERE THIS WOULD EXCEED THE REQUIREMENTS SET FORTH IN SECTION 24-35 OF THIS CHAPTER (1 POINT)
- BONUS ITEM OPTION L – IMPLEMENTATION OF DESIGN GUIDELINES THAT INCLUDE SUPERIOR ARCHITECTURAL DESIGN. (0.5 POINTS)

SITE STATISTICS

– SITE AREA	220.026± AC
– AREA DEDICATED TO SCHOOL LAND	3.0 AC
– NON-DEVELOPABLE AREA	61.260± AC (28.2%)
RPA BUFFERS	58.76± AC
STEEP SLOPES (OUTSIDE RPA)	2.50± AC
– NET DEVELOPABLE AREA	155.766± AC
(FOR USE IN DENSITY CALCULATIONS)	
– TOTAL LOTS/UNITS	582 LOTS
(AREA DESIGNATIONS: A, B, & C)	
TOWNHOUSE UNITS	139 UNITS
TH-25' WIDE (3 UNIT)	3 UNITS
TH-25' WIDE (4 UNIT)	8 UNITS
TH-25' WIDE (5 UNIT)	65 UNITS
TH-20' WIDE (5 UNIT)	45 UNITS
TH-20' WIDE (6 UNIT)	18 UNITS
SINGLE FAMILY LOTS	443 LOTS
50' WIDE LOTS	274 LOTS
60' WIDE LOTS	72 LOTS
70' WIDE LOTS	97 LOTS
– NET DENSITY	3.74± DU/AC

* THE CALCULATIONS PROVIDED IN THIS TABLE DO NOT INCLUDE THE 3.0 ACRES DEDICATED TO SCHOOL LAND IN THE TOTAL SITE AREA.

Rev.	Date	Description	Revised By
3	08/04/2023	REVISED PER JAMES CITY COUNTY COMMENTS	TRS/GRR
2	06/14/2023	REVISED PER JAMES CITY COUNTY COMMENTS	TRS
1	03/23/2023	REVISED PER JAMES CITY COUNTY COMMENTS	TRS

AES CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
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Phone: (757) 253-0040
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Hampton Roads | Central Virginia | Middle Peninsula

MASTER PLAN

HANKINS-DUNN PROPERTY
8290 RICHMOND ROAD

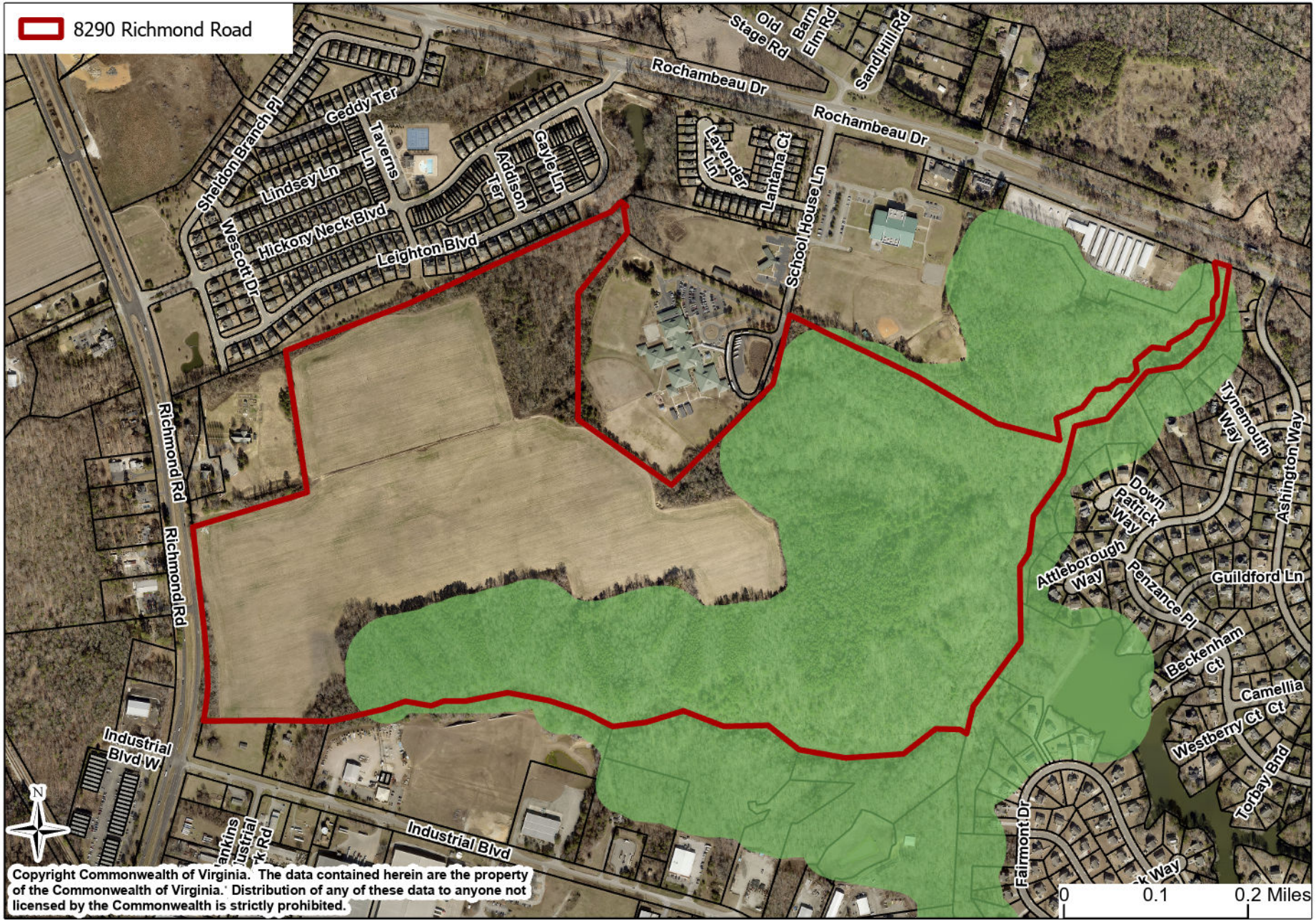
STONEHOUSE DISTRICT JAMES CITY COUNTY VIRGINIA

Project Contacts:	TRS
Project Number:	9149-11
Scale: 1"=200'	Date: 10/26/2022

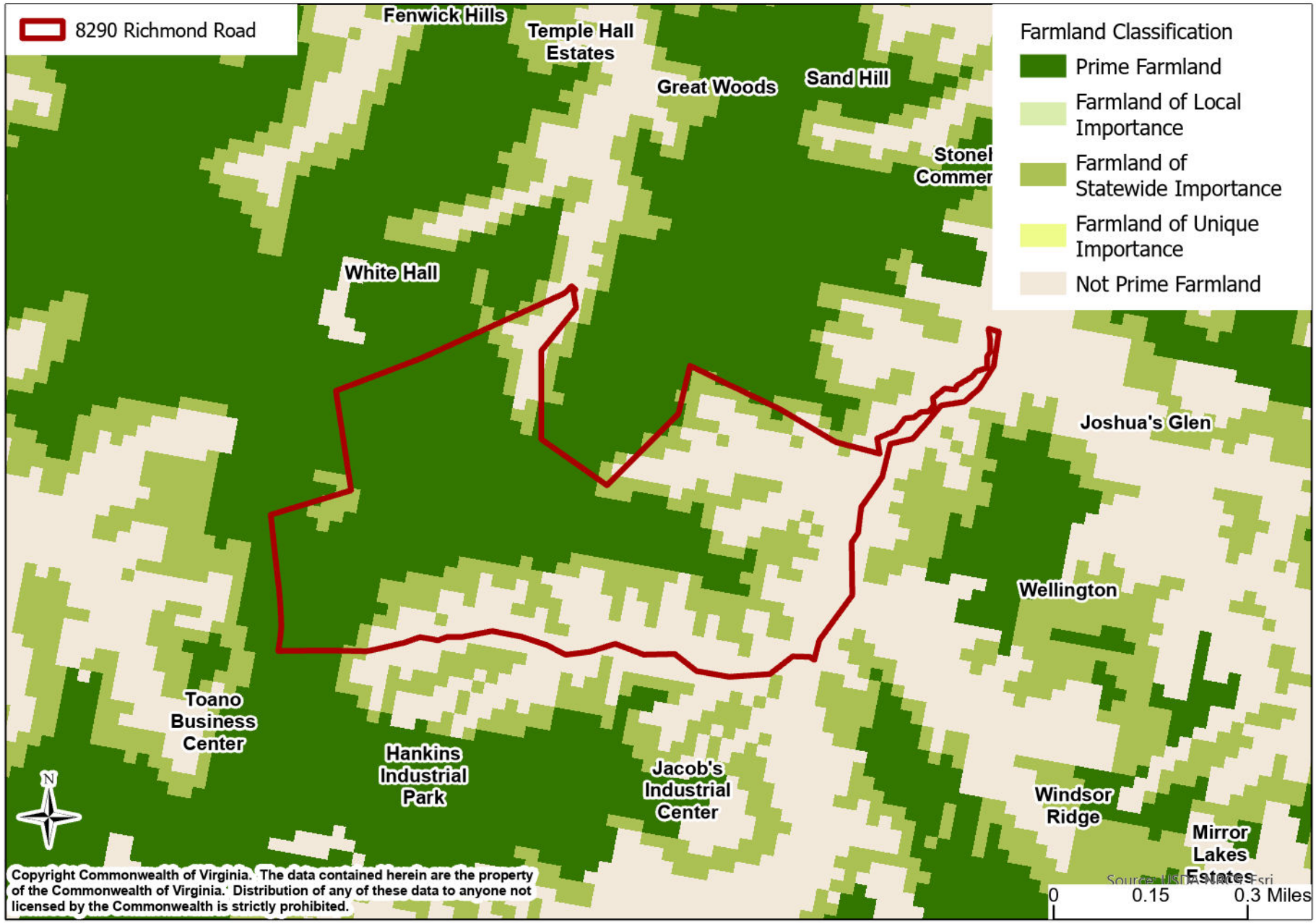
Sheet Number
MP-03

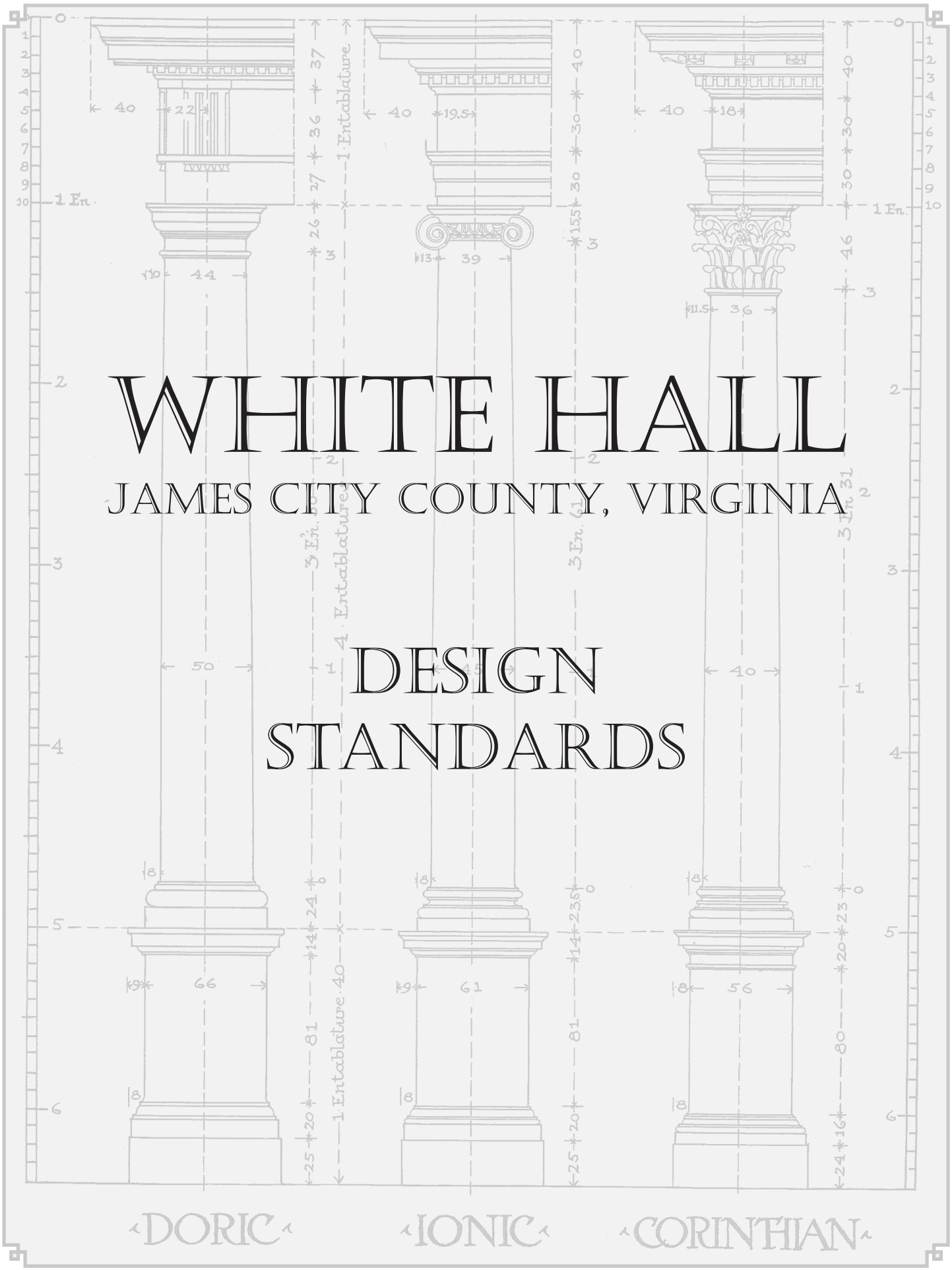
S:\JOBS\9149\11-9290 Richmond Road\Planning\Master Plan\mp9149111MP03 - Site Layout Master Plan.dwg, 8/17/2023 1:12:29 PM, jordanhine

Z-22-0004 / SUP-22-0026 8290 Richmond Road
Hankins-Dunn Rezoning - Ecological Habitat Core



Z-22-0004 / SUP-22-0026 8290 Richmond Road
Hankins-Dunn Rezoning - Farmland Classification





WHITE HALL

JAMES CITY COUNTY, VIRGINIA

DESIGN STANDARDS

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SECTION 5
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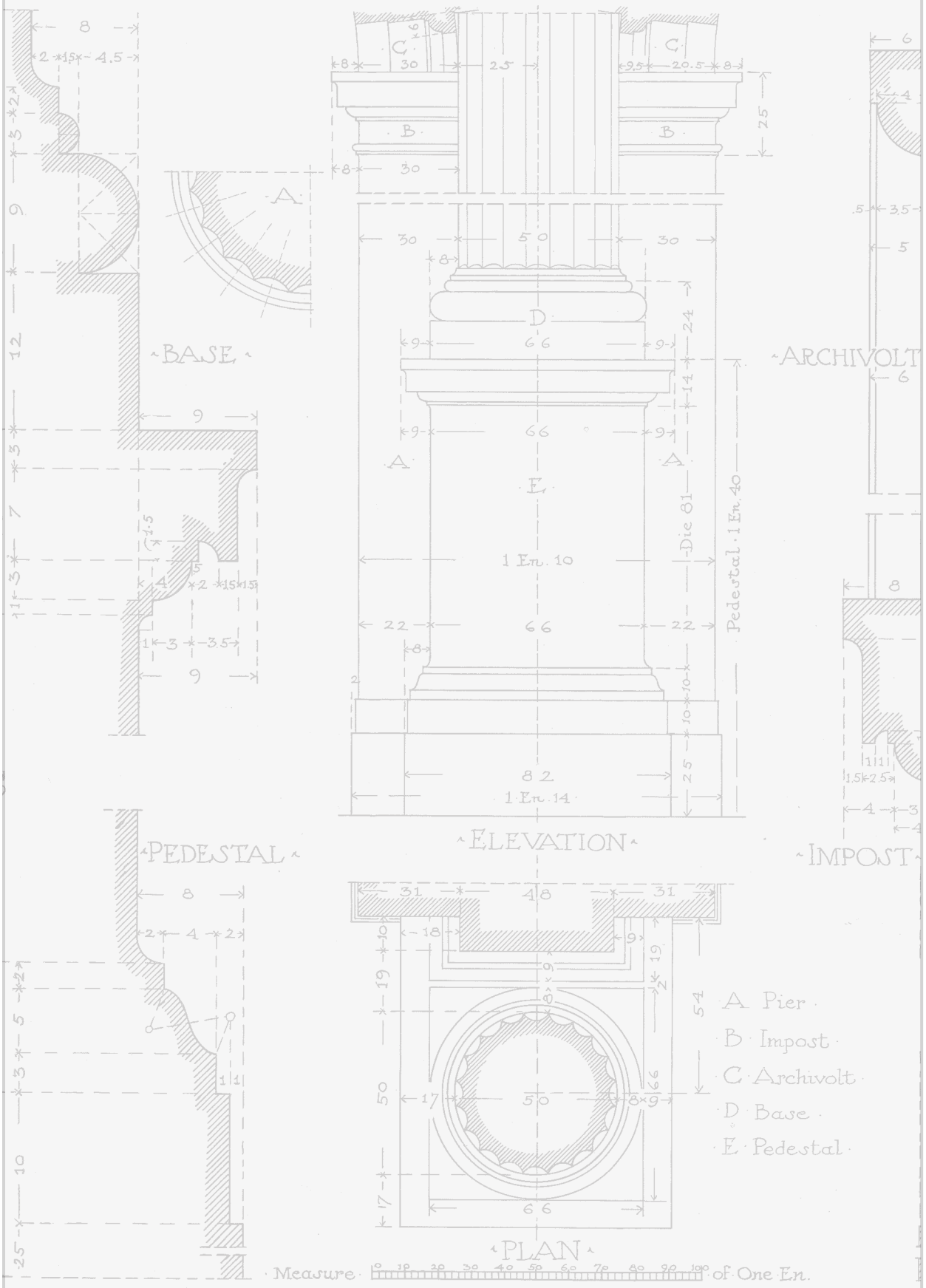
DORIC DETAILS



PEDESTAL & IMPOST

INTRODUCTION

From the developer that brought you the award-winning communities of Wyndham, Wellesley, Twin Hickory, Rutland as well as White Hall, HHHunt Communities is proud to present an additional neighborhood to the White Hall community.

These standards, for the addition to White Hall, are updated from the original White Hall Standards to reflect the existing community as well as current building trends. Likewise, while maintaining the high standards of the community, this document is intended to be simplified and easier to understand to assist the builders, homeowners and committees in achieving the goals of HHHunt and James City County.

These Standards are divided into four sections:

Section 1: Introduction
Section 2: Administration, Policies, Responsibility
Section 3: New Construction
Section 4: High Impact Lots & Requirements
Section 4: Modifications

THE OVERALL VISION

White Hall - The Existing Community

White Hall represents more than two centuries of nearly continuous occupation by the Geddy family. Near Toano in James City County, the original property was known as Whitehall Plantation. The farmhouse was built for William Geddy in 1805-06.

Recognizing the importance of the farmhouse, it was restored and positioned as a focal point and central feature/amenity for the neighborhood. Streets were arranged in a traditional Tidewater Virginia manner with a variety of lot sizes. Many homes have alleys and many front the parks and open space. Along Route 60, a view corridor to the farmhouse and adjacent historic church is enhanced by a significant amount of land that remains as open space. With the neighborhood centered round the farmhouse / amenity center the remaining property was designed around natural and preserved woodlands.



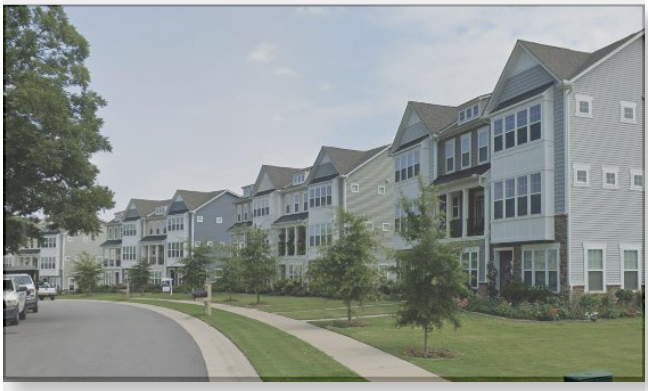
The farmhouse, amenity center and open space comprised approximately 40% of the total site which includes two ponds, a creek, multi purpose playing field,nature trails.



White Hall Signage


The Farmhouse / Amenity Center


Single Family Homes Streetscape


Townhomes Streetscape

White Hall - The New Neighborhood

The additional property at White Hall is essentially an extension of the best that White Hall offers:

- streets arranged in a traditional Tidewater Virginia manner
- a variety of lot sizes
- homes on alleys
- view corridors to an iconic architectural feature (the amenity center)
- open space / pastoral landscape along Highway 60
- connectivity
- preservation of natural areas

In addition to the above mentioned items, the master plan for the White Hall addition has a 'mews' that connects the existing amenity center with an additional amenity center. A mews is essentially a linear park where houses front without a street in between as they are accessed by allies.

Architecture in the new neighborhood will remain consistent with White Hall although with more variation in styles and colors.

Examples of Toano architectural styles (see the following page) in a contemporary setting as a guide for White Hall builders:








DESIGN GOALS

The criteria developed in these Standards are all based on the following general design fundamentals established originally for White Hall as well as additional fundamentals as deemed appropriate for current planning and construction trends. The White Hall Design Committee (WHDC) and/or the Modifications Committee ("MC") will use these fundamentals as the basis for review of any new construction, improvement, or modification that is not otherwise addressed by more specific criteria.

Maintain High Appearance Standards

Every home, structure or improvement shall meet minimum standards of design and material quality consistent with the level of quality established for the community, all while attempting to capture the architectural character of the Toano area. Construction workmanship of any improvement shall be of workmanlike quality and finished appearance consistent with professional construction standards and techniques.

Encourage Contextual Design

Every home, structure or improvement shall be of a size and use that is consistent with the standards of this community, and shall be designed in styles, shapes, sizes, massing, and colors to be of good proportions, harmonious with each other, consistent and supportive of the general architectural style of Toano and in the existing neighborhoods of White Hall and appropriate to the general appearance characteristics of the community.

As noted in "Historic Structures Survey of James City County" (page 43) by The Ottery Group, Toano and James City County are like most other communities in that several historical architectural styles are found. *"Of the architectural styles available in the database system, the most frequently occurring styles were the vernacular and vernacular derivatives of late nineteenth and twentieth century styles. These are classified as Late Victorian, Late 19th and Early 20th Century American Movements, and Other. An additional set of popular styles are mostly twentieth century in usage. The Colonial Revival style and Bungalow/Craftsman style have their roots in the revivalism and classical revival styles of the late nineteenth century. The earliest (chronological) styles such as Colonial, Early Republic, Georgian, and Federal up to distinctive mid-nineteenth century styles such as Gothic Revival and Italianate styles occurred the fewest number of times during the survey."*

Examples of Toano Architecture









Create a Balance of Community and Privacy

New homes and structures shall be designed and located on a lot in accordance with the Standards herein, and consistent with the character and setbacks of the community, so as to create a harmonious streetscape in relationship to existing structures, and so as not to compromise the privacy of any other lot below the general level enjoyed by other members of the community. The WHDC will judge the ability of each lot to meet this goal on its own merits based on subdivision design, lot orientation, topography, and vegetation. All streetscapes shall be in compliance with the James City County approved Streetscape Policy, as well as the overall community site plans and/or subdivision plans and related landscape plans, as approved by the County.

All Streets are Important

Houses on a **corner** play a stronger role in defining the character of the neighborhood than other buildings along the block face. They can act as informal entryways to the street, setting the tone for the streetscape that follows. Corner buildings must recognize their prominent location by embracing the public realm on both streets, regardless of which street the house faces, with a greater visual emphasis.

Public Spaces are Important

Some homes abut public spaces such as neighborhood parks, pedestrian or bicycle paths, or common areas. As with houses on corner lots, these homes have more than one facade facing a public space. Special attention is necessary to ensure that all of the building's facades and yards enhance the public realm

Preserve Environmental Quality

In order to preserve environmental quality, White Hall will follow all James City County Development Standards.

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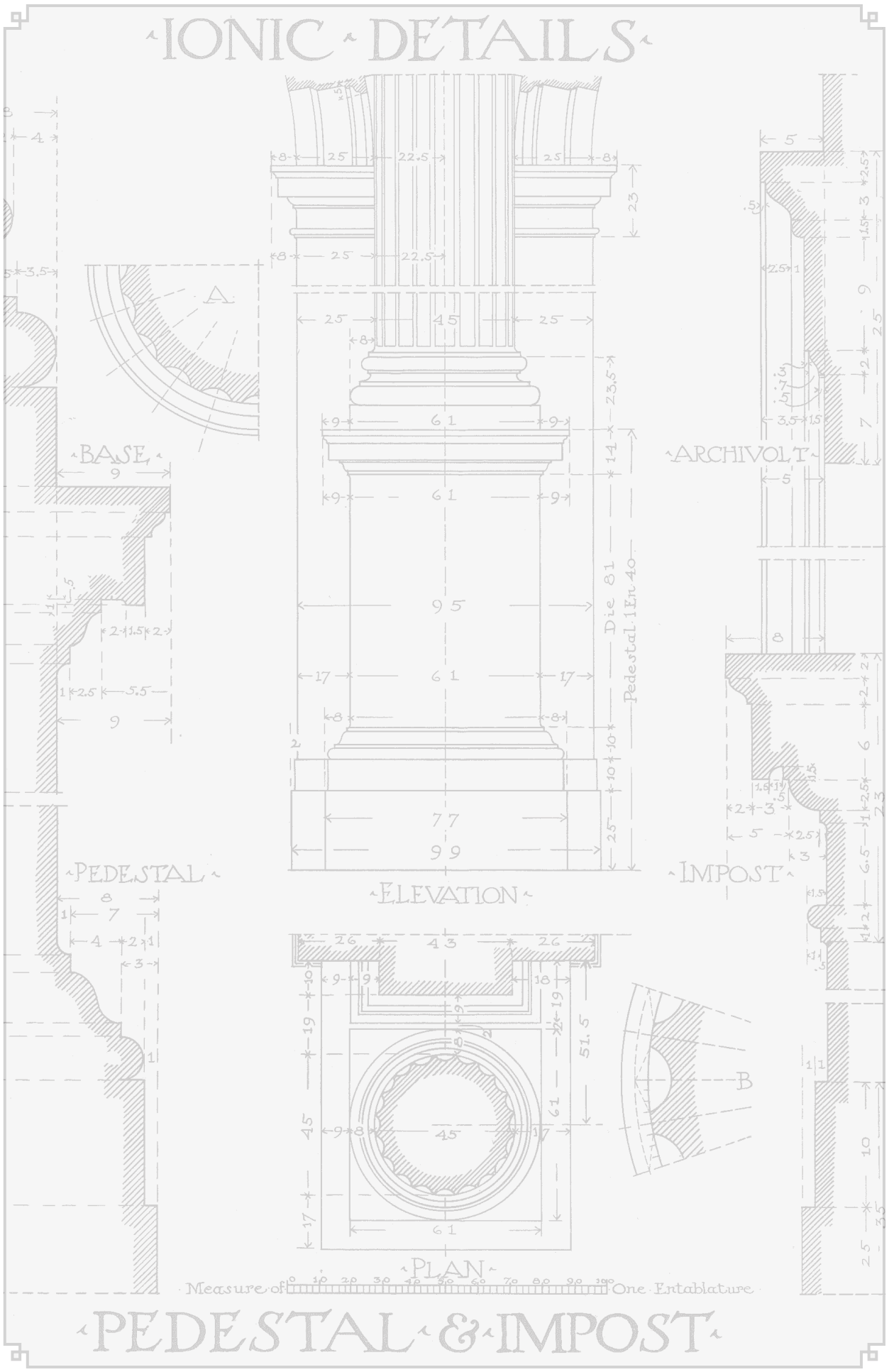
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ELEVATION
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Measure of One Entablature
PEDESTAL & IMPOST

2.1 - AUTHORITY TO ESTABLISH STANDARDS AND CONDUCT DESIGN REVIEW

2.1.1 Purpose of the Standards

Town planning has a rich history dating back to the Italian Renaissance and carried through England in the 16th and 17th centuries. English settlers brought this concept to the new permanent settlements in the American Colonies including the early town of Williamsburg, only a few miles from White Hall. Today, both the visual character and the quality of life in these older towns and cities are still held as a standard by which people judge desirable design and livability of urban environments. It is with this intent and spirit that the Design Standards for White Hall (the "Standards") have been developed.

2.1.2 Authority to Establish Standards and Conduct Design Review

The Standards are created by proffer to James City County (the "County"), and under the authority of the Declaration of Covenants, Conditions and Restrictions for White Hall Foundation, Inc. (the "Declaration"). The White Hall Design Committee (the "WHDC") is established under the same proffer and authority. The WHDC will use the Standards in its review of all applications for exterior improvements to any property in White Hall. **Any amendments to the Standards must be approved by Director of Planning.** These Standards may be modified or amended by the WHDC without the approval of the County only when such changes are administrative amendments which do not materially alter the standards for architectural review and/ or property modification. The County will receive a copy of amendments made to the Standards.

2.1.3 Review by the Declarant

The Declarant for the White Hall Foundation, Inc. (the "Declarant") reserves the right to review, evaluate, and approve, disapprove, allow or not allow the use of all builders' and/ or Realtors' marketing and/or advertising plans and programs related to the sale and construction of new homes to be built in White Hall.

2.1.4 Architectural Review Committee

The White Hall Design Committee (WHDC) has been established to implement these Standards and receives it's authority from Article XIII of the Declaration. Although the Standards contain a listing of specific requirements to be followed, the very nature of design is an individualistic process. Consequently, it is the responsibility of the WHDC to interpret the goals of the community and these Standards as they relate to design submittals and the WHDC has sole discretion in this regard.

2.1.5 Interpretation

The WHDC and/or MC shall judge compliance with these policies in questions of appearance, aesthetics, or infringement by design upon the rights of other residents. The WHDC and/ or MC preserve(s) the right to reject designs or to require modifications to designs including deletion, addition, or relocation of design elements in order to achieve compliance with these fundamentals.

2.1.6 Amendments and Deletions

The WHDC reserves the right to modify, add to, or delete from any specific section of the Standards from time to time. All changes must be approved by the Director of Planning prior to incorporation into these Standards. These Standards may be modified or amended by the WHDC without the approval of the County only when such changes are administrative amendments which do not materially alter the standards for architectural review and/ or property modification. All other changes deemed substantive in nature shall be submitted to the County for review and approval per the applicable sections of the proffers for the Properties.

2.1.7 Variations in the Standards

The Standards have been created to implement the design goals for the Declarant and to reasonably protect the quality and character of the community. The WHDC and/or MC, and/or the White Hall Foundation, Inc. (the "Foundation"), will endeavor to interpret, implement, and enforce these Standards in a consistent, fair and reasonable manner throughout the community. The WHDC retains all authority to interpret these Standards as they apply to each application, and also has the authority to allow variations from specific requirements based on site-specific conditions that may, in the sole discretion of the WHDC, warrant such an exception and/or when allowing a variation in the Standards would result in a better design and still remain consistent with the goals on pages 8 and 9. What constitutes a "better design" will be determined in the sole discretion of the WHDC. Neither the Foundation nor MC may grant any variation without approval from the WHDC. No variations shall be granted if the request is determined to conflict with proffered conditions or County approved documents and plans.

2.1.8 Design Standards Not A Warranty

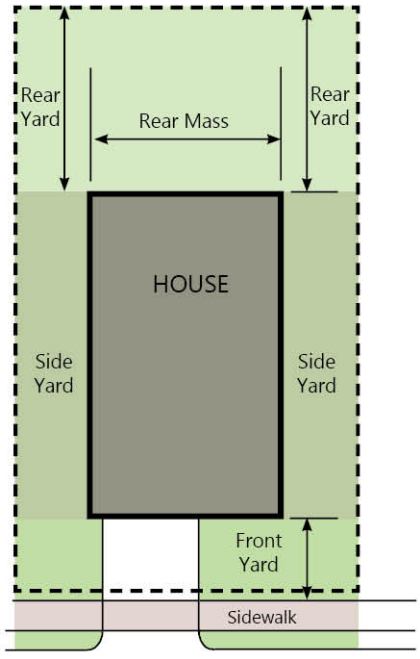
The White Hall Design Standards have been created to implement the Declarant's design goals for White Hall and to reasonably protect the quality and character of the community. The WHDC/MC, and the Foundation, will endeavor to interpret, implement, and enforce these Standards in a consistent, fair and reasonable manner throughout the community. The WHDC retains all authority to interpret these Standards as they apply to each application, and also has the authority to grant variations from specific requirements for site-specific conditions that may, in the sole discretion of the WHDC, warrant such an exception.

These Standards and the review activities of the WHDC do not constitute a warranty to any property owner or group of owners against any variation from these Standards occurring at any specific location in White Hall.

2.1.9 Definitions

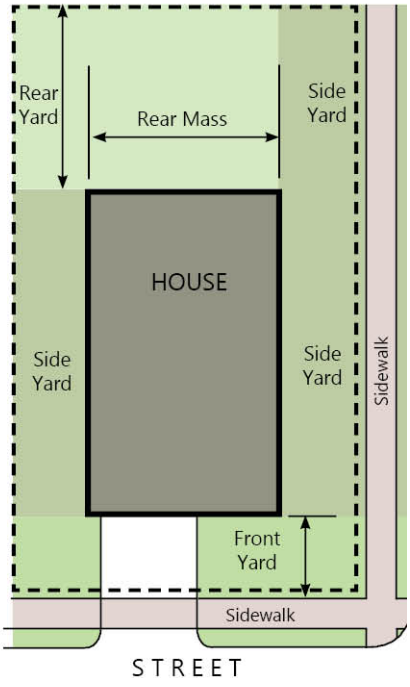
A. Yard Diagram and Terminology

Not to Scale



B. Yard Diagram and Terminology For Lots on Corners and Adjacent to Common Areas

Not to Scale



2.2 RESPONSIBILITY FOR OBTAINING APPROVALS

2.2.1 Property Owner is Responsible

A. New Construction and Reconstruction

Each builder, as the original lot owner, shall adhere to all standards and guidelines, presented herein, and shall first obtain required approvals from the WHDC prior to commencing clearing work or construction on any lot in White Hall. Builders shall be responsible for additional required submittal during construction, as described herein, and shall notify the WHDC when construction of each new home is completed so that the WHDC may conduct a final review and issue a Certificate of Compliance. Construction completion shall include all minimum yard and landscaping improvements as required in the Standards, and in accordance with all County approved documents and plans.

Each subsequent home or property owner is responsible for his or her property's compliance with these Standards. Any proposed improvements to be made to that property may affect that compliance, and the Declaration requires that the Owner obtain approvals from the WHDC and/or MC prior to making the improvements, in order to maintain compliance. This is true regardless of whether or not the work is being performed by the owner directly, by a contractor, or by any other individual.

B. Property Improvement

Each Owner is responsible for ensuring his or her Lot, as defined in Article I of the Declaration, is in compliance with these Standards. Any proposed improvements to be made to the Lot may affect compliance, and the Declaration requires that the Owner obtain approvals from the Designated Committee prior to making the improvements, in order to maintain compliance. This is true regardless of whether or not the work is being performed by the Owner directly, by a contractor, or by any other individual.

C. Notification

Property owner is responsible for notifying the Foundation, WHDC or MC, as applicable once an approved modification has been completed.

2.2.2 Complying with Proffers and Other Laws

In addition to approvals from the WHDC and/or MC, other approvals and permits may be required by the County, such as a building permit. It is not the responsibility of the Foundation, the Declarant, or the WHDC to provide notification of required permits nor to obtain any permits on behalf of a builder or property owner, nor to provide any guarantees or waive any legal requirements for compliance with any state or county law, with the Declaration or with the Standards.

For a complete list of the Proffers, notify the Planning Department at James City County.

2.3 PREPARATION OF SUBMITTALS

2.3.1 Introduction

Submittals shall be complete, accurate, and include sufficient detail to adequately explain the entire design. All requested information on the application forms shall be furnished. See Section 5 for all forms and applications.

Submittals with insufficient explanation of a design, including all visible details, and submittals that are incomplete or inaccurate cannot be accepted. The Designated Committee may, at its discretion, accept plans that are marked and initialed with late changes. Once the application is accepted, the applicant may be required to resubmit corrected and revised sheets.

All construction shall be completed in accordance with the application and the plans as approved. Any deviation from the approved plans shall be submitted and reviewed by the Designated Committee and given written approval prior to any construction. Applicants requesting design change approvals should consult with

the Designated Committee to determine if additional plans and specifications are required

For specific Submittal Requirements for new homes see Section 3.4 in New Construction.

For specific Submittal Requirements for modifications to existing home see Section 5.2 in Modifications.

2.3.2 Submittals Kept for Record

Submittals are kept on file for a record of approved designs. Therefore submitted drawings should be electronic originals, not the originals themselves.

2.3.3 Review Meetings

The WHDC and/or MC review(s) plans for new homes, modifications, additions and accessory buildings in regular, scheduled meetings. Contact the WHDC Chairperson or Community Manager for meeting times and dates.
To be included on the agenda, applications must be submitted no later than noon, 3 business days prior to the scheduled meeting day (for example, if the WHDC and/or MC meets on Wednesday, submittals for review would be due by noon the previous Friday). Any changes to these time frames for submittals are not considered a substantive amendment and do not require approval by the County.

To avoid construction delays, the WHDC and/or MC strongly recommends submitting plans for approval prior to or concurrent with applying for building permits from the County, if applicable.

If an independent MC is formed, that committee may establish its own deadlines for submittals exclusive of any WHDC deadline requirements.

Submittals will be reviewed generally within 30 days of receipt by the WHDC. If no response is received within 30 days, contact the WHDC in writing to verify the application was received, and request action on the submittal. If action is not taken promptly within 15 days following notification, the application will be deemed to be approved to the extent that it complies with all provisions of these Standards, and construction may begin. Action for this section means any response provided in writing to the applicant, including but not limited to, Conditionally Approved, Not Approved, or Deferred.

2.3.4 Non- Review Meetings

To facilitate completion of a project or where there are extenuating circumstances, reviews may be conducted periodically between regular, scheduled meetings. Request for such reviews should be made to the WHDC and/or Community Manager at least seven (7) days prior to the anticipated need for approval.

2.3.5 Review Basis

The WHDC and/or MC base(s) reviews of each application on its interpretation of the Declaration, and these Standards as well as on the graphic and written information presented.

Due to time constraints, the WHDC and/or MC reviews of all applications occur without personal presentations by the applicant.

If, in the applicant's opinion, extenuating circumstances exist which would justify a variation from stated guidelines, this information should be presented in writing with the application.

2.3.6 Approvals

An application is deemed to have been reviewed when notice is delivered to the applicant in writing. **NO VERBAL APPROVALS OR FINDINGS SHALL BE GIVEN.** The following four decisions may be rendered:

A. Preliminary Review

Not approved for construction. This is a review of early design drawings to give the applicant direction as to what the concerns of the WHDC and/or MC are likely to be regarding that design. Comments are given to the applicant but no approval to proceed is granted without WHDC and/or MC review of a complete submittal in accordance with the requirements of the Standards.

B. Conditionally Approved

The application, as submitted, is approved for construction subject to the stated conditions in the approval letter being met. If any of the conditions require

modifying the plan or facade elevations, the applicant is required to re-submit with the conditions addressed.

C. Not Approved

The application, as submitted, is not approved for construction. Reasons for the decision shall be given in writing. The Designated Committee may provide suggestions for revisions but is not obligated to provide design solutions. A "Not Approved" action requires an appeal or a complete re-submittal by the applicant.

D) Deferred

Not approved for construction, additional information is required. Reasons for the decision stem from a lack of information that once received should be adequate for a final decision. This action requires submittal of the requested information only, and not a full re-submittal, before any approvals can be given.

2.3.7 Appeals

Should an application be denied on the basis of the Covenants or Standards, and the applicant feels that the submittal was misinterpreted or that there are extenuating circumstances which should justify an exception from these requirements, the applicant may appeal to the WHDC.

Review	1st Appeal	2nd Appeal	3rd Appeal
WHDC	WHDC	Declarant (final appeal)	NA
MC	MC	WHDC	Declarant / Board*

See Detailed Information Below

First Appeal

WHDC: Should an application be denied by the WHDC on the basis of the Declaration or the Standards and the applicant feels that the submittal was misinterpreted or that there are extenuating circumstances which should qualify for an exception from requirements, the applicant may request, in writing, a meeting with the WHDC to personally present the submittal and any requests for a variation in design and approval. The applicant is invited to present the submittal, but the balance of the meeting shall be conducted in closed sessions as permitted in 55-510.1C. of the Virginia Code.

MC: If an independent MC is formed and the appeal applies to a decision made by that MC, the first appeal shall be to the MC in writing and with the same procedural guidelines detailed above.

Second Appeal

WHDC: If an applicant feels that he or she has been unfairly denied approval by the WHDC through the first appeal process, then a second appeal may be made in writing to the WHDC Chairperson, requesting that the submittal be sent to the Declarant for review. The Declarant may or may not request a personal meeting with the applicant and will issue a final decision in writing to the WHDC for communication to the applicant.

MC: If an independent MC is formed and the second appeal applies to a decision made by the MC, the second appeal must be to the WHDC in writing. The WHDC may or may not request a personal meeting with the applicant and will issue a final decision in writing to the applicant.

Third Appeal

WHDC: None Allowed

MC: If an applicant feels that he or she has been unfairly denied approval by the MC and WHDC through the appeals process, then a third appeal may be made in writing to the WHDC Chairperson, requesting that the submittal be sent to the Declarant for review. The Declarant may or may not request a personal meeting with the applicant and will issue a final decision in writing to the WHDC for communication to the applicant.

* If the rights of the WHDC have been conveyed by the Declarant to the MC, the final appeal would be to the White Hall Board of Directors instead of the Declarant. In this case, the White Hall Board of Directors may develop its own procedures for that appeal process. There are no further appeals provided.

2.3.8 Reuse of Previously Approved Plan

The WHDC will permit the re-use of previously approved designs within White Hall, but may also limit the use of such plans to avoid significant repetition.

Approval of a home for a given site does not guarantee approval on another site. The WHDC may issue restrictions on the number of re-uses of a house design on a street, a neighborhood and/or the entire community.

The WHDC reserves the right, at its option, to require significant modifications to a façade, or to reject the home design entirely, in order to control the amount of repetition.

See Section 3.10.5 for additional detail on proximity of similar houses.

2.3.9 Construction Changes

All construction shall be completed in accordance with the application and the plans as approved. Any deviation from the approved plans shall be submitted and reviewed by the WHDC and given written approval prior to any construction. Applicants requesting design change approvals should consult with the WHDC to determine if additional plans and specifications are required.

2.3.10 Final Compliance

A Certificate of Compliance is a written document from the WHDC, certifying that the builder has met all of the requirements under the Declaration and the Standards insofar as they pertain to new construction.

It is the responsibility of the builder to request a Certificate of Compliance within 15 days of completing construction.

If the WHDC identifies any items not completed in accordance with the Standards and/or Declaration, the builder must complete repair of these items within 30 days and request another inspection.

IN THE EVENT THAT THE SUBSEQUENT OWNER CLOSES ON THE LOT PRIOR TO RECEIPT OF A CERTIFICATE OF COMPLIANCE, IT BECOMES THE SOLE RESPONSIBILITY OF THE NEW OWNER TO ENSURE COMPLIANCE WITH THE STANDARDS AND/OR DECLARATION.

Please Note: A Certificate of Compliance is different from a Certificate of Occupancy. A Certificate of Compliance is issued by the WHDC while the Certificate of Occupancy is issued by the County.

2.3.11 Review Fees

See Section 3.4.3.

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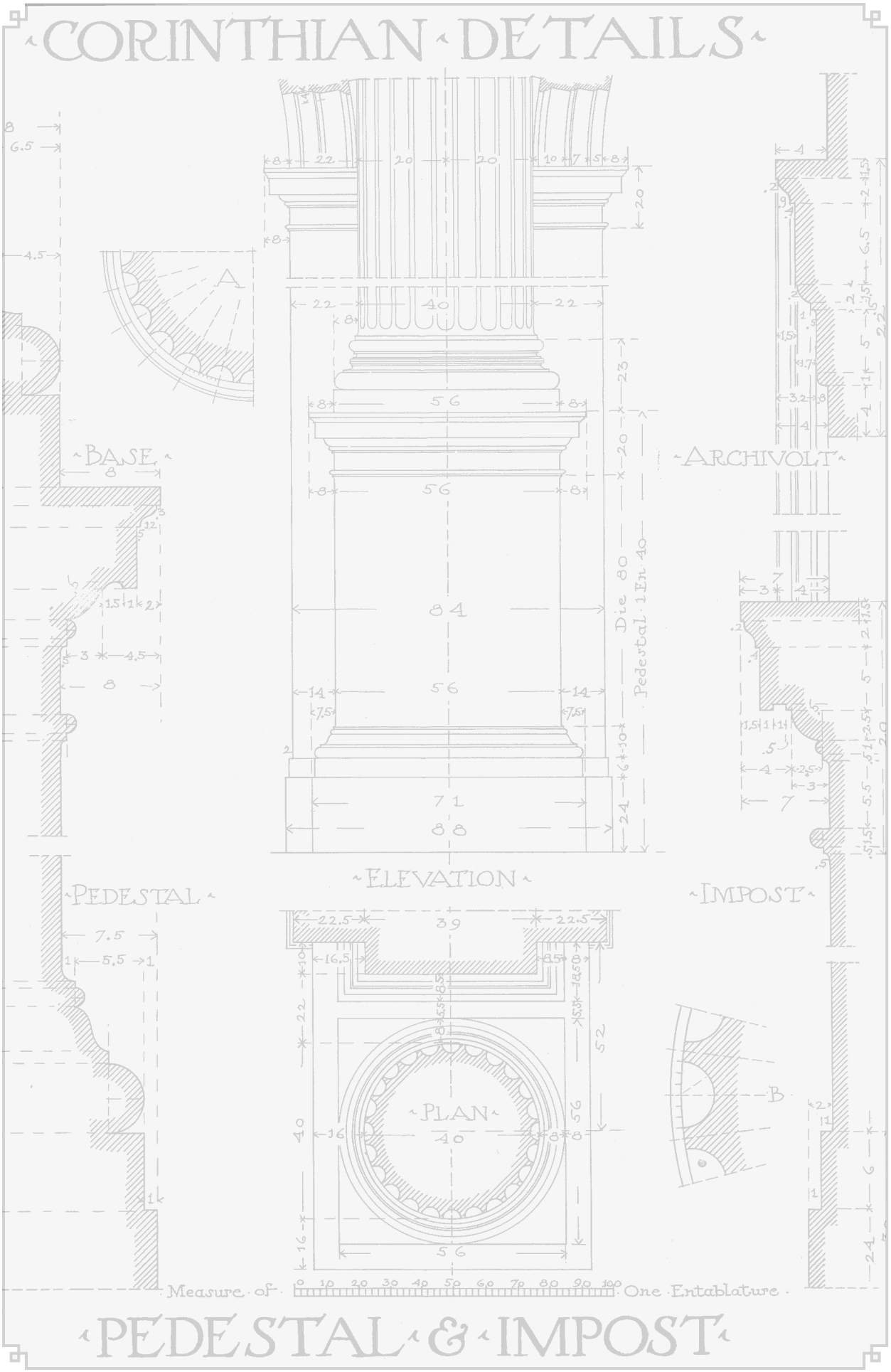
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PEDESTAL & IMPOST

3.1 INTRODUCTION

The **New Homes** section of these Standards is intended to guide home builders with particular design standards specific to a lot or home before, during and after construction. New construction is defined as any proposed construction that occurs before a Certificate of Occupancy is issued from the County.

Generally acceptable practices for complying with the architectural standards outlined in this document are on the following pages. However, in some circumstances, such as the addition of a fence or patio, you may need to refer to the **Modifications Standards** in Section 5 for additional information, standards and/or clarification.

In some cases proposed homes that are allowed elsewhere may be denied because of the property location. It is, therefore, important that home builders not assume that an application will be approved simply because a similar house has been approved elsewhere. The WHDC must consider the impact of each proposed change on the property in question, neighboring properties, the street, the neighborhood, and the community as a whole.

Keep in mind that some lots are unique and houses have a greater visual impact than others. These are considered to be 'high impact lots' and homes. When this occurs, additional standards are required for the property and the house. These are identified on the High Impact Lot map with additional / special standards.

The MC and WHDC will reach their decision on individual applications by considering the intrinsic merits of each proposal as well as all relevant surrounding circumstances. Please refer to Sections 1 and 2 for more information on the community design goals, interpretations made by the WHDC, design variations, etc. that will help the WHDC and MC reach their decision.

3.2 HOMES AND ARCHITECTURE

3.2.1 Style and Form

As noted in the Design Goals, the architectural styles of White Hall will be traditional Toano Virginia architecture.

Houses shall utilize simple rectangular massing with traditional gable, hip and/or shed roofs as appropriate to the size and shape of the house. Traditional dormers are encouraged on roofs, and may be required to visually break up large roof expanses.

The WHDC may reject highly stylized houses with overstated eclectic design elements. Houses with overly mixed styles, or houses with insufficient stylistic theme or treatment shall not be permitted.

Houses should be designed so as to reduce the visibility of the garage. The WHDC encourages, and in some cases may require a side load garage where the layout of the lot supports that feature. For garages that extend further forward than the main body of the house, the WHDC reserves the right to require additional architectural or landscape elements.

3.2.2 Facades

Exterior facades which face a public street shall have a formal arrangement and organization of all elements including doors, windows, porches, columns, cornices, trim and details such as shutters, quoins, jack arches and the like.

Houses with facades that face two public streets shall maintain the same qualities on both facades.

All other facades located at a distance greater than 10' from an adjoining structure, shall be of a residential scale with sufficient openings for light, view and air consistent with the residential scale of the community.

The WHDC reserves the right to require that large planes be broken up with additional windows, off-sets, or other details to maintain appropriate scale.

3.3 ZONING

The extension to White Hall is zoned R2-Cluster. All setbacks and zoning requirements should follow this zoning classification. Being respectful of neighboring homes, use similar setbacks, but vary up to 5' the placement of the main façade.

3.4 SUBMITTAL REQUIREMENTS

3.4.1 Submittals to be Complete and Accurate

Submittals prepared for consideration by the WHDC and MC are required to be complete, accurate, include sufficient detail to adequately explain the entire design and shall include drawings prepared as described below. All requested information on the application forms needs to be furnished. The WHDC/MC will not accept applications that are incomplete or inaccurate.

The WHDC/MC may require that color chips accompany color applications.

3.4.2 Summary of Submittal Requirements

Proper submittals include drawings that are neat, accurate, drawn to scale, and with sufficient detail to adequately explain the entire design. Insufficient explanation of a design including all visible details is cause for non-acceptance of an application. The WHDC, at its discretion, may accept plans that are marked in red with late changes to design features; however, the WHDC may require that the marked sheets be corrected and revised, and re-submitted:

New Home Preliminary Submittal Requirements

- Preliminary Review Application
- Review Fee
- Floor Plans
- All Exterior Elevations: For preliminary review and approval, the ground level can be flat, however, when actual plans on a specific lot are submitted and the ground level is sloped, the actual elevation is required. If there is a significant change, it may require a new review and decision by the WHDC. See Section 3.5 for additional detail.
- Indicate finish materials.

New Home Construction Submittal Requirements

- New Construction Application
- Review Fee
- Stake Out (Stake out building location on lot and trees to be removed and/ or saved and submit form when done and ready for inspection.)
- Site Plan
- Foundation Plan
- Floor Plans
- All Exterior Elevations: Show actual ground level, especially on sloped lots. If there is a significant change from Preliminary Approval, it may require a new review and decision by the WHDC. See Section 3.5 for more detail.
- Indicate finish materials.
- Exterior Color Selection (Submit on Color Form application)
- Finished Landscaping Plan (Submit on Landscape Form application with New Home plans)

Accessory Structures

- See Section 5.4.1 in Modifications

Other Site Improvements

- See Section 5 - Modifications

Fences:

- See Section 5.4.4 - 5.4.9 - Modifications

3.4.3 Architectural Review Fees

REVIEW TYPE:	CHARGE PER PLAN
Preliminary Review:	$200 per house plan
New Construction Review :	$75 per application if the house plan has been Preliminarily approved $275 per application if the house plan has not been preliminarily reviewed/ approved
Color Application Review:	First Review: No charge Subsequent reviews: $25
Landscape Plan Review:	First Review: No charge Subsequent reviews: $25

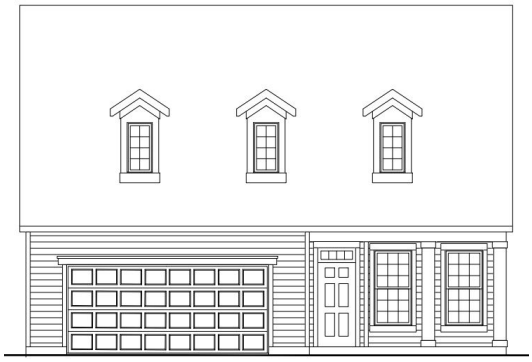
Modifications Review Fee: There are no fees for modification reviews by the WHDC. If an independent Modification Committee is formed, that committee may recommend its own fee schedule subject to approval by the White Hall Board of Directors.

3.5 PRELIMINARY ELEVATION APPROVALS

As per Section 2.3.6 - Approvals, the WHDC will review preliminary design drawings to give the applicant direction as to what the concerns are likely to be regarding that design. 'Preliminary Approval' is general and not lot or site specific. Once approval has been granted these elevations are the basis for review for final construction plans.

A house approved during Preliminary Review does not necessarily mean it is approved when changes occur based on site conditions. For instance, when grading alters the elevations (as shown below) it would need to be resubmitted with the actual ground level and revised elevation and re-evaluated by the WHDC.

For example:



Assume 'Model M' had a Preliminary Review and was approved by the WHDC.



The same 'Model M' would not have Preliminary Approval because of the facade changes due to the topography. It would require a new submittal and review by the WHDC.

3.6 GENERAL REQUIREMENTS

3.6.1 Construction Schedule

Construction for all new construction shall commence within six months of the date of written approval and shall be completed within one year from the date of the approval.

Approval for projects not started within six months of initial approval shall expire and a new application package shall be required if the improvement is still desired.

3.6.2 Access to Lots

Submission of an application to the WHDC will constitute permission from the Owner to the WHDC, the MC or its agents to have access to the lot before, during and after construction for the purpose of reviewing the construction and assessing compliance with all approvals per the application.

3.6.3 Signs

See Section 4.5.18 for other sign requirements.

A) Construction Signs

Only one construction sign will be permitted per home for the identification of the builder and must be based on templates approved by the WHDC. This sign shall not exceed 3 square feet and shall be permanently mounted on a suitable post. Larger signs showing architectural renderings and similar information may be installed with prior WHDC approval.

B) Initial 'For Sale' Signs

Initial "For Sale" signs, other than those posted by the Declarant, shall be limited to one sign per home and shall be placed in the front of the home. Initial "For Sale" lead-in signs are not permitted to be placed by the builder. The WHDC reserves the right to restrict the size, placement, and design of any initial "For Sale" signage as it deems appropriate.

3.7 SITE MANAGEMENT

3.7.1 Trash Containment

Trash shall be contained on a site or removed daily. Dumpsters shall be placed prior to the commencement of framing operations on any construction site, and shall be maintained until the trim-out operations are completed. All construction debris and all construction personnel trash (food and drink containers, wrappers, etc.) shall be disposed of in the dumpster and may not be dumped on the job site, on other sites, or on common areas within the community.

3.7.2 Hazardous and Toxic Waste

No petroleum based products or other potentially hazardous or toxic substances may be disposed of on any lot, any storm drain, any drainage ditch, stream or pond within the properties.

3.7.3 Portable Toilets

During construction, every general contractor shall maintain portable construction site toilets on construction sites. Single toilets may serve multiple sites as permitted by the County. Toilet doors shall face the interior of the site. Where a construction site borders a completed home, the toilet shall be at least 10' away from the adjacent lot line.

3.7.4 Construction Entrances

Construction entrances shall be limited to the future permanent driveway location. Rock fill in construction driveways will be maintained to prevent the carrying of soil into the street by construction vehicles. Any soil deposited on White Hall roads by construction vehicles shall be immediately removed and the street area cleaned by the builder.

3.7.5 Construction Vehicle Parking

Construction vehicles, trailers, and equipment may be parked on streets during construction hours only. Vehicles and equipment may not be parked on streets overnight, nor on weekends or holidays without prior notification to and approval from the WHDC Chairperson.

3.8 CLEARING AND LOT PREPARATION

3.8.1 No Clearing Without Approval

No clearing or work of any kind shall commence on any lot until architectural plans and specifications (including a stakeout form) as defined in these guidelines have been submitted and approved by the WHDC. For new construction, an on-site clearing review must be completed and written approval received. Overall clearing and grading shall be in compliance with County approved documents and plans.

3.8.2 Clearing of Trees

The clearing of mature trees (over 6" in diameter) shall be as approved by the WHDC representative on-site during site clearing review. The WHDC encourages the saving of mature hardwood trees and ornamental trees where possible in front yards. Saving trees in groups is also encouraged. Trees shall be cleared to permit the proper grading and planting of a finished yard as specified elsewhere in these Standards. Yards may not be left entirely in a natural state, except for approved natural areas.

Tree stumps shall be removed or cut at grade in a manner to conserve remaining trees. Cleared material may not be dumped on other sites or common areas within the community.

The WHDC may require the removal of additional vegetation that is considered horticulturally obnoxious and unsightly. What constitutes horticulturally obnoxious and unsightly is in the sole discretion of the WHDC.

3.8.3 Required Tree Replacement

On lots where no significant trees can be saved, or where clearing is subsequently performed beyond what was approved, the WHDC reserves the right to require the planting of new nursery-grown trees in accordance with the criteria in the Landscaping section of these Standards.

3.8.4 Tree Removal on Improved Lots

See Tree Removal in the Modifications Section.

3.8.5 Wetlands and Wetland/Resource Protection Area (RPA) Buffers

Where wetlands or wetland/RPA buffers exist in the community, no structures of any kind may be installed. This includes but is not limited to fences, play structures and sheds.

3.9 GRADING AND EROSION CONTROL

3.9.1 Prevent Erosion During Construction

Compliance with applicable government regulations and code requirements in preventing silt runoff is required. Erosion control devices shall be installed prior to construction as required by the County and/or Virginia State Code, and maintained for the duration of construction. Any mud or silt runoff onto adjoining properties, common areas, sidewalks or streets shall be immediately stopped and residue removed.

3.9.2 Grading for Drainage

Site shall be graded to direct water away from residence and prevent ponding, standing water, or poorly drained areas. Final grading for drainage should be in accordance with the master drainage plan for the community.

A. Where the natural topography conducts drainage from one lot across another lot, drainage after development may be restored to this natural direction unless otherwise required by the master drainage plan.

B. Do not alter the topography to re-direct drainage across adjacent properties. When possible, drainage shall be directed to the rear of the lot or landscaped areas.

C. Do not alter the topography so as to result in water that would otherwise normally flow across the lot, being trapped on adjacent lots.

3.9.3 Terracing and Retaining Walls

Where necessary to stabilize slopes, retaining walls, stepped terraces or other forms of permanent erosion control should be provided. Any permanent structures constructed for erosion control, such as retaining walls, must be approved by the WHDC.

Any retaining wall visible from a street shall be constructed of brick or stone as appropriate to the house. Other retaining walls may be constructed of interlocking unit masonry.

Timber retaining walls are not permitted.
All walls shall be constructed level and stepped as required for changes in slope.

For more information on the design of retaining walls, see Section 3.30.

3.10 LOCATING STRUCTURES ON A LOT

3.10.1 Proximity of Similar Townhouses

Note: Building refers to two or more connected units.

Unit refers to the individual townhouse that when connected with other units create a building.

Along the front façade of each townhouse building of five units or less, no two units or color scheme can be repeated. In buildings of six or seven units, one unit is allowed to be repeated provided its separated by two other units and colors are different. The first two adjacent units on either side of a unit shall present a "complete and discrete" vertical façade composition. Façade composition is the arrangement and proportion of materials and elements (e.g., windows, doors, columns, bays). "Complete and discrete" is a complementary but distinct composition of materials, fenestration proportions and color.

3.10.2 House Siting Requirements

A) Setbacks:

See R2 Cluster Zoning in James City County.

Varying building setback along the street is encouraged. Be respectful of neighboring houses and use similar setbacks, but vary up to 5' the placement of the main façade.

B) Orientation to the Street:

The building façade containing the primary entrance is considered as the primary façade and should face a public street. Corner lots should prioritize the frontage on

the more primary or public street. Houses in cul-de-sacs shall generally face the center of the cul-de-sac. Where site conditions make this unnecessarily difficult (in the sole opinion of the WHDC) the WHDC may approve an alternative site orientation.

3.10.3 Additions

See Modifications Section 5.3.1.

3.10.4 Accessory Structures

See Modifications Section 5.3.2.

3.10.5 Proximity of Similar Houses

Once house models have been preliminarily approved, a 'grid' will be prepared by the WHDC indicating which houses are considered 'the same or very similar' and cannot be located as described below and shown in the diagrams.

A) The same or very similar elevations or color schemes **shall not** X be located:

1) adjacent to;
2) directly across from on another;
3) diagonal from one another.

B) The same or very similar elevations or color schemes **may not** X be located:

1) 'two houses down' in both directions.

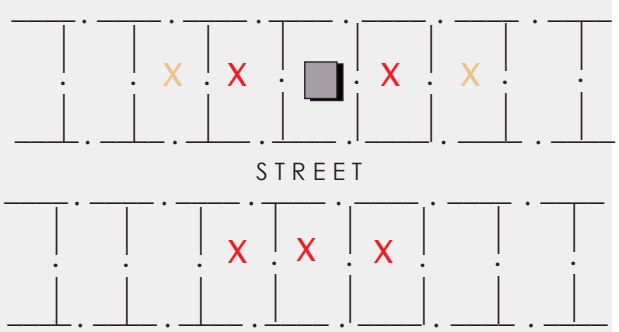
These will be reviewed on a case-by-case basis.

C) Homes with the same or very similar elevation or color scheme **shall not** X be located adjacent to one another on a cul-de-sac as shown to the right.

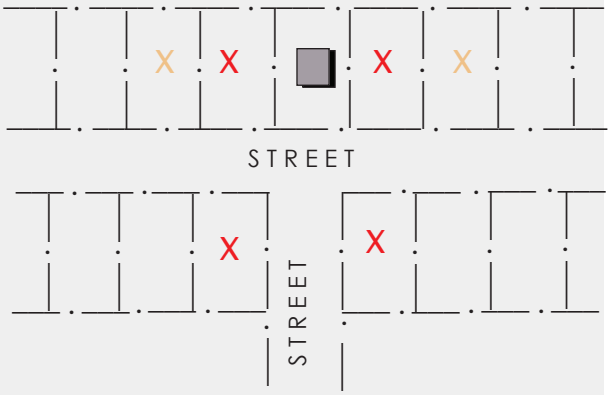
Homes with the same or very similar elevation or color scheme **may not** X be located a cul-de-sac as shown in the diagram. These will be reviewed on a case-by-case basis.

d) Houses interrupted by a street or common area will be reviewed on a case-by-case basis.

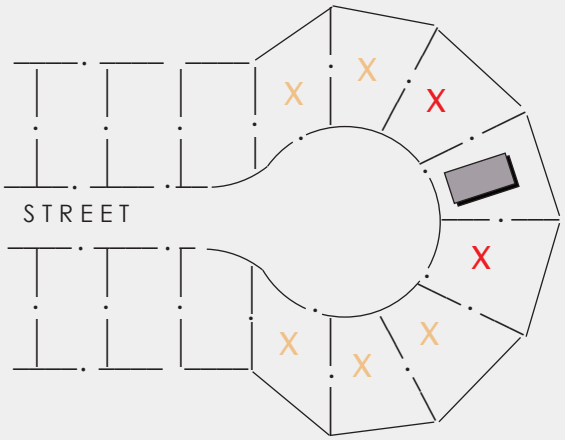
Example A
Typical Street for Single Family Homes



Example B
Intersection for Single Family Homes



Example C
Cul-de-Sac for Single Family Homes



X Lots where the same or similar houses or colors shall not be built

X Lots where the same or similar houses or colors may not be built but will be reviewed on a case-by-case basis

3.11 VINYL SIDING ELEVATIONS

If the front wall elevation of a single family house has more than 75% vinyl siding, a minimum of three of the following features on this page is required. Note: for calculation purposes, doors, windows, garage, trim features, gables, etc. are not used in calculating the wall surface.



a) When a roof or roofs face the side yard, a decorative attic vent or window on the front elevation



b) When a roof or roofs face the side yard, a trim band on the front elevation to separate the attic from the living space



c) When a roof or roofs face the street, at least one dormer



d) A foundation material minimum



e) A Change in siding patterns



f) Shutters



g) A change or an architectural offset of at least 18" in the façade elevation (garage does not count)



h) A projecting architectural element such as an accent roof or pergola above garage doors (see section 3.19)



i) A change in siding colors (trim, door, foundation or garage doors do not count)



j) A front porch at least 25% of the width of the front façade

3.12 COLORS

3.12.1 Types of Approved Finishes

A) The WHDC/MC must approve all exterior colors prior to painting or the application of prefinished materials.

B) Vinyl siding shall be prefinished with an integral color, as approved, and shall not be painted.

C) Stains for approved wood siding will be considered by the WHDC/MC on a case by case basis.

3.12.2 Criteria for Judging Color

A) The same or very similar color schemes may not be used on homes that are side by side, directly across, or diagonal from each other or homes on corners that back up to each other.

B) The WHDC/MC may reject a proposed siding color if it determines that the color has been used on too many houses in the same neighborhood or on one street. The WHDC/MC have sole discretion in the determination of what colors are or are not acceptable.

C) Color selections are not limited to a restricted list; however, colors should generally be harmonious with each other and with other finishes such as masonry foundations and roof colors. Roof colors shall be submitted at the same time as house colors.

D) Additions and accessory buildings must be finished in the same colors as the house.

3.13 FOUNDATIONS

Houses shall be built on a minimum 12" continuous foundations over a basement or crawl space.

All visible portions of exterior foundations shall be constructed of brick or stone. For houses with primary facades constructed entirely of brick or stone, the foundation shall match the facade.

When required, foundation vents on street facing facades shall be wood or PVC traditional louvered vents, or as otherwise approved by the WHDC. Decorative vents shall match the house trim color.

Stepping the siding down below the first floor level is not permitted on any elevation of the house except for the rear elevation with walk-out basements. For walkout basements, the siding may extend to the foundation only on the rear elevation. The WHDC reserves the right to require additional windows if the siding extends to the foundation on the rear elevation.



Siding should be above the foundation as shown here



Siding should never be sloped



Siding should not be stepped

3.14 SIDING

3.14.1 Modifications by the WHDC

Modifications to wall surfaces including but not limited to the addition of windows, doors, or breaks in the surface, may be required by the WHDC in order to mitigate large unbroken wall expanses. This may be in addition to the minimum number of required windows.

3.14.2 Materials

Except as provided herein, house walls shall be faced with brick, stone (natural or cultured), horizontal lap siding, shingles or board and batten. Plywood, or metal siding is not allowed. Other materials will be reviewed on a case-by-case basis.

Horizontal lap siding, shingles and board and batten may be manufactured from natural wood, cement fiber board or premium vinyl (minimum .044" thickness). Other products will be considered on a case-by-case basis.

A maximum of four main wall materials or patterns may be used on any one facade of any home. Where multiple materials or patterns are used on a single elevation or a change in the elevation, material changes shall end in a logical place such on an inside corner to give the impression of three dimensionality or transition with the trim.

Portions of facades that are accessory to the main facade may use other materials as appropriate to the design and as approved by the WHDC, such as stucco in pediments, shiplap siding on dormer sides, or vertical board and batten siding on dependencies.

Materials used on the side and rear of the home must be consistent with one of the materials used on the front elevation.

Painted siding shall be painted with oil or latex based exterior house paint. Semi-transparent stains and clear finishes are generally not permitted.

See Section 3.13 for step-down siding.

See Section 4 for additional requirements for **High Impact Lots** requirements.

3.14.3 Criteria for Installing Vinyl Siding

A) Vinyl installation shall meet or exceed the standards in the handbook of the Vinyl Siding Institute, and the conditions stated below.

B) In any clear run of siding (between openings, corners, projection, etc.) of:

1) lengths of 12'-0" or less: only single length panels shall be used. **No joints are permitted.**

2) In clear runs greater than 12'-0" but less than 18'-0" in length: a maximum of one vertical joint is permitted in any horizontal line of siding. *

3) In clear runs greater than 18'-0" but less than 30'-0" a maximum of two joints are permitted in any horizontal line of siding.*

* In clear runs of siding over 12'-0": joints must be placed in a random pattern in the wall. No "stair-step" joint patterns shall be permitted.



'Stair-Stepping' siding is not permitted

C) On the left and right sides of the house all joints shall face the rear of the house / lot.



Seams (as shown above) should not be visible from the front of the house

D) When lap siding is used on dormers, it must be horizontal and not parallel to the roof pitch.



Correctly Installed



Incorrectly Installed

3.15 EXTERIOR TRIM

3.15.1 Door and Window Trim

Traditional windows on public street facing facades shall be trimmed with traditional 2" brick moldings, wide moldings, or shall have shutters (if appropriate to the style of the house).



Window trim is too small



Window trim is sized appropriately

Decorative window heads are not required in facades with lap siding, but may be permitted as appropriate to the architecture.

In brick or stone facades facing a street, jack arches or a soldier course are required over straight windows, masonry arches are required around circle-head or ellipse-head windows

On corner lots or high impact lots, all trim (including windows) on the facade facing the street or common area shall be a minimum of 4" or match those on the front facade.

3.15.2 Fascia and Soffits

A) Fascia shall be a minimum of 6" and may be aluminum wrapped only if pre-colored.

B) Soffits shall be the same color as the fascia.

3.15.3 Cornices & Eaves

A) Eaves shall generally be between 12" and 16" wide unless otherwise justified by the architectural style, in the opinion of the WHDC.

Small eaves such as on dormers shall be sized appropriately to the dormer.

B) All primary facades shall have a minimum three-member cornice and eave consisting of soffit, fascia and gutter.

c) Gable ends with projected box rakes shall contain compatible elements to the main cornice and eave.



'Pork Chop' eave returns are not allowed



Eave returns should return as shown in the picture or carry through to the opposite side.

d) Open end roof rafters (as shown below) may be permitted if appropriate to the style of the home (i.e. farmhouse or craftsman).





When appropriate open end rafters are allowed

3.15.4 Other Exterior Trim

A) Corner boards shall be a minimum of 6"

B) Frieze board trim of 4" is required on all front facing gables

C) Trim material shall be consistent with the exterior siding material. Mixing of materials is not permitted.

3.16 WINDOWS

Aesthetic design consideration shall be given to the location of all windows and doors that face the front of the house or any other street. All windows and doors shall be of a style and size that is appropriate to the design of the home. Circle and ellipse head windows are permitted. The WHDC/MC reserves the right to require additional windows or different styles, sizes or locations of windows when, in its opinion, these changes are necessary to maintain the aesthetic quality of the facade.

3.16.1 Design

A) Double-hung and Single-hung

B) Casement

C) Bay windows

1) Must be wide enough to fill each bay facade without filling with siding. May include a picture window in the center panel of the bay.

2) Cantilevered bay windows are not permitted on the first floor of street facing facades. Bay and box windows may be cantilevered on the second floor but must include decorative supports.

D) Circle, ellipse head, custom or accent windows as appropriate to design. Specialty windows are encouraged in gables but the WHDC reserves the right to limit use of these specialty windows.

E) No iron, steel, or similar bars shall be installed over any windows or doors.

F) Window grid and trim color will be considered on a case-by-case basis and must be submitted with all exterior color selections/ modifications.

3.16.2 Material

A) Wood

B) Clad wood (vinyl clad or metal clad)

C) Solid PVC if designed in wood profile

3.16.3 Location

A) Window styles on all facades shall be the same as windows on the front façade. Smaller decorative windows will be considered on a case-by-case basis.

B) No window shall be located closer than 18" from a house corner unless otherwise approved.

C) The WHDC reserves the right to require changes to window placement even if this requires floor plan changes.

D) See Section 4 for additional requirements for window placement on high impact lots.

3.16.4 Minimum Number of Windows

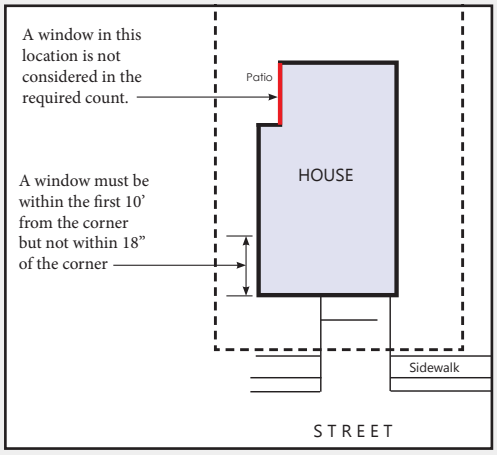
A) Front Elevations:

The quantity and location of front windows for all houses will be reviewed on a case-by-case review.

B) Side Elevations for Non-High Impact Lots

A minimum of three full size windows are required on the first floor and two on the second floor. For second floors where the roof is sloped and the second floor length is reduced, the WHDC will consider one window on the second floor.

Windows placed in recesses in the elevation when not visible from the street do not count (see diagram below).



A double window counts as one window.

At least one window must be within 10' from the front corner of the house.

C) **Side Elevations for High Impact Lots**

See Section 4

3.16.5 Gable Windows

A) Gable windows shall be centered in the gable

B) Horizontal sliders are not permitted.

C) See High Impact Lot Requirements for required gable windows.





3.17 SHUTTERS

Shutters shall be wood or vinyl, shall be appropriately sized to the window opening, and shall be operable with hinges and shutter dogs or appear to be operable with faux hardware. What is considered "appropriately sized" is in the sole discretion of the WHDC.

Shutters are not recommended on twin windows and are not permitted on triple or larger multiple windows.



Shutters, as shown on the left side of the house, are not permitted on double windows.

Shutters on the right side of the house are permitted but the ones in this photo are sized too large. They should be one-half the width of the window unless they are Bahama shutters.



Shutters in this illustration are sized correctly

3.18 DOORS

3.18.1 Entry Door Design

Door shall be constructed of wood, metal clad or wood veneer fiberglass.

Standard six-panel doors will generally be permitted as the minimum for the main front door of the house. Front doors may include side-lites and transom. Double front doors, doors with double side lites, and special design panel doors and doors with half lites will be judged on the basis of their compatibility with the house architecture.

Excess ornamentation not consistent with other ornamentation on the house, is prohibited.

In general, single full lite doors or traditional multiple lite doors which match the design characteristics of the doors they cover will be approved.

Door styles shall be submitted and reviewed for approval the WHDC and/or MC.

3.18.2 Entry Door Material

A) Wood

B) Metal clad

C) Wood veneer fiberglass

3.18.3 Storm/Screen Doors

See Section 5.3.5 in Modifications

3.18.4 Sliding Doors

Sliding doors may be installed on side and rear façades only. Door styles shall be submitted for approval and shall be consistent with the architectural style, character, and color of the home.

3.18.5 Garage Doors

See Section 3.19.

3.19 GARAGES

3.19.1 Design

A) The front plane of the garage should be flush to or behind the front plane of the house or front porch. If, in a hardship case and in the opinion of the WHDC, a garage is allowed to project beyond the front plane of the house or porch by more than 5', an architectural detail, such as a window, must be added to the side of the garage facing the front door of the home.



B) Three-car garages on the front facade are not allowed.

3.19.2 Garage Doors

A garage door can change the aesthetic value of a house since it can comprise a significant portion of the facade. The style and detailing should complement the overall look of the house. Just as any part of the house design and the design, type, material and style of a garage door needs careful thought.

A) Any garage doors visible from a street shall use an upgraded garage door. An upgraded garage door is any door with a minimum of three (3) enhanced features. Enhanced features shall include"

i. A projecting architectural element, such as an accent roof or pergola, above garage doors,

ii. windows,

iii. raised panels,

iv. decorative panels,

v. wood grain panel,

vi. arches, and

vii. hinge straps or other architectural features on the exterior that enhance the entry (i.e. decorative lintels, arches, columns, keystones, eyebrows, etc.).



A garage door such as this would not be allowed



The same house as the picture above but with a garage door that is acceptable.

B) For two car garages, two single doors are encouraged over one larger door.



For two-car garages, two doors is preferred

C) In the event the distance between the top of the trim of the garage door and the bottom of the trim of the second floor window(s) is within a continuous plane with the same siding pattern and color, and is greater than 6', the expanse of siding on the front façade of the home above the garage door must be mitigated by a change in siding patterns and/or color, or a feature such as a pergola, roof extension, cornice return or a band board. This is not required when the first floor and second floor are not a continuous plane.



This example would not be allowed since the spacing between the top of the garage door and the window or gable is greater than 6'.





The two examples above illustrate solutions to mitigate the expanse of siding between the top of the garage door and the second floor window or gable.

3.19.3 Garage Exterior Lighting

A) Number of Lights

For one-car garages, one light on the side of the door that's closest to the front walk is required or one light on each side of the door.

For double doors, lights should be placed on the left and right sides or between doors.

For two-car garages with one door, one light on each side is required.

B) Size of Lights

Exterior garage lights that are too small or too large will detract from the curb appeal of the house. As a general rule of thumb, fixtures should measure one-third to one-quarter the height of your garage door.

To calculate the specific fixture size you need, multiply the width of your garage door by 0.25 for a single door and 0.33 for a double door. Many fixtures include a suggested light source and estimated beam width to help you double-check your calculations.

C) Placement of Lights

Depending on the light fixture design, the center of the light should be approximately 5 1/2 to 6' from the ground.



Not Acceptable
This style of light should be beside the door



Not Acceptable
Lights are too small and are placed to high





Acceptable: Light size and placement are correct

3.20 ROOF AND ROOF ACCESSORIES

3.20.1 Main Roof Material

A) Dimensional architectural shingles (min. 30 year warranty)

B) Pre-finished standing seam metal

C) Slate (real or imitation)

D) Cedar shake (real or simulated)

E) Color and style of main roof will be considered on a case-by-case basis based on compatibility with the architecture of the home.

F) Flashing shall be real copper or pre-finished aluminum in bronze or black.

3.20.2 Secondary Roof Material

A) If not the same as the Main Roof Material, only one other roof material can be used on secondary roofs.

B) Dimensional architectural shingles (min. 30 year warranty)

C) Pre-finished standing seam metal

D) Real copper standing seam metal

E) Slate (real or simulated)

F) Cedar shake (real or simulated)

G) Color and material for secondary roofs will be considered on a case-by-case basis based on compatibility with the architecture of the home.

H) Flashing shall be real copper or pre-finished aluminum in bronze or black.

3.20.3 Roof Slope

A) The minimum roof slope of main house roofs shall be 8 in 12. Minor secondary roofs with slopes less than 8 in 12 may be permitted at the discretion of the WHDC/MC.

B) Roof slopes shall be consistent with the style of architecture of the house. The WHDC/MC may require steeper slopes for aesthetic reasons.

C) Small areas of flat roofs may be permitted when concealed from view from streets and amenities and integral to the house design.

D) Eaves/overhangs shall be a minimum of 12" and a maximum of 24". Other sizes can be reviewed on a case-by-case basis.

3.20.4 Gables & Dormers

A) Dormer windows & eyebrow window shall be consistent with the style of architecture of the house

B) Dormers are intended to only be large enough to house a window(s) and appropriate trim. Siding can be used when appropriate on a case-by-case basis and approved by the WHDC.



Unacceptable
Dormers are too large for the window



Acceptable
Dormers are appropriately sized for the window

3.20.5 Gutters and Downspouts

A) Color shall be real copper or pre-finished aluminum to match the color of the trim adjacent to the gutter/downspout to complement the overall color scheme.

B) Downspouts shall include short turnouts no longer than 8"at outlets or be piped below grade.

C) Downspouts shall not block sidewalks or access to garage doors or trash corrals.

3.20.6 Flashing

Highly visible roof flashing shall be real copper or prefinished to match the adjacent building material color. Painting is acceptable for less visible flashing however no exposed mill finished flashing is permitted.

3.20.7 Ventilation

A) Attic Vents

1) In general only continuous eave ridge vents, or power vents incorporated into the architectural elements of the house are permitted. If additional attic vents are needed, they shall be low profile designs.

2) No protruding attic vents are permitted on front elevation

3) Ridge vents shall be covered with shingles. All other attic vents shall be finished or painted to match roof shingles.

B) Gas flues & plumbing vents

1) Gas flues for heaters and fireplaces shall be no larger than 8" in diameter.

2) No roof penetrations or accessories shall be located on the front roof plane of the home.

3) Flues and plumbing vents shall be black or painted to match the roof shingles.

3.20.8 Skylights

Skylights are not permitted on any roof facing a street.

3.21 CHIMNEYS AND FLUES

3.21.1 Chimneys

A) Masonry chimneys are required on any façade or roof plane that faces a street (front or side). All chimneys shall have masonry foundations. Sided chimneys are permitted on roof planes or facades that do not face or are visible from a street.

B) Cantilevered chimneys are not permitted.

c) Chimneys shall be appropriately sized in proportion to the size and height of the house.

3.21.2 Flues

A) Direct-vent fireplaces are not permitted on any front facade.

B) All the exterior materials and finishes used to enclose the fireplace box shall match the adjacent façade.

C) Cantilevered direct vent fireplaces are not permitted on the front and side elevations. A continuous foundation to match the foundation of the house is required. Cantilevered direct vent fireplaces are not permitted on the first floor level of the rear elevation, but will be considered on a case-by-case basis only if the fireplace is surrounded by a deck.

3.22 LATTICE

When lattice is used for porches, decks, and any other use, it cannot have openings 2.75" or larger. Depending on the architectural style of the house, it can be vertical or the traditionally angled.

White is the preferred color but the WHDC will review other colors on a case-by-case basis.



Unacceptable installation



Acceptable installation

3.23 PORCHES AND DECKS

3.23.1 Definitions

Porch: a covered shelter projecting from the front, side, or rear entrance of a building



Short Porch: porches less than 1/3 of the width of the façade excluding a garage



Portico: a structure consisting of a roof supported by two columns or columns at regular intervals, typically attached as a porch to a building



Stoop: a platform that leads to the entrance of a house; often with stairs leading to it



Balcony: a platform enclosed by a balustrade on the outside of a house with access from an upper-floor window or door



Patio: a paved outdoor area situated directly on the ground typically adjoining a house



Deck: an elevated outdoor platform without a roof that extends from a house



3.23.2 Front Porches and Stoops

Front porches are encouraged to promote a pedestrian friendly community. The WHDC reserves the right to require a minimum number of porches on each street.

A) Design

1) Minimum porch depth: 5'

2) All front entry stoops and extended front porches shall be consistent with the architecture of the home and constructed of finished materials to match the house.

3) Any wood or composite steps as part of a front entry feature shall have closed risers.

4) Band boards, handrails and railings shall be painted wood or metal of a design to match the character and style of the house.

5) Columns supporting roofs of porches and covered stoops shall be appropriate to the character of the house.

6) Individual porches and porticoes shall be one-story in height.

7) Stacked first and second floor porches and porches with upper open floors are permitted

B) Foundations

1) Front stoops and short porches (1/3 the width of the front facade not including the garage) shall be constructed with continuous foundation walls.

2) Full front porches shall be constructed with a continuous foundation wall or masonry piers a minimum of 12" wide to match the foundation material of the home.

3) Spaces between piers under porch floors shall be enclosed with framed and finished lattice or other finished underpinning. Landscaping is required as per Section 3.29.

Foundation Examples



Continuous foundation



Foundation with brick piers



Lattice between piers



Architectural foundation wall



Wood stairs and lattice

C) Flooring

1) Exposed aggregate concrete

2) Broom finished concrete

3) Finished paving material (stone, tile or brick)

4) Finished wood (stained or painted)

5) Trimmed composite decking boards

6) Unfinished treated wood decking is prohibited.

D) Handrails, Railings & Band Boards

1) Handrails and railings shall be vinyl, finished painted wood or metal.

2) Band boards shall be aluminum or finished and painted to match the trim.

3) Pickets shall be supported on top and bottom rails that span between columns.

4) Colors of pickets, railing and band boards shall be reviewed on a case-by-case basis.

5) Front steps can be masonry to match the foundation or wood or composite to match the finish of the porch. Any wood or composite steps as part of a front entry feature shall have closed risers.

E) Columns

1) Columns shall be appropriate to the architecture of the home and may include one of the following:

i) Tapered round (Tuscan or Doric)

ii) Tapered square (min. 8" at base)

iii) Square box (min. 8" square)

iv) Masonry piers

v) Other styles of columns, arches, walls, and the like shall be considered on a case-by-case basis.

3.23.3 Side Porches

A) Side porches shall match the front porch in materials and design, but may be scaled down as appropriate to the porch.

B) Side porches may be constructed on masonry or wood piers except that porches on **High Impact Lots** shall be supported on masonry piers or continuous masonry wall to match the front porch. Posts should be a minimum 6" square box columns

C) Columns, rails, band boards, trim and the like, shall be finished to match house or front porch

D) See 3.20 Secondary Roofs for roof material. Where porch roof material is the same as another roof material on the home, the colors of those materials must match.

3.23.4 Rear Porches

A) Rear porches should match the front porch in material and design, but may be scaled down as appropriate to the porch.

B) Flooring, columns, rails and piers must, at a minimum, match like materials for decks as detailed in 5.3.4.

C) Spaces between piers 2' above grade (to the bottom of the band board) and less than 8' above grade shall be enclosed with framed and finished lattice or other finished underpinning. Screening with landscaping alone is not permitted.

D) May be screened with insect screen.

E) See 3.20 Secondary Roofs for roof material. Where porch roof material is the same as another roof material on the home, the colors of those materials must match.

F) **For High Impact Lots**, the porch must be a minimum of 7' from the property line adjacent to the street and appropriately landscaped.

3.23.5 Rear Decks

A) Design

1) Decks shall be supported on minimum 6 x 6 wood posts.

2) Spaces between piers 6" above grade (to the bottom of the band board) and less than 7' above grade shall be enclosed with framed and finished lattice or other finished underpinning. Screening solely with landscaping is not permitted. Wood screening may be stained white or stained with a transparent or translucent stain in natural earth tones. Vinyl or composite screening may be white or a color to match the trim of the home.

3) If stained, deck stain color shall complement the colors of the home. In general only transparent or translucent stains in natural earth tones are permitted.

B) Location

1) decks shall be primarily located behind the mass of the home and totally behind the rear plane of the home.

2) No portion of the deck including the deck stairs, if applicable, may extend farther forward than the rear plane of the home.

For **High Impact Lots**, the deck must be a minimum of 7' from the property line adjacent to the street or the minimum county setback, whichever is greater. If not fenced, the deck should be landscaped on the street side as per the guidelines for houses on high impact lots.

C) Materials

1) Pressure treated wood

2) Composite decking

3) Railings can be wood, vinyl or metal. Alternate upgraded railing styles will be considered on a case-by-case basis.

3.24 EXTERIOR LIGHTING

Note: All lighting (other than with single family detached homes) shall follow Article II, Division 7 of the Zoning Ordinance.

3.24.1 Front Entry Light

A minimum of one wall-mounted light is required at the front entrance of the home. The light shall be of traditional design to match the style of the home.

3.24.2 Facade Architectural Accent Lighting

See Section 5.3.7 (a) in Modifications.

3.24.3 Landscape Lighting

See Section 5.4.19 in Modifications.

3.24.4 Floodlights

See Section 5.3.7 (b) in Modifications

3.24.5 Holiday and Festival Lighting

See Section 5.14.15i and 5.3.7 Modifications.

3.24.6 High Intensity Fixtures

See Section 5.3.7(c) in Modifications.

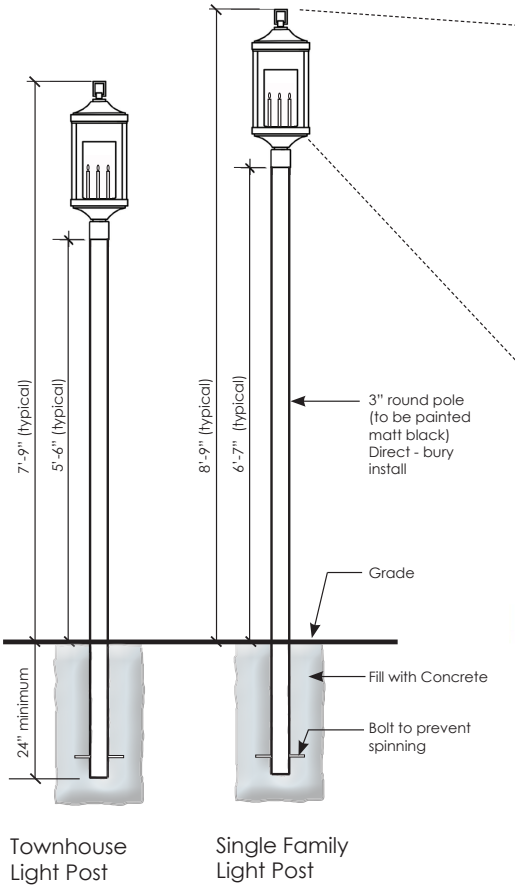
3.24.7 Post Lighting

A) Every house shall have one (1) Post light in the front yard. See detail on the following page. Post light must be located 2 feet from the back of the street sidewalk and no more than 3 feet from the side of the driveway.

B) For corner lots, up to three (3) additional post lights may be required.

C) Post lights shall be set in concrete or following manufacturer's specifications

D) Must be hot-wired "photocell"; control switches are not permitted in the home.



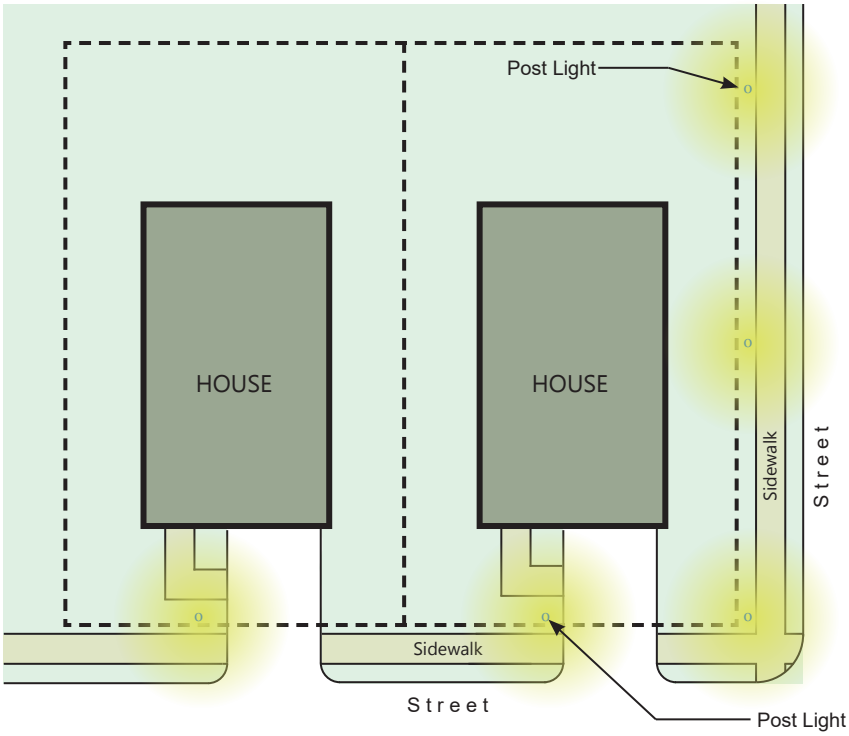


Progress Lighting
P540004-020 (Gibbs Street)
(or similar)

Bulbs to be Phillips 75-Watt
Equivalent A19 LED Soft White

Category: Outdoor
Finish: Matt Black
Construction: Aluminum
Glass/Shade: Clear seeded glass

MOUNTING	ELECTRICAL	LAMPING	ADDITIONAL INFORMATION
Post top - fitter for 3" post or pedestal mounted	Pre-wired 6" of wire supplied 120 V	Quantity: One 100w max. Medium Base E26 base ceramic socket	cCSAus Wet location listed 1 year warranty



Lighting Notes

1. All houses to have a post light 3' from the driveway (on the front door side) and 2' from the public (street) sidewalk.

2. All corner houses are site specific but may be required to have up to an additional three (3) postlights on the side.

3. Details shown are conceptual and subject to change based on field conditions.

4. All measurements are from the center of the pole.

3.25 UTILITY EQUIPMENT

3.25.1 Utility Equipment

No equipment other than equipment placed by a utility provider for phone, electric, cable, Internet and for any household utility not yet contemplated but developed in the future and deemed in the sole discretion of the WHDC a standard utility under this provision, may be placed on a home except for standard residential heating and air conditioning equipment and/or satellite dishes in compliance with provisions of the Declaration and Section 3.25.

Window and/or through-wall heating and air conditioning units are prohibited.

Generators permanently installed and permanently affixed to the home and provided for emergency use are permitted on a case by case basis with regard to size and shall be subject to the same design standards provided for utility equipment pursuant to this Section 3.25.

3.25.2 Other Equipment

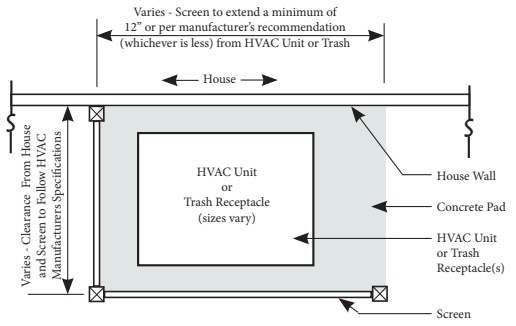
Mechanical equipment (detached from the home), yard equipment and other similar items, on or stored outside the home, must be located behind the mass of the home and located or screened so as to be reasonably concealed from view of neighboring lots, streets and property located adjacent to the lot. What constitutes "reasonably concealed" or "similar items" shall be in the sole discretion of the Designated Committee.

3.25.3 Utility Equipment Screening

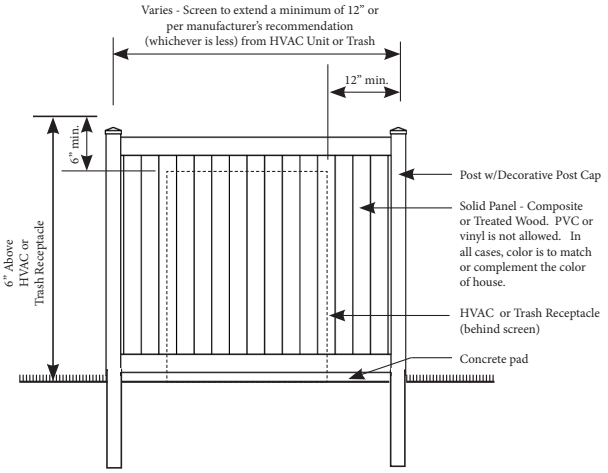
HVAC equipment shall be enclosed in a screened enclosure shared with a trash enclosure or in separate enclosures.

Enclosures may be located in the rear yard or on the side of the house toward the rear corner. No enclosures may be located on an adjacent lot or one the street side of high impact lots.

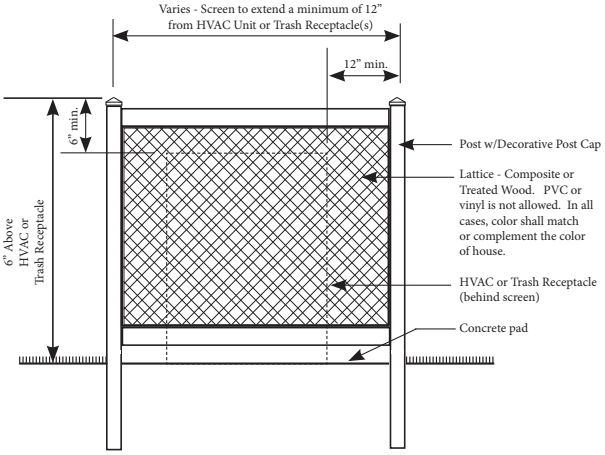
Fence enclosures shall be properly supported trimmed, level and plumb.



Plan View
Not to Scale



Elevation - Option A
Not to Scale



Elevation - Option B
Not to Scale

Equipment shall be screened facing the street and/or side lot lines, but may be open to the rear. The height of the screening enclosure shall be at least 6" higher than the equipment screened, but not more than 12" higher. In any case, the maximum height may not exceed 5'.

The Designated Committee reserves the right to require additional landscape screening when, in the sole discretion of the Designated Committee, it is determined that the siting of the enclosures so requires.

3.26 TRASH ENCLOSURES

3.26.1 Requirements

Trash enclosures are required for all single family homes as detailed on the preceding page.

For townhouses with alleys, trash receptacles can be kept adjacent to the rear of the house.

For townhouses without alleys, trash receptacles must be kept in the garage.

3.26.2 Location

Residential trash enclosures shall be located adjacent to the home in one of the following locations:

A) Rear yard

B) Side yard no closer than 10' from the front corner of the house where the trash enclosure will be located. For High Impact Lots, the enclosure should not be on the street side.

3.26.3 Design

A) Trash receptacles must be concealed with white vinyl lattice or decorative screening (must be approved in advance) to match the screening for HVAC units. See Screening Options on previous page for design specifications.

B) When the trash enclosure and HVAC screening are adjacent to one another, the screening should be one system rather than two separate enclosures.

C) The opening to the trash enclosure shall face the rear yard.

D) If planned for two or more receptacles, the 'long' dimension should run parallel to the house.

E) A minimum of three (3) 36" tall evergreen shrubs should be planted on the street side of the enclosure.

The Designated Committee reserves the right to require additional landscape screening when, in the sole discretion of the Designated Committee, it is determined that the siting of the enclosures so requires it.
F) Maximum height: no taller than 12" higher than the container. Minimum height: at least 6" taller than the container being screened.

G) Wooden enclosures: not allowed

H) Vinyl enclosures should be white. Other colors can be reviewed on a case-by-case basis.

I) Enclosure shall be properly supported, trim, level & plum.

3.27 DRIVEWAYS

Every improved lot in White Hall shall have a single paved driveway that conforms to the following criteria.

3.27.1 Design

A) Unless otherwise approved by the WHDC, driveway widths shall be no greater than the garage door plus 1' on each side. For multiple doors, the driveway may extend to 1' outside the outer door edges. For difficult lot conditions the WHDC may grant a variation in the design.

Only one driveway entrance is permitted per lot.

B) All driveways, regardless of location at entry, shall be held a minimum of 3' off of the side property lines unless otherwise approved by the WHDC.

C) Circular driveways, parking areas in front of the house, and other special conditions are generally discouraged where they substantially reduce the amount of front yard. The WHDC may approve certain applications where they feel that the front yard appearance will not be adversely affected or for other extenuating circumstances that, in the sole opinion of the WHDC, warrant such an approval as an exception.

D) 'Track' (ribbon) driveways (driveways with a grassed median) are encouraged. For driveways that intersect a street, a driveway apron shall be constructed at the street and 2 driving strips run the length of the driveway to the garage parking pad. For driveways that insect an alley, no apron is required. The center of the driveway is required to be sodded or planted in a low groundcover.

3.27.2 Materials

Driveways and garage entrance aprons may be constructed of broom-finish concrete, exposed aggregate concrete, brick or concrete pavers. The WHDC encourages the use of pervious materials.

Regardless of the paving material used, where a driveway is intersected by a concrete sidewalk, the apron of the driveway, from the sidewalk to the roadway, must be concrete to match the sidewalk.

3.28 WALKWAYS

3.28.1 Street Sidewalks

All lots shall include sidewalks along street frontages, located as shown on overall construction drawings. Sidewalks shall be broom-finish concrete.

3.28.2 Front Walkway

A) Front walks shall extend either from the front steps to the driveway or from the front steps to the sidewalk in front of the home.

B) Minimum width: 4'

C) The WHDC encourages the use of pervious materials. Other materials will be reviewed on a case-by-case basis. The following materials are permitted for walkways:

1) Broom finished concrete

2) Exposed aggregate

3) Concrete pavers (color to complement the color of the house and must be approved in advance)

4) Cobblestone/brick (color to complement the color of the house and must be approved in advance)

5) Decorative edging may be considered on a case-by-case basis

3.28.3 Secondary Walkway

See Section 5.4.33 in Modifications.

3.28.4 Patios & Outdoor Living Spaces

See Section 5.4.20 in Modifications.

3.29 LANDSCAPING

3.29.1 Boundaries

For boundaries and definitions of Front yard, Side yard, Corner Side Yard, and Rear Yard, see Yard Definitions and Boundaries on page 14.

3.29.2 Variations in Landscaping

The goal of landscaping in White Hall is to create diversity by using different landscape plans, styles, and plant material for each home while still providing a harmonious streetscape throughout the neighborhood. The WHDC encourages using multiple planting beds throughout the yards, not just the front foundation planting bed. An array of trees, shrubs, plants, and other various planting materials is encouraged.

Native plant material should be used as much as possible.

3.29.3 Required Planting for New Homes

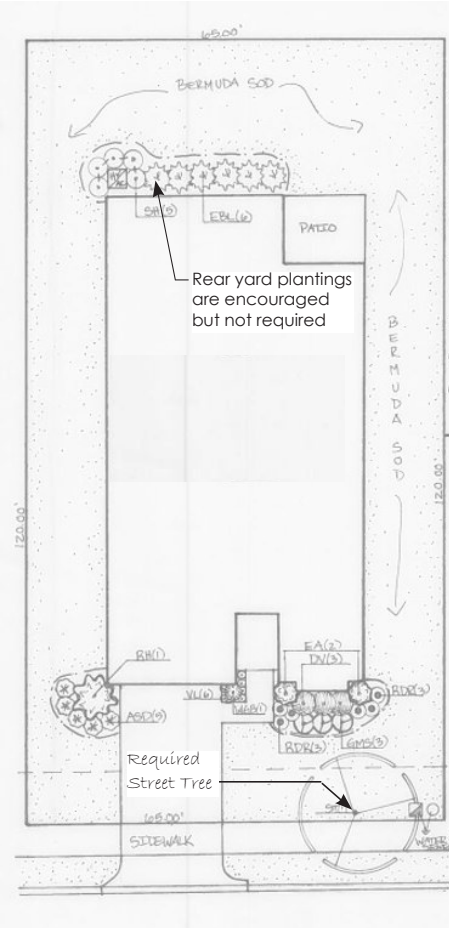
A) Front Yards

Front yards are defined as all yard areas except for foundation planting bed, from the front house corners to the curb. All front yards shall be sodded with a drought resistant turf grass or planted with low-growing ground cover. The WHDC strongly encourages low-growing ground cover to reduce or eliminate the amount of sod in yards.

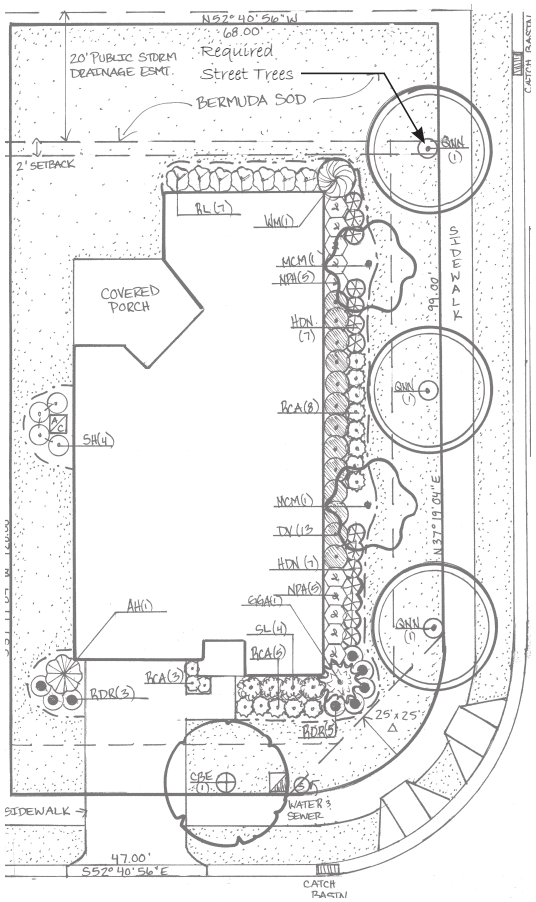
Foundation planting is required along the entire front facade of the house.

Planting beds shall meet the following criteria unless otherwise approved by the WHDC:

Planting Plan Example
(Interior Lots)



Planting Plan Example
(Corner & High Impact Lots)



1) Foundation Planting Beds shall be a minimum of 4' wide from the house foundation.

2) House corners shall be visually softened with vertical accent shrubs (4'-5') or small evergreen trees (6'-8').

3) Planting beds shall contain a minimum of 50% evergreen material.

B) Corner Side Yards & High Impact Lots

For corner lots, foundation beds shall return down the full side facing a street.

Side yards shall be sodded to match front yards. The WHDC reserves the right to require additional landscaping on homes that are highly visible from a public street.

C) Rear Yards

Lawn areas in rear yards must be sodded. Yard areas may also be developed as gardens, planting beds with shrubs or trees, or mulched play areas. The WHDC reserves the right to require additional landscaping on homes that are highly visible from a public street.

3.29.4 Plant Examples

Groundcover
- (periwinkle, liriope, pachysandra)
- 2 1/4" minimum pot size
- planted 12" apart in staggered rows

Small Shrubs
- (euonymous, helleri holly, azalea)
- 18" - 24" minimum size
- 30" spacing (when in rows)

Larger Shrubs
- (boxwood, pyracantha, arborvitae)
- 24" - 30" minimum size
- 48" spacing (when in rows)

Trees
- (Nellie Stevens Holly, redbud, maple)
- 5' - 6' height minimum size
- individually placed

3.29.5 Planting Bed Materials

The following types of mulch are permitted:

- Hardwood (shredded) chips
- rock (excluding white)

The colors for hardwood (shredded) chips, recycled rubber mulch shall be shades of brown, black or gray only. No shades of red, blue or green are permitted. All types of mulch shall be maintained and weed free.

All other materials & colors shall be considered on a case-by-case basis

3.29.6 Supplemental Trees

A) Single Family Homes

i) In addition to a Street Tree, there must be a minimum of one flowering or shade tree in each Front Yard.

ii) A minimum of one deciduous, flowering or shade tree is required in each Rear Yard where no existing mature (6" diameter or larger) shade trees exist.

B) Townhomes

i) Supplemental Trees are Not Required

C) Minimum Size - 2 1/2" caliper for shade trees or 8-10' tall for flowering tree.

D) Alley loading lots: the WHDC encourages the shade tree be planted close to the property line abutting the alley to create a tree line effect, however it shall not interfere with visibility.

E) Street Tree Program

1) Purpose

Builders shall plant deciduous shade trees along all rights of way abutting lots in accordance with the County approved Streetscape Policy and overall landscape plan.

Corner lots shall have trees along both streets.

All trees planted to meet these requirements shall have a minimum caliper of 2 ½" measured at 3'-0" above ground.

For additional restrictions on street trees, refer to Article IV of the Declaration.

2) Warranty

i) Should the street tree die after the warranty, it is the sole responsibility of the Owner to replace the street tree with one of the same species.

ii) Approval is required prior to removal or replacement unless removal is necessitated by emergency situations where the tree is damaged or has been made imminently dangerous by wind storms or other natural occurrences

3) Maintenance

i) At all times following the planting of the Street Tree, the Owner shall have the obligation to maintain the tree at Owner's expense.

ii) Any Street Tree which is required to be removed shall be replaced with a tree of the same type and similar size and in the identical location as the tree which was removed.

iii) Unless otherwise noted, all removal and replacement shall be at the sole expense of the Owner.

3.29.7 Irrigation

Permanent in-ground irrigation systems connected to the James City Service Authority are not permitted. Irrigation shall be by surface hose, and in accordance with any limitations set by the County, including James City County Ordinance Article VII – Outdoor Water Use, as amended, for water conservation.

Because the size of the water lines cannot accommodate irrigation, rain water conservation using rain barrels, cisterns or dry wells to capture roof water runoff, are encouraged by the WHDC. If rain barrels, cisterns, dry wells or other water conservation devices are used in conjunction with gutters/ downspouts systems, they shall outlet to pervious areas. Rain barrels, cisterns, dry wells or other water conservation devices are considered landscape accessories and must be submitted to the WHDC for review and approval as to color, size, material and location. If rain barrels, cisterns, dry wells or other water conservation devices are used, they shall be muted in color.

Variations may not be granted by the WHDC for this section and no changes, additions, or deletions shall be made without the prior written consent of James City County and/or James City Service Authority.

3.30 TERRACING AND RETAINING WALLS

3.30.1 Retaining Walls

A) Topography shall not be altered in such a way as to re-direct drainage across adjacent properties, nor shall it be altered in such a way as to result in water that would otherwise normally flow across the Lot being trapped on adjacent Lots. When possible, drainage shall be directed to the street or to the rear of the Lot.

B) Retaining walls on street facing yards shall be constructed of brick or stone as appropriate to the house.

C) Other retaining walls may be constructed of interlocking unit masonry or timber (no railroad ties).

D) All materials shall be compatible with the color of the home.

E) All walls shall be constructed level and stepped as required for changes in slopes.

F) Walls over 36" in height may require fencing or railings as per building codes. It is the responsibility of the builder to verify whether or not a fence/railing is required and submit the fence/railing to the MC or WHDC for review.

3.31 SIGNS

See Section 3.6.3

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DORIC ORDER

ELEVATION

GALLERY WITH ARCHES

4.1 HIGH IMPACT LOT MAP

High Impact House Examples



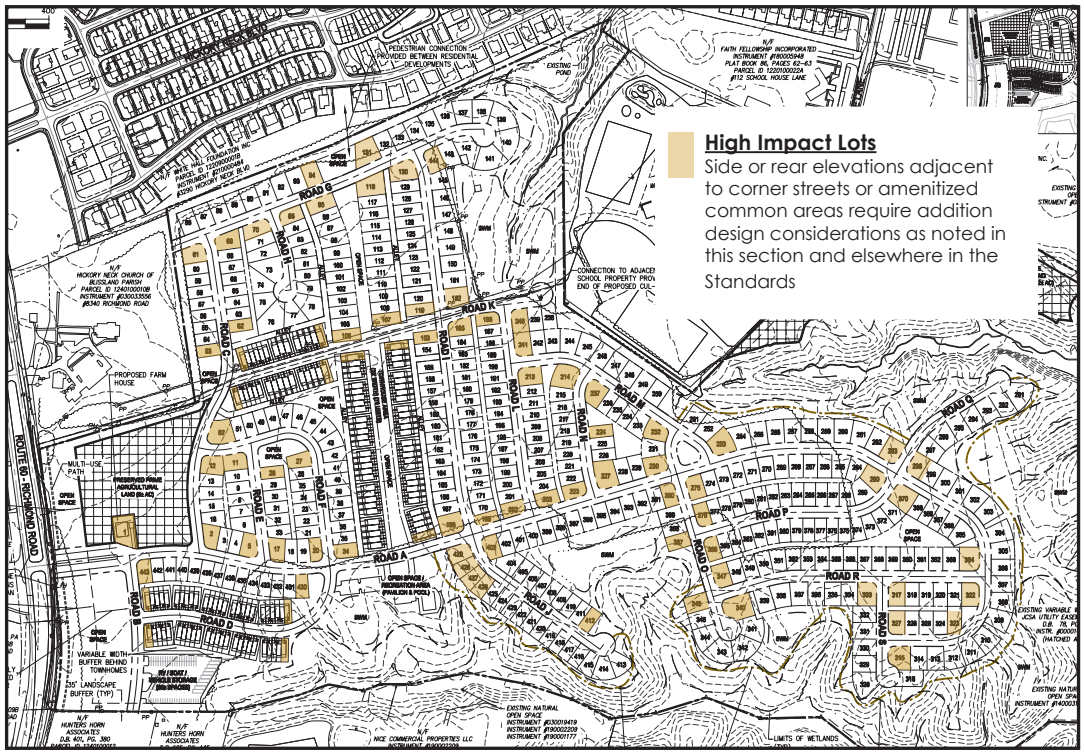
Historic corner house



New corner house



New corner house with garage



4.2 HIGH IMPACT LOT REQUIREMENTS

The following design considerations must be taken into account for corner lots and lots that are adjacent to amenitized common areas.

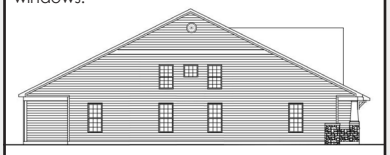
Note: The High Impact Lot Map is a conceptual land plan. As construction plans develop, there may be changes to the layout that affect lots that are currently shown and not shown. Therefore, there may be lots shown in future plans that fit this category and need to adhere to these guidelines. Generally, all corner lots, highly visible lots or lots that are adjacent to amenitized open space are considered high impact and shall follow these requirements.

A) The garage side of the house should be on the opposite side of the corner street or amenitized common area. The WHDC may allow exceptions on a case-by-case basis when the garage is detailed with windows or other architectural features.

B) A minimum of three windows per floor is required on the corner elevation or elevation that faces an amenitized common area in a fenestration pattern similar to the front facade (see illustration below). The WHDC can review on a case-by-case smaller windows or fewer windows for the second floor when a sloped roof reduces the length of the second floor.

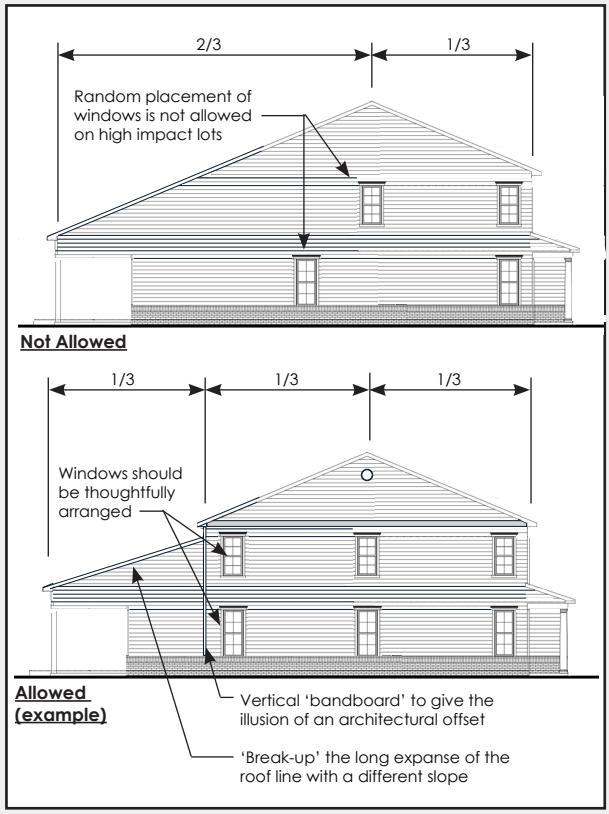


Not Allowed (example)
On High Impact Lots the side elevation facing the street cannot have randomly placed windows.



Allowed (example)
On High Impact Lots the side elevation facing the street must have windows in a fenestration pattern similar to the front facade.

C) On the street facing side for high impact lots, houses with asymmetric facades where one side is unproportionally long (as shown in the illustration example below) are not permitted. With minor adjustments, the facade can be changed to an acceptable street facing facade.



D) Shutters are not appropriate on all building styles, but when shutters are used on the front facade they need to be included on the side elevation that faces the corner street or an amenitized common area.

E) When more than one siding pattern, material or color is used on the front façade, at least two matching patterns, materials or colors need to be used on the side elevation facing the corner street or an amenitized common area.

F) As applicable, when the roof is 'pitched' toward the front and rear of the house, a minimum 10" trim shall be used to divide the first floor or second floor from the attic.

G) As applicable, when the roof is 'pitched' toward the front and rear of the house, a decorative attic vent or window needs to be incorporated in the design of the attic elevation.

H) Trim on the side elevation is to be a minimum of 4" wide.

I) Foundation beds shall return down the full side of the elevation and contain at least 50% evergreen material with two or more plant types. All shrubs should be a minimum of 24" at time of planting and spaced 3' on center (varies per plant).

J) When fencing is proposed, picket or ornate privacy fences are required. (see fencing section in Modifications for more detail)

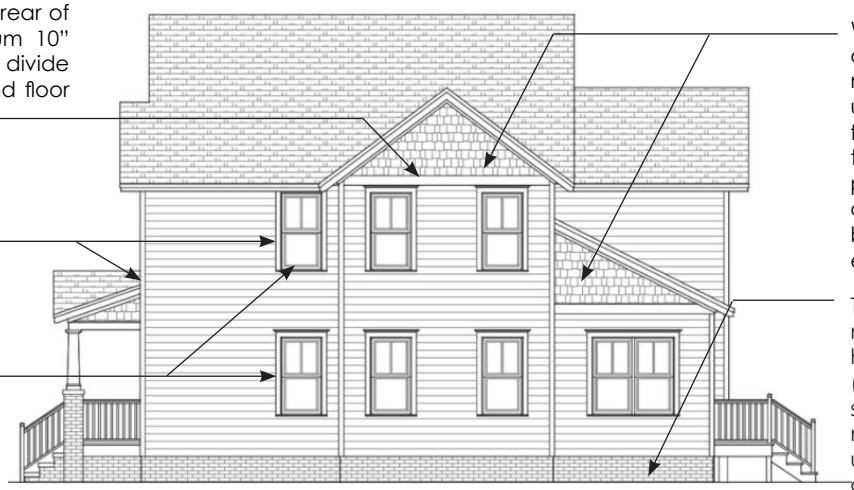
K) All efforts should be made to place HVAC, utilities, or any other similar component in the rear or side yard opposite the street. If any of the HVAC, utilities are on the street side, they will be initially screened with enclosures and landscaping.

When the roof is 'pitched' toward the front and rear of the house, a minimum 10" trim shall be used to divide the first floor or second floor from the attic.

Trim on the side elevation is to be a minimum of 4" wide.

Three windows per floor is required

NOTE:
Garage and HVAC units should not be on the elevation facing the street or the common area.



When more than one siding pattern, material or color is used on the front façade, at least two matching patterns, materials or colors need to be used on the side elevation

There shall be a minimum vertical height of twelve (12) inches of brick, stone or stone veneer above grade utilized on slab-on-grade foundations on all front, side, and rear elevations.

NOTE:
Not all requirements (such as landscaping or fencing) are shown on this diagram. Refer to the appropriate sections for more detail.

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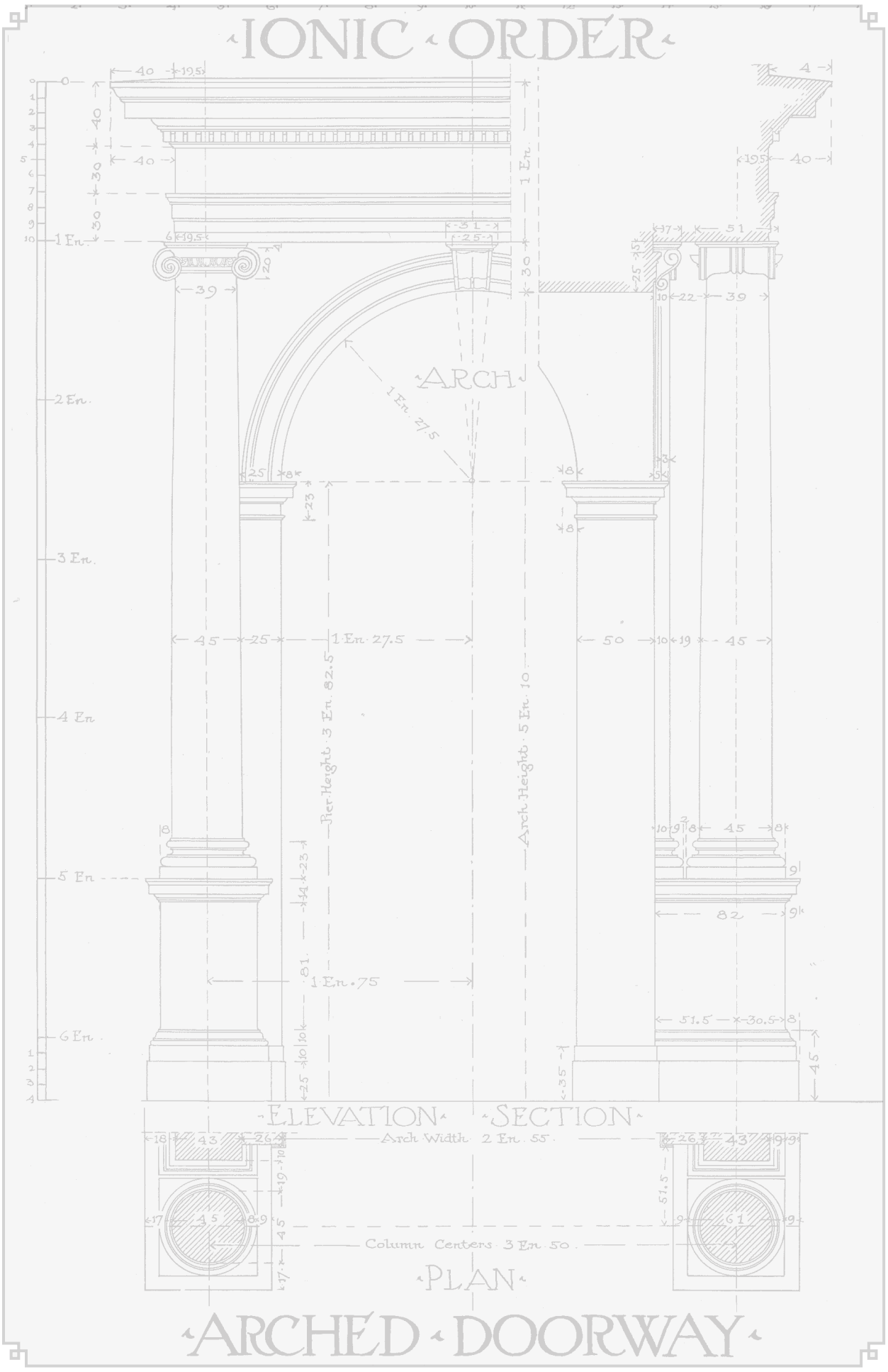
IONIC ORDER
ARCH
ELEVATION
SECTION
PLAN
ARCHED DOORWAY
Arch Width 2 En. 55
Column Centers 3 En. 50
Pier Height 3 En. 82.5
Arch Height 5 En. 10
1 En. 27.5
1 En. 75

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5.1 INTRODUCTION

The **Modifications** section is intended to guide current and future homeowners regarding particular design situations and modifications that may arise once you've moved into your home.

The House Modifications Section of the Standards is divided into three sections:

Submittal Requirements (Section 5.2)

House Modifications (Section 5.3)

Lot Modifications (Section 5.4)

Submittal Requirements are an abbreviated version of the overall submittal requirements as detailed in Section 3.4. For more information or clarity, please refer to that section or contact the Community Manager.

House Modifications generally apply to anything that is related to the actual structure of the house. Projects in this category may include house additions, facade lighting, or attached flagpoles.

Lot Modifications generally include all items that require changes to the lot. Projects in this category may include a patio, landscaping, or fencing.

When reviewing the standards for a project, understand that it may fall into two different sections...one in Modifications and one in New Construction. For instance, an accessory building is listed in the Modifications section but may include elements, such as windows, in the New Construction section. Therefore, it is essential that all sections are reviewed when considering a house or lot modification.

Likewise, whether its New Construction, House Modifications, or Lot Modifications, all applications should verify whether or not its a **High Impact Lot** (see page 48) and follow those standards.

Please note that these guidelines may be neither universally applicable nor exhaustive.

Changes, materials, devices and design concepts that are generally not acceptable may also be indicated for your guidance.

It is important that owners not assume that an application will be approved simply because a similar exterior change has been approved elsewhere. In some cases proposed exterior changes that are allowed elsewhere may have been approved because the applicant's property has unique characteristics, location, or topography made such a change suitable. The MC/WHDC must consider the impact of each proposed change on the property in question, neighboring properties and the community as a whole.

The MC/WHDC will reach its decision on individual applications by considering the intrinsic merits of each proposal as well as all relevant surrounding circumstances. Please refer to Section 1 for more information on community design goals and Section 2 for process and interpretations that will help the Modifications Committee and the White Hall Design Committee reach their decisions.

5.2 SUBMITTAL REQUIREMENTS

5.2.1 Submittals to be Complete and Accurate

Submittals prepared for consideration by the WHDC are required to be complete and accurate. Submittals for design review must include drawings prepared as described below. The WHDC/MC may require that color chips accompany color applications. All requested information on the application forms needs to be furnished. The WHDC/MC will not accept applications that are incomplete or inaccurate.

5.2.2 Submittal Requirements

Proper submittals include drawings that are neat, accurate, drawn to scale, and with sufficient detail to adequately explain the entire design. Insufficient explanation of a design including all visible details is cause for non-acceptance of an application. The WHDC, at its discretion, may accept plans that are marked in red with late changes to design features; however, the WHDC may require that the marked sheets be corrected and revised, and re-submitted:

ADDITIONS

- Site Plan - showing addition location, distances to property lines, and also showing any landscaping, if any, that is to be removed
- Floor plan(s) of Addition
- All Exterior Elevations of Addition including existing house (show finish materials)

ACCESSORY STRUCTURES

- Site Plan - showing location of new structure and existing house, with distances between each, distances to property lines, and also showing tree(s) or landscaping, if any, that are to be removed
- Floor Plan(s)
- All Exterior Elevations (show finish materials)

OTHER SITE IMPROVEMENTS

- DECK, PATIO, SWIMMING POOL, GAZEBO, ETC: site Plan showing location of improvement, existing structures, distances to property lines and also showing tree(s) and landscaping, if any, that are to be removed.
- FENCES: Site Plan - showing location, extent of fence and also showing tree(s) and landscaping, if any, that are to be removed. Drawing of fence with heights, materials and sizes identified.
- HOUSE COLORS: For changes to existing house colors, submit application form with manufacturer's names and color names. Submit color chips with application.

5.2.3 Review Fees

There are no fees for modification reviews by the WHDC.

If an independent Modification Committee is formed, that committee may recommend its own fee schedule subject to approval by the White Hall Board of Directors.

5.2.4 Additional Information

For additional information, or clarification, refer to Section 2.

5.3 HOUSE MODIFICATIONS

This section of the standards generally refers to any modification to the house.

Items are listed alphabetically.

For modifications to the land or lot, refer to Section 5.4

5.3.1 Additions to Houses

A) Design

To ensure consistency in the design of the house and minimize visual disruption of the community, additions shall match the design characteristics of the house. Specifically:

1) The architectural style of additions shall match the style of the house. The massing of the addition shall be similar in the use of shapes to that of the house, but proportionately smaller so as not to overpower the house. Roof styles and slope shall be similar.

2) Openings shall be required in additions, including windows and doors, in a similar fashion and extent as in the original house. Windows and doors shall be of matching material as those in the house. Exceptions may be granted for sunrooms at the discretion of the WHDC and/or MC.

3) Architectural elements such as corner and rake boards, soffits, eaves, window and door trim, shutter and siding shall match the style of the same elements on the house.

4) All exterior finish materials and colors shall match the house.

5) The space beneath any structure constructed on piers (including decks) higher than 2' above grade, but less than one story above grade shall be enclosed with lattice or other approved screening material.

6) Greenhouse additions shall be constructed of finished wood framing or

of a pre-finished metal consistent with the exterior color scheme of the home.

7) Foundation material and colors shall match the existing foundation. If built on piers (including decks), the space beneath any structure higher than 6" above grade, but less than one story or 7' above grade shall be enclosed with lattice or other approved screening material.

Screening with both lattice or underpinning and landscaping is encouraged and may be required at the discretion of the MC/ WHDC.

B) Location

Additions may not extend beyond the approved setbacks set for construction of the main home. See Section 3.10 in New Construction.

In general the siting of additions shall not create a breach of privacy between neighboring houses. Where this is unavoidable, the WHDC may require screening of the view by the applicant. What constitutes a breach of privacy will be determined in the sole discretion of the WHDC.

5.3.2 Accessory Structures

See Section 5.4.1.

5.3.3 Awnings

Awnings (permanent or retractable) must be consistent with the architectural style, character and color of the house. The Modifications Committee and the WHDC reserve the right to prohibit the use of awnings on the front and side of any home. All awnings, including materials and colors will be reviewed on a case-by-case basis. Accurate drawings or pictures of awnings and color swatches are required for review.

Any visible disrepair, discoloration, staining, and/or tears must be repaired and replaced upon occurrence, or within thirty (30) days of notification from the Foundation. The Foundation has the authority to require repairs and maintenance or removal of damaged awnings when noted and when it is deemed necessary.

5.3.4 Decks

See Section 5.3.4.

5.3.5 Doors: Storm and Screen

Storm/screen doors shall be reviewed on a case-by-case basis by the WHDC and/or MC. They shall be the same color as the door they cover or the trim color of the home.

5.3.6 Flags and Flagpoles

No flag or flagpole of any size, shape, or form, temporary or permanent, shall be permitted on the exterior of any portion of a lot (as described in the Declaration) or improvement thereon, except as provided herein:

A) Flags mounted on houses

The WHDC and/or MC may grant written approval for a reasonable and aesthetic house mounted pole or poles, which are attached to and extend from the facade of the house. One house mounted pole may be attached to and extend from the façade by the front door of a unit without the prior written approval of the WHDC or MC as long as the pole does not exceed 6' in length and the flag displayed on the pole does not exceed 4' x 6'.

B) Vertical Flagpoles

Permanent and/or temporary vertical flagpoles are not permitted in front yards. Permanent and/or temporary flag pole not exceeding 15' in height, may be permitted in rear yards directly behind the mass of the house and no closer than 20' to any property line. Written approval from the WHDC and/or MC is required.

Outside of this stated approved guideline, the display of any flag or the installation of any necessary supporting structure(s) for any flag on or within the Properties, including on the exterior of any Lot (as described in the Declaration) or any improvement thereon within White Hall, is hereby expressly prohibited without prior written approval of the WHDC or MC. For the purpose of this section, any flag or flagpole or necessary supporting structure for any flag on any portion of a Lot (as described in the Declaration) is deemed an "exterior alteration or modification of existing improvements" as contemplated by the Declaration.

5.3.7 Lighting

Note: All lighting (other than with single family detached homes) shall follow Article II, Division 7 of the Zoning Ordinance.

See Section 3.24 for Post Lights and House Mounted Lighting.

All exterior lighting shall be submitted for review and approval of location & design prior to installation.

High intensity house or pole mounted area or security lights are prohibited unless permitted by the MC/WHDC for special conditions. "High intensity" refers to ballasted light fixtures using high or low-pressure sodium, mercury vapor, or metal halide lamps.

A) Facade Architectural Accent Lighting

Lighting should focus on architectural features of the facade. Only low voltage fixtures are allowed and the fixtures should be placed at ground level and concealed in landscape beds



B) Facade Floodlighting

Floodlighting of front facades will be permitted by the WHDC on condition that floodlights use only low voltage fixtures, and the fixtures are placed at ground level and concealed in landscape beds



C) Floodlights

1) In general, floodlights shall only be permitted in rear yards. Where the MC or WHDC permits floodlights in side or front yards, the flood lights must be on a motion sensor.

2) Flood lights shall be eave-mounted or placed on the trim in an inconspicuous manner or location and shall be located such that light is completely directed within the home's lot area.

3) Lighting fixtures shall be properly shielded to prevent seeing the actual light source from the street.

D) Landscape Lighting

See Section 5.4.19

E) Holiday / Festival Lighting & Decorations

All holiday lighting is subject to regulations adopted by the White Hall Board of Directors and may be prohibited and subjected to additional regulations. If the Foundation wishes to permit holiday lighting, holiday lighting may be displayed two months prior to and no more than one month after any commonly recognized holiday for which such lighting is traditionally displayed.

5.3.8 Solar Panels

Per Section 67-701 (A) of the Code of Virginia Covenants Restricting Solar Energy Collection Devices ("CRSECD"), no community association shall prohibit an Owner from installing or using solar energy collection devices. However, a community association may establish reasonable restrictions concerning the size, place, and manner of placement of such solar energy collection devices.

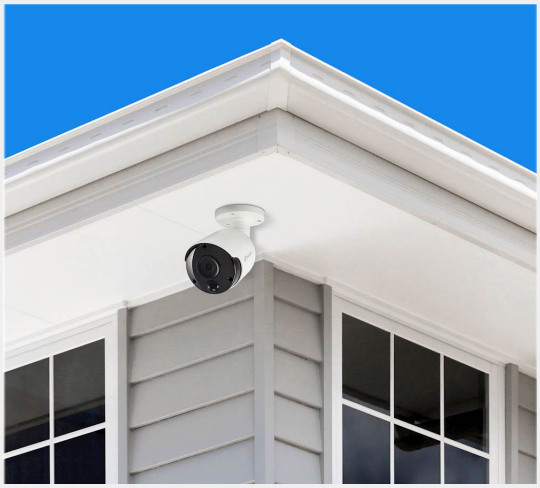
A) Solar collectors that lie flat against a roof plane may be used upon approval of the exterior components by the Designated Committee.

B) Should Section 67-701 of the CRSECD be amended in such a way as to render this section in conflict, state code shall supersede this section.

C) All conduit should be placed along the trim and eaves and match the color.

5.3.9 Surveillance Cameras

A) Cameras shall be mounted in such a location that they are not easily discernible from the street (i.e. eave mounted or flush mounted in the door frame or window well).



B) Cameras shall be located such that surveillance is not directed to a location where a person would have a reasonable expectation of privacy.

C) Cameras and all fixtures associated with the
camera shall be of a color to match the color of the material on which they are mounted (trim or siding).

D) Cameras shall be submitted for review and approval of location & design prior to installation.

E) Doorbell cameras do not require approval.

5.3.10 Window and Door Treatments

The backings of window and/or door treatments shall not be brightly colored patterned or consist of any writing, logos or symbols. What is considered to be brightly colored is in the sole discretion of the WHDC and /or Foundation and will be reviewed on a case by case basis.

For more information on windows, see Section 3.16 and for doors see Section 5.3.5.

5.4 LOT MODIFICATIONS

This section of the standards generally refers to any modification to the lot or yard. Items are listed alphabetically.

For modifications to the house, refer to Section 5.3

5.4.1 Accessory Structures

A) General Information

Accessory structures consist of sheds, detached garages, green houses and any other structure that may not be included in other sections. Some accessory buildings, such as detached garages, may have additional information in other sections.

If the specific accessory building is not addressed here, submit the accessory building to the WHDC and/or MC for a case-by-case review and approval prior to construction.

B) Design

Accessory Buildings shall match either the main house (at a minimum) or may be specially designed in a unique style, to the extent that it enhances the over-all design of the house and lot in the sole opinion of the WHDC/MC.

For sheds, workshops and other outbuildings the maximum floor area shall be 64 square feet (e.g. 8' x 8'), unless otherwise approved by the WHDC and/or MC. Exceptions to this limit will be judged on the basis of exceptional design merit and on siting that does not significantly impact adjacent properties or the visual streetscape. The WHDC and/or MC reserve(s) the right to require additional screening.

For detached garages, the maximum floor area shall be 624 square feet unless otherwise approved by the WHDC and/or MC. Exceptions to this limit will be judged on the basis of exceptional design merit and on siting that does not significantly impact adjacent properties or the visual streetscape.

Windows and doors in accessory buildings shall be similar in style to those in the house. Alternate styles of shed doors may be approved at the discretion of the WHDC/ MC.

Architectural elements such as corner and rake boards, soffits, eaves, window and door trim, shutters and vinyl shall match or complement the style of the same elements on the house.

All exterior finish materials and colors shall match the main house.

Sheds may be set on foundations that match the house, or may be set directly on the ground on skids. When skids are used, the shed must be set level and plumb. Any space greater than 12" that is visible beneath the shed must be concealed with lattice or plantings.

The maximum interior height of a shed shall be 8', measured at the eaves (exclusive of sloped roof height).

Roof styles and slopes shall be similar to that of the main house (i.e. gable roof with gable roof buildings, etc).

See Section 3 for additional architectural requirements that may be required for accessory buildings.

C) Location

Accessory buildings shall be located within the minimum setbacks from the rear and side lot line for such structures established by the County, however, minimum setbacks may be increased by the WHDC or MC on a case-by-case basis, taking into consideration specific lot conditions and privacy of neighbors.

Accessory buildings may only be constructed in rear yards only, no farther forward than the rear plane of the house (see diagram on page 13 for more information).

D) Effects on Neighboring Privacy

In general the siting of accessory buildings shall not create a breach of privacy between neighboring houses, nor shall it create a visual nuisance to neighboring houses. Where this is unavoidable, the MC/WHDC may require screening of the view of the structure by the applicant. What constitutes a breach of privacy will be determined in the sole discretion of the WHDC/MC.

New windows or doors created by the accessory building shall not create a breach of privacy between neighboring houses. The MC/WHDC reserves the right to not approve certain openings or require screening by the applicant in situations where, in the opinion of the MC/WHDC, it is required. What constitutes a breach of privacy will be determined in the sole discretion of the MC/WHDC.

E) Temporary Commercial Storage Units (with or without wheels)

See Section 5.4.31.

5.4.2 Clotheslines

Retractable exterior clotheslines are permitted in rear yards, directly behind the house and not extending to the side past the house corners. Clotheslines shall be retracted when not in use.

5.4.3 Doghouses, Dog Pens & Dog Runs

A) Doghouses

Are not considered accessory buildings but have the same requirements as play structures: an interior height of 6'-0" or less floor-to ceiling, and with a total floor area of less than 36 square feet.

B) Dog Pens

Dog pens must be submitted to the Designated Committee and will be reviewed on a case-by-case basis. In no instance shall a dog pen extend beyond the front plane of the home. The Designated Committee reserves the right to require additional screening.

C) Dog Runs

In addition to Dog Pen standards, dog runs are permitted and shall be located behind the rear plane of the home.

1) A dog run is defined as a fenced area in which a dog can be confined and can exercise.

2) The dog run may be attached to the rear of the home or enclose a portion of the rear yard. Dog runs may be constructed with pressure treated wood or black chain link fencing screened by privacy fence or approved landscaping such that the chain link is not visible from any adjacent road or adjacent property. The fenced area shall not exceed four (4) feet in width and the fence shall not exceed six (6) feet in height.

5.4.4 Fencing - General Information

The purpose of fencing may be for functional reasons or merely aesthetic purposes – or both. Whether it is a privacy fence or picket style fence, it can have a great effect on the public realm and the experience of driving or walking the neighborhoods. A fence must achieve the balance of function (establishing a boundary) while maintaining or enhancing the appearance of the property as well as the public realm.

Regardless of the purpose of the fence, it is the intent of these standards to allow homeowners the enjoyment of their yard while promoting an aesthetic streetscape.

Any fence type not described in this article must be submitted for review by the WHDC to determine if it may be used.

A) Standards that apply to all fence types

1) Fences may be constructed up to, but not on, property lines.

2) Only one fence shall be constructed at the same location on any property line.

3) Fencing must remain outside of any VDOT easements or sight distance parameters.

4) Posts and panels for fences shall not impede the flow of water in swales. Fences may not be installed in the middle of the swale. Pickets or panels must be a minimum of 2" above grade.

5) The finished side of any fence should face out from the lot being fenced in.

6) Rear yard fences may be white vinyl, unfinished wood, or may be painted (or stained) white. All front yard fences shall be painted white. See Section 4 for requirements on high impact lots. Other colors will be reviewed on a case-by-case basis.

B) Prohibited Fence Types

The following fence types are examples of fences prohibited unless as an integral part of the overall design of the community:

- split rail,
- board and rail,
- turned rail.
- rough-cut rail fences

The following fence types are examples of fences prohibited for use in any area of White Hall:

- chain link fences,
- barbed wire fences,
- fences with metal posts (excluding aluminum picket fencing),
- stockade style solid picket fences,
- post and wire fences,
- others as determined by the MC/WHDC.

C) Gates

Where full yard enclosure is desired, swing gates are required where fences cross walks or driveways. Gates shall be constructed to match the fence and shall utilize decorative black metal fence hardware. Other hardware shall be considered by the WHDC on a case by case basis and reviewed within the context of the lot and overall community. Gates for swimming pool access shall be fitted with code approved security latches. All other gate types, hardware and latches shall be considered by the WHDC on a case by case basis and reviewed within the context of the lot and overall community.

D) Privacy Screen for Spas

See Section 5.4.29.

E) Swimming Pool Fences

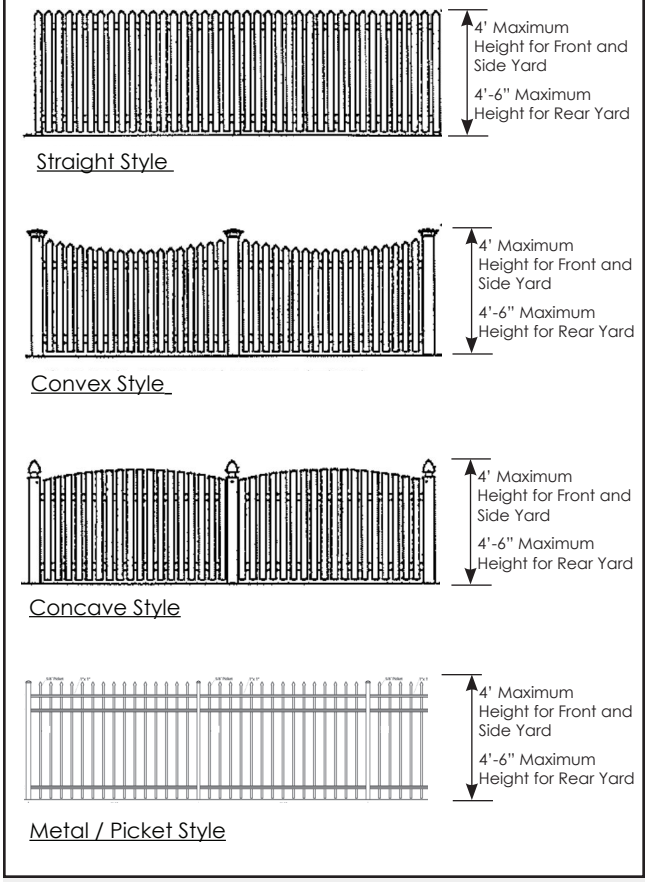
See Section 5.4.30.

5.4.5 Front Yard Fences

A) Definition

A front yard fence is defined as any fence constructed along the yard side of the front sidewalk 12" behind the sidewalk (unless a different dimension is approved by the WHDC); extending to the side lot lines, and then down the side lot lines to at least the front corners of the house, closing to the house.

B) Fence Types Allowed



C) Materials

1) Allowed:

Pressure/salt-treated wood
PVC/Vinyl
Composite
Metal (picket style)
Masony in conjuction with one of the above mentioned fence types

2) Not Allowed in Front Yards:

Privacy Fences

3) Other material may be considered by the WHDC on a case-by-case basis.

D) Design

1) Maximum Height: 4' to the highest point in front and side yards and 4'-6" to the highest point in rear yards.

2) The vertical fence boards shall face out from the lot being fenced.

3) Front yard fences shall be painted white.

E) Location

1) Front yard fences should be a minimum of 12" from the sidewalk(s)and planted with evergreen shrubs or perennials. Spacing varies depending on species but should encompass the entire length of the fence. **A planting plan is required to be submitted with a fence application.**

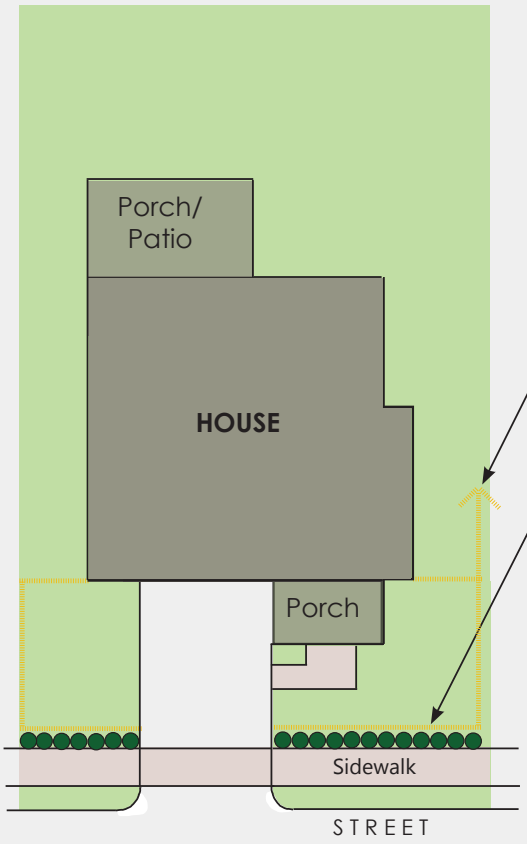
2) On high impact lots, fences should be a minimum of 12" from both sidewalks and planted with evergreen shrubs or perennials. Spacing varies depending on species but should encompass the entire length of the fence. **A planting plan is required to be submitted with a fence application.**

3) Front yard fences may extend to the side lot lines, and then down the side lot lines to at least the front corners of the house, closing to the house. Front yard fences may also continue back along the side of the house, and connect to an approved (picket style or privacy) rear yard fence.

4) Where an existing fence is already constructed on a property line, the new fence may extend up to it. **Only one fence shall be constructed at the same location on any property line.**

5) Any 'Front Yard Fence" can also be installed in side and rear yards.

F) Front Yard Fence Illustration
Interior Lots or those that are NOT High Impact



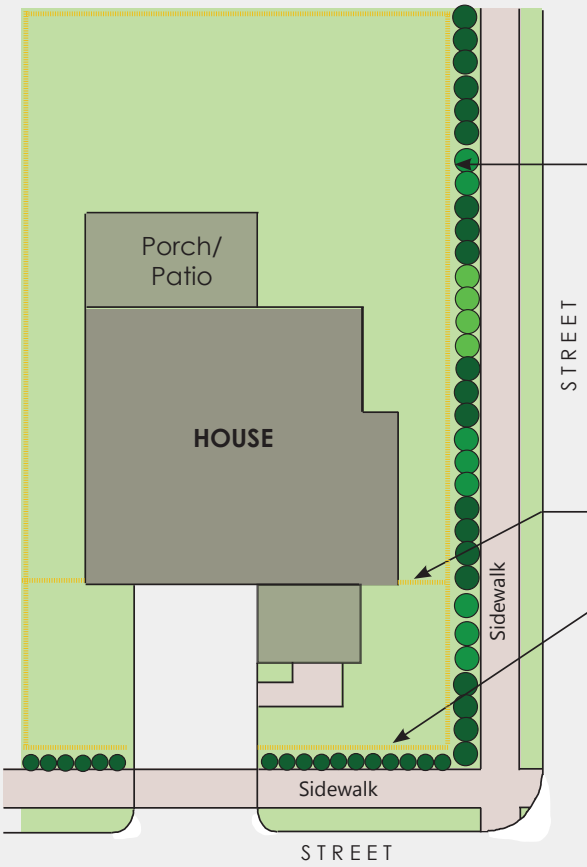
As an alternative to a fence, an approved, maintained, evergreen hedge may be installed. The type of evergreen hedge must be submitted to the Designated Committee for review and approval prior to installation.

Front yard fences may also continue back along the side of the house, and connect to an approved rear yard fence.

Front yard fences should be a minimum of 12" from the sidewalk and planted with evergreen shrubs or perennials. Spacing varies depending on species but should encompass the entire length of the fence.

Note: A planting plan is required to be submitted with a fence application.

G) Front Yard Fence Illustration
Lots that are High Impact



As an alternative to a fence, an approved, maintained, evergreen hedge may be installed. The type of evergreen hedge must be submitted to the Designated Committee for review and approval prior to installation.

When a picket style fence is proposed, fences must be a minimum of 3' from the sidewalk or the property line that abuts a public street. Evergreen shrubs, a minimum of 3' in height at time of planting, generally planted 3' from each other (depending on the species the spacing may vary) for any fence, excluding gates, that face a street. If the fence is 25' long or greater, at least two varieties of shrubs should be planted.

Optional fence at front house corner

Front yard fences should be a minimum of 12" from the sidewalk and planted with evergreen shrubs or perennials. Spacing varies depending on species but should encompass the entire length of the fence.

Note: A planting plan is required to be submitted with a fence application.

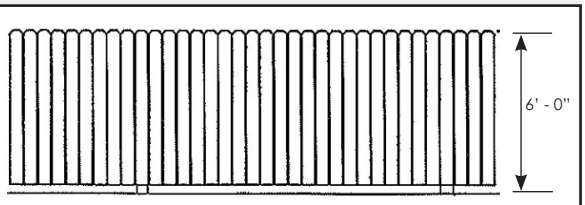
5.4.6 Rear Yard (Privacy) Fences (Interior Lots)

A) Definition

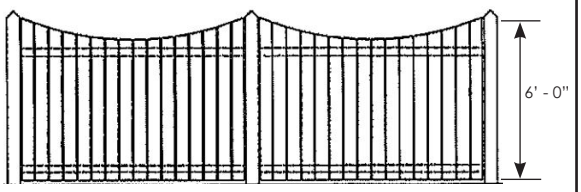
A rear yard fence is defined as any fence enclosing the area extending from the rear property line to no further forward than 50% of the side of the main body of the home. For circumstances where there is a an architectural off-set, window, or other feature, the WHDC will review fence locations on a case-by-case basis.

Any rear yard fence type shall be acceptable fencing for pools as contemplated in section 5.4.31.

B) Fence Types Allowed



Dog Eared



Concave



Convex

Note: The Garden Style fence can be used on all sides where a rear yard fence is allowed.

C) Materials

1) Allowed:

Pressure/salt-treated wood

Composite

Vinyl / PVC

Masonry in a combination with any of the above type fences

2) Not Allowed:

Metal

Masonry

3) Other material may be considered by the WHDC on a case-by-case basis.

D) Design

1) Maximum Height: 6' to the highest point.

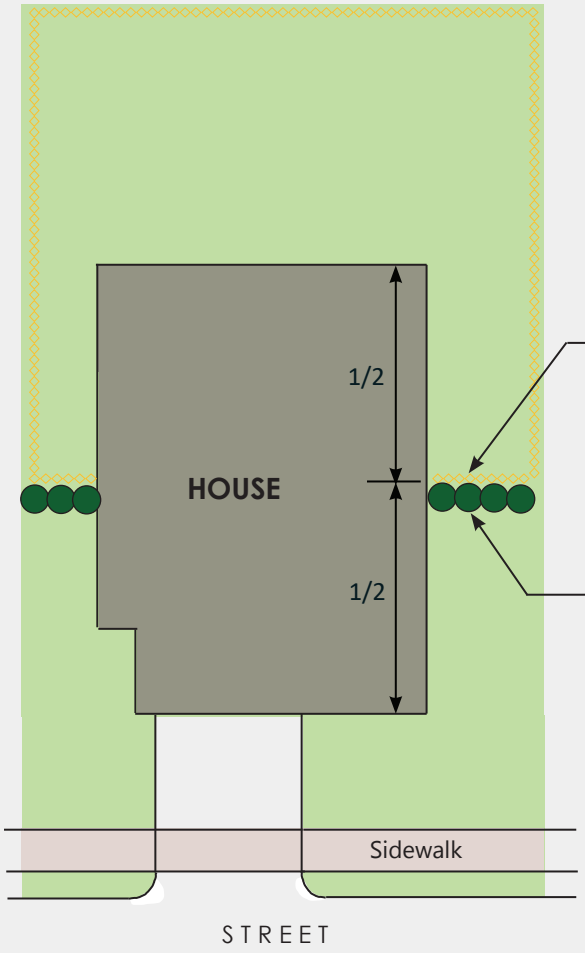
2) The vertical fence boards shall face out from the lot being fenced.

E) Location

1) Rear yard fences may extend no further forward than 50% of the side of the main body of the home. For circumstances where there is a an architectural off-set, window, or other feature, the WHDC will review fence locations on a case-by-case basis.

2) Where an existing fence is already constructed on a property line, the new fence may extend up to it. **Only one fence shall be constructed at the same location on any property line.**

f) Rear Yard Fence Illustration
Interior Lots or those that are NOT High Impact



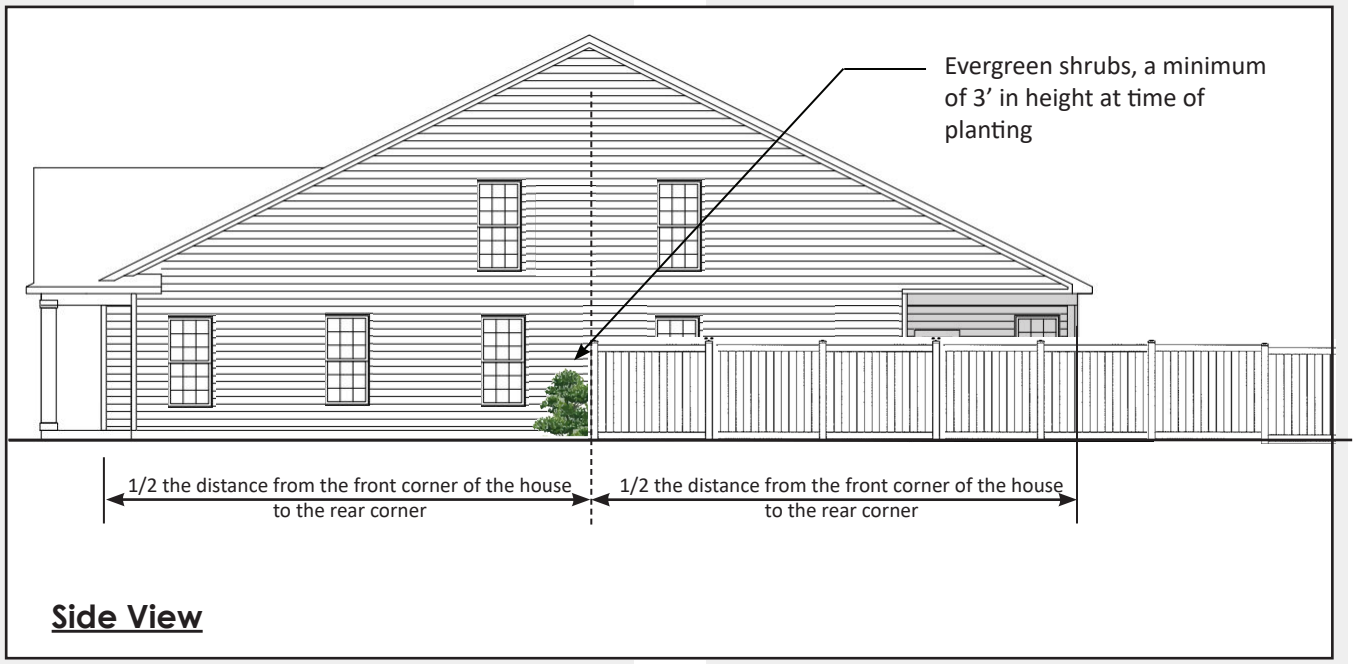
Plan View

Note: For high impact lots (corner lots or lots adjacent to an amenitized area) see the following pages 68 -69.

Rear yard fences may extend no further forward than 50% of the side of the main body of the home. For circumstances where there is a an architectural off-set, window, or other feature, the WHDC will review fence locations on a case-by-case basis

Evergreen shrubs, a minimum of 3' in height at time of planting, generally planted 3' from each other (depending on the species the spacing may vary) for any fence, excluding gates, that face a street. If the fence is 25' long or greater, at least two varieties of shrubs should be planted.

Note: A planting plan should be submitted with all fence requests.



Side View

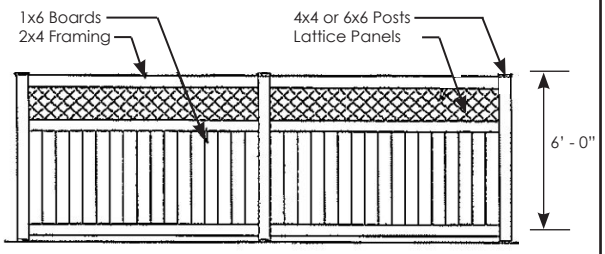
5.4.7 Rear Yard Privacy Fences
(High Impact Lots)

A) Definition

A rear yard fence is defined as any fence enclosing the area extending from the rear property line to no further forward than 50% of the side of the main body of the home. For circumstances where there is a an architectural off-set, window, or other feature, the WHDC will review fence locations on a case-by-case basis.

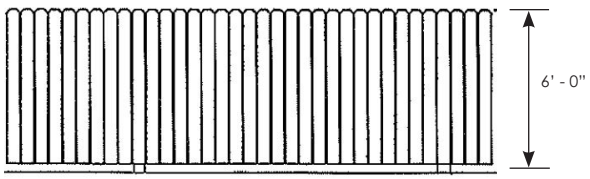
Any rear yard fence type shall be acceptable fencing for pools as contemplated in section 3.10.6.

B) Fence Type Required on the High Impact Side of the Yard

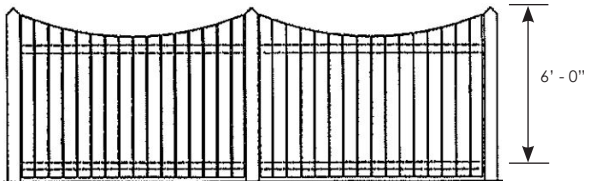


Garden Style

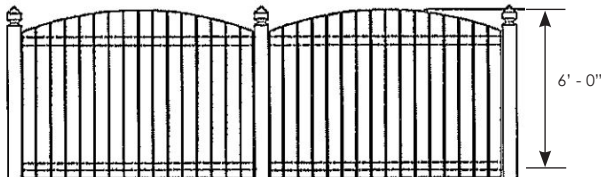
C) Fence Types Allowed on the Rear Yards and Sides of the Yard that are not High Impact



Dog Eared



Concave



Convex

Note: The Garden Style fence can be used on all sides where a rear yard fence is allowed.

D) Materials

1) Allowed:

Pressure/salt-treated wood

Composite

Vinyl / PVC

Masonry in a combination with any of the above type fences

2) Not Allowed:

Metal

Masonry

3) Other material may be considered by the WHDC on a case-by-case basis.

E) Design

1) Maximum Height: 6' to the highest point.

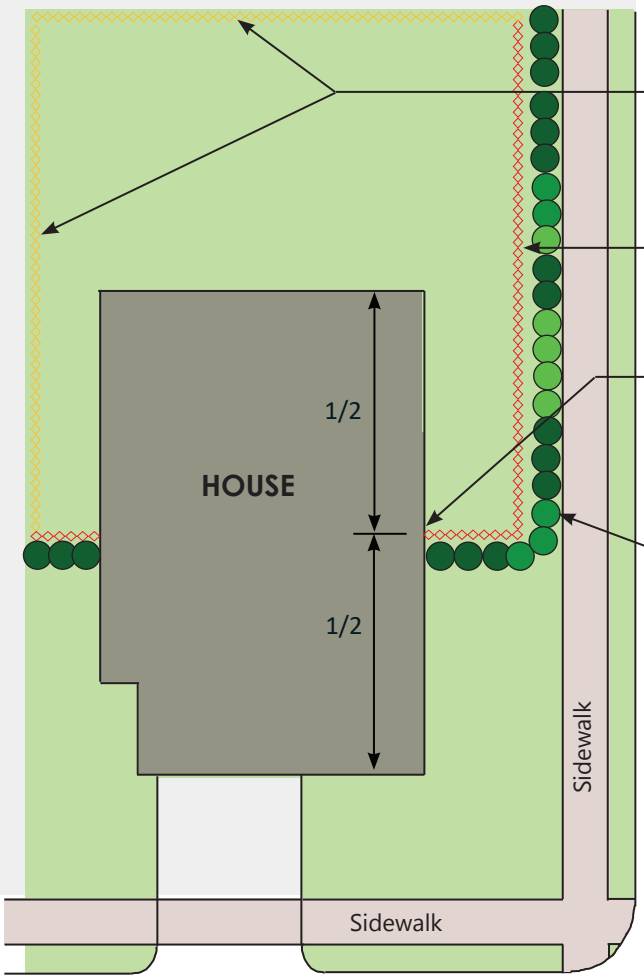
2) The vertical fence boards shall face out from the lot being fenced.

F) Location

1) Rear yard fences may extend no further forward than 50% of the side of the main body of the home. For circumstances where there is a an architectural off-set, window, or other feature, the WHDC will review fence locations on a case-by-case basis.

2) Where an existing fence is already constructed on a property line, the new fence may extend up to it. **Only one fence shall be constructed at the same location on any property line.**

G) Privacy Fence Illustration
High Impact Lots



Plan View

Garden Style Privacy Fence

Privacy Fence

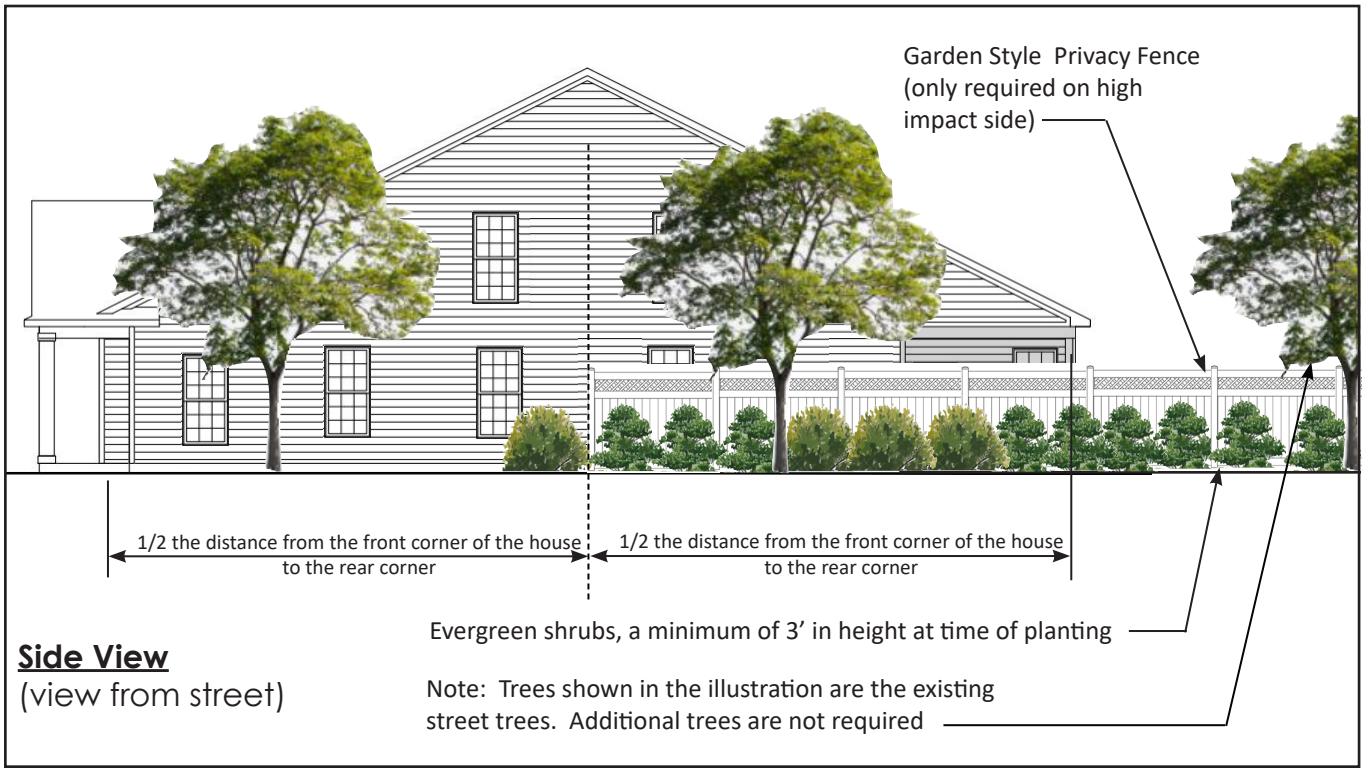
Privacy Fences that are not on the 'high impact side' are not required to be garden style privacy fences

Garden Style Privacy Fences are required on the high impact sides, including all sides fronting a street (front and sides)

Side yard fences shall not be closer than 1/2 the distance from the rear corner of the house to the front corner of the house.

Evergreen shrubs, a minimum of 3' in height at time of planting, generally planted 3' from each other (depending on the species the spacing may vary) for any fence, excluding gates, that face a street. If the fence is 25' long or greater, at least two varieties of shrubs should be planted.

Note: A planting plan should be submitted with all fence requests.



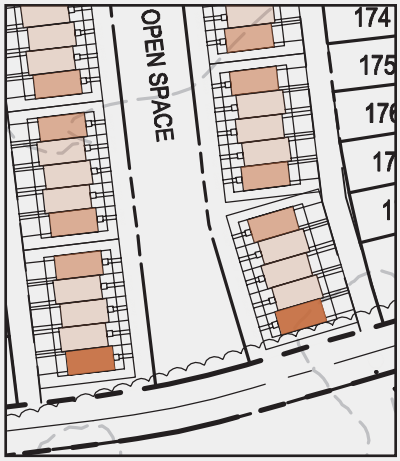
Side View
(view from street)

5.4.8 Townhouse Fences Interior Units and End Units that are not High Impact*

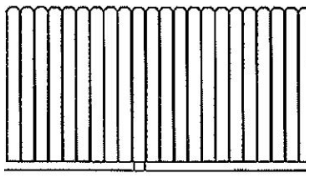
A) Definition

Interior Unit
End Unit*
High Impact
(See Section 3.4.2)

* Note: when walkways or other amenities are between two end units, they may be classified as high impact



B) Fence Type Allowed on Interior Units and End Units that are not High Impact



Note: The Garden Style fence can be used on all sides where a rear yard fence is allowed.

C) Materials

1) Allowed:

Pressure/salt-treated wood

Composite

Vinyl / PVC

Masonry in a combination with any of the above type fences

2) Not Allowed:

Metal

Masonry

3) Other material may be considered by the WHDC on a case-by-case basis.

D) Design

1) Fences constructed along side property lines shall be 6'-0" high to the top of the board pickets.

2) Fences constructed along rear property lines may be either 6'0" or 4'0" in height.

3) For Solid Board Privacy Fences, the vertical fence boards shall face out from the lot being fenced.

4) All fences shall be white and match the builders fence.

5) Evergreen shrubs, a minimum of 3' in height at time of planting, should be planted 3' from each other for any fence (excluding gates) that face a street.

E) Location

1) Fences shall be constructed from the rear corners of the house back to the rear lot line or rear fence setback line.

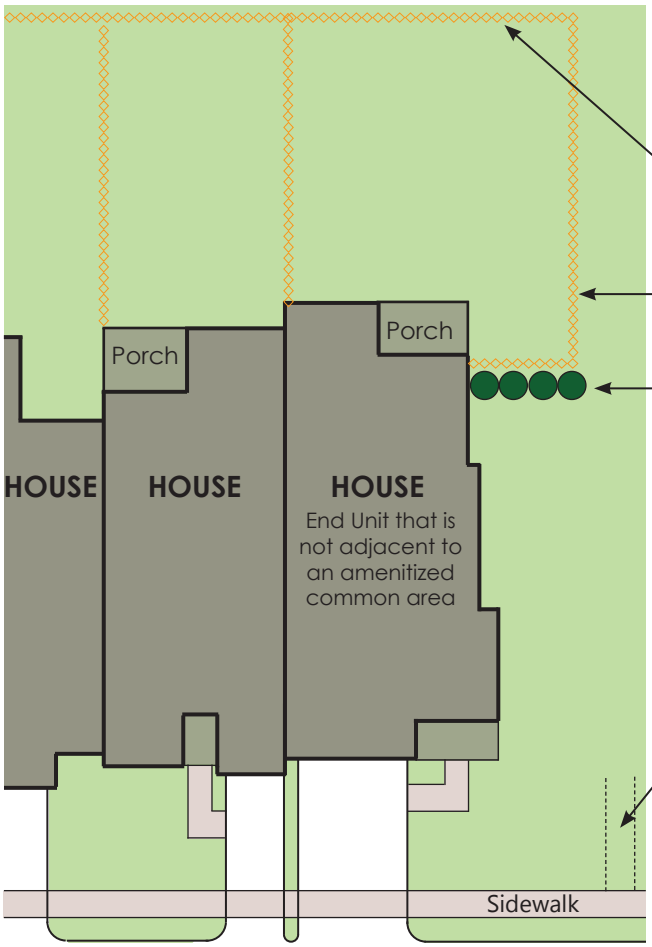
2) Where an existing fence is already constructed on a property line, the new fence may extend up to it. **Only one fence shall be constructed at the same location on any property line.**

For end unit fences that are not considered high impact, fences may continue up to the open side lot line and up to a point even with the house rear corner and then back to the house. For end unit fences, when there is a porch or patio on the rear corner of the house, the fence can be brought forward so that the porch or patio is included in the fenced yard.

For end unit fences where there is a walkway or other amenitized open space or end units considered high impact, see Section 5.4.9.

No type of fence (privacy or picket style) is allowed beyond the rear corner of the house.

F) Fence Illustration
Interior Lots or those that are NOT high impact or with side entry doors



The fence on the rear property line can be either 6' or 4' in height.

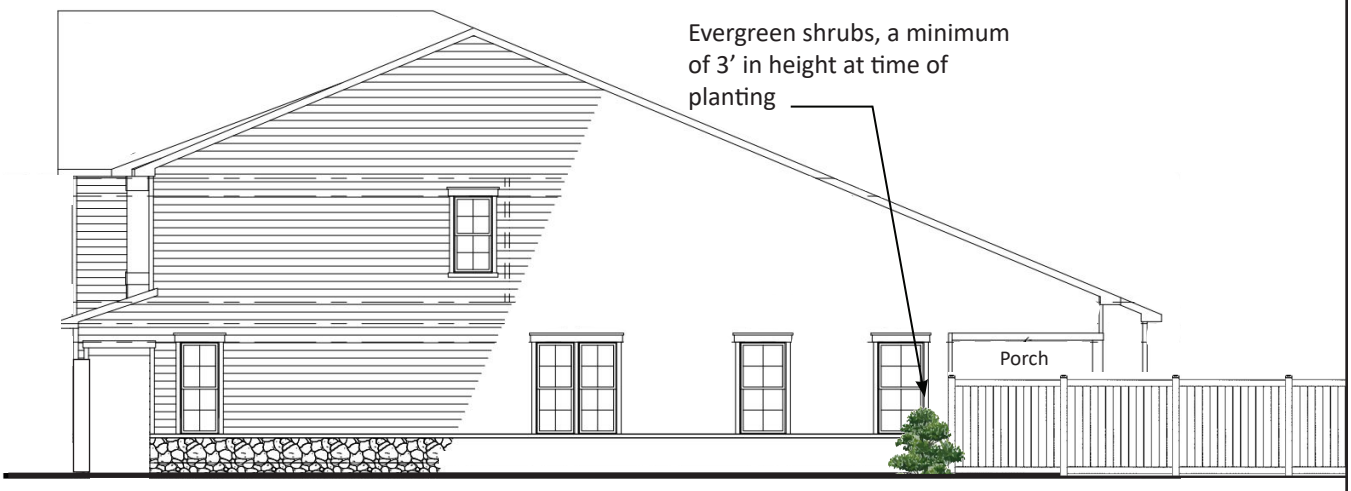
The fence on side property lines shall be 6' in height.

Evergreen shrubs, a minimum of 3' in height at time of planting, generally planted 3' from each other (depending on the species the spacing may vary) for any fence, excluding gates, that face a street. If the fence is 25' long or greater, at least two varieties of shrubs should be planted.

Note: A planting plan must be submitted with all fence requests.

Note: If there is a sidewalk or other amenitized open space, the end unit

Plan View



Side View (End Unit)
Not High Impact)

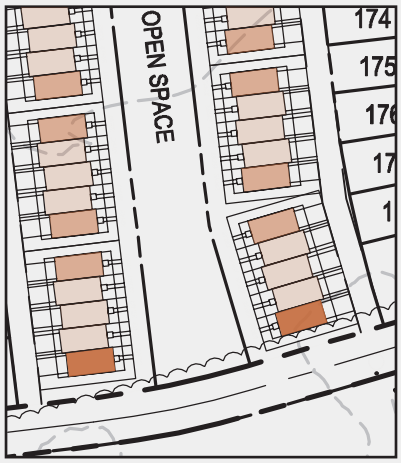
Note: If there is a porch or patio on the rear corner of the end units as shown in the diagram, the fence can encompass the porch, otherwise, the fence must connect to the rear corner

5.4.9 Townhouse Fences End Units that are High Impact

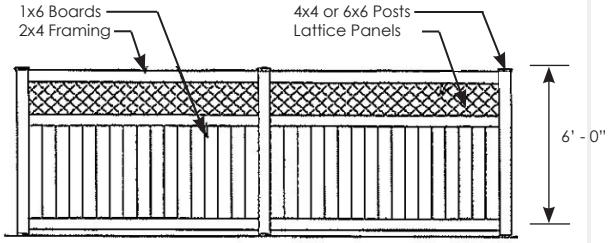
A) Definition

Interior Unit
End Unit*
High Impact
(See Section 3.4.2)

* Note: when walkways or other amenities are between two end units, they may be classified as high impact lots



B) Fence Type Allowed on High Impact



Garden Style

Note: fences on rear property lines can be either 6' or 4' high.

Fences that are NOT on the high impact side can be privacy fences as detailed in Section 5.4.8.

C) Materials

1) Allowed:

Pressure/salt-treated wood
Composite
Vinyl / PVC
Masonry in a combination with any of the above type fences

2) Not Allowed:

Metal
Masonry

3) Other material may be considered by the WHDC on a case-by-case basis.

D) Design

1) Fences constructed along side property lines shall be 6'-0" high to the top of the board pickets.

2) Fences constructed along rear property lines may be either 6'0" or 4'0" in height.

3) The vertical fence boards shall face out from the lot being fenced.

4) All fences shall be white and match the builders fence.

5) Evergreen shrubs, a minimum of 3' in height at time of planting, should be planted 3' from each other for any fence (excluding gates) that face a street.

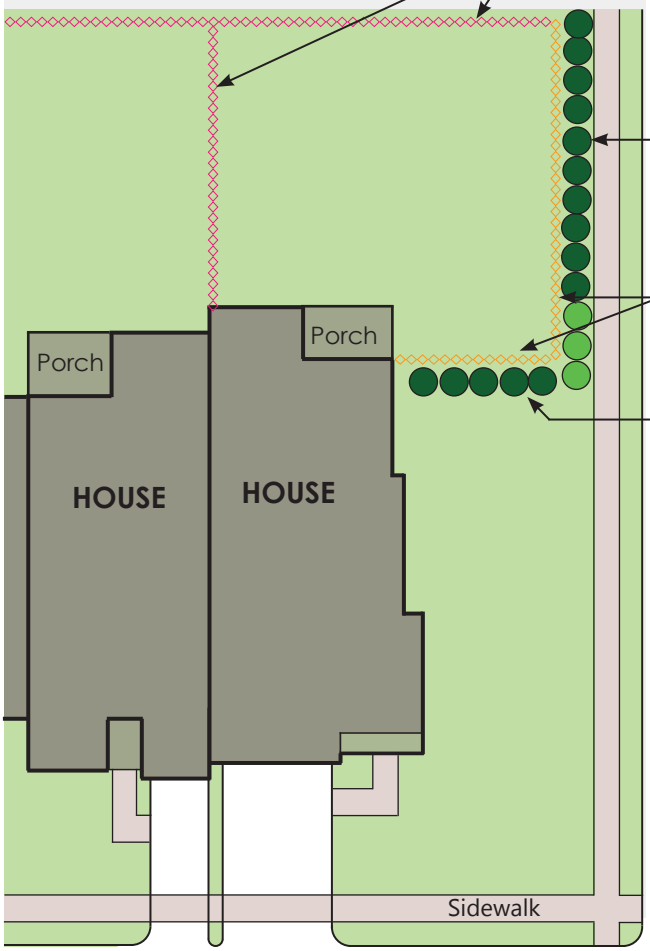
E) Location

1) When a garden style privacy fence is required, fences must be a minimum of 5' from the sidewalk or property line that abuts a public street.

2) Fences shall be constructed from the rear corners of the house back to the rear lot line or rear fence setback line. When there is a porch or patio on the rear corner of the house, the fence can be brought forward so that the porch or patio is included in the fenced yard.

2) Where an existing fence is already constructed on a property line, the new fence may extend up to it. **Only one fence shall be constructed at the same location on any property line.**

f) Fence Illustration
Lots that are high impact or with side entry doors



Garden Style Privacy fences are not required for interior property lines and the rear property line if the rear is not adjacent to an amenitized common area.

When a garden style privacy fence is required, fences must be a minimum of 5' from the sidewalk or property line that abuts a public street.

Ornate Privacy Fence

Evergreen shrubs, a minimum of 3' in height at time of planting, generally planted 3' from each other (depending on the species the spacing may vary) for any fence, excluding gates, that face a street. If the fence is 25' long or greater, at least two varieties of shrubs should be planted.

Note: A planting plan should be submitted with all fence requests.

Plan View



Side View
(High Impact)

5.4.10 Fire Pits (permanent)

A) Design

Permanent Fire Pits shall be integrated into an overall patio or landscape/hardscape plan.

All pipes and wires necessary for operation of the Fire Pit must be reasonably concealed.

B) Location

Fire Pits must be located behind the rear plane of the home no closer than 8' to any property line unless the property line is adjacent to a buffer or natural area.

C) Materials

Permanent Fire Pits shall be constructed of masonry in colors and materials to complement the surrounding patio, if any, and home.

Use of cinder-blocks as a finishing material is prohibited.

5.4.11 Fireplaces / Chimneys (outdoor)

A) Design

Outdoor Chimneys shall be integrated into an overall landscape/hardscape plan and must be in keeping with the design of the home.

Outdoor Chimneys may be no taller than 12' from the ground to the top of the cap and the structure. The surrounding hearth may be no larger than 12' long by 5' wide. The Designated Committee may grant a design variation to these size requirements for exceptional design.

All pipes and wires necessary for operation of Outdoor Chimney must be reasonably concealed.

B) Location

Outdoor Chimneys must be located behind the mass of the home. The Designated Committee may approve a variation for exceptional design.

C) Materials

Outdoor Chimneys constructed of masonry in colors and materials to complement the surrounding patio, if any, and home.

Use of cinder-blocks as a finishing material is prohibited.

5.4.12 Gazebos

See Section 5.4.27

5.4.13 Generators & Mechanical Equipment

A) Generators permanently installed and permanently affixed to the home and provided for emergency use are permitted on a case-by-case basis with regard to size.

B) Generators shall be subject to the same screening requirements provided for other utility equipment in this Section 3.25.

C) Other Equipment:

No other equipment may be placed on a house or lot except for standard residential heating and air conditioning equipment which shall be screened from view, or satellite dishes in compliance with provisions of Section 3.4.25.

Window and through-wall air conditioning units are prohibited.

Above ground storage tanks, mechanical equipment (detached from the home), yard equipment and other similar items on or stored outside a home must be located behind the mass of the house and located or screened so as to be reasonably concealed form view of neighboring homes, streets and adjacent properties. What constitutes "reasonably concealed" or "similar items", shall be in the sole discretion of the WHDC and/or Modifications Committee.

5.4.14 Greenhouses

A) Design / Materials

Greenhouses (defined as having walls and roof made chiefly of transparent material) shall be constructed of finished wood framing or of a pre-finished metal complementary to the exterior color scheme of the home.

B) Location

Greenhouses may not extend beyond the approved setbacks set for construction of the main home.

In general the siting of greenhouses shall not create a breach of privacy between neighboring houses. Where this is unavoidable, the WHDC may require screening of the view by the applicant. What constitutes a breach of privacy will be determined in the sole discretion of the WHDC.

5.4.15 Holiday Decorations & Lighting

All holiday decorations are subject to regulations adopted by the White Hall Board of Directors and may be prohibited and/or subjected to additional regulations. Holiday decorations may be displayed 2 months prior to and no more than 1 month after any commonly recognized holiday for which such decorations are traditionally displayed. For holiday lighting guidelines, please refer to Section .

All holiday lighting is subject to regulations adopted by the White Hall Board of Directors and may be prohibited and subjected to additional regulations. If the Foundation wishes to permit holiday lighting, holiday lighting may be displayed 2 months prior to and no more than 1 month after any commonly recognized holiday for which such lighting is traditionally displayed

5.4.16 Kitchens (outdoor)

A) Portable Grills

Portable grills do not require approval but must remain behind the mass of the home or be otherwise concealed from view of the street or neighboring properties when not in use.

B) Design

Outdoor kitchens shall be integrated into an overall deck or patio plan.

All pipes and wires necessary for operation of the Outdoor Kitchen must be reasonably concealed. The backs of any kitchen cabinet or element that is visible from the street or neighboring property must be finished in a material and color to complement the house or adequately screened.

C) Location

Outdoor kitchens must be located behind the rear mass of the home no closer than 10' to any property line.

D) Materials

Outdoor Kitchens must be in colors and materials to complement the surrounding patio or deck.

If a pergola or overhead structure is proposed, see Sections 5.4.27 and 5.4.32.

5.4.17 Landscaping and Gardens

A) Lawns

All disturbed portions of the Front, Side and Rear Yards, excluding planting beds, shall be sodded with a drought resistant turf grass.

Artificial turf or plants are prohibited.

B) Vegetable Gardens

All vegetable gardens and any other gardens for non-decorative plants which are not part of normal property landscaping, are restricted to 10% of the rear yard for unfenced yards and 25% of fenced yards.

For fenced lots, gardens shall be located behind the rear plane of the home within the fenced area. For unfenced lots, gardens shall be located behind the mass of the home so as to be concealed from view from the street.

Small seasonal animal barrier fences constructed of wood or wire in neutral tones are permitted but must be removed when the garden is no longer active.

Vegetable climbing structures are restricted to be no taller than four (4) feet in height and shall be made of wood or wire cages. Vegetable climbing structures must be removed when the garden is no longer active.

C) Mulch Beds

Hardwood (shredded) chips and recycled rubber are the only acceptable materials. Color shall be shades of brown, black or gray only. No shades of red, blue or green are permitted.

D) Edging

Edging may be natural earth, stone or solid brick which must complement the color and texture of the foundation color of the residence. Steel edging is permitted but shall be black, brown or green only.

Retaining wall blocks and/or bricks may be used, multi-stacked (2 or more) with alternating courses so as to completely enclose the landscape area. If three or more blocks or bricks are used in a stack, it is considered a wall and must adhere to Section 3.30.

Wood edging may be used in the rear yard only.

Prohibited edging materials are plastic and cinder-block. Large rocks will be reviewed on a case-by-case basis.

Edging of walkways, driveways is not permitted, unless in conjunction with a mulch bed.

All edging must be maintained as to the appearance of the material and design. The Foundation has the authority to require the repair, replacement or removal of any edging.

E) Rock Gardens

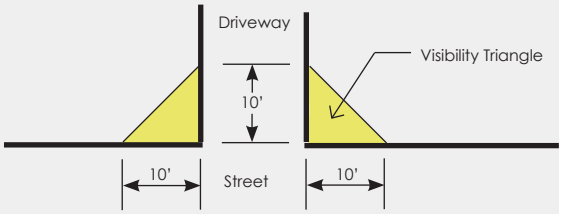
Rock gardens are not permitted, except behind the mass of the home and must be part of an overall landscape design and approved by the WHDC.

F) Water Diversion Areas

Water diversion areas made of rock or gravel are allowed, but may be no more than 5% of the flower bed or garden bed. The rock color and texture must complement the natural color and texture of the foundation or the trim or base color of the residence. Rock or gravel is limited to one (1) inch in diameter. No rocks or gravel are permitted on the right-of-way areas on the property. All rock areas must be maintained and weed free.

G) Sight Visibility Triangle

At the intersection of a drive with a street, structures or plantings are not permitted that obstruct visibility between a height of 2 feet and 8 feet above the elevation of a driveway. The visibility triangle (as shown below) is determined by measuring in two directions from the intersection of the street and drive: 10 feet landward from the street and 10 feet parallel to the street and then connecting the two points with a straight line.



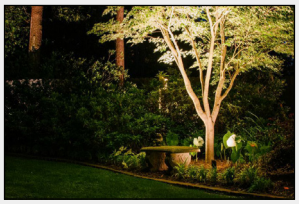
5.4.18 Landscape Accessories

DEFINITION: In addition to those items listed above, landscape accessories include but are not limited to: benches, arbors, trellises, fountains, log piles, permanent barbecues, decorative objects, and temporary shade structures. These accessories must be approved by the Designated Committee as to design and location.

PLACEMENT: In general, unless a design variation is granted by the WHDC, landscape accessories, excluding rain barrels, cisterns and other water conservation devices are permitted no farther forward than the rear corners of the home and shall be located behind the mass of the home. The Designated Committee may consider landscape accessories that are part of an overall landscape plan in front of the home on a case-by-case basis. The Designated Committee reserves the right to require additional screening for any landscape accessory.

5.4.19 Landscape Lighting

A) Landscape lighting fixtures may be utilized to illuminate landscaping, landscape beds, walkways, driveways, trees, decks, water features and patios.



Uplighting is allowed



Path lighting is allowed

B) Light from landscape lighting must be directed completely within the Lot.

C) Only low voltage fixtures with white bulbs are permitted

D) Location

1) Except for path lighting, all landscape lighting shall be incorporated into a landscape bed

2) Landscape lighting shall be placed so as to face directly at the object(s) being illuminated.

E) For facade lighting, see Section 5.3.7(a).

F) For Holiday Lighting, see Section 5.4.15.

5.4.20 Patios and Outdoor Living Spaces

A) Design

1) The color and material of all patios and outdoor living spaces shall complement the home and be compatible with existing exterior improvements.

2) Sitting walls may be no taller than 2' including capstones

3) Screening may be required to mitigate the view of the patio from the road or neighboring properties.

4) For Outdoor Kitchens see Section 5.4.16.

5) For Fireplaces see Section 5.4.11.

6) For Fire Pits see Section 5.4.10.

B) Location

Patios should be located behind the rear plane of the home In single family homes, no closer than 7' to the property lines. Variations for location will be considered on a case by case basis.

C) Materials

1) Patios are permitted of hard-surfaced materials including aggregate and patterned concrete, concrete pavers, or brick pavers either set in concrete or sand-set.

2) Loose laid stone and gravel patios are not permitted

D) Secondary Door Landings

Access door landings no larger than 9 sq. ft. are permitted and may be constructed of hard-surface materials including aggregate and patterned concrete, either set in concrete or sand-set. Larger size landings can be reviewed on a case-by-case basis.

5.4.21 Play Equipment - Play Sets, Enclosed Structures, Forts, Treehouses,Playhouses

A) Definitions

1) Children's Play Equipment

Play structures and equipment shall include but not be limited to: Swing Sets, Sliding Boards, Jungle Gyms, Climbing Structures, Trampolines and Skateboard Ramps. Factory built, pre-finished equipment is preferred but not required. Home-built play equipment shall be neat and orderly in appearance and finish. All structures shall be stained or painted in neutral or earth tone colors. All exterior play equipment must be submitted for approval and review by the Designated Committee prior to placement on the lot.

2) Enclosed Structures

Forts, playhouses, or other enclosed play buildings with an interior height of 6'-0" or less floor-to ceiling, and with a total floor area of less than 36

square feet shall be considered to be play equipment. Dog houses are also permitted under this section. Larger buildings are considered to be Accessory Buildings regulated under Section 5.8.

B) Placement and Screening

1) Placement

Recreational equipment shall be located in rear yards only, away from property lines that are adjacent to other houses or roads and away from neighbors' direct view where possible. Play sets must be located behind the mass of the house, and are not permitted in the side yard. Location variations may be granted by the WHDC on a case-by-case basis for wooden play structures to be located in the side yard pursuant to Section 1.2.4.

2) Screening

The Designated Committee may require that certain play equipment and/or enclosed structures be screened from view. The standard requirement for screening will be to provide densely shaped evergreen shrubs or trees of height, when planted, of at least 2/3 the height of the structure, and so placed as to provide a continuous screen on the stipulated side. Planting may be in a continuous row or staggered. A variety of shrubs/ trees may be used in addition to single species solutions. It shall be the sole responsibility of the homeowner to submit to the Designated Committee a plan with proposed plant types, size and quantity for review.

C) Maintenance

1) Play equipment that has fallen into disrepair should be removed from the property.

2) The Foundation has the authority to require the removal of any play equipment in need of repair and/or maintenance.

5.4.22 Play Equipment - Basketball Goals

Basketball goals may be installed where shown on the illustrations for each lot type in Appendix D. The Foundation has the authority to require the removal of any basketball goal in need of repair and/or maintenance. Temporary basketball goals may not be used on community streets. Goals may be installed in accordance with the following criteria:

A) Pole Mounted

1) For homes with front loading garages, temporary and/or permanent pole mounted basketball goals may not directly face the street unless otherwise approved by the WHDC. Permanent basketball goals may be installed on the side of the driveway and no farther than 10' from the garage door.

2) For homes with side or rear load garages, permanent pole mounted basketball goals may be installed either at the head or side of the driveway. Permanent basketball goals installed on the side of the driveway may only be located in the side or rear yard behind the front plane of the home.

3) Pole mounted basketball goals, temporary and/or permanent, are permitted in rear yards, directly behind the mass of the house and no closer than 8' to any property line.

4) Mounting pole must be black pre-finished metal or painted a neutral earth tone.

5) Backboard must be gray, white or clear acrylic. Colored or patterned backboards are not permitted.

6) Written approval of the Designated Committee is required for temporary or permanent goals.

B) House Mounted

1) Basketball goals may be mounted only on the garage elevation of the home.

2) House mounted basketball goals must be gray, white or clear acrylic. Colored or patterned backboards are not permitted.

5.4.23 Play Equipment - Trampolines

Trampolines may be installed in accordance with the following criteria:

A) All trampolines must be submitted to the Designated Committee for review indicating size and location. Brightly colored trampolines are not permitted.

B) Trampolines must be located behind the mass of the house. Location variations may be granted by the WHDC on a case-by-case basis pursuant to Section 1.2.4.

C) The Foundation has the authority to require the removal of any trampoline in need of repair and/or maintenance.

D) Written approval of the Designated Committee is required.

5.4.24 Ponds and Water Features

Ponds, waterfalls, fountains, or other decorative water features must be approved by the WHDC, and will be permitted in rear yards only.

5.4.25 Satellite Dishes and Antennas

A) Permitted Antennas

The following antennas are permitted as required by the Federal Telecommunications Act:

1) An antenna that is designed to receive direct broadcast satellite service, including direct-to-home satellite services that is one meter (39'') or less in diameter.

2) An antenna that is designed to receive video programming services via multi point distribution services, including multichannel, multi point distribution services, instructional television fixed services, and local multi point distribution services, and that is one meter (39'') or less in diameter or diagonal measurement.

3) An antenna that is designed to receive television broadcast signals.

B) Location:

To the extent feasible, antennas should not be visible from street. The following priorities shall be observed in determining antenna locations:

1) Mounted directly on the rear of the home, on a roof plane facing the rear, or on the back side of a chimney.

2) Mounted on the ground in the rear yard.

3) Mounted on a pole, an existing other structure, or a tree in the rear yard.

4) If no clear signal may be obtained in any of the above locations, mounted on the ground or, if necessary, on a pole, in the front yard, or on the front plane of the home.

5) (Television Broadcast Antennas only): Antennas shall be located in the house attic unless it can be demonstrated that inadequate space exists in this location, or that adequate reception is not feasible here.

C) Appearance and Screening

Insofar as possible, the visibility of antennas should be minimized using one or both of the following methods:

1) Screen the antenna from view from the street with natural plantings, trees and shrubs; to the extent they do not comprise the signal reception.

2) Use antennas with a dark or muted color, or paint the antenna a muted color to blend with the background surface or with the surrounding landscape.

3) NO ADDITIONAL REGULATION BY THE FOUNDATION: Under Federal law, antennas that meet the requirements of this section may not be further regulated by the White Hall Board of Directors or the WHDC as to type or placement. Residents are encouraged to use care in the selection and placement of antennas to preserve the appearance and character of White Hall.

5.4.26 Signs

Except as noted below, all signs on lots in White Hall, as well as lead-in signs and builder's or realtor's signs, shall be based on templates approved by the WHDC, and must be approved as to placement. During initial house construction, only one construction sign will be permitted per lot, for the identification of the builder, architect, sub-contractors and/ or suppliers. "For Sale" signs, other than those posted by the Declarant, shall be limited to one sign per lot and placed in the center of the front yard only. Rear yard signs are not permitted. No lead-in signs are permitted.

A) Real Estate Signs

Real estate signs for resale of a home may not exceed 4 square feet and may be placed in the front yard.

B) Security Signs

Signs indicating security systems are permitted in front of the home in landscape beds near the front door, not at the street. Security signs may not exceed a maximum of 10.5" x 8" in size.

C) Campaign Signs

Campaign signage may be on the Owner's lot and may not exceed 6 square feet and may not stand higher than 5' from the ground. Only one election sign (total) may be displayed per home in accordance with national, federal, local or community elections. The sign may be displayed no more than 2 months prior to or 7 days following any election.

D) Initial 'For Sale' Signs and Construction Signs

Initial For Sale/construction signs are signs placed by the original builder for the first sale of the home. Construction signs and initial For Sale signs are addressed in Section 3.6.

5.4.27 Shade Structures

(see also Section for trellis, pergola and arbors)

All temporary shade structures, permanent shade structures, and gazebos must be submitted to the Designated Committee for review and approval. If a temporary shade structure changes (i.e. location, size, or material), it must be resubmitted to the Designated Committee for review and approval. If considered a porch, see Section 3.23.3.

A) Awnings - See Section 5.3.3.

B) Temporary Shade Structures

Definition: Temporary shade structures are defined as an accessory structure, which may be attached to the home or freestanding, that provides cover or shade and lacks a permanent foundation, is assembled with non-permanent fasteners and is fold-able or collapsible.



Size: In general, temporary shade structures shall take up no more than 10% of the square footage of the rear yard. Larger temporary shade structures may be allowed on case-by-case basis at the discretion of the Foundation's Board of Directors and may remain on the Lot for no more than 7 days.

Location: Temporary shade structures shall be located behind the mass of the home. When not in use, temporary shade structures are to be stored so as not to be visible from the road or neighboring properties or common area.

Material / Finish: Poles must be wood or metal painted a muted color. The cover must be a solid muted color. Covers with a pattern can be reviewed by the reviewing committee on a case-by-case basis.

Time Frame: Temporary shade may be erected no earlier than April 15th and must be removed by October 15th of the same year.

C) Permanent Shade Structures

Definition: Permanent shade structures are defined as an accessory structure, which is freestanding. When attached to the house it is considered a porch. Permanent shade structures provide cover or shade and has a permanent foundation, is assembled with permanent fasteners and is not fold-able or collapsible.



Size: Permanent shade structures may not exceed 10' in height from the deck or patio floor to the tallest point of the structure.

Construction: Permanent shade structures shall be constructed of weather resistant wood, preferably western red cedar, cypress, or redwood, although pressure treated southern yellow pine will be the acceptable minimum. All exposed wood members, shall be surfaced (finished smooth) on all exposed sides. Unfinished, dimensional lumber will not be approved for exposed open or freestanding members.

Colors and Finishes: Permanent shade structures shall be painted to match the trim color of the house, finished with a clear finish, or match the color of the deck. If roofed, roofing material and color should match or complement the house roof color and material.

Location: Permanent shade structures shall be located on a deck or patio behind the mass of the home, and are not permitted on lawn or garden areas. Location variations may be granted by the Designated Committee for permanent shade structures located out from behind the mass of the home should the permanent shade structure be deemed to be of a superior design and should the impact to neighboring properties be deemed minimal. What is deemed a superior design or minimal impact shall be in the sole discretion of the Designated Committee.

Time Frame: Permanent shade structures are permitted to remain on the lot year round, but the entire structure (shade source, poles, bracing, etc) must be removed when the structure is no longer being used for its intended purpose. The Foundation shall have the right to require full removal of any permanent shade structure if it is determined that the structure is deemed unkempt, in the sole discretion of the Foundation.

D) Gazebos

Definition: Gazebos are defined as accessory structures that are freestanding, roofed, and open on all sides. Gazebos can have railings. They provide shade, shelter, and an ornamental feature in the landscape.





Design: Acceptable gazebos shall generally be octagonal (8) sided structures consisting of a base deck, decorative columns or posts, optional railings, and a sloped roof. Stepped roofs and/or cupolas may be added. Structures of other shapes such as square structures (see also Shade Structures) will be considered on the basis of equal architectural merit.

Size: The maximum width of a gazebo across flat sides shall be 14'-0". The maximum height from gazebo deck to eave edge shall be 8'-0". Gazebos shall have roof slopes generally of at least 8 in 12. Slopes shall be appropriate to size and style of gazebo.

Construction: Gazebos shall be constructed of weather resistant wood, preferably western red cedar, cypress, or redwood, although pressure treated southern yellow pine will be the acceptable minimum. All exposed wood members, except decking, shall be surfaced (finished smooth) on all exposed sides. Posts, railings, and other open wood members shall be turned, edged, or worked into shapes consistent with traditional gazebo designs. Unfinished, dimensional lumber will not be approved for exposed open or free-standing members.

Additional trim, detailing, brackets, cupolas, etc. shall be appropriate to the design and size of the gazebo. The Designated Committee reserves the right to deny gazebo designs with excessive and inappropriate detail, as well as with insufficient detail.

Gazebos may be built on site or assembled from kits. Applications for approval must include either scale drawings of plans and elevations, or manufacturer's brochure showing the exact gazebo being purchased, with dimensions and specifications.

Colors and Finishes: Gazebos shall be painted to match the trim color of the house, finished with a clear finish, or match the color of the deck, and roofed with shingles that match the house shingles.

5.4.28 Solar Panels

A) Per Section 67-701 (A) of the Code of Virginia Covenants Restricting Solar Energy Collection Devices ("CRSECD"), no community association shall prohibit an owner from installing or using solar energy collection devices. However, a community association may establish reasonable restrictions concerning the size, place, and manner of placement of such solar energy collection devices.

B) Solar Panels must comply with the James City County Guidelines for Solar Energy Systems as may be amended or changed from time to time.

C) Should Section 67-701 of the CRSECD be amended in such a way as to render this section 3.7.6 in conflict, state code shall supersede this section.

5.4.29 Spas and Hot Tubs

For swimming pools, see Section 5.4.30.

A) Permitted behind the mass of the home only.

B) Screening is required to mitigate the view of the Hot Tub or Spa from the road, neighborhood amenities or neighboring properties.

C) Privacy screens may be constructed like vertical board privacy fences or may be framed lattice. They may be constructed on decks or directly adjacent to patios for the purpose of screening spas. The extent of these privacy screens will be reviewed by the WHDC and/or MC on a case-by-case basis, but in no case may extend to the side, past the rear corners of the house. The WHDC and/or MC reserve the right to require additional landscaping for the purpose of screening.

5.4.30 Swimming Pools

For spas and hot tubs, see Section 5.4.29.

A) In-ground swimming pools are permitted in rear yards behind the mass of the home. Variations may be granted by the WHDC pursuant to Section 2.1.8.

B) Pool wells may be located no closer to any property line than 15'.

C) Pool decks shall be concrete, brick or concrete pavers, and may be located up to 5' from any property line.

D) The WHDC and/or MC reserve(s) the right to require landscape screening between a pool deck and any property line.

E) Above ground swimming pools are not permitted unless completely enclosed by a deck. See Section 3.23.5 for deck restrictions.

F) All pumps, filters & equipment must be screened from view from the road, amenities or neighboring properties. Screening should match the HVAC screening or with landscaping.

G) Pools must be fenced per County code. See Section 5.4.4 for additional fencing details.

H) Pools shall be enclosed with any rear yard fence type as detailed in Section 5.4.5, 5.4.6, or 5.4.7. Black metal fencing (excluding chain link) may be submitted for consideration on a case by case basis. Gates for swimming pool access shall be fitted with code approved security latches.

5.4.31 Temporary Commercial Storage Units (with or without wheels)

Temporary Commercial Storage Units must be approved in advance by the White Hall Community Manager by letter or e-mail. Requests shall include dates on which the storage unit will be on site but may not exceed fourteen (14) days unless otherwise approved by the Community Manager. Only one storage unit is permitted and must be placed on the driveway and as close to the home as possible.

5.4.32 Trellises, Arbors and Pergolas

Although the terms often are used interchangeably, trellises, arbors, and pergolas are distinctly different structures.

A) Trellises



A trellis is typically a latticework built to support climbing plants or vines. It can be as simple as a panel attached to the side of a building, or it can be freestanding in a garden or yard.

Trellises come in all sorts of shapes and sizes; typically based on the wall or area where it's to be located. The material, style. and color of the arbor should match the features of the house. As trellises are typically used for vines or other plants, a planting plan (if any) should be included with the application. Materials for trellises include aluminum, wood, and PVC (vinyl). Prefabricated kits will be reviewed on a case-by-case basis.

B) Arbors



An arbor usually incorporates a trellis into its structure, creating a tunnel-like passageway of climbing plants. Arbors have a continuous run of latticework from one side of the "tunnel" to the other, often in an arched shape.

Arbors come in all sorts of shapes,sizes and even colors. The architectural style of the arbor should match the style of the house. A standard arbor, as a gateway, is typically 3' - 6' wide and 6' - 8' tall. Materials for pergolas include aluminum, wood, and PVC (vinyl). Prefabricated kits will be reviewed on a case-by-case basis.

C) Pergolas

Pergolas, too, are designed to support climbing plants. Unlike arbors, though, pergolas have posts supporting an open, roof-like structure. They're most commonly used to shade a walkway or a deck. **(see "Shade Structures on page ___ for other options)**



Pergolas can vary in shape and sizes, but should be in scale with the house, patio, and/or yard.

A standard pergola will most often use 6 x 6 inch posts for support. A very small pergola may use 4 x 4 inch posts as long as it has less than 4 to 6 feet between posts. The height of pergolas typically are about 8 feet to 10 feet tall. Materials for pergolas include aluminum, wood, and PVC (vinyl).

D) Location

Trellises, arbors, and pergolas are permitted in the rear plane of the home but no closer than 7' to the property line unless the property line is adjacent to a natural or undeveloped property. For superior design or unique site conditions, the reviewing committee will consider other options.

5.4.33 Walkways (secondary)

A) Front / Main Walk

See Section 3.28

B) Secondary Walks

Secondary walkways located behind the front plane of the house or in the rear yard may include loose-laid stone in gravel or a mulch bed in addition to approved hard surface materials. Continuous landscape edging will be required along soft surface walks.

WHITE HALL
JAMES CITY COUNTY, VIRGINIA

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WHITE HALL

JAMES CITY COUNTY, VIRGINIA

CORINTHIAN ORDER

ELEVATION A-B SECTION C-D

PLAN

CAMPANILE

WHITE HALL
JAMES CITY COUNTY, VIRGINIA

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WHITE HALL
JAMES CITY COUNTY, VIRGINIA

New Construction Application

Please refer to the Design Review Standards prior to submittal.

Date submitted:

Date Reviewed:

White Hall
11237 Nuckols Rd
Glen Allen, VA 23059
Phone: 804-762-0038

Property Information

Block _____ Lot # _____ Section:_____

Address of Lot: _____

Plan Name / Elevation: _____

Is this a High Impact Lot? _____
(See Map on Page 48)

☐ Corner Lot

☐ Adjacent to Amenitized Areas

Application Fee

Preliminary Review: $250

Preliminary Review w/Lot: $275

Subsequent Reviews: $75

Check #: _____

Amount: _____

Applicant:

Applicant Name: _____

Address: _____

Builder: _____
(If different than applicant)

Contact Name: _____

Phone: _____

Email: _____

House Information

Finished Floor Area: _____sq. ft.

Proposed Materials:

Front Facade _____

What percent of vinyl is on the front?_____

Rear: _____

Sides: _____

Roof: _____

Foundation: _____

Rear Deck: _____

Patio: _____

Accents: _____

Driveway_____

The following items must be submitted electronically with this application:

☐ One (1) copy of a site plan (1" = 30') including tree preservation information. Indicate finish driveway and walkway materials on the plan. HVAC and Trash to be shown. Post light and

☐ One (1) copy of architectural plans and elevations. Indicate total finished floor area for each floor on plans. Also indicate foundation, chimney, siding, brick and roofing materials.

☐ Payment fee for review of plans.

☐ Optional: Application for approval of landscape plan (*provides for free landscape review*). If submitted separately: fee is $25.00 Street tree(s) and supplemental trees must be included.

Architectural plan review is for compliance with White Hall Covenants and Design Guidelines only. Approval does not relieve the Applicant of responsibility for obtaining all other necessary permits and compliance with applicable zoning and building codes.

DO NOT WRITE BELOW: *For Committee Use Only*

WHDC Action: ☐Preliminary Review ☐ Conditional Approval ☐ Not Approved (resubmit) ☐ Incomplete (resubmit)

Signed for WHDC: _____ Date: _____

WHITE HALL
JAMES CITY COUNTY, VIRGINIA

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WHITE HALL
JAMES CITY COUNTY, VIRGINIA

Lot Clearing Application

Please refer to the Design Review Standards prior to submittal.

Date submitted:

Date Reviewed:

White Hall
11237 Nuckols Rd
Glen Allen, VA 23059
Phone: 804-762-0038

Property Information

Block _____ Lot # _____ Section:_____

Address of Lot: _____

Date the Lot will be ready for Inspection: _____

Applicant:

Applicant Name: _____

Contact Name: _____

Address: _____

_____

Phone: _____

Email: _____

Builder: _____
(If different than applicant)

Lot clearing / stakeout, submitted electronically, shall include the staking of all house corners and of the driveway. Tree which are to be saved are to be clearly marked and groupings of trees or areas to be left natural should be identified with tape.

The applicant shall be the property owner at the time of application.

Lot clearing / stakeout review is for compliance with the White Hall Design Standards only. Approval does not relieve the applicant of responsibility for obtaining all other necessary permits and compliance with applicable zoning and building codes.

DO NOT WRITE BELOW: *For Committee Use Only*

WHDC Action: ☐ Preliminary Review ☐ Conditional Approval ☐ Not Approved (resubmit) ☐ Incomplete (resubmit)

Signed for WHDC: _____ Date: _____

WHITE HALL
JAMES CITY COUNTY, VIRGINIA

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WHITE HALL
JAMES CITY COUNTY, VIRGINIA

Landscape Application

Please refer to the Design Review Standards prior to submittal.

Date submitted:

Date Reviewed:

White Hall
11237 Nuckols Rd
Glen Allen, VA 23059
Phone: 804-762-0038

Property Information

Block _____ Lot # _____ Section:_____

Address of Lot: _____

Plan Name / Elevation: _____

Is this a High Impact Lot? _____ (See Map on Page 48)

☐ Corner Lot

☐ Adjacent to Amenitized Areas

Application Fee

First Time Review: No Charge

Subsequent Reviews: $25

Check #: _____

Amount: _____

Applicant:

Applicant Name: _____

Address: _____

Builder: _____
(If different than applicant)

Landscape Contractor: _____

Contact Name: _____

Phone: _____

Email: _____

The following items must be submitted electronically with this application:

☐ Copies of your landscape plan submitted in the same scale as the site plan in accordance with the White Hall Design Standards, including location of all planting areas and major plants, with a plant schedule of plant species and sizes.

☐ The landscape plan show (or provide a note) the required street tree(s) and supplemental trees.

☐ The landscape plan should indicate all site improvements including the house, driveway, walks, other structures, fences, etc.

☐ Irrigation Plan

☐ Trash Enclosure shown on the plan

☐ Post Lights shown on the plan

☐ HVAC units shown on the plan

Note: Native plant material should be used as much as possible.

Landscape plan review is for compliance with Charter Colony Covenants and Design Guidelines only. Approval does not relieve the Applicant of responsibility for obtaining all other necessary permits and compliance with applicable zoning and building codes.

DO NOT WRITE BELOW: *For Committee Use Only*

WHDC Action: ☐ Preliminary Review ☐ Conditional Approval ☐ Not Approved (resubmit) ☐ Incomplete (resubmit)

Signed for WHDC: _____ Date: _____

WHITE HALL
JAMES CITY COUNTY, VIRGINIA

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WHITE HALL
JAMES CITY COUNTY, VIRGINIA

Color Application

Please refer to the Design Review Standards prior to submittal.

Date submitted:

Date Reviewed:

White Hall
11237 Nuckols Rd
Glen Allen, VA 23059
Phone: 804-762-0038

Property Information

Block _____ Lot # _____ Section:_____

Address of Lot: _____

Plan Name / Elevation: _____

Application Fee

First Time Review: No Charge
Subsequent Reviews: $25

Check #: _____

Amount: _____

Requested Colors

	Manufacturer	Color	Paint	Stain	Vinyl	Other
Siding:			☐	☐	☐	☐
Shake Siding:			☐	☐	☐	☐
Trim:			☐	☐	☐	☐
Shutters:			☐	☐	☐	☐
Front Door:			☐	☐	☐	☐
Front Door Style:						
Garage Door:			☐	☐	☐	☐
Main Roof:			☐	☐	☐	☐
Secondary Roof:			☐	☐	☐	☐
Brick:						
Mortar:						
Stone:						
Deck Railings:						
Window Grids:						
Other:						

Architectural plan review is for compliance with White Hall Covenants and Design Standards only. Approval does not relieve the Applicant of responsibility for obtaining all other necessary permits and compliance with applicable zoning and building codes.

DO NOT WRITE BELOW: *For Committee Use Only*

WHDC Action: ☐ Preliminary Review ☐ Conditional Approval ☐ Not Approved (resubmit) ☐ Incomplete (resubmit)

Signed for WHDC: _____ Date: _____

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WHITE HALL
JAMES CITY COUNTY, VIRGINIA

Final Application

Please refer to the Design Review Standards prior to submittal.

Date submitted:

Date Reviewed:

White Hall
11237 Nuckols Rd
Glen Allen, VA 23059
Phone: 804-762-0038

Property Information

Block _____ Lot # _____ Section:_____

Address of Lot: _____

Applicant:

Applicant Name: _____ Contact Name: _____

Address: _____ Phone: _____

Builder: _____ Email: _____
(If different than applicant)

Checklist

Yes	No	NA	
☐	☐	☐	Is post light 'hot wired' with a hot wired photocell
☐	☐	☐	Site Plan: Is house sited as submitted and approved?
☐	☐	☐	House plan built as submitted and approved?
☐	☐	☐	Lot stakeout submitted and approved?
☐	☐	☐	Colors submitted and applied as approved?
☐	☐	☐	Driveway built as submitted and approved?
☐	☐	☐	Sidewalk installed and correctly sized in front of the home.
☐	☐	☐	Sidewalk installed to front door?
☐	☐	☐	Post light installed with concrete and located correctly?
☐	☐	☐	Landscaping installed as per the approved plan?
☐	☐	☐	HVAC and other utilities correctly screened?
☐	☐	☐	Trash Enclosure installed?
☐	☐	☐	Roof vents painted to match the roof?
☐	☐	☐	Lattice screening under deck (and front porch if applicable)?
☐	☐	☐	Sod installed in front, side and rear yards?
☐	☐	☐	Other: _____
☐	☐	☐	Other: _____

Modification Requests with Required Documentation

The lists below contain minimal information required for a submittal to the Modifications Committee. Every submittal is unique and therefore may require additional information. It is best to include as much or more information as possible to assist the Committee in their review of your request.

Note: If you are proposing a feature that is not included in this checklist, please request assistance from the management company

House Additions

- Plat showing all property lines, existing structures, decks and patios, driveways and walks, easements, setbacks and the house addition showing location and dimensions
- Architectural plans sealed by a registered architect
- All materials, including but not limited to, siding, roof, shutters, trim, windows, etc.
- Colors of all proposed materials
- Photographs of the house from all sides with the proposed location noted

Sheds & Accessory Buildings

- Plat showing all property lines, existing structures, decks and patios, driveways and walks, easements, setbacks and the shed or accessory building showing location and dimensions
- Exact size (Height, width, length). Photos or specifications from the manufacturer are helpful.
- Details including siding material, color, doors, windows, shutters
- Foundation material and details
- Any screening proposed (lattice and/or plants)
- Photographs of the house with a list of colors, type of siding and roof material.

Decks

- Plat showing all property lines, structures, existing decks and patios, driveways and walks, easements, setbacks and the deck showing location and dimensions
- Dimensions of deck flooring, railings (height and size) and posts (height and size)
- Material and exact name of color (stain, paint)
- Any screening proposed (lattice and/or plants)
- Photographs of the house, especially the proposed deck location

Fence

- Plat showing all property lines, structures, existing decks and patios, driveways and walks, easements, setbacks and the fence showing location and gate locations.
- Exact type of fence including size, material, stain or paint color (exact color name)
- Photos or specifications from the manufacturer.
- If available, a quotation from a contractor with specifications.
- Photographs of the site if unusual circumstances exists.

Play Equipment

- Plat showing all property lines, existing structures, decks and patios, driveways and walks, easements, setbacks and the play equipment showing location and dimensions
- Photographs or specifications from the manufacturer showing material, color, height, width and length
- Any proposed site additions such as mulch or landscaping.
- Photographs of the site location, especially how it relates to the neighbors

Landscaping

- Plat showing all property lines, existing structures, decks and patios, driveways and walks, easements, setbacks and the proposed landscaping showing location of plant beds and/or plant material.
- Plant locations and plant schedule showing plant names and sizes.
- If mulch is added, specify type and color.
- If edging is added, specify the material.
- Note on the plans if any grading is required. In certain circumstances a letter from a licensed engineer may be required.

Hardscaping (patios, fire pits, arbors, etc.)

- Plat showing all property lines, existing structures, decks and patios, driveways and walks, easements, setbacks and the proposed feature showing location and dimensions
- Details and materials such as stone/brick, finishes, colors, etc. that are specific to the feature
- If not hand built, photographs or specifications from the manufacturer showing material, color, size
- Any proposed site additions such as landscaping.
- Photographs of the house and site location, especially how it relates to the neighbors.

Trash Enclosure

- Plat showing all property lines, existing structures, decks and patios, driveways and walks, easements, setbacks and the trash enclosure showing location and dimensions
- Type of screening with all dimensions
- Materials and paint/stain color
- Photographs of the house, especially the proposed trash enclosure location

WHITE HALL
JAMES CITY COUNTY, VIRGINIA

New Construction Application

Please refer to the Design Review Standards prior to submittal.

Date submitted:

Date Reviewed:

White Hall
11237 Nuckols Rd
Glen Allen, VA 23059
Phone: 804-762-0038

New Application for MC ☐	Re-Submittal to MC ☐	Appeal to MC ☐	
New Application for WHDC ☐	Appeal to MC ☐	Resident Appeal to WHDC ☐	

This section is for office use only:

Conditional Approval: _____ Assigned to Follow-Up: _____

Variation(s) Granted: _____ Not Approved: _____

Deferred for Additional Information: _____ Additional Information Needed: _____

Please fill out completely and make sure that all proper documentation, materials, etc. are included with the application, otherwise, the application will be deemed incomplete.

Applicant Name:_____ Contact Phone #_____

Address: _____ Email: _____

Do you currently own the lot: Yes ☐ No ☐ Lot #: _____ Adjacent to Common Area? Yes ☐ No ☐

DESCRIPTION OF REQUEST: *Please check the appropriate box and include any specifications/explanations with the application.*

☐ Addition ☐ Landscaping ☐ Solar Panels ☐ Patio ☐ Storm Door ☐ Accessory Building ☐ Play Structure

☐ Landscape Accessory ☐ Fence ☐ Screened Porch ☐ Deck ☐ Other: _____

REQUIRED: Submittal may not be reviewed unless all information is included for your request:

☐ **Application (required)**

☐ **Plat / Survey of Property (required):** The plat should include all improvements to the property including, but not limited to, structures, driveways and walks, decks and patios, easements, and setbacks.

☐ **Site Plan of Improvements (required):** Identify the location of the proposed improvements and actual dimensions in relation to the existing structures, driveways, setbacks, easements, etc. Photographs of the site are usually beneficial.

☐ **Specifications (required):** Provide detailed drawings, specifications and/or photos of the proposed improvement. List all materials, dimensions, types & colors. Provide material samples as applicable (color chip, type of rock, photos).

☐ **Architectural Plan (if applicable):** When additions are being proposed, identify square footage, front, sides and rear elevations, color selection, and special details.

☐ **Landscape Plan (if applicable):** Identify location of Landscape Improvements, property lines, existing walls and fences, landscape materials (sod, tree, shrub and ground cover types), irrigation and lighting (if applicable), utility easements, north arrow and scale. (A Landscaping Plan is required for any landscape improvements other than for maintenance purposes.)

I do, by my signature,understand and agree to the following:

1) The White Hall Foundation has encouraged me to review these plans with the adjacent owners to our lot as a courtesy.

2) It is the sole responsibility of the owner to obtain all county permits.

3) That all County codes supersede any approvals given and are the sole responsibility of the owner to research.

4) That I assume total responsibility for the upkeep and maintenance of all modification(s) made in the area. I also acknowledge that obtaining insurance for the improvement is my responsibility.

5. That the modification(s) will in no way hinder yard care.

6. The White Hall Foundation reserves the right to require removal or repair of the modification at my own expense if 1) the modification is not constructed or installed as per the specifications submitted for approval with this form; or 2) the modification is not maintained in a safe condition; or 3) the modification is not maintained in keeping with the surrounding structures and is not satisfactory to the Modifications Committee.

7) I certify that I have read and agree to follow the rules and regulations pertaining to architectural control and review.

8) There is no obligation on the part of the Applicant to ever start this modification. However, if Applicant does not start construction within six (6) months, approval will automatically be revoked without prior notice from the Association. Time extensions may be granted upon written receipt, at the discretion of the Association. When extensions are not granted, the application must be resubmitted for review.

9) This document will become part of the owner's homeowner file and will inure to any succeeding owners. Owner is encouraged to include disclosure of this document to any subsequent purchasers.

_____ _____

Date Applicant / Owner Signature

DO NOT WRITE BELOW: *For Committee Use Only*

_____	_____	_____	_____
Date Received by MC Staff	Date Reviewed by MC	Follow-Up-Date	Initial
_____	_____	_____	_____
Date Received by WHDC	Received by	Date Reviewed by WHDC	Date

Community Impact Statement

For

Hankins-Dunn Property



Prepared For

HHHunt

October 26, 2022
Revised: March 23, 2023
Revised: August 4, 2023

JCC Case Number: Z-22-0004/SUP-22-0026

AES Project Number: 9149-11

Prepared by:

AES
CONSULTING ENGINEERS

5248 Olde Towne Road Suite 1
Williamsburg, Virginia 23188
Phone: 757-253-0040
Fax: 757-220-8994
www.aesva.com

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I. INTRODUCTION

HHHunt, proposes to create a development consisting of a mix of residential single family attached and detached housing to complement the existing White Hall community which they also developed. The amenities in this new community would complement the existing amenities within the White Hall community and make possible a shared homeownership association.

II. THE PROJECT TEAM

The organizations that participated in the preparation of the information provided with this rezoning submission are as follows:

- Owner(s) - George M. Hankins Jr. & Sharon H. Dunn
- Developer - HHHunt
- Attorney - Geddy, Harris, Franck & Hickman, LLP
- Civil Engineering - AES Consulting Engineers
- Environmental/Wetlands - Wetland Studies and Solutions, Inc. (WSSI)
- Traffic - DRW Consulting
- Land Planning - AES Consulting Engineers

III. EXISTING CONDITIONS

Master Plan Sheet 2 contains detailed information on wetlands, buffers, soils, and slopes. A pre-development site analysis revealed the following results:

Wetland areas, Buffers and Steep Slopes, etc…	*61.260 acres*
Developable Land	*155.766 acres*
Land Dedication to School Property	*3.000 acres*
Total Site Area	***220.026 acres***

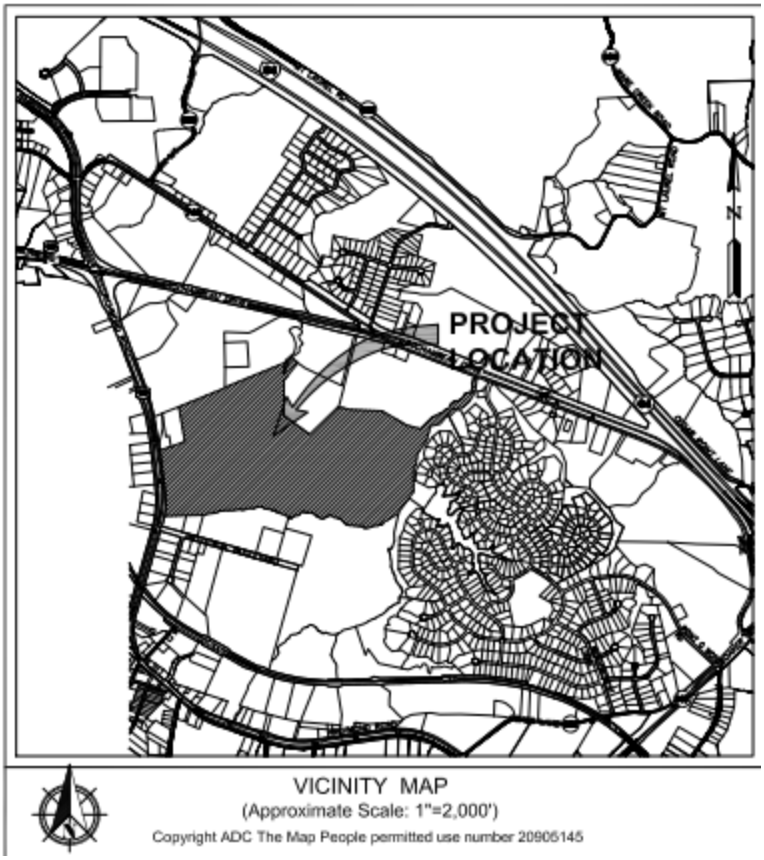


Figure 1 – Site Location

IV. PROJECT DESCRIPTION

HHHunt is proposing to develop a community on approximately 220 acres near Anderson's Corner in James City County. This location has been identified on the County's comprehensive plan as low density residential for multiple plan cycles and is a location recommended for concentrated development on the Alternative B plan from the County's Engage 2045 initiative. Current plans illustrate a mix of residential building types and open space connected by a series of interconnecting streets and alleys and further served by a 4-lane divided highway, Route 60.

The proposed project is located adjacent to Hickory Neck Episcopal Church and the White Hall subdivisions (also developed by HHHunt). The intent of the developer is to provide pedestrian connectivity and shared amenities between these developments under a common homeowner's association.

The planning efforts for the proposed project include several types of open space contributing to the unique character of the project. Buffers of 35' and more are provided around the perimeter of the community, with a 150' Community Character Corridor buffer along the Route 60 road frontage. Non developable open space consisting of wetlands, streams, and slopes of 25% or greater bound much of the eastern boundary of the property. Other developable lands have been provided as common open space either in the form of expanded buffer areas or recreation open space noted on the Master Plan. A detailed site analysis was conducted by Wetland Studies and Solutions that identified wetlands and stream beds and buffers of approximately 60 acres. The non-developable 61.260 acres is approximately 28% of the total parcel acreage. See the Environmental Inventory drawing identifying areas of non-developable and net developable acreages as they relate to this application included with the Master Plan drawings.

V. PLANNING CONSIDERATIONS

A. Land Use

The current zoning of the property is A-1. A-1 lands (General Agricultural District) provide for farming and forestry activities, low density residential uses, certain recreational uses, certain public or semipublic uses and institutional uses. A review of the Comprehensive Plan of James City County shows this area designated as Low Density Residential and lying within the PSA or Primary Service Area. Low density residential areas are developments or lands generally suited for gross densities of up to one dwelling unit per acre. Residential developments with densities greater than 1 unit per acre and up to 4 units per acre may be considered if they offer particular public benefits to the community. This application is proposing a rezoning from A-1 to R-2 with a Residential Cluster overlay. After discussion with planning staff, R-2 was chosen as the most appropriate underlying zoning given the requested residential uses because it provides design flexibility. This flexibility permits the ability to include townhome units along with single family units and the cluster facilitates the ability to provide a large percentage of the net developable land as open space and also provide for a more affordable housing mix.

The Master Plan was planned incorporating elements of the JCC Ordinance Section 24-551 – Open Space Development Design Elements. This community plan is a compact walkable neighborhood that preserves significant continuous open space and natural features around most of its perimeter. 35.5% of the developable land is being preserved as open space. Most of the community lies within the existing footprint of the existing farm fields so clearing the mature forestland will be kept at a minimum. Home types range from smaller townhome lots with parking

pads to larger single family detached homes that site on 70' wide lots. This variability in home sizes translates into a variability in home pricing that allows a maximum range of affordable homes. Cul-de-sacs have been minimally planned with the majority of streets on a gridded type of layout. The façade along Richmond Road will be landscaped consistently with that of White Hall with column entrances and black three board fence. The internal focal feature of the community is a lengthy mews that connects the proposed amenity center to the existing White Hall community. To achieve this planning feature, alleys are planned for the backs of these homes.

To achieve a community density above 1 unit per acre requires density bonus points per JCC Ordinance Section 24-549 – Density Standards. The Master Plan shows a maximum of 582 units on 217.026 gross acres and 155.766 net developable acres (does not include the 3.0 acres being gifted to County for school usage). The gross density is 2.68 units/acre but the adoption of Ordinance No. 31A-357 on May 9, 2023 requires that all densities now be referenced in terms of net density which is 3.74 units/acre. Whereas before the adoption of Ordinance No. 31-357 four (4) density bonus points would have been required, six (6) density bonus points are now required. 6.5 density bonus points are being provided as follows:

- *Bonus Item Option C – Undertaking or funding a stream restoration project or stormwater management facility retrofit within the same sub-watershed, as identified by an approved watershed management plan or by the engineering and resource protection division. (1.5 point)*

  To assist in funding the restoration effort of existing degraded streams located downstream from the stormwater facilities on the Stonehouse Elementary School property as identified by the engineering resource protection division, in addition to the cash proffer, there shall be $500, paid on a per lot basis, to contribute to stream restoration.

- *Bonus Item Option D – Meeting a majority of items (a) – (d) listed in section 24-551, open space development design elements (1.5 points)*

  (a) The community, similar in design to White Hall, has a compact layout that encourages pedestrian movement with key open space either preserved or amenitized. More than 75% of the community is within a 10 minute walk of the amenity center and 100% within a 5 minute walk to a pocket park or the trail system.

  (b) The development is mostly contained within the existing farmed fields with limited clearing of existing forest lands. Likewise, the plan avoids most of the steep slopes on the property.

  (c) Home types will vary ranging from townhomes to larger single family detached homes; creating a diverse community or residents with different needs and/or economic situations..

  (d) Like White Hall, the use of cul-de-sacs is minimal allowing for significant connectivity within the neighborhood.

(e) A planned trail system will connect this community through that continuous ribbon of wildlife habitat.

- *Bonus Item Option H – Preserving a single area of health, mature, mixed hardwood forestland at least two acres in size with the developable portion of the stie. The planning director may request that the developer provide confirmation, prepared by a certified horticulturalist, that these qualities are present (1 point).*

  An area 2 acres in size has been identified on the northern property line next to the Williamsburg Christian Academy. A certification from a WSSI arborist is included which confirms that the forestland is comprised of mature mixed hardwoods. Prior to the first occupancy permit, this area will be deed restricted prohibiting the clearing of trees.

- *Bonus Item Option I – Retaining a single area of agricultural land designated on the USDA maps to be of prime or statewide importance that is at least five acres in size. (1 point)*

  An area 5 acres in size has been identified adjacent to the 150' CCC buffer on the southern side of the Hickory Neck Church. This land is confirmed as prime agricultural land on the USDA online maps. Prior to the first occupancy permit, this area will be deed restricted designating this area as for agricultural preservation.

- *Bonus Item Option K – Providing pedestrian accommodations on one side of all internal roadways, where this would exceed the requirements set forth in section 24-35 of this chapter (1 point)*

  Sidewalks will be constructed on both sides of all public streets.

- *Bonus Item Option L – Implementation of Design Guidelines that include superior architectural design. (0.5 points)*

  The design guidelines from White Hall have been updated in a new format and are presented to continue the neighborhood placemaking and quality of home construction as previously accomplished.

The above shall be implemented on this project through proffers or Master Plan designation.

B. Environmental

A detailed environmental site analysis was conducted on this property. The property is largely crop land that has been actively farmed for hundreds of years. The property is bounded at the east/southeast by wetlands and RPA buffers. Recent work performed by the Environmental Services Division of Wetlands Studies and Solutions identified approximately 61.26 acres of wetlands, streams and RPA buffers which account for approximately 28.2% of the site. Wetland Studies and Solutions, Inc. has also conducted a perennial stream analysis on the property and James City County Stormwater and Resource Protection Division concurred with the delineation and approved the RPA limits on April 24, 2023. Additional areas containing slopes of 25% or

greater have been mapped but account for limited portions of the developable area of the site (outside RPA buffers).

C. Parks and Recreation

HHHunt proposes to provide both active and passive recreational amenities designed to meet the needs of the anticipated residents within the proposed community. Based on the James City County Parks and Recreation Master Plan guidelines, the development will include a minimum of: 1 playground, 2.05 acres of park land, 2,800 ft of biking/jogging trails, 25-meter competition pool and 1 multi-use rectangular field. The intention is to annex this community into the existing White Hall community which will allow current White Hall residents to use these new amenities as well. A cohesive community under one homeowner management will be more financially stable than 2 separate communities.

VI. ANALYSIS OF IMPACTS TO PUBLIC FACILITIES AND SERVICES

The subject property is located within the Primary Service Area of James City County. Parcels and subsequent land development activities within the Primary Service Area are required to connect to public water and sanitary sewer service provided by the James City Service Authority (JCSA). Sheet 4 of the Master Plan, *The Master Utility Plan* is intended to supplement this report for information on public water and public sanitary sewer.

A. Public Water Facilities

The subject property will be served with public drinking water by the existing JCSA water distribution system in the area. JCSA currently maintains an existing 12-inch water main through the middle of this property which links the water mains along both Richmond Road and Rochambeau Drive. The water main on Richmond Road becomes a 16-inch water main north of Hickory Neck Church and continues to the Stonehouse Commerce Park north of the proposed development. A 12-inch water main lies along the south side of Rochambeau Drive and extends from the middle of the property towards interconnections with Stonehouse Elementary School. A water distribution system model will be completed and submitted prior to the site or subdivision

plans. During the model development, a meeting will be held with JCSA to review the water main layout. The model will examine flow rates and pressures throughout the immediate water system area. The water model will account for all single–family attached residential buildings.

B. Public Sewer Facilities

Sanitary sewer service can be provided to the subject development by two existing JCSA pumping stations. These stations convey sewage flow into the existing 20-inch HRSD force main which runs from the entrance of Stonehouse Commerce Park south along Barhamsville Road to Anderson's Corner, then along Rochambeau Drive eastwards to eventually discharge at the Williamsburg Wastewater Treatment Plant. In addition, a 12-inch JCSA force main runs along Richmond Road from JCSA Lift Station 6-8. This force main contains additional capacity for properties along its corridor, should it be necessary. Properties along School Lane, including Stonehouse Elementary, Faith Fellowship Assembly of God, and the Williamsburg Christian Academy operate and maintain individual grinder pump stations which connect to a common JCSA force main along School Lane. This pipeline is connected to the HRSD force main at the intersection with Rochambeau Drive.

JCSA Lift Station 9-7 is located on the north side of Old Stage Road and was built to initially serve the Fenwick Hills subdivision. A small fraction of the sewage flows generated from the proposed development will flow by gravity into this station. Table 1 below shows the flows generated by the development that will be conveyed to LS 9-7.

The remaining portion of the proposed development will flow by gravity to the east to existing JCSA Lift Station 9-5 located at the entrance to the Wellington subdivision at Rochambeau Drive. This sewer will require crossing the wetlands to connect to the existing JCSA sanitary main adjacent the Wellington Subdivision. Approval for this wetland impact is expected to occur soon with a nationwide permit authorization. This connection was anticipated with the design of LS 9-5. LS 9-5 was initially designed to serve a large area including the project area along School Lane. Table 1 below shows the flows generated by this development that will be conveyed to LS 9-5.

The total wastewater flow generated by the proposed development is shown in Table 1 below.

Table 1 – Wastewater Flows from Development

Type of Development	No. of Units	Flow (GPD/ Unit)	Average Daily Flow (GPD)	Duration (hrs)	Avg. Flow (GPM)	Peak Flow (GPM)
To LS 9-7	186	310	57,660	24	40.0	100.0
To LS 9-5	396	310	122,760	24	85.3	213.3
Total	**582**		**180,420**		**125.3**	**313.3**

A thorough capacity study will take place prior to the site plan phase. The capacity study will include existing and future conditions and requires modeling with updated pressure information from HRSD. During the model development, a meeting will be held with JCSA to review modeling considerations and scenarios.

C. Fire Protection and Emergency Services

There are currently five fire stations providing fire protection and Emergency Medical Services (EMS) services to James City County. The closest fire station to the subject site is Station #1 located at 3135 Forge Road, approximately 1 mile south of this project. From this station, an estimated response time will be less than two minutes.

The next closest fire station to the subject site is station number 4 at 5312 Olde Towne Road. Although more distant than the Forge station, response time to the site is reasonable if an emergency event occurs requiring additional fire and life safety support. These two fire stations, and the emergency medical staff available at these stations, will provide a more than adequate response to potential emergencies. In addition, through cooperative agreements between Williamsburg, James City County and York County, the site may also be served by the York County station at Lightfoot.

D. Solid Waste

The proposed development on the subject property will generate solid wastes that will require collection and disposal to promote a safe and healthy environment. As currently happens in White Hall, reputable, private contractors, hired by the Homeowners Association will handle the

collection of solid waste. Both trash and recyclable material will be removed from this site to a solid waste transfer station.

E. Utility Service Providers

Virginia Natural Gas, Dominion Virginia Power, and Cox Communications provide, respectively, natural gas, electricity, cable TV service, and telephone service to this area. The current policy of these utility service providers is to extend service to the development at no cost to the developer when positive revenue is identified; plus, with new land development, these utility service providers are required to place all new utility service underground.

F. Schools

The property is located within the Stonehouse Elementary School, Toano Middle School, and Warhill High School districts. The development is expected to generate a total of 186 school age children (82 Elementary, 43 Middle, and 61 High)

Stonehouse Elementary School 82 additional elementary school students are expected to be generated by the development. For school year 2022-2023, SES was 107.4% of design capacity (802 students for a design capacity of 747 students). SES is over capacity by 55 students. However, the overall elementary school system was at 87.7% capacity (4,873 students with a capacity for 5,556). With extra capacity within the entire elementary school system, the addition of 82 elementary school students from this development still keeps the overall elementary school capacity under 100%.

Stonehouse Elementary School

Historical Enrollment

Grade	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
K	108	97	104	119	97	116	133	106	139	116
1	115	116	115	110	129	106	113	127	117	156
2	106	123	115	112	126	140	112	113	131	132
3	111	113	126	117	118	129	141	111	115	142
4	137	126	133	132	119	126	137	134	116	134
5	143	144	121	137	134	128	128	127	140	122
Total	**720**	**719**	**714**	**727**	**723**	**745**	**764**	**718**	**758**	**802**

Source: Williamsburg-James City County Public Schools, 9/30/22 Count

Williamsburg-James City County Public Schools
Historical Enrollment

Grade	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
K	778	751	760	813	770	807	788	670	763	786
1	831	809	810	792	863	791	811	765	724	847
2	828	851	832	808	808	886	832	747	803	779
3	804	839	865	860	828	825	902	762	772	814
4	821	824	871	868	868	840	833	843	784	825
5	841	838	841	887	881	875	853	796	879	822
K - 5 Total	**4,903**	**4,912**	**4,979**	**5,028**	**5,018**	**5,024**	**5,019**	**4,583**	**4,725**	**4,873**
6	853	852	887	879	857	897	884	824	836	922
7	839	860	859	886	876	872	892	864	851	869
8	854	855	873	863	907	872	879	867	898	874
6 - 8 Total	**2,546**	**2,567**	**2,619**	**2,628**	**2,640**	**2,641**	**2,655**	**2,555**	**2,585**	**2,665**
9	1,021	980	953	1,008	931	989	940	958	1,015	1,036
10	908	986	976	965	1,035	948	1,005	912	932	991
11	806	875	939	918	959	958	897	964	833	886
12	814	796	837	884	894	901	932	886	928	857
9 - 12 Total	**3,549**	**3,637**	**3,705**	**3,775**	**3,819**	**3,796**	**3,774**	**3,720**	**3,708**	**3,770**
K - 12 Total	**10,998**	**11,116**	**11,303**	**11,431**	**11,477**	**11,461**	**11,448**	**10,858**	**11,018**	**11,308**

Source: Williamsburg-James City County Public Schools, 9/30/22 Count

Toano Middle School 43 additional middle school students are expected to be generated by the development. For school year 2022-2023, TMS was 85.8% of design capacity (678 students for a design capacity of 790 students). TMS is under the design capacity by 112 students. The overall middle school system is at 85.2% of design capacity (2,665 students with a capacity for 3,129) with no single middle school over capacity. With extra capacity at TMS and within the entire middle school system, the addition of 43 middle school students from this development still keeps capacity under 100%.

Toano Middle School
Historical Enrollment

Grade	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
6	262	264	268	275	262	232	207	190	210	235
7	232	259	276	275	276	230	245	195	203	233
8	239	233	259	276	278	239	226	243	203	210
Total	**733**	**756**	**803**	**826**	**816**	**701**	**678**	**628**	**616**	**678**

Source: Williamsburg-James City County Public Schools, 9/30/22 Count

Williamsburg-James City County Public Schools
Historical Enrollment

Grade	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
K	778	751	760	813	770	807	788	670	763	786
1	831	809	810	792	863	791	811	765	724	847
2	828	851	832	808	808	886	832	747	803	779
3	804	839	865	860	828	825	902	762	772	814
4	821	824	871	868	868	840	833	843	784	825
5	841	838	841	887	881	875	853	796	879	822
K - 5 Total	**4,903**	**4,912**	**4,979**	**5,028**	**5,018**	**5,024**	**5,019**	**4,583**	**4,725**	**4,873**
6	853	852	887	879	857	897	884	824	836	922
7	839	860	859	886	876	872	892	864	851	869
8	854	855	873	863	907	872	879	867	898	874
6 - 8 Total	**2,546**	**2,567**	**2,619**	**2,628**	**2,640**	**2,641**	**2,655**	**2,555**	**2,585**	**2,665**
9	1,021	980	953	1,008	931	989	940	958	1,015	1,036
10	908	986	976	965	1,035	948	1,005	912	932	991
11	806	875	939	918	959	958	897	964	833	886
12	814	796	837	884	894	901	932	886	928	857
9 - 12 Total	**3,549**	**3,637**	**3,705**	**3,775**	**3,819**	**3,796**	**3,774**	**3,720**	**3,708**	**3,770**
K - 12 Total	**10,998**	**11,116**	**11,303**	**11,431**	**11,477**	**11,461**	**11,448**	**10,858**	**11,018**	**11,308**

Source: Williamsburg-James City County Public Schools, 9/30/22 Count

Warhill High School 61 additional high school students are expected to be generated by the development. For school year 2022-2023, WHS was at 92.0% of design capacity (1,325 students for a design capacity of 1,441 students). WHS is under the design capacity by 116 students. The overall high school system is at 95.1% of design capacity (3,770 students with a capacity for 3,963). With extra capacity at WHS and within the overall high school system, the addition of 61 high school students from this development still keeps capacity under 100%.

Warhill High School

Historical Enrollment

Grade	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
9	325	321	312	372	340	366	343	345	365	328
10	282	322	320	326	386	346	360	334	347	368
11	258	261	298	304	337	365	316	343	299	330
12	263	260	258	293	309	311	353	318	323	299
Total	**1,128**	**1,164**	**1,188**	**1,295**	**1,372**	**1,388**	**1,372**	**1,340**	**1,334**	**1,325**

Source: Williamsburg-James City County Public Schools, 9/30/22 Count

Williamsburg-James City County Public Schools

Historical Enrollment

Grade	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
K	778	751	760	813	770	807	788	670	763	786
1	831	809	810	792	863	791	811	765	724	847
2	828	851	832	808	808	886	832	747	803	779
3	804	839	865	860	828	825	902	762	772	814
4	821	824	871	868	868	840	833	843	784	825
5	841	838	841	887	881	875	853	796	879	822
K - 5 Total	**4,903**	**4,912**	**4,979**	**5,028**	**5,018**	**5,024**	**5,019**	**4,583**	**4,725**	**4,873**
6	853	852	887	879	857	897	884	824	836	922
7	839	860	859	886	876	872	892	864	851	869
8	854	855	873	863	907	872	879	867	898	874
6 - 8 Total	**2,546**	**2,567**	**2,619**	**2,628**	**2,640**	**2,641**	**2,655**	**2,555**	**2,585**	**2,665**
9	1,021	980	953	1,008	931	989	940	958	1,015	1,036
10	908	986	976	965	1,035	948	1,005	912	932	991
11	806	875	939	918	959	958	897	964	833	886
12	814	796	837	884	894	901	932	886	928	857
9 - 12 Total	**3,549**	**3,637**	**3,705**	**3,775**	**3,819**	**3,796**	**3,774**	**3,720**	**3,708**	**3,770**
K - 12 Total	**10,998**	**11,116**	**11,303**	**11,431**	**11,477**	**11,461**	**11,448**	**10,858**	**11,018**	**11,308**

Source: Williamsburg-James City County Public Schools, 9/30/22 Count

Schools - Elementary Schools	Effective Capacity
Clara Byrd Baker*	599
Laurel Lane*	574
DJ Montague*	578
Norge*	725
Matthew Whaley	449
James River	528
Stonehouse	747
Matoaka	747
Blayton*	609
Total	**5,556**

Schools - Middle Schools	Effective Capacity
Berkeley	779
Toano	790
James Blair	608
Hornsby	952
Total	**3,129**

Schools - High Schools	Effective Capacity
Lafayette	1,314
Jamestown	1,208
Warhill	1,441
Total	**3,963**

Source: FutureThink Report Enrollment Projections Update dated October 26, 2022

VII. ANALYSIS OF ENVIRONMENTAL IMPACTS

A. Preliminary Wetland Determination

Investigations were conducted by WSSI (Wetland Studies and Solutions). The extent of wetland features are shown on existing conditions map included in the master plan (Sheet 2). The U.S. Army Corps of Engineers confirmation of delineated wetlands is currently underway. In the Master Plan for the proposed development, we have attempted to avoid all impacts to the wetlands, however it may be necessary to provide minor impacts to the wetlands for utility and stormwater outfalls. In addition, there may be some temporary disturbances of some steep slopes associated with the construction of the stormwater management facilities. All of the above-described impacts are shown on Sheet 2 based on the anticipated development. These items will require further review and approvals from local, state and federal agencies prior to the issuance of James City County Land Disturbance Permits.

B. Resource Protection Areas

The wetlands on the property mandate the implementation of 100-ft Resource Protection Areas (RPA) buffers which are shown on Master Plan Sheet 2- Existing Conditions. These buffers are outlined by WSSI and have been confirmed by the James City County Stormwater and Resource Protection Division.

C. Soils

The *Soil Survey of James City and York Counties and the City of Williamsburg, Virginia* (USDA 1985) maps several soil types within the Anderson's Corner Site boundary. The hydrologic classifications of the mapped soil types range from group A (well drained) to group D (poorly drained). Among the mapped units, Johnston complex is classified by the NRCS as a hydric soil. However, Johnston soils are limited primarily to the areas of the unnamed drainage swales and intermittent stream. The Anderson's Corner Site is predominantly situated on well-drained soils and the shrink-swell potential is low to moderate in all soils mapped within the site boundary. Detailed soils breakdown is noted on sheet 2 of the master plan.

VIII. ANALYSIS OF STORMWATER MANAGEMENT

As the property falls within the upper reaches of the Ware Creek Watershed. The stormwater design for this project seeks to direct runoff through a series of stormwater controls (treatment train) prior to discharging stormwater into the receiving waters. Additionally, the site stormwater should benefit the watershed by taking a large track of farm field and providing water quality treatment. The preliminary stormwater management analysis and design has been performed as a component of the planning for this proposed project. The purpose of the stormwater management plan is to address the Department of Environmental Quality (DEQ) requirements for water quality and quantity control of flow generated. AES performed initial BMP sizing and determined the treatment levels of the proposed wet/dry ponds to satisfy a significant amount of the water quality and quantity requirements as outlined in the Virginia Runoff Reduction Method. Preliminary estimates suggest the development will need to remove a proposed 97.68 lbs. of phosphorus a year with our current envisioned design removing as approximately 104.54lbs. per year.

IX. ANALYSIS OF IMPACTS TO TRAFFIC

A traffic study has been prepared by DRW Consultants to review the Route 60 and Route 30 Corridors and intersections. The study has been attached which concludes that the impacts associated with the proposed development have minor impacts on the surrounding traffic but does note that there are high levels of background traffic that is increasing from forecasted traffic from proposed developments within the vicinity of the project. Traffic Improvements noted in the study include left and right turn lane storages on Richmond Road for entering the community as well as separate left and right turn lanes exiting the community.

X. FISCAL IMPACT STUDY

County Staff performed a fiscal impact analysis of the project for a 25-year period using the County's proprietary software program and County generated standard assessed values based on average data for the applicable fiscal analysis zone within the County that estimated total revenues of $74,927,760 which is a combination of General Fund Revenues and Schools Revenues ($52,354,866 + $22,572,894).

Total projected expenditures were calculated by James City County to be $80,192,417 which is a combination of Operating Expenditures ($14,670,784), Schools Operating Expenditures ($52,445,365), and Capital Expenditures ($13,076,268).

A simple subtraction of revenues minus expenditures equates to a fiscal deficit of $5,264,658 ($74,927,760 - $80,192,417 = $5,264,658). The project team does not have access the inputs that went into the fiscal analysis the County provided to check the authenticity of the assumptions, so these numbers are assumed to be accurate. This analysis projects that the development will have an overall negative financial impact of $5,264,658 on County services and schools. **Based on 582 homes/units, this cost is $9,046 per home/unit.**

To ensure this development does not have a negative fiscal impact on James City County, a cash proffer is being voluntarily offered in the amount of $9,046 for every market rate home in the development and a slightly reduced amount for proffered workforce housing units. To further mitigate future school overcrowding, 3.0 acres of land will be deeded to the County at no additional cost to the County for future expansion of Stonehouse Elementary.

County Staff also performed a fiscal impact analysis of the Project using the projected assessed values provided by the Applicant. The Applicant believes these projected assessed values are more realistic than those used by the County. This analysis is attached hereto. This analysis estimated total revenues of $82,850,368 which is a combination of General Fund Revenues and Schools Revenues ($60,277,475 + $22,572,894).

Total projected expenditures were calculated by James City County were unchanged at $80,192,417 which is a combination of Operating Expenditures ($14,670,784), Schools Operating Expenditures ($52,445,365), and Capital Expenditures ($13,076,268).

A simple subtraction of revenues minus expenditures equates to a positive fiscal impact of $2,657,951 ($82,850,368- $80,192,417 = $2,657,951). The cash proffers made by the Applicant further increase the positive fiscal impact on the County. In addition, the land proposed to be deeded to the Stonehouse Elementary School property will assist the County with any future expansion plans at that school.

XI. CONCLUSIONS

In summary, the Community Impact Statement for the rezoning and subsequent development of *the Hankins-Dunn Property* highlights the following conclusions and public benefits:

- This project proposes a mix of housing types and prices that are very much needed within James City County. The number of building permits within James City has declined in recent years and the County is unable to keep up with demand for housing.
- The rezoning is consistent with the intended land use designated on the current Comprehensive Plan for this area. In fact, on the preferred Alternative B map in the Engage 2045 study, this property was identified and overwhelmingly supported by the residents where residential growth should happen. Further, the proposed residential development is consistent with adjacent neighborhoods and is located within the County's Primary Service Area (PSA).
- The proposal achieves the necessary density bonus points to support the requested density (6 points required). Prior to adoption of Ordinance No. 31A-357 on May 9, 2023, only 4 points would have been required.
- As an additional public benefit, the proposal proffers 10% of the units will be offered for sale at prices qualifying as workforce housing.
- The project provides extensive active and passive recreation open space throughout the community. Developable open space meets the required amount for Cluster Development and Density Bonus criteria.
- The project at worst is a fiscal break even situation for the County and the Applicant submits based on its numbers that the project will more likely generate a significant positive fiscal impact to the County.
- There is adequate capacity in the system of roads serving this project and developer is proffering traffic improvements at the entrances to the development to provide safe access to the community.
- Adequate public services (water and sewer, fire) and utility services (gas, electricity, cable television, and telephone) are available for development.
- Adequate public schools capacity exists to accommodate the estimated 186 school students generated by the development. A majority of the community is within a walkable

distance from Stonehouse Elementary School and the road network will allow students to be dropped off by car which will help reduce the traffic backup that currently occurs on School House Lane.

- In addition to voluntary cash proffers, the Applicant is gifting approximately 3 acres of land, boundary to be determined by the County, adjacent to Stonehouse Elementary School for any future expansion needs.
- James City County's stormwater requirements, including the incorporation of SSC measures will be met.

Traffic Analysis For Hankins-Dunn Property

JAMES CITY COUNTY, VIRGINIA

For:
HHHunt

By:
DRW Consultants, LLC
Midlothian, VA

March 14, 2023

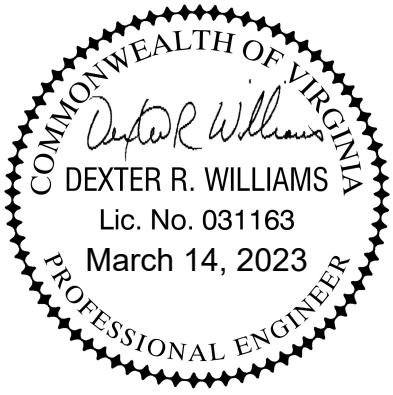
Traffic Analysis For Hankins-Dunn Property

JAMES CITY COUNTY, VIRGINIA

For:
HHHunt

By:
DRW Consultants, LLC
Midlothian, VA

March 14, 2023



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REPORT TEXT

INTRODUCTION

HHHunt proposes to rezone the Hankins-Dunn property (Parcel ID 1240100011) to permit residential development. The property is located in James City County (JCC) and fronts on Rt. 60 Richmond Road. The property location in the VDOT Hampton Roads District is shown on the upper section of Exhibit 1 and the property location on the James City County parcel map is shown on the lower section of Exhibit 2.

TRAFFIC STUDY SCOPE

A traffic study scope memorandum dated July 15, 2022 was distributed for review by JCC and VDOT and is included as Appendix Exhibit R. The scope was reviewed in a conference call on August 9, 2022. The only revision to the July 15, 2022 scope was to add development traffic from Stonehouse and Hazelwood Farms to the background traffic forecast. A traffic analysis for the project dated October 21, 2022 was reviewed by JCC and VDOT. This traffic analysis includes revisions in response to comments by JCC and VDOT and an update of the proposed housing units and development plan.

The upper section of Exhibit 2 shows the traffic count and analysis intersections included in the scope memorandum:

1. Rt. 60 Richmond Road/Rt. 30 Barhamsville Road/Rt. 30 Rochambeau Drive. Signalized intersection. This is an analysis intersection.
2. Rt. 60 Richmond Road/VCA Andersons Corner Animal Hospital/Hickory Neck Blvd. Unsignalized crossover. This is an analysis intersection and also part of the trip distribution counts for White Hall.
3. Rt. 60 Richmond Road/Bicast Publishing. Unsignalized Crossover. This is the primary/only likely access for the Hankins-Dunn property development. This is an analysis intersection.
4. Rt. 30 Rochambeau Drive/Preston Lane/Geddy Terrace. Unsignalized crossover. This is not an analysis intersection and is part of the trip distribution counts for White Hall.
5. Rt. 30 Rochambeau Drive/Hickory Neck Boulevard. Unsignalized crossover. This is not an analysis intersection and is part of the trip distribution counts for White Hall.

In summary, the three intersections on Rt. 60 (intersections 1, 2 and 3) are included for counts and analysis. Intersection 2 and intersections 4 and 5 on Rt. 30 are included for derivation of trip distribution in the larger section of White Hall south of Rt. 30 Rochambeau Drive and east of Rt. 60. The derived trip distribution for White Hall is applied for Hankins-Dunn property trip distribution and assignments.

Another significant element of the scope is access for Hankins-Dunn property. The Hankins-Dunn property has primary access on Rt. 60 Richmond Road. The property does have frontage on the access road to Stonehouse Elementary School, but terrain on the Hankins-Dunn property

consists of steep slopes and wetlands is not developable. The property also fronts on the boundary of existing White Hall subdivision, but there is no right of way stub from White Hall to provide access to the Hankins-Dunn property. The property does not have any secondary access to another public road or subdivision stub road. The Hankins-Dunn property is planned to have a single access for development at the existing crossover at intersection 3 with subdivision street stub outs in accordance with VDOT SSAR connectivity requirements.

The lower section of Exhibit 2 shows the latest conceptual layout for the Hankins-Dunn property.

2022 TRAFFIC COUNTS AND ANALYSIS

2022 AM and PM peak hour counts without balance for the three intersections on Rt. 60 are shown on the study road network diagrams on Appendix Exhibit F. 2022 AM and PM peak hour counts with balance are shown on the study road network diagrams on Exhibit 3.

Following are software analysis protocols used in this report in general accordance with VDOT TOSAM 2 criteria:

- Peak hour factor for overall intersection applied to all movements.
- Truck percentages from traffic counts for each turning movement.
- Maximum queues for SimTraffic results.
- Storage lengths for turning lanes are length of full width storage plus one-half taper lengths in SimTraffic per VDOT TOSAM2 recommendations.
- Ten (10) SimTraffic simulation runs.
- Existing signal timing is actuated and uncoordinated.
- Signal timing optimized and adjusted for same cycle lengths for 2030 background (with Stonehouse and Hazelwood) and for 2030 total (Stonehouse, Hazelwood, Hankins-Dunn).

Following are traffic level of service (LOS) and queuing results for Rt. 30 Rochambeau Drive/Rt. 60 Richmond Road 2022 traffic counts (see Appendix Exhibits J1 and J2 for Synchro HCM6 signalized intersection report and Appendix Exhibit L1 and L2 for SimTraffic Queuing and Blocking reports):

TABLE 1-1 RICHMOND ROAD/BARHAMSVILLE ROAD/ROCHAMBEAU DRIVE - 2022 COUNTS							
SIGNALIZED LOS And Seconds Delay					Maximum Queues		
	AM		PM		Storage Length	SimTraffic Q&B	
Overall	C	21.4	C	22.4		AM	PM
EBL	C	23.5	C	23.9	200	44	37
EBT	B	19.3	B	19.2		65	44
EBR		0.0		0.0	400		
WBL	C	24.1	C	24.4	250	41	40
WBT	B	19.2	B	19.9		22	23
WBR		0.0		0.0	370		
NBL	C	22.0	C	26.8	290	108	232
NBT	C	20.3	C	21.2		103	189
NBR		0.0		0.0	195		
SBL	C	23.8	C	23.8	310	119	128
SBT	C	21.7	C	22.4		142	163
SBR		0.0		0.0	40		

SimTraffic queue shown is maximum report value for multi-lane groups

There is overall LOS C in the AM and PM peak hours with LOS B and C for individual movements. All auxiliary lane maximum queues are within storage lengths.

Following are traffic level of service (LOS) and queuing results for Rt. 60 Richmond Road/Hickory Neck Blvd./VCA intersection (see Appendix Exhibits K1 and K2 for Synchro HCM6 unsignalized intersection report and Appendix Exhibits L1 and L2 for SimTraffic Queuing and Blocking reports):

TABLE 1-2 RICHMOND ROAD/HICKORY NECK ROAD/VCA - 2022 COUNTS							
Traffic LOS And Seconds Delay					SimTraffic Maximum Queue		
	AM		PM		Storage Length		
	LOS	Delay	LOS	Delay		AM	PM
EBL/T/R	B	11.6	B	13.2		27	33
WBL/T	B	12.5	C	16.3		61	57
WBR	A	9.3	B	10.6		26	23
NBL	A	8.7	A	8.6	400	14	14
NBR					75	1	
SBL	A	9.1	A	9.5	310	25	26

There is LOS C or better for individual movements. All auxiliary lane maximum queues are within storage lengths.

Following are traffic level of service (LOS) and queuing results for Rt. 60 Richmond Road/Bicast/Hankins-Dunn (see Appendix Exhibits K1 and K2 for Synchro HCM6

unsignalized intersection report and Appendix Exhibits L1 and L2 for SimTraffic Queuing and Blocking reports):

TABLE 1-3 RICHMOND ROAD/BICAST PUBLISHING - 2022 COUNTS							
Traffic LOS And Seconds Delay By					SimTraffic Maximum Queue		
	AM		PM		Storage		
	LOS	Delay	LOS	Delay	Length	AM	PM
EBL/R	B	13.1	B	12.4		15	37
NBL/T	A	8.8	A	8.7		20	50
SBU/T						5	44

There is LOS B or better for individual movements. Storage for northbound and southbound left turns/U-turns are on through lanes.

2030 BACKGROUND TRAFFIC FORECAST

The October 2022 study used a 2025 background forecast in accordance with the work scope. For consistency with overall planning for this project, a 2030 forecast year in used in this report.

One element for all 2030 traffic forecasts in this study is a growth factor applied to 2022 counts. Exhibit 4 shows VDOT daily traffic counts from 2015 to 2021. The 2015 to 2019 counts (pre-COVID) show an increasing trend and the 2015 to 2021 counts (with COVID effect) show a declining trend.

The 2015 to 2019 increasing trend is used in this study, which has a 1.05 growth factor from 2022 to 2030. Exhibit 5 shows 2030 background traffic only with the 1.05 growth factor applied.

Traffic forecasts for buildout of Stonehouse and Hazelwood Farms are also included in the background forecast. Appendix Exhibit P shows the Stonehouse Figure 23: Total Trips (2027 – Full Build) from the second submission TIA with revision date December 10, 2018 (original TIA date June 20, 2018.).

Traffic forecasts for build out of Hazelwood Farms from the January 2019 TIA are shown on Appendix Exhibits Q1 and Q2.

All Hazelwood Farms and Stonehouse traffic enters the study area on Rt. 30 Barhamsville Road north of Rt. 60 Richmond Road. The studies for Hazelwood Farms and Stonehouse did not distribute development traffic at the Rt. 60 Richmond Road/Rt. 30 Barhamsville Road/Rt. 30 Rochambeau Drive intersection. The 2022 turning movement counts to and from the north

on Rt. 30 Barhamsville Road are used for the Hazelwood Farms and Stonehouse trip distribution onto the study intersections. Exhibit 5a shows the derivation of directional splits at Rt. 60 Richmond Road/Rt. 30 Barhamsville Road/Rt. 30 Rochambeau Drive based on peak hour turning movements. The Hazelwood Farms trips at the three intersections on Rt. 60 are shown on Exhibit 5b. The Stonehouse trips at the three intersections on Rt. 60 are shown on Exhibit 5c. Complete 2030 background traffic with growth factor, Hazelwood Farms and Stonehouse is shown on Exhibit 5d.

Following are traffic level of service (LOS) and queuing results for Rt. 30 Rochambeau Drive/Rt. 60 Richmond Road (see Appendix Exhibits J3 and J4 for Synchro HCM6 signalized intersection reports and Appendix Exhibits L3 and L4 for SimTraffic Queuing and Blocking reports):

TABLE 2-1 RICHMOND ROAD/BARHAMSVILLE ROAD/ROCHAMBEAU DRIVE - 2030 BACKGROUND

SIGNALIZED LOS And Seconds Delay					Maximum Queues		
	AM		PM		Storage Length	SimTraffic Q&B	
Overall	C	28.3	C	31.5		AM	PM
EBL	C	30.5	D	35.1	200	151	109
EBT	C	25.5	C	30.6		107	61
EBR		0.0		0.0	400	43	35
WBL	C	32.5	D	37.3	250	63	51
WBT	C	28.2	C	34.1		20	44
WBR		0.0		0.0	370	61	87
NBL	C	29.5	C	34.7	290	127	290
NBT	C	29.1	C	30.2		222	404
NBR		0.0		0.0	195	134	194
SBL	C	33.9	D	38.2	310	232	310
SBT	C	25.8	C	29.3		244	592
SBR		0.0		0.0	40		

SimTraffic queue shown is maximum report value for multi-lane groups

There is overall LOS C in the AM and PM peak hours with LOS C and D for individual movements. Most auxiliary lane maximum queues are within storage lengths. The northbound right turn queue of 194 feet is near maximum storage length 195 feet in the PM peak hour. The southbound left turn queue of 310 feet is at maximum storage length 310 feet in the PM peak hour.

Following are traffic level of service (LOS) and queuing results for Rt. 60 Richmond Road/Hickory Neck Blvd./VCA intersection (see Appendix Exhibits K3 and K4 for Synchro HCM6 unsignalized intersection report and Appendix Exhibits L3 and L4 for SimTraffic Queuing and Blocking reports):

TABLE 2-2 RICHMOND ROAD/HICKORY NECK ROAD/VCA - 2030 BACKGROUND							
Traffic LOS And Seconds Delay					SimTraffic Maximum Queue		
	AM		PM		Storage		
	LOS	Delay	LOS	Delay	Length	AM	PM
EBL/T/R	C	15.7	C	22.0		33	52
WBL/T	C	18.8	D	31.0		81	93
WBR	B	10.7	B	13.1		28	23
NBL	B	10.3	B	11.0	400	12	21
NBR					75	0	0
SBL	B	11.3	B	12.1	310	33	38

There is LOS D or better for individual movements. All auxiliary lane maximum queues are within storage lengths.

Following are traffic level of service (LOS) and queuing results for Rt. 60 Richmond Road/Bicast/Hankins-Dunn (see Appendix Exhibits K3 and K4 for Synchro HCM6 unsignalized intersection report and Appendix Exhibits L3 and L4 for SimTraffic Queuing and Blocking reports):

TABLE 2-3 RICHMOND ROAD/BICAST PUBLISHING - 2030 BACKGROUND							
Traffic LOS And Seconds Delay By					SimTraffic Maximum Queue		
	AM		PM		Storage		
	LOS	Delay	LOS	Delay	Length	AM	PM
EBL/R	C	18.6	C	18.9		12	30
NBL/T	B	10.5	B	11.1		48	163
SBU/T						29	167

There is LOS C or better for individual movements. Storage for northbound and southbound left turns/U-turns are on through lanes.

DERIVATION OF TRIP DISTRIBUTION FOR HANKINS-DUNN

Exhibit 6 shows the peak hour traffic counts for the larger section of White Hall bounded by Rt. 60 on the west and Rt. 30 on the north. Trips at the Rt. 60 Richmond Road/Rt. 30 Barhamsville Road/Rt. 30 Rochambeau Drive intersection are distributed based on peak hour count splits at the intersection to and from the east on Rt. 30 Rochambeau Drive. The resulting AM and PM peak hour entering and exiting trip distribution for the larger section of White Hall is shown on Exhibit 6a.

HANKINS-DUNN PROPERTY TRIP GENERATION

The housing unit plan for this project has changed since the October 2022 study. Table One

on Exhibit 7 shows AM and PM peak hour trip generation for the current Hankins-Dunn property development proposal using Trip Generation Manual, 11th Edition (TGM11) as follows:

- 443 single family units are TGM11 Land Use Code (LUC) 210, single family detached.
- 139 townhomes are TGM11 LUC 215, single family attached.

Table 2 on 7 shows tabulated trip distribution for the Hankins-Dunn property derived from the larger section of White Hall. Exhibit 7a shows trip distribution percentages for the Hankins-Dunn property based on the Exhibit 6a trip distribution for the larger section of White Hall. Exhibit 7b shows trip assignments for the Hankins-Dunn property.

2030 TOTAL TRAFFIC WITH STONEHOUSE, HAZELWOOD & HANKINS-DUNN

Exhibit 8 shows 2030 AM and PM peak hour traffic with the proposed Hankins-Dunn property development.

Access improvements for Hankins-Dunn property includes the following elements at the existing crossover/proposed subdivision access intersection:

- One southbound left turn lane on Rt. 60 (200 feet full width lane, 200 feet taper, 300 feet TOSAM storage)
- Northbound right turn lane on Rt. 60 (100 feet full width lane, 200 feet taper, 200 feet TOSAM storage)
- Two exit lanes on Hankins-Dunn access: shared left/through and right turn
- One assumed entering lane on Hankins-Dunn property entrance

Following are traffic level of service (LOS) and queuing results for Rt. 30 Rochambeau Drive/Rt. 60 Richmond Road (see Appendix Exhibits J5 and J6 for Synchro HCM6 signalized intersection reports and Appendix Exhibits L5 and L6 for SimTraffic Queuing and Blocking reports):

TABLE 3-1 RICHMOND ROAD/BARHAMSVILLE ROAD/ROCHAMBEAU DRIVE - 2030 TOTAL							
SIGNALIZED LOS And Seconds Delay					Maximum Queues		
	AM		PM		Storage Length	SimTraffic Q&B	
Overall	C	29.2	C	33.3		AM	PM
EBL	C	31.1	D	37.2	200	159	76
EBT	C	27.7	C	34.4		77	63
EBR		0.0		0.0	400	38	37
WBL	C	32.3	D	43.4	250	101	224
WBT	C	28.7	C	32.5		17	162
WBR		0.0		0.0	370	61	41
NBL	C	30.0	D	37.8	290	153	256
NBT	C	30.0	C	31.1		239	319
NBR		0.0		0.0	195	174	195
SBL	C	34.8	D	39.6	310	234	308
SBT	C	26.3	C	30.5		261	443
SBR		0.0		0.0	40		

SimTraffic queue shown is maximum report value for multi-lane groups

There is overall LOS C in the AM and PM peak hours with LOS C and D for individual movements. Most auxiliary lane maximum queues are within storage lengths with the northbound right turn and southbound left turn maximum queue length at or near within TOSAM storage. The northbound right turn queue of 195 feet is at maximum storage length 195 feet in the PM peak hour. The southbound left turn queue of 308 feet is near maximum storage length 310 feet in the PM peak hour.

Following are traffic level of service (LOS) and queuing results for Rt. 60 Richmond Road/Hickory Neck Blvd./VCA intersection (see Appendix Exhibits K5 and K6 for Synchro HCM6 unsignalized intersection report and Appendix Exhibits L5 and L6 for SimTraffic Queuing and Blocking reports):

TABLE 3-2 RICHMOND ROAD/HICKORY NECK ROAD/VCA - 2030 TOTAL							
Traffic LOS And Seconds Delay					SimTraffic Maximum Queue		
	AM		PM		Storage		
	LOS	Delay	LOS	Delay	Length	AM	PM
EBL/T/R	C	16.7	D	26.9		35	45
WBL/T	C	22.9	E	37.2		83	110
WBR	B	11.6	B	13.8		33	23
NBL	B	10.6	B	12.1	400	16	18
NBR					75		
SBL	B	12.8	B	12.9	310	39	23

There is LOS E or better for individual movements. All auxiliary lane maximum queues are within storage lengths.

Following are traffic level of service (LOS) and queuing results for Rt. 60 Richmond Road/Bicast/Hankins-Dunn (see Appendix Exhibits K5 and K6 for Synchro HCM6 unsignalized intersection report and Appendix Exhibits L5 and L6 for SimTraffic Queuing and Blocking reports):

TABLE 3-3 RICHMOND ROAD/BICAST PUBLISHING/HANKINS-DUNN - 2030 TOTAL

						SimTraffic Maximum Queue	
	AM		PM		Storage		
	LOS	Delay	LOS	Delay	Length	AM	PM
EBL/T/R	D	26.3	E	38.3		15	201
WBL/T	D	25.8	F	100.9		287	909
WBR	B	13.0	C	16.3		118	903
NBL/T	B	10.5	B	11.1		23	94
NBR					200	8	28
SBL	A	9.9	C	18.0	300	79	281

There is LOS A through F for individual movements. The southbound left turn is within storage.

2030 TOTAL TRAFFIC WITH HANKINS-DUNN ONLY

Exhibit 9 shows 2030 AM and PM peak hour traffic with the proposed Hankins-Dunn property development only. Stonehouse and Hazelwood traffic is not included.

Access improvements for Hankins-Dunn property includes the following elements at the existing crossover/proposed subdivision access intersection:

- One southbound left turn lane on Rt. 60 (200 feet full width lane, 200 feet taper, 300 feet TOSAM storage)
- Northbound right turn lane on Rt. 60 (100 feet full width lane, 200 feet taper, 200 feet TOSAM storage)
- Two exit lanes on Hankins-Dunn access: shared left/through and right turn
- One assumed entering lane on Hankins-Dunn property entrance.

Following are traffic level of service (LOS) and queuing results for Rt. 30 Rochambeau Drive/Rt. 60 Richmond Road (see Appendix Exhibits J7 and J8 for Synchro HCM6 signalized intersection reports and Appendix Exhibits L7 and L8 for SimTraffic Queuing and Blocking reports):

TABLE 4-1 RICHMOND ROAD/BARHAMSVILLE ROAD/ROCHAMBEAU DRIVE - 2030 TOTAL - W/O STONEHOUSE & HAZELWOOD							
SIGNALIZED LOS And Seconds Delay					Maximum Queues		
	AM		PM		Storage Length	SimTraffic Q&B	
Overall	C	27.4	C	31.6		AM	PM
EBL	C	31.7	C	34.9	200	64	44
EBT	C	23.7	C	29.3		64	54
EBR				0.0	400	20	
WBL	C	33.3	D	41.7	250	83	150
WBT	C	21.3	C	25.2		18	32
WBR		0.0		0.0	370		
NBL	D	41.7	D	40.4	290	134	224
NBT	C	24.7	C	25.5		112	140
NBR		0.0		0.0	195		
SBL	C	30.9	D	35.9	310	109	127
SBT	C	24.8	C	31.1		161	194
SBR		0.0		0.0	40		

SimTraffic queue shown is maximum report value for multi-lane groups

There is overall LOS C in the AM and PM peak hours with LOS C and D for individual movements. All auxiliary lane maximum queues are within storage lengths.

Following are traffic level of service (LOS) and queuing results for Rt. 60 Richmond Road/Hickory Neck Blvd./VCA intersection (see Appendix Exhibits K7 and K8 for Synchro HCM6 unsignalized intersection report and Appendix Exhibits L7 and L8 for SimTraffic Queuing and Blocking reports):

TABLE 4-2 RICHMOND ROAD/HICKORY NECK ROAD/VCA - 2030 TOTAL- W/O STONEHOUSE & HAZELWOOD							
Traffic LOS And Seconds Delay					SimTraffic Maximum Queue		
	AM		PM		Storage Length		
	LOS	Delay	LOS	Delay		AM	PM
EBL/T/R	B	12.4	C	15.6		32	34
WBL/T	B	14.8	C	19.6		82	65
WBR	B	10.0	B	11.2		30	23
NBL	A	9.0	A	9.4	400	12	17
NBR					75		4
SBL	B	10.1	B	10.1	310	26	23

There is LOS C or better for individual movements. All auxiliary lane maximum queues are with storage lengths.

Following are traffic level of service (LOS) and queuing results for Rt. 60 Richmond Road/Bicast/Hankins-Dunn (see Appendix Exhibits K7 and K8 for Synchro HCM6 unsignalized intersection report and Appendix Exhibits L7 and L8 for SimTraffic Queuing and Blocking reports):

TABLE 4-3 RICHMOND ROAD/BICAST PUBLISHING/HANKINS-DUNN - 2030 TOTAL- W/O STONEHOUSE & HAZELWOOD

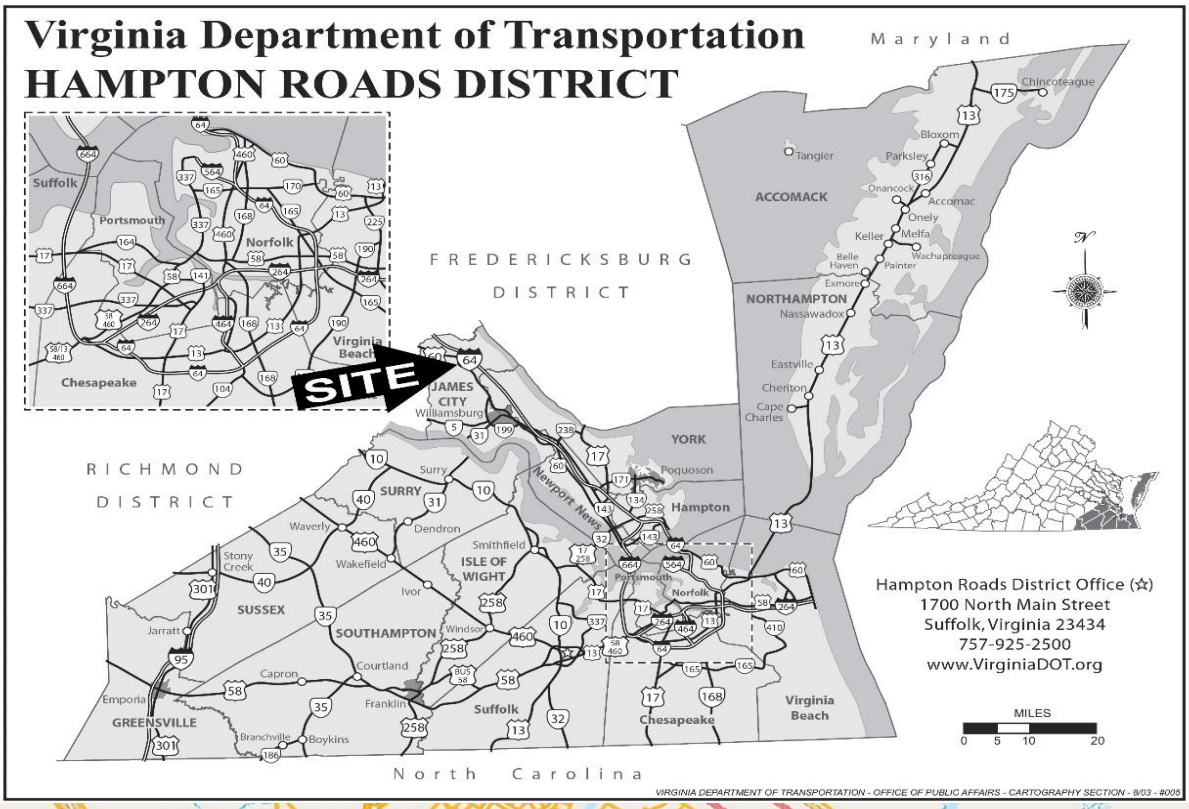
Traffic LOS And Seconds Delay By					SimTraffic Maximum Queue		
	AM		PM		Storage		
	LOS	Delay	LOS	Delay	Length	AM	PM
EBL/R	C	17.0	C	19.0		21	49
WBL/T	C	15.9	D	31.3		95	496
WBR	B	10.5	B	12.3		78	170
NBL/T	A	8.9	A	8.8		22	51
NBR					200	6	37
SBL	A	8.4	B	11.8	300	44	147

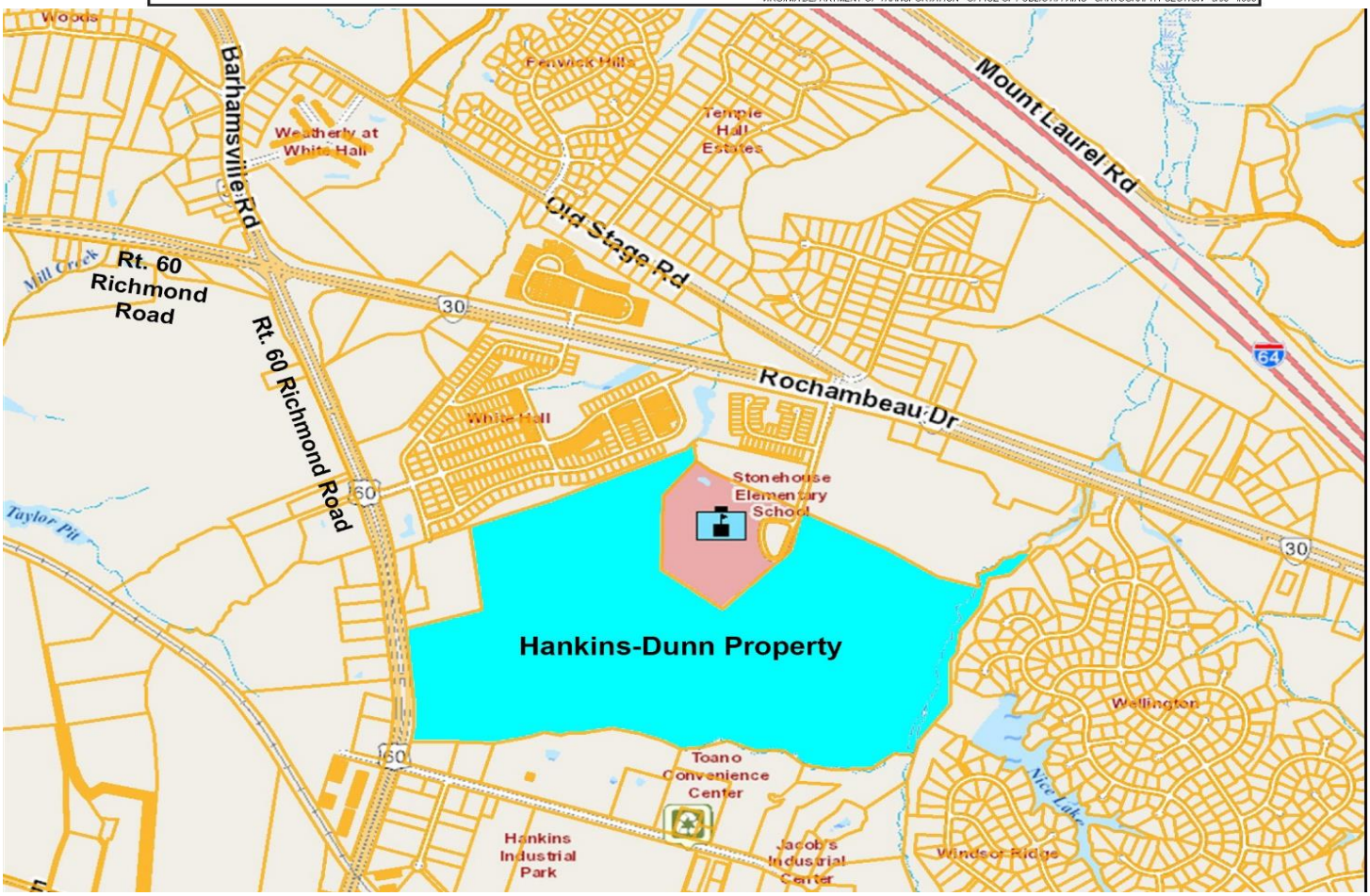
There is LOS A through D for individual movements. The southbound left turn is within storage length.

SUMMARY AND CONCLUSIONS

The existing road network easily accommodates traffic from the proposed development of the Hankins-Dunn property. If there are other substantial traffic increases in the area (such as the 74% forecast increase for Hazelwood and Stonehouse), then some queues at the signalized intersection of Rt. 60 Richmond Road/Rt.30 Rochambeau Drive will be at capacity and minor street exiting left turns at unsignalized crossovers will become more difficult.

REPORT EXHIBITS



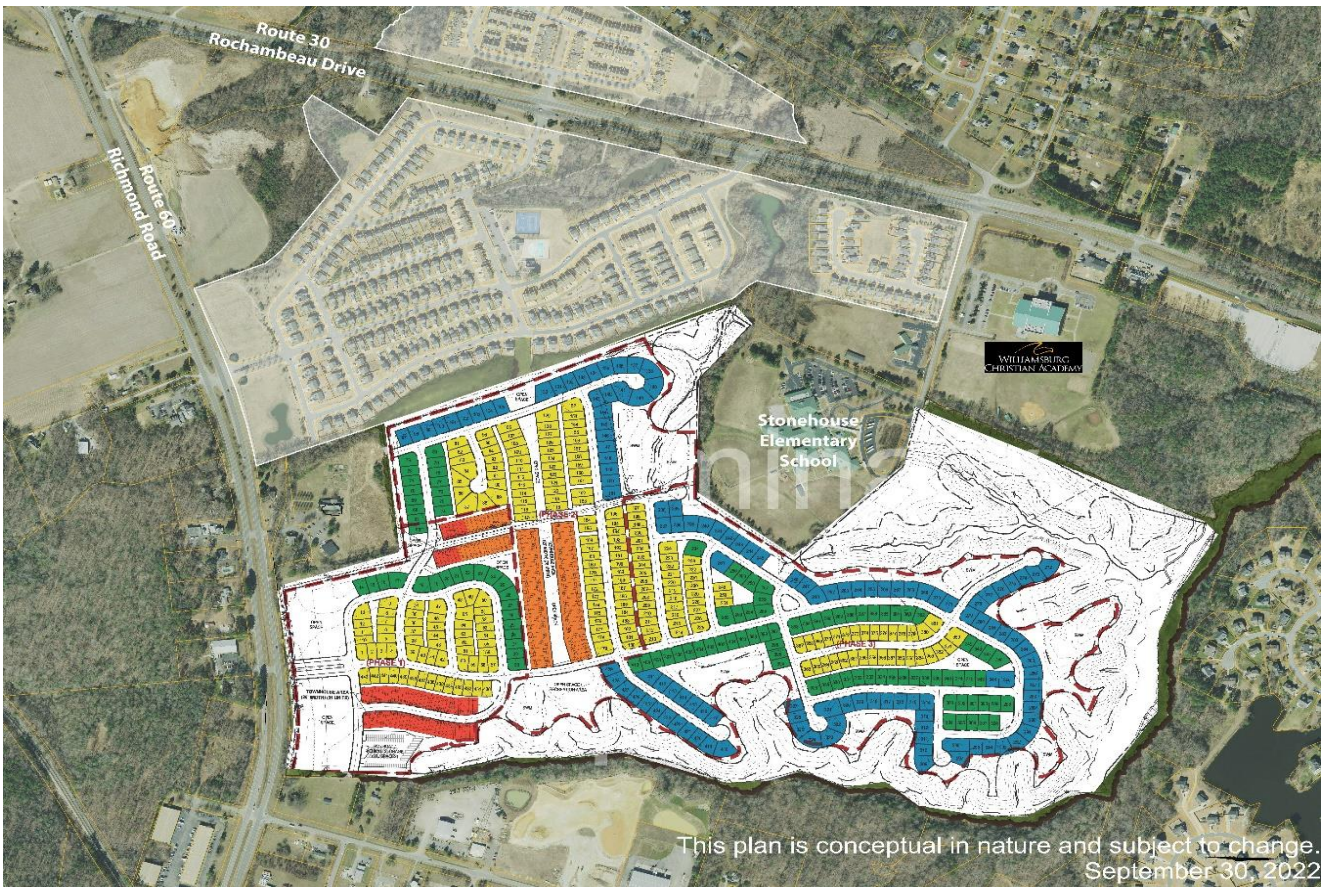


HANKINS-DUNN PROPERTY
REGIONAL AND AREA PARCEL MAPS

DRW Consultants, LLC
804-794-7312

Exhibit 1

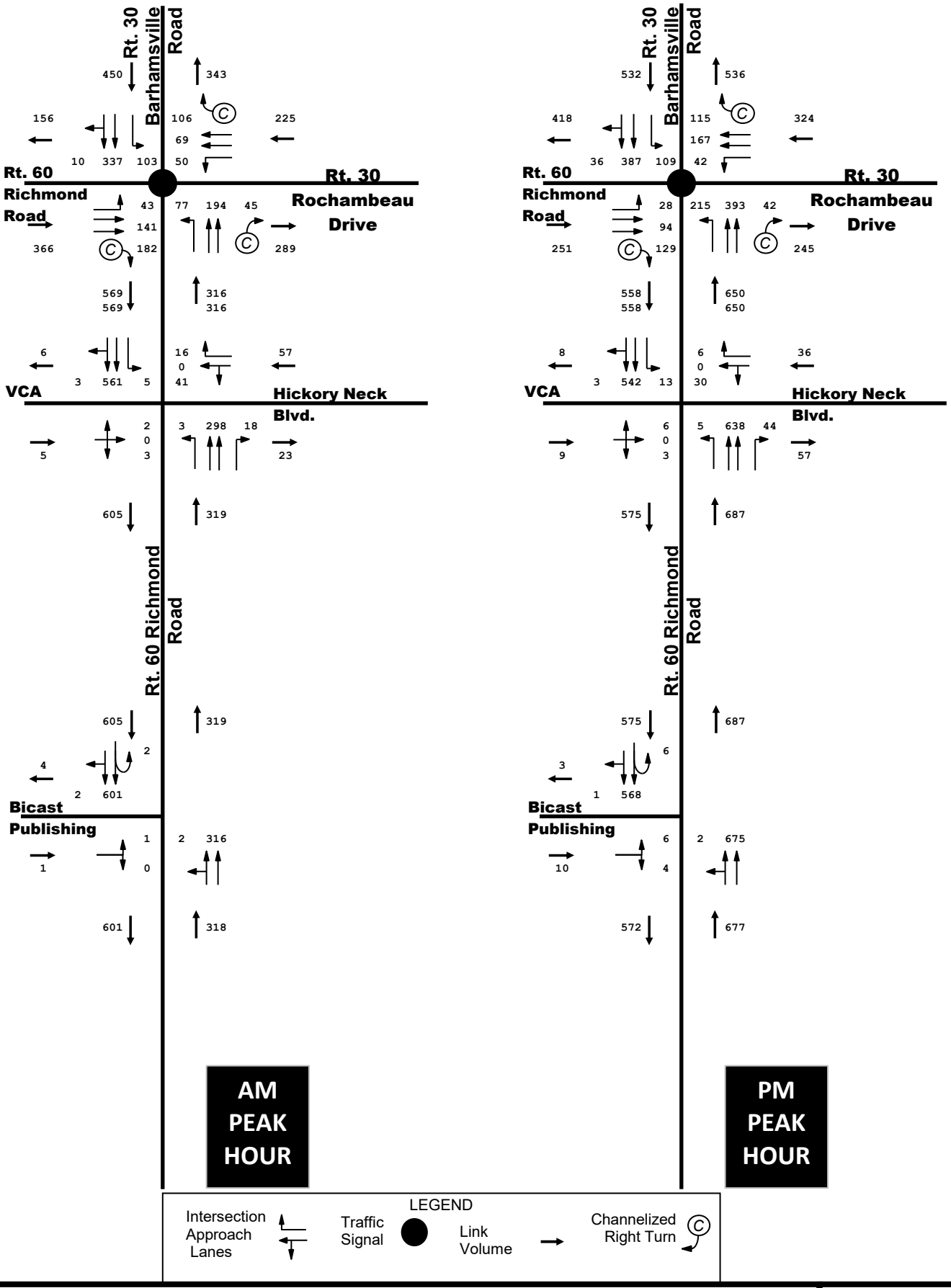




HANKINS-DUNN PROPERTY
TRAFFIC COUNT LOCATION
AND SITE LAYOUT

DRW Consultants, LLC
804-794-7312

Exhibit 2



2022 PEAK HOUR COUNTS
WITH BALANCE

DRW Consultants, LLC
804-794-7312

Exhibit 3

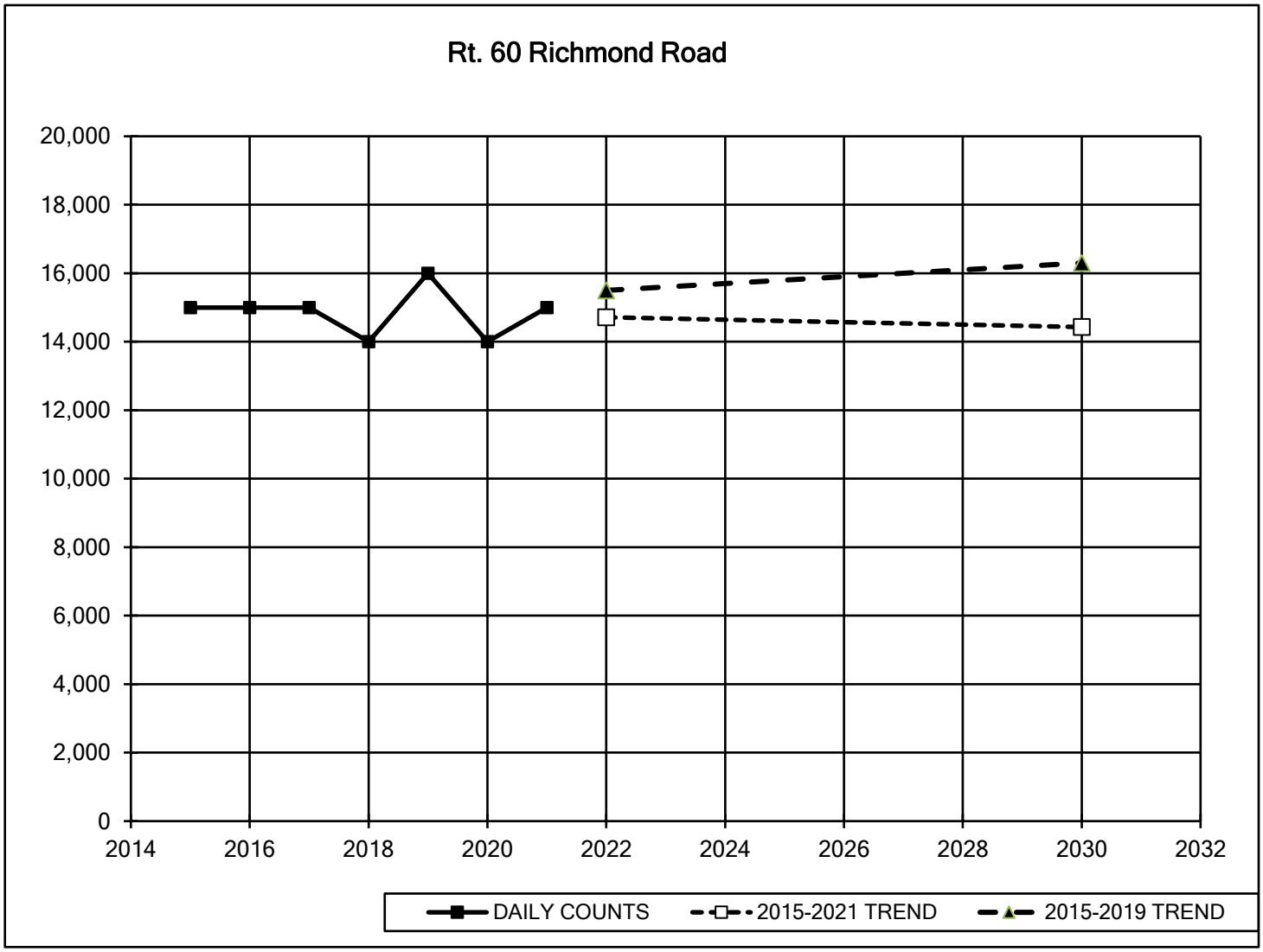
Street: Rt. 60 Richmond Road
From: Rt. 30 North of Toano
To: Rt. 607 Croaker Road
Source: VDOT AADT

DAILY COUNTS

Year	NB	SB	2 Way
2015			15,000
2016			15,000
2017			15,000
2018			14,000
2019			16,000
2020			14,000
2021			15,000

	2015-2021 TREND	Δ22
2022	14,714	
2030	14,429	0.98

	2015-2019 TREND	Δ22
2022	15,500	
2030	16,300	1.05

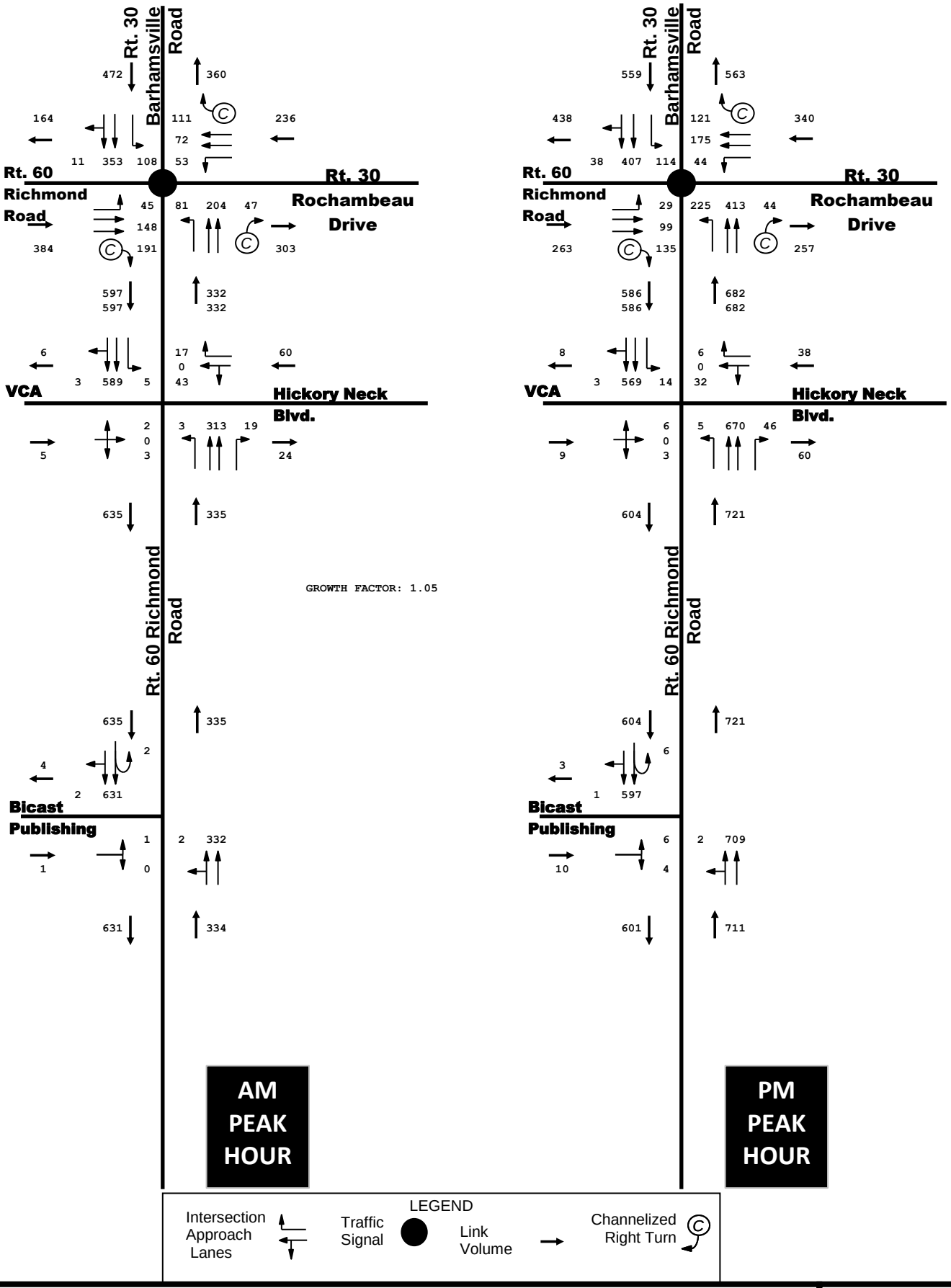


n

RT. 60 RICHMOND ROAD
AVERAGE ANNUAL WEEKDAY TRAFFIC AND TREND

DRW Consultants, LLC
804-794-7312

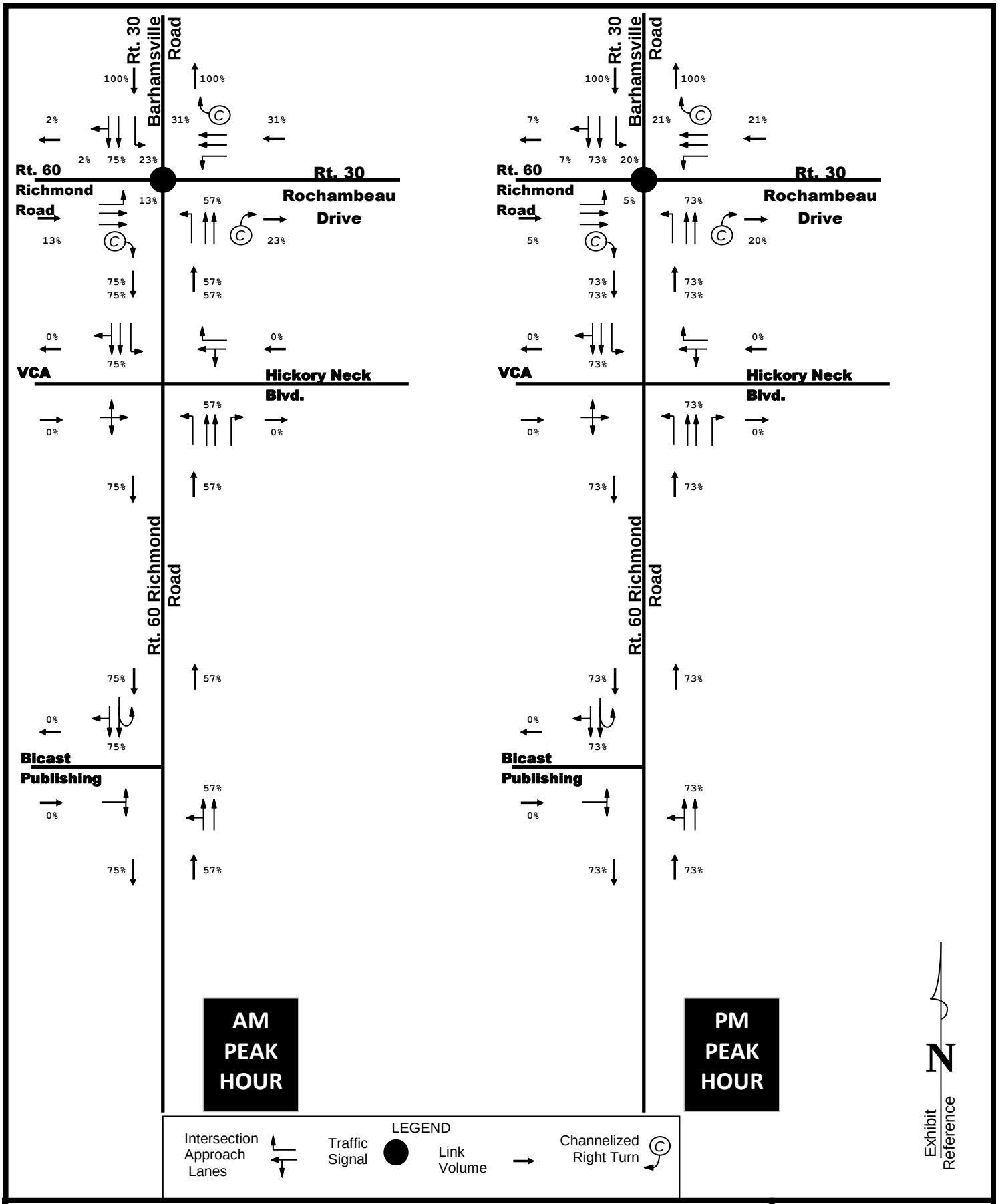
Exhibit 4



2030 BACKGROUND TRAFFIC
GROWTH FACTOR ONLY

DRW Consultants, LLC
804-794-7312

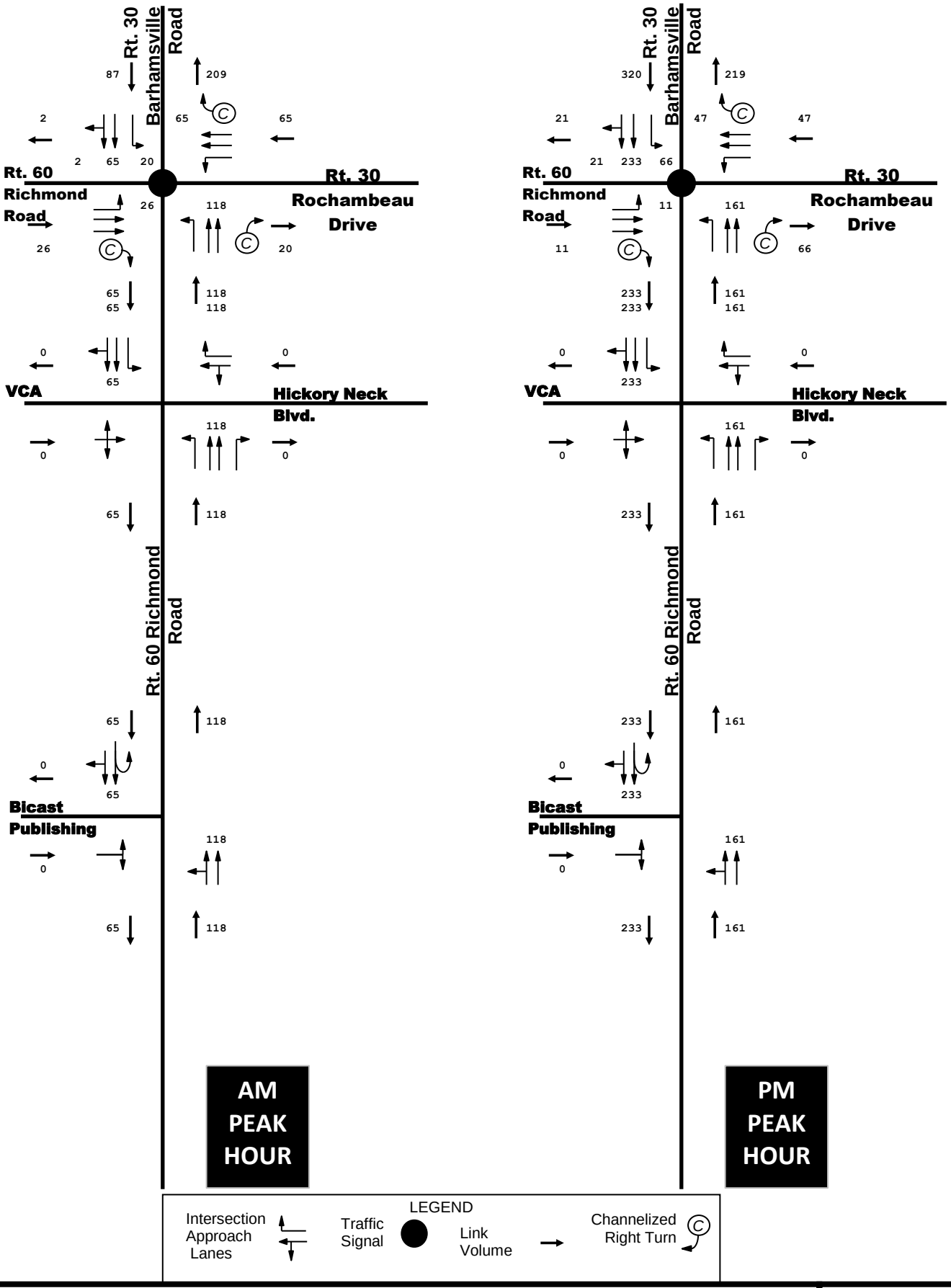
Exhibit 5



DISTRIBUTION FOR HAZELWOOD AND STONEHOUSE TRAFFIC DERIVED FROM 2022 COUNTS

DRW Consultants, LLC
804-794-7312

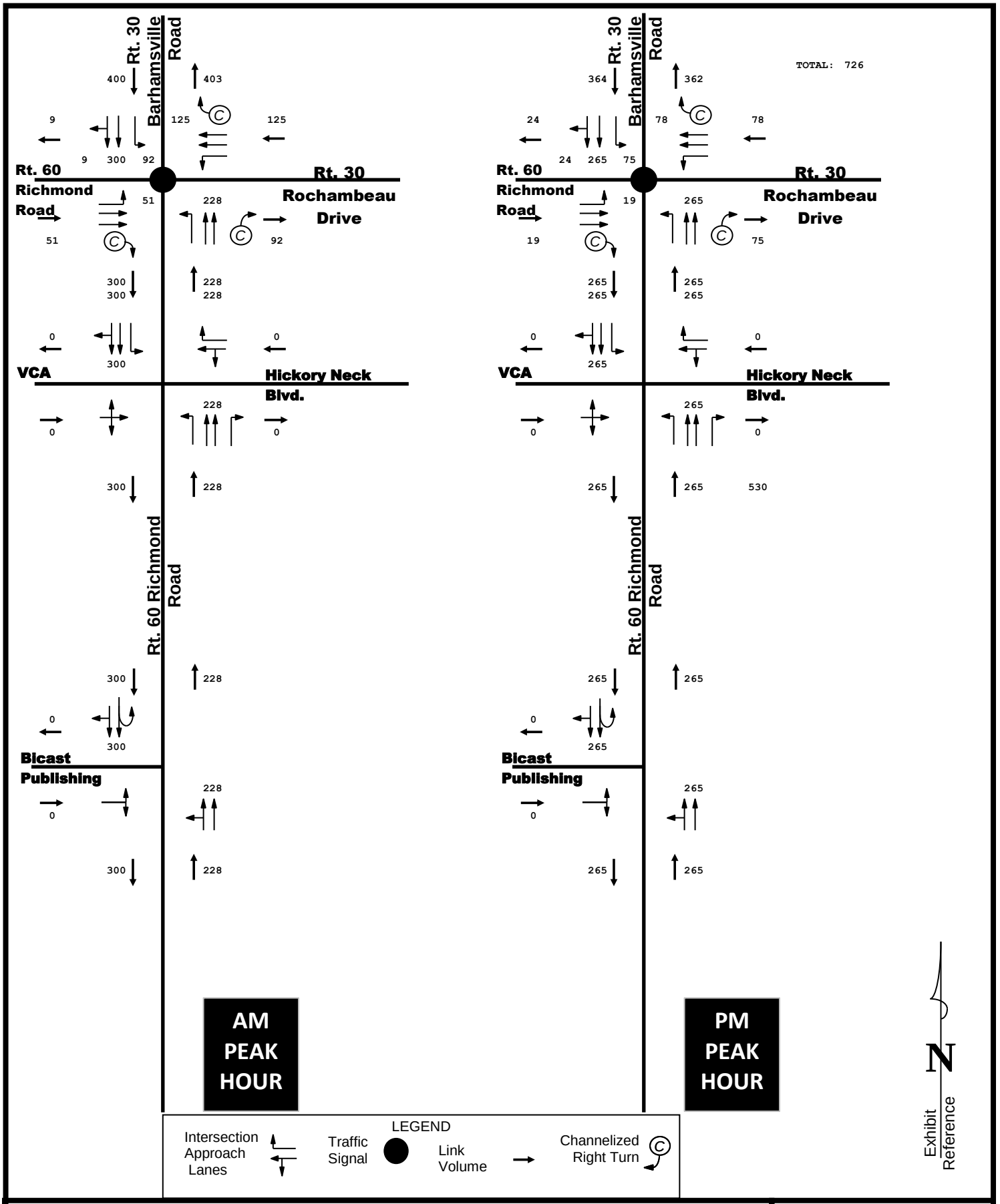
Exhibit 5a



HAZELWOOD TRIP BUILD OUT TRIP ASSIGNMENTS

DRW Consultants, LLC
804-794-7312

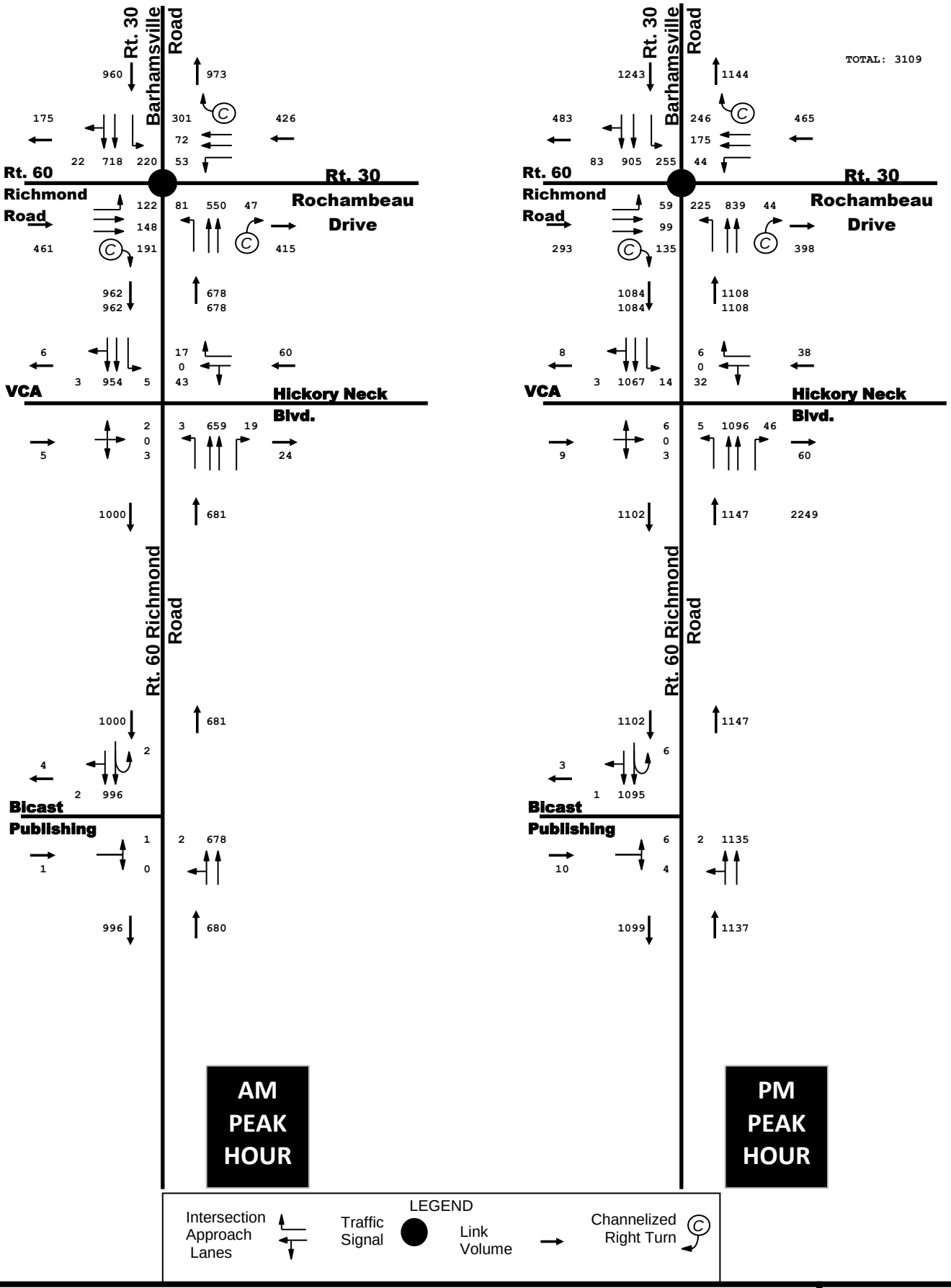
Exhibit 5b



STONEHOUSE BUILD OUT TRIP ASSIGNMENTS

DRW Consultants, LLC
804-794-7312

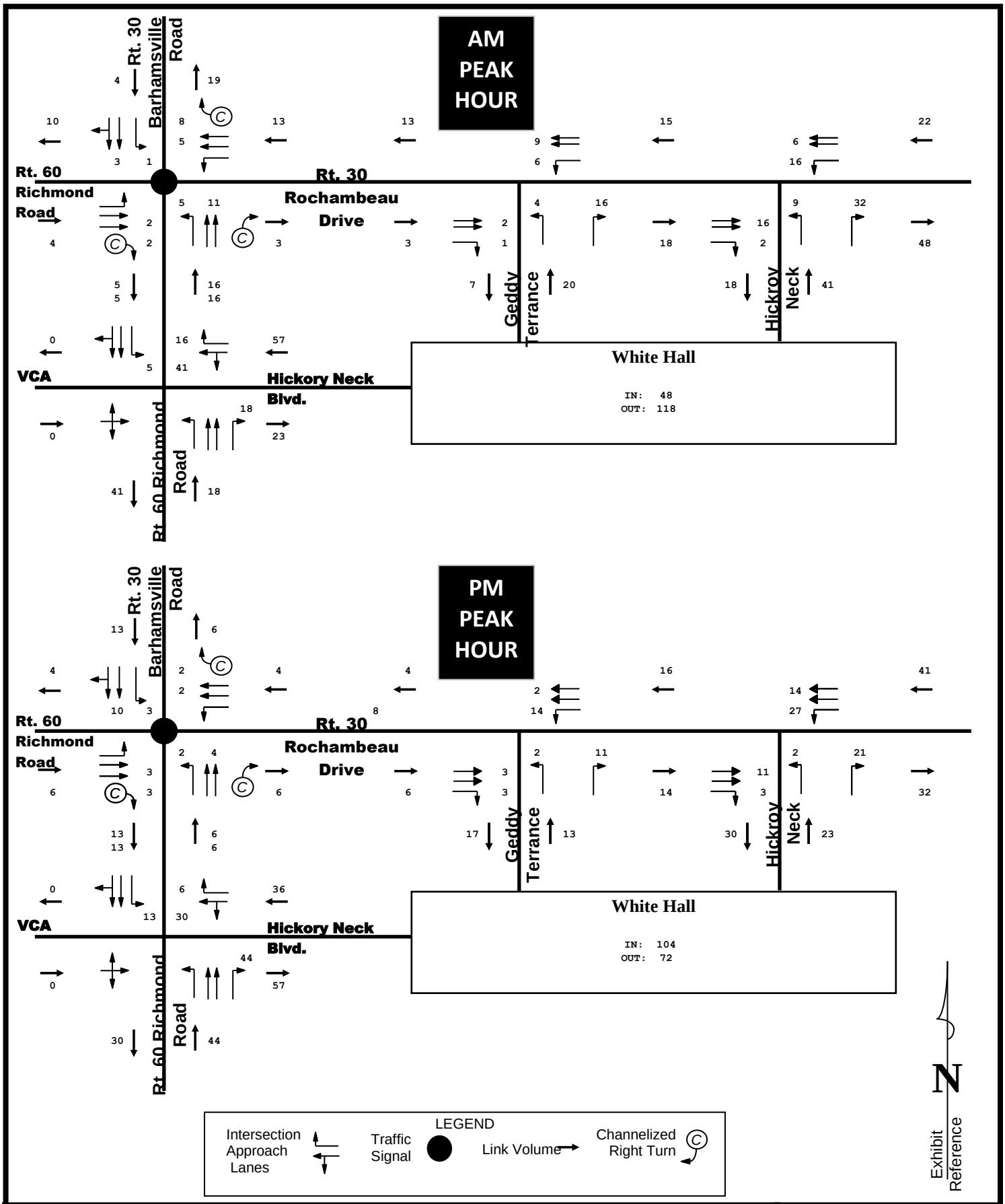
Exhibit 5c



2030 PEAK HOUR BACKGROUND TRAFFIC
GROWTH FACTOR & HAZELWOOD & STONEHOUSE

DRW Consultants, LLC
804-794-7312

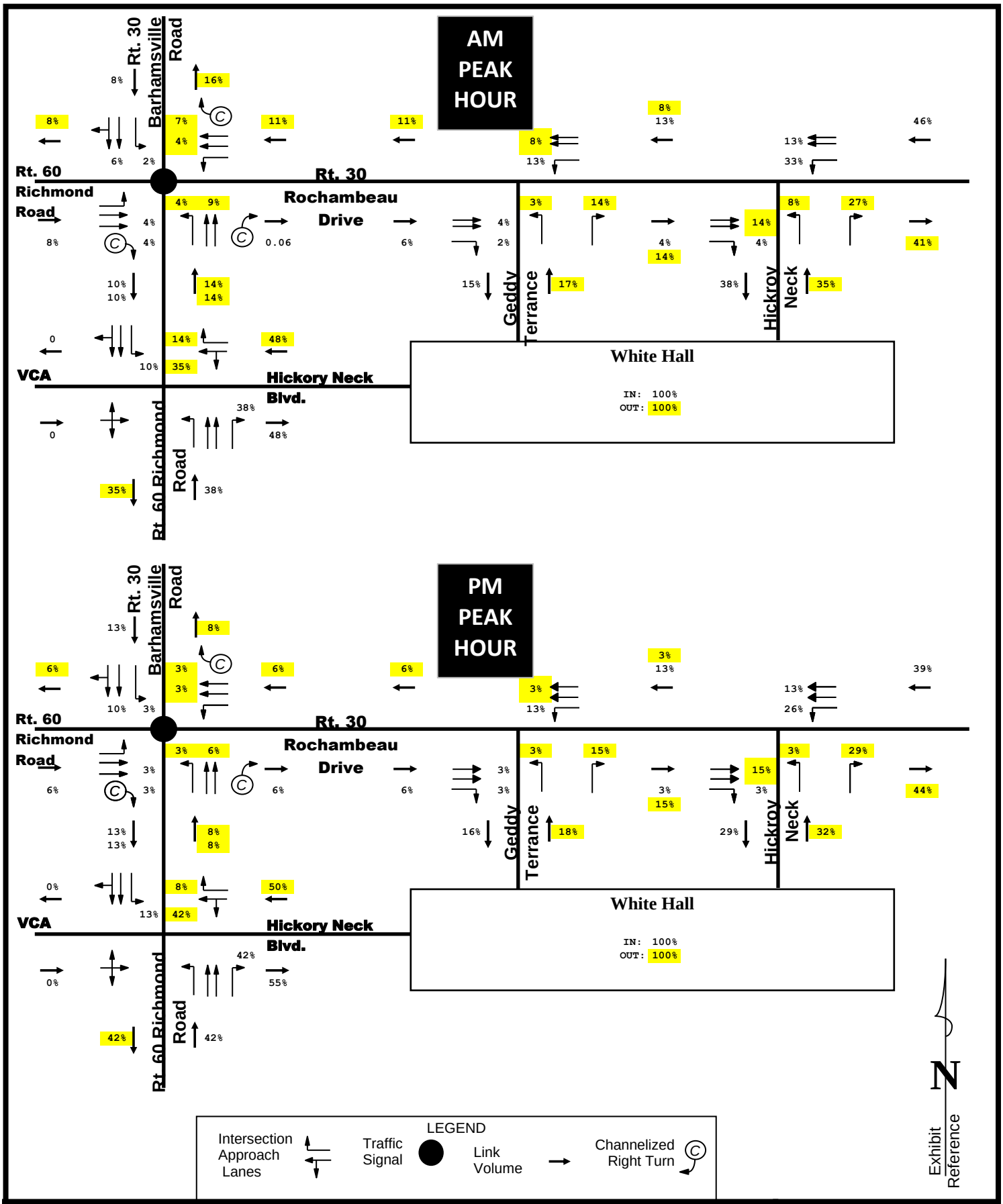
Exhibit 5d



WHITE HALL 2022 PEAK HOUR COUNTS

DRW Consultants, LLC
804-794-7312

Exhibit 6



WHITE HALL 2022 TRIP DISTRIBUTION
BASED ON PEAK HOUR COUNTS

DRW Consultants, LLC
804-794-7312

Exhibit 6a

		LAND USE		WEEKDAY TRIP GENERATION						
			SQ.FT.,	AM PEAK HOUR			PM PEAK HOUR			
VALUE	LAND USE	CODE	OTHER UNITS	Enter	Exit	Total	Enter	Exit	Total	DAILY
TABLE ONE: SITE TRIP GENERATION										
eq.-adj. st.	Single-Family Detached	210	443 units	75	214	289	254	149	403	3968
eq.-adj. st.	Single-Family Attached	215	139 units	21	46	67	45	34	79	1009
			582 units	96	260	356	299	183	482	4977

TABLE TWO: SITE TRIP DISTRIBUTION

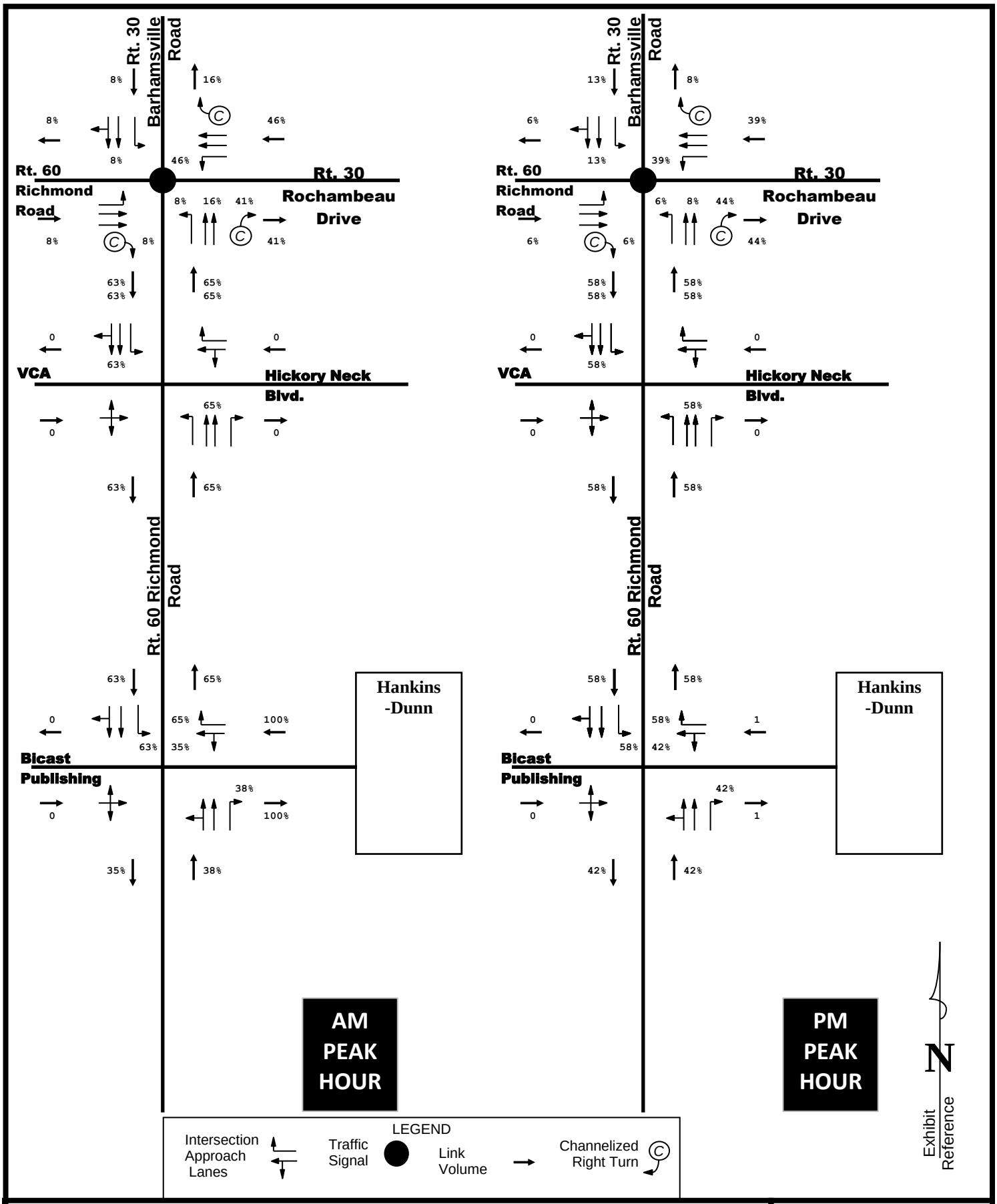
					96	260	356	299	183	482	
	AM Peak Hour						PM Peak Hour				
	Entering Traffic		Exiting Traffic				Entering Traffic		Exiting Traffic		
Direction	% Dist.	Trips	% Dist.	Trips			% Dist.	Trips	% Dist.	Trips	
Rt. 60 West Richmond Road	8%	8	8%	22			6%	17	6%	10	
Rt. 30 North Barhamsville Road	8%	8	16%	42			13%	37	8%	15	
Rt. 30 East Rochambeau Drive	46%	44	41%	106			39%	118	44%	82	
Rt. 60 South Richmond Road	38%	36	35%	90			42%	127	42%	76	
	100%	96	100%	260			100%	299	100%	183	

Trip generation rates from Trip Generation Manual, 11th Edition (TGM11) by the Institute of Transportation Engineers (ITE)

HANKINS-DUNN PROPERTY
TRIP GENERATION AND DISTRIBUTION
FEBRUARY 24, 2023 PLAN BY AES

DRW Consultants, LLC
804-794-7312

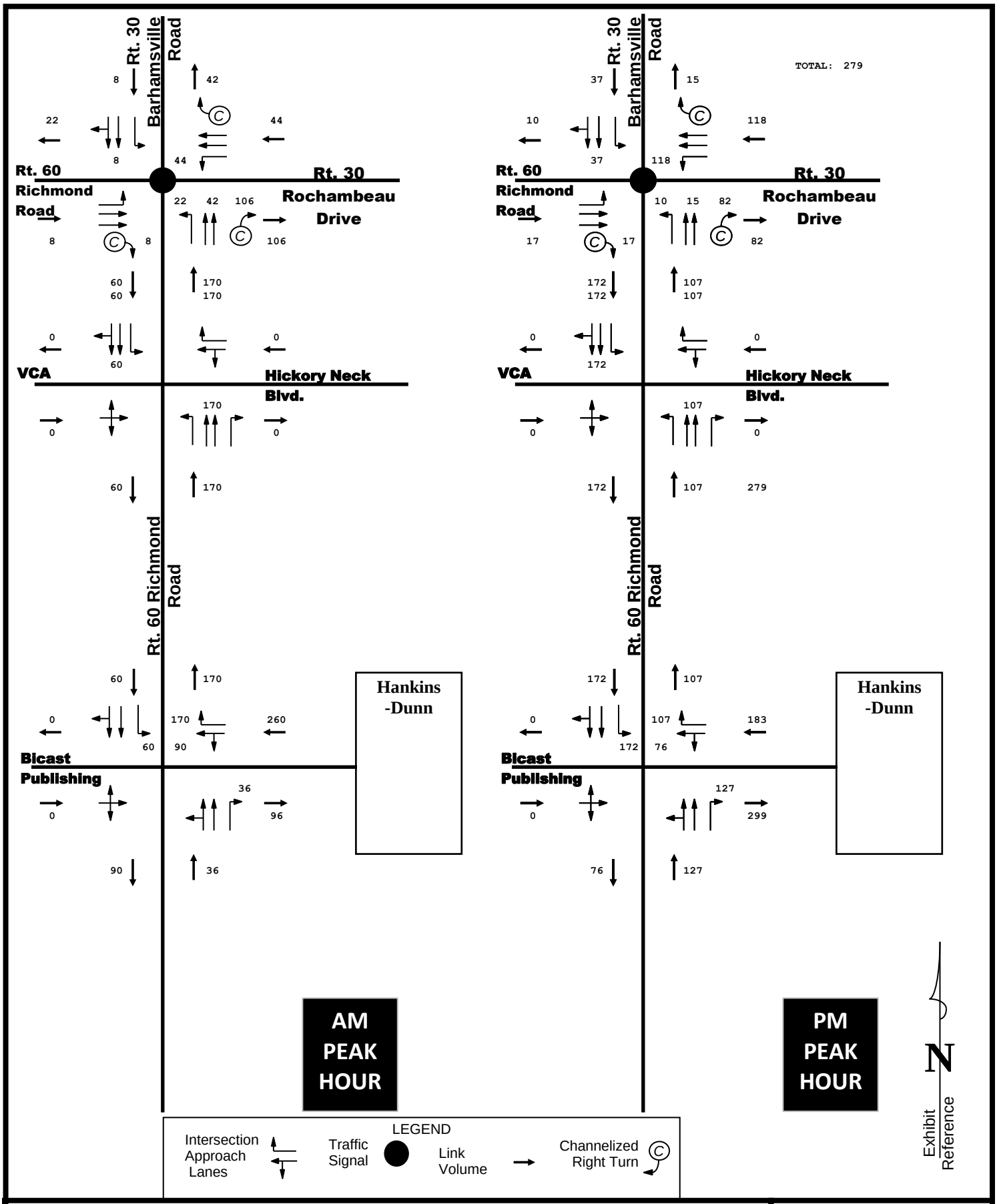
Exhibit 7



HANKINS-DUNN PERCENTAGE TRIP DISTRIBUTION

DRW Consultants, LLC
804-794-7312

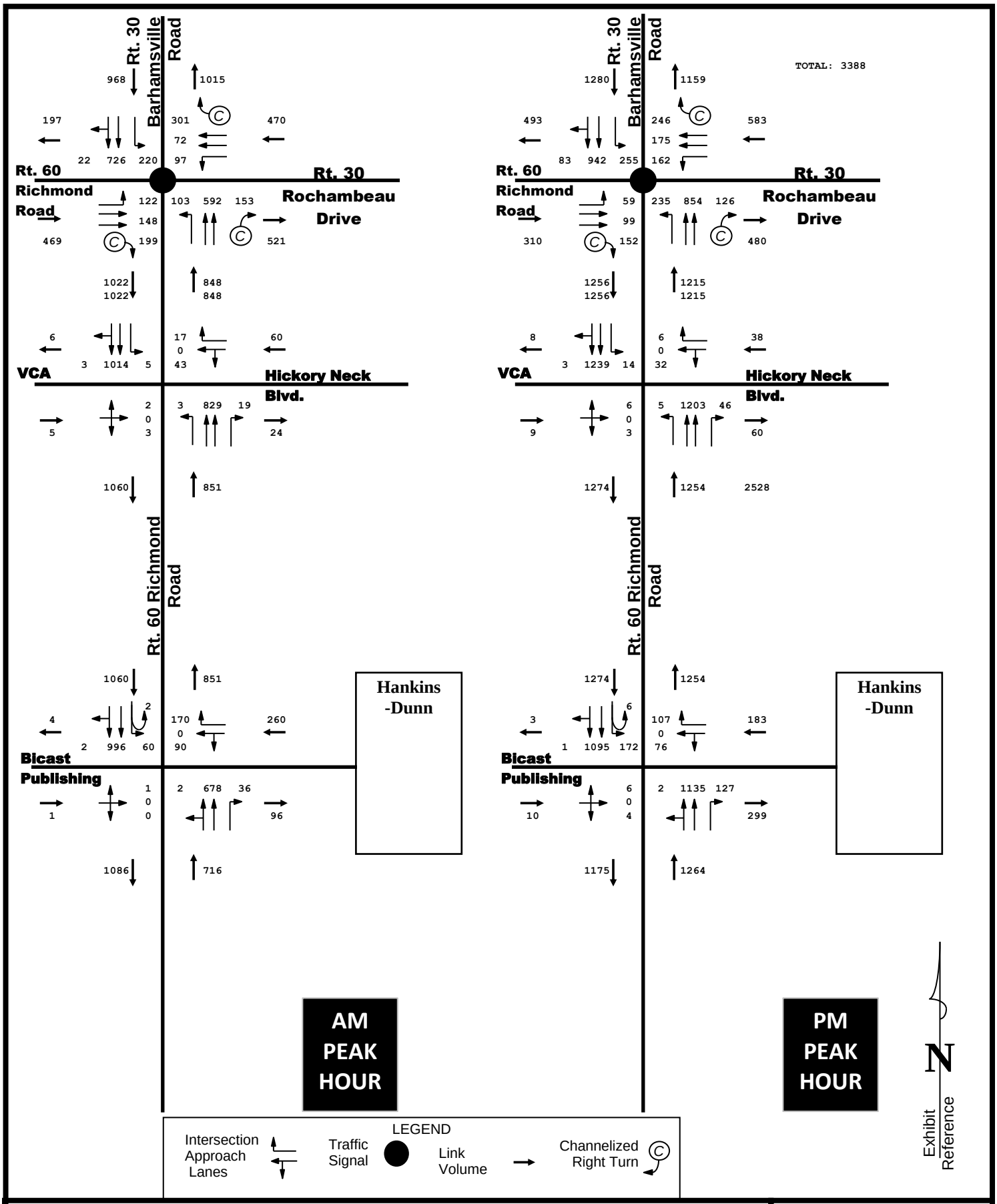
Exhibit 7a



HANKINS-DUNN PROPERTY TRIP ASSIGNMENT

DRW Consultants, LLC
804-794-7312

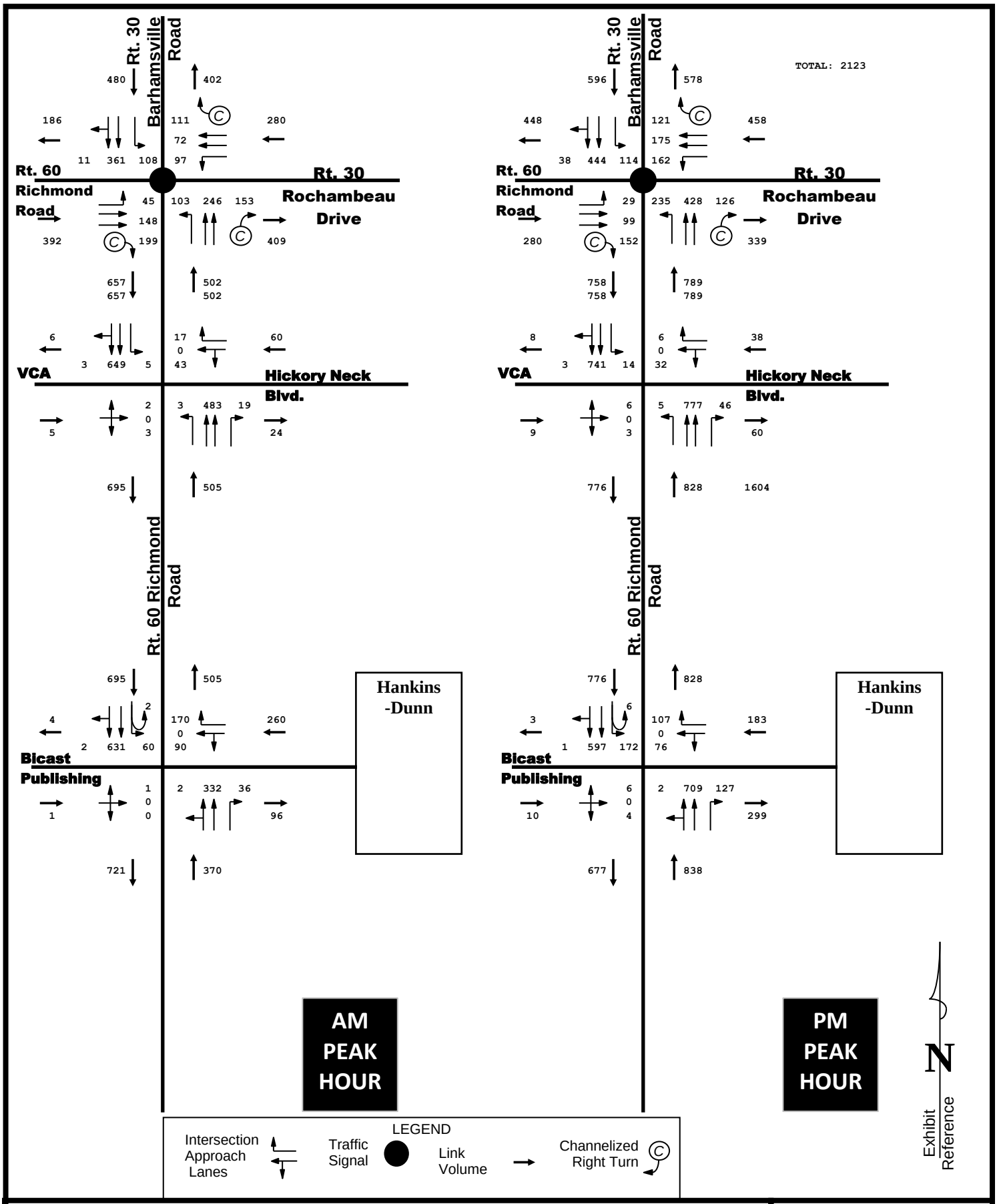
Exhibit 7b



2030 TOTAL TRAFFIC

DRW Consultants, LLC
804-794-7312

Exhibit 8



2030 TOTAL TRAFFIC
WITHOUT HAZELWOOD & STONEHOUSE

DRW Consultants, LLC
804-794-7312

Exhibit 9

APPENDIX
EXHIBITS

APPENDIX TABLE OF CONTENTS

APPENDIX EXHIBITS Number

AM & PM Peak Hour Tabulated Traffic Counts

Rt. 60 Richmond Road/Rt. 30 Barhamsville Road/Rt. 30 Rochambeau Drive. ..... A
Rt. 60 Richmond Road/VCA Andersons Corner Animal Hospital/Hickory Neck Blvd ..... B
Rt. 60 Richmond Road/Bicast Publishing C
Rt. 30 Rochambeau Drive/Preston Lane/Geddy Terrace ..... D
Rt. 30 Rochambeau Drive/Hickory Neck Boulevard ..... E

2022 Count Without Balances ..... F

St. Luke's Village Trip Assignments

Existing Zoning Primary Trips I1
Existing Zoning Pass By Trips I2
Proposed Zoning Primary Trips I3
Proposed Zoning Pass By Trips I4

HCM6 Signalized Intersection LOS ..... AM PM

2022 Balanced Traffic J1 J2
Rt. 60 Richmond Road/Rt. 30 Barhamsville Road/Rt. 30 Rochambeau Drive ..... Page 1
2025 Background Traffic J3 J4
Rt. 60 Richmond Road/Rt. 30 Barhamsville Road/Rt. 30 Rochambeau Drive ..... Page 1
2025 Total Traffic J5 J6
Rt. 60 Richmond Road/Rt. 30 Barhamsville Road/Rt. 30 Rochambeau Drive ..... Page 1
2025 Total Traffic Without Stonehouse & Hazelwood J7 J8
Rt. 60 Richmond Road/Rt. 30 Barhamsville Road/Rt. 30 Rochambeau Drive ..... Page 1

HCM6 Unsignalized Intersection LOS ..... AM PM

2022 Balanced Traffic K1 K2
Rt. 60 Richmond Road/VCA Andersons Corner Animal Hospital/Hickory Neck Blvd ..... Page 1
Rt. 60 Richmond Road/Bicast Publishing ..... Page 2
2025 Background Traffic K3 K4
Rt. 60 Richmond Road/VCA Andersons Corner Animal Hospital/Hickory Neck Blvd ..... Page 1
Rt. 60 Richmond Road/Bicast Publishing ..... Page 2
2025 Total Traffic K5 K6
Rt. 60 Richmond Road/VCA Andersons Corner Animal Hospital/Hickory Neck Blvd ..... Page 1
Rt. 60 Richmond Road/Bicast Publishing/Hankins-Dunn ..... Page 2
2025 Total Traffic Without Stonehouse & Hazelwood K7 K8
Rt. 60 Richmond Road/VCA Andersons Corner Animal Hospital/Hickory Neck Blvd ..... Page 1
Rt. 60 Richmond Road/Bicast Publishing/Hankins-Dunn ..... Page 2

SimTraffic Queuing & Blocking Report ..... AM PM

2022 Balanced Traffic L1 L2
2025 Background Traffic L3 L4
2025 Total Traffic L5 L6

Reference Documents

Stonehouse Build Out Trips ..... P
Hazelwood Build Out Trips ..... Q
July 15, 2022 Workscope ..... R
VDOT Signal Timing: Rt. 60 Richmond Road/Rt. 30 Barhamsville Road ..... S

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: Route 60 (Richmond Road) | Date: September 13, 2022 | Tuesday

and: Route 30 | Weather: Partly Cloud, Warm

Location: James City County, VA | Entered by: ARG | Star Rating: 4

TIME	EASTBOUND on: Route 60					WESTBOUND on: Rochambeau Drive					NORTHBOUND on: Route 60					SOUTHBOUND on: Barhamsville Road					TOTAL N + S + E + W
	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	
AM																					
7:00-7:15	0	6	47	26	79	0	4	9	17	30	0	19	34	5	58	0	22	62	4	88	255
7:15-7:30	0	7	41	48	96	0	6	15	19	40	0	18	42	9	69	1	14	76	3	94	299
7:30-7:45	0	11	35	42	88	0	10	10	24	44	0	16	48	5	69	0	23	98	4	125	326
7:45-8:00	0	9	36	54	99	0	17	15	35	67	0	19	39	15	73	1	27	81	3	112	351
8:00-8:15	0	16	29	38	83	0	17	29	28	74	0	24	57	16	97	3	34	76	0	113	367
8:15-8:30	0	8	36	43	87	0	6	7	13	26	0	18	47	3	68	2	23	76	1	102	283
8:30-8:45	0	8	17	33	58	1	8	11	16	36	0	20	61	9	90	1	38	86	7	132	316
8:45-9:00	0	9	32	44	85	0	17	22	43	82	1	15	57	6	79	0	26	75	5	106	352
2 Hr Totals	0	74	273	328	675	1	85	118	195	399	1	149	385	68	603	8	207	630	27	872	2549
1 Hr Totals																					
7:00-8:00	0	33	159	170	362	0	37	49	95	181	0	72	163	34	269	2	86	317	14	419	1231
7:15-8:15	0	43	141	182	366	0	50	69	106	225	0	77	186	45	308	5	98	331	10	444	1343
7:30-8:30	0	44	136	177	357	0	50	61	100	211	0	77	191	39	307	6	107	331	8	452	1327
7:45-8:45	0	41	118	168	327	1	48	62	92	203	0	81	204	43	328	7	122	319	11	459	1317
8:00-9:00	0	41	114	158	313	1	48	69	100	218	1	77	222	34	334	6	121	313	13	453	1318
PEAK HOUR																					
7:15-8:15	0	43	141	182	366	0	50	69	106	225	0	77	186	45	308	5	98	331	10	444	1343
%T & PHF	#####	5%	5%	4%	5%	#####	2%	14%	2%	6%	#####	10%	12%	13%	12%	20%	0%	5%	0%	4%	0.915
PM																					
4:00-4:15	0	7	22	29	58	0	9	48	23	80	0	51	107	7	165	1	20	83	12	116	419
4:15-4:30	0	6	23	29	58	0	8	42	30	80	0	47	107	16	170	3	27	80	10	120	428
4:30-4:45	0	9	35	34	78	0	13	48	26	87	0	55	107	9	171	1	21	80	4	106	442
4:45-5:00	0	5	21	41	67	0	12	34	26	72	0	45	86	10	141	0	29	99	5	133	413
5:00-5:15	0	10	20	30	60	0	9	39	29	77	0	55	85	16	156	4	29	108	19	160	453
5:15-5:30	0	5	18	24	47	0	8	46	34	88	0	60	115	7	182	1	24	88	8	121	438
5:30-5:45	0	7	21	39	67	0	8	45	33	86	0	45	107	6	158	2	15	73	3	93	404
5:45-6:00	0	8	20	32	60	0	7	33	23	63	1	51	95	13	160	4	21	80	3	108	391
2 Hr Totals	0	57	180	258	495	0	74	335	224	633	1	409	809	84	1303	16	186	691	64	957	3388
1 Hr Totals																					
4:00-5:00	0	27	101	133	261	0	42	172	105	319	0	198	407	42	647	5	97	342	31	475	1702
4:15-5:15	0	30	99	134	263	0	42	163	111	316	0	202	385	51	638	8	106	367	38	519	1736
4:30-5:30	0	29	94	129	252	0	42	167	115	324	0	215	393	42	650	6	103	375	36	520	1746
4:45-5:45	0	27	80	134	241	0	37	164	122	323	0	205	393	39	637	7	97	368	35	507	1708
5:00-6:00	0	30	79	125	234	0	32	163	119	314	1	211	402	42	656	11	89	349	33	482	1686
PEAK HOUR																					
4:30-5:30	0	29	94	129	252	0	42	167	115	324	0	215	393	42	650	6	103	375	36	520	1746
%T & PHF	#####	0%	0%	4%	2%	#####	2%	1%	2%	2%	#####	3%	2%	0%	2%	0%	3%	4%	3%	3%	0.964

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: Route 60 (Richmond Road) Date: September 13, 2022 Tuesday

and: Hickory Neck Blvs/Business Access Weather: Partly Cloud, Warm

Location: James City County, VA Entered by: ARG Star Rating: 4

TIME	EASTBOUND on: Animal Hospital Acces					WESTBOUND on: Hickory Neck Blvd					NORTHBOUND on: Route 60					SOUTHBOUND on: Route 60					TOTAL N + S + E + W
	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	
AM																					
7:00-7:15	0	1	0	1	2	0	3	0	3	6	0	1	60	3	64	0	0	110	2	112	184
7:15-7:30	0	1	0	2	3	0	2	0	3	5	0	2	66	3	71	0	0	124	0	124	203
7:30-7:45	0	0	0	1	1	0	10	0	3	13	0	0	69	4	73	0	1	148	0	149	236
7:45-8:00	0	0	0	0	0	0	19	0	6	25	0	0	67	1	68	0	2	158	2	162	255
8:00-8:15	0	1	0	0	1	0	10	0	4	14	0	1	96	10	107	0	2	131	1	134	256
8:15-8:30	0	0	0	0	0	0	5	0	2	7	0	0	69	3	72	0	1	120	2	123	202
8:30-8:45	0	3	0	1	4	0	9	0	3	12	0	1	81	2	84	0	0	128	2	130	230
8:45-9:00	0	0	0	0	0	0	7	0	2	9	0	0	76	4	80	0	0	129	4	133	222
2 Hr Totals	0	6	0	5	11	0	65	0	26	91	0	5	584	30	619	0	6	1048	13	1067	1788
1 Hr Totals																					
7:00-8:00	0	2	0	4	6	0	34	0	15	49	0	3	262	11	276	0	3	540	4	547	878
7:15-8:15	0	2	0	3	5	0	41	0	16	57	0	3	298	18	319	0	5	561	3	569	950
7:30-8:30	0	1	0	1	2	0	44	0	15	59	0	1	301	18	320	0	6	557	5	568	949
7:45-8:45	0	4	0	1	5	0	43	0	15	58	0	2	313	16	331	0	5	537	7	549	943
8:00-9:00	0	4	0	1	5	0	31	0	11	42	0	2	322	19	343	0	3	508	9	520	910
PEAK HOUR																					
7:15-8:15	0	2	0	3	5	0	41	0	16	57	0	3	298	18	319	0	5	561	3	569	950
%T & PHF	#####	0%	#####	0%	0%	#####	5%	#####	0%	4%	#####	0%	11%	0%	10%	#####	60%	4%	0%	4%	0.928
PM																					
4:00-4:15	0	4	0	1	5	0	11	2	1	14	1	3	161	3	168	0	4	122	0	126	313
4:15-4:30	0	0	0	1	1	1	8	0	3	12	0	1	156	4	161	0	2	112	1	115	289
4:30-4:45	0	2	0	0	2	1	10	0	0	11	1	2	165	7	175	0	4	120	1	125	313
4:45-5:00	0	2	0	1	3	0	6	0	3	9	0	0	126	14	140	0	0	147	0	147	299
5:00-5:15	0	0	0	1	1	0	9	0	0	9	1	0	161	14	176	0	7	152	1	160	346
5:15-5:30	0	2	0	1	3	0	4	0	3	7	1	0	167	9	177	0	2	123	1	126	313
5:30-5:45	0	1	0	0	1	0	7	0	1	8	1	0	150	5	156	0	5	102	0	107	272
5:45-6:00	0	2	0	1	3	0	6	0	0	6	1	0	163	14	178	0	3	116	0	119	306
2 Hr Totals	0	13	0	6	19	2	61	2	11	76	6	6	1249	70	1331	0	27	994	4	1025	2451
1 Hr Totals																					
4:00-5:00	0	8	0	3	11	2	35	2	7	46	2	6	608	28	644	0	10	501	2	513	1214
4:15-5:15	0	4	0	3	7	2	33	0	6	41	2	3	608	39	652	0	13	531	3	547	1247
4:30-5:30	0	6	0	3	9	1	29	0	6	36	3	2	619	44	668	0	13	542	3	558	1271
4:45-5:45	0	5	0	3	8	0	26	0	7	33	3	0	604	42	649	0	14	524	2	540	1230
5:00-6:00	0	5	0	3	8	0	26	0	4	30	4	0	641	42	687	0	17	493	2	512	1237
PEAK HOUR																					
4:30-5:30	0	6	0	3	9	1	29	0	6	36	3	2	619	44	668	0	13	542	3	558	1271
%T & PHF	#####	0%	#####	0%	0%	0%	0%	#####	0%	0%	33%	0%	2%	2%	2%	#####	8%	4%	0%	4%	0.918

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: Route 60 (Richmond Road) | Date: September 13, 2022 | Tuesday

and: Bicast Publishing Access | Weather: Partly Cloud, Warm

Location: James City County, VA | Entered by: ARG | Star Rating: 4

TIME	EASTBOUND on: Bicast Publishing					WESTBOUND on:					NORTHBOUND on: Route 60					SOUTHBOUND on: Route 60					TOTAL N + S + E + W
	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	
AM																					
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	0	63	0	63	0	0	128	0	128	191
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	74	0	74	0	0	125	0	125	199
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	70	0	70	0	0	152	1	153	223
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	1	68	0	69	1	0	176	1	178	247
8:00-8:15	0	1	0	0	1	0	0	0	0	0	0	1	103	0	104	1	0	140	0	141	246
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	74	0	74	0	0	130	0	130	204
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	1	83	0	84	0	0	136	0	136	220
8:45-9:00	0	1	0	0	1	0	0	0	0	0	0	1	82	0	83	0	0	128	1	129	213
2 Hr Totals	0	2	0	0	2	0	0	0	0	0	0	4	617	0	621	2	0	1115	3	1120	1743
1 Hr Totals																					
7:00-8:00	0	0	0	0	0	0	0	0	0	0	0	1	275	0	276	1	0	581	2	584	860
7:15-8:15	0	1	0	0	1	0	0	0	0	0	0	2	315	0	317	2	0	593	2	597	915
7:30-8:30	0	1	0	0	1	0	0	0	0	0	0	2	315	0	317	2	0	598	2	602	920
7:45-8:45	0	1	0	0	1	0	0	0	0	0	0	3	328	0	331	2	0	582	1	585	917
8:00-9:00	0	2	0	0	2	0	0	0	0	0	0	3	342	0	345	1	0	534	1	536	883
PEAK HOUR																					
7:30-8:30	0	1	0	0	1	0	0	0	0	0	0	2	315	0	317	2	0	598	2	602	920
%T & PHF	#####	0%	#####	#####	0%	#####	#####	#####	#####	#####	#####	0%	10%	#####	10%	0%	#####	5%	0%	5%	0.931
PM																					
4:00-4:15	0	0	0	0	0	0	0	0	0	0	1	0	167	0	168	0	0	124	0	124	292
4:15-4:30	0	0	0	1	1	0	0	0	0	0	0	0	172	0	172	0	0	126	0	126	299
4:30-4:45	0	0	0	0	0	0	0	0	0	0	1	0	176	0	177	1	0	120	0	121	298
4:45-5:00	0	3	0	1	4	0	0	0	0	0	0	0	139	0	139	0	0	153	1	154	297
5:00-5:15	0	1	0	1	2	0	0	0	0	0	0	0	171	0	171	2	0	167	0	169	342
5:15-5:30	0	2	0	2	4	0	0	0	0	0	0	1	168	0	169	3	0	126	0	129	302
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	164	0	164	0	0	117	0	117	281
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	0	170	0	170	0	0	115	0	115	285
2 Hr Totals	0	6	0	5	11	0	0	0	0	0	2	1	1327	0	1330	6	0	1048	1	1055	2396
1 Hr Totals																					
4:00-5:00	0	3	0	2	5	0	0	0	0	0	2	0	654	0	656	1	0	523	1	525	1186
4:15-5:15	0	4	0	3	7	0	0	0	0	0	1	0	658	0	659	3	0	566	1	570	1236
4:30-5:30	0	6	0	4	10	0	0	0	0	0	1	1	654	0	656	6	0	566	1	573	1239
4:45-5:45	0	6	0	4	10	0	0	0	0	0	0	1	642	0	643	5	0	563	1	569	1222
5:00-6:00	0	3	0	3	6	0	0	0	0	0	0	1	673	0	674	5	0	525	0	530	1210
PEAK HOUR																					
4:30-5:30	0	6	0	4	10	0	0	0	0	0	1	1	654	0	656	6	0	566	1	573	1239
%T & PHF	#####	0%	#####	0%	0%	#####	#####	#####	#####	#####	0%	0%	2%	#####	2%	0%	#####	4%	0%	4%	0.906

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: Route 30 (Rochambeau Drive) | Date: September 13, 2022 | Tuesday

and: Preston Lane/Geddy Terrace | Weather: Partly Cloud, Warm

Location: James City County, VA | Entered by: ARG | Star Rating: 4

TIME	EASTBOUND on: Route 30					WESTBOUND on: Route 30					NORTHBOUND on: Geddy Terrace					SOUTHBOUND on: Preston Lane					TOTAL N + S + E + W
	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	
AM																					
7:00-7:15	0	0	74	0	74	0	1	28	2	31	0	0	0	4	4	0	6	0	2	8	117
7:15-7:30	0	2	63	0	65	0	0	35	2	37	0	2	0	6	8	0	11	0	3	14	124
7:30-7:45	0	1	66	1	68	0	3	44	0	47	0	0	0	4	4	0	8	0	2	10	129
7:45-8:00	0	1	71	0	72	0	2	59	3	64	0	1	0	3	4	0	3	1	8	12	152
8:00-8:15	0	0	97	0	97	0	1	67	2	70	0	1	0	3	4	0	7	2	2	11	182
8:15-8:30	0	0	50	0	50	0	2	25	3	30	0	0	0	3	3	0	2	0	2	4	87
8:30-8:45	0	1	78	0	79	1	0	30	2	33	0	1	0	5	6	0	4	0	4	8	126
8:45-9:00	0	3	50	0	53	0	6	81	5	92	0	1	0	6	7	0	4	0	2	6	158
2 Hr Totals	0	8	549	1	558	1	15	369	19	404	0	6	0	34	40	0	45	3	25	73	1075
1 Hr Totals																					
7:00-8:00	0	4	274	1	279	0	6	166	7	179	0	3	0	17	20	0	28	1	15	44	522
7:15-8:15	0	4	297	1	302	0	6	205	7	218	0	4	0	16	20	0	29	3	15	47	587
7:30-8:30	0	2	284	1	287	0	8	195	8	211	0	2	0	13	15	0	20	3	14	37	550
7:45-8:45	0	2	296	0	298	1	5	181	10	197	0	3	0	14	17	0	16	3	16	35	547
8:00-9:00	0	4	275	0	279	1	9	203	12	225	0	3	0	17	20	0	17	2	10	29	553
PEAK HOUR																					
7:15-8:15	0	4	297	1	302	0	6	205	7	218	0	4	0	16	20	0	29	3	15	47	587
PM																					
4:00-4:15	0	3	43	0	46	1	7	71	6	85	0	1	0	0	1	0	3	0	4	7	139
4:15-4:30	0	1	65	2	68	0	4	73	4	81	0	0	0	3	3	0	3	1	4	8	160
4:30-4:45	2	3	56	0	61	0	5	77	4	86	0	1	0	1	2	0	2	0	2	4	153
4:45-5:00	0	3	61	0	64	0	3	74	6	83	0	0	0	4	4	0	1	0	2	3	154
5:00-5:15	0	0	64	1	65	1	2	79	6	88	0	1	0	3	4	0	7	0	0	7	164
5:15-5:30	0	2	45	0	47	0	5	84	2	91	0	1	0	2	3	0	1	0	1	2	143
5:30-5:45	1	2	41	1	45	0	5	84	3	92	0	1	0	8	9	0	1	0	1	2	148
5:45-6:00	0	3	42	1	46	0	7	66	8	81	0	2	0	0	2	0	1	2	0	3	132
2 Hr Totals	3	17	417	5	442	2	38	608	39	687	0	7	0	21	28	0	19	3	14	36	1193
1 Hr Totals																					
4:00-5:00	2	10	225	2	239	1	19	295	20	335	0	2	0	8	10	0	9	1	12	22	606
4:15-5:15	2	7	246	3	258	1	14	303	20	338	0	2	0	11	13	0	13	1	8	22	631
4:30-5:30	2	8	226	1	237	1	15	314	18	348	0	3	0	10	13	0	11	0	5	16	614
4:45-5:45	1	7	211	2	221	1	15	321	17	354	0	3	0	17	20	0	10	0	4	14	609
5:00-6:00	1	7	192	3	203	1	19	313	19	352	0	5	0	13	18	0	10	2	2	14	587
PEAK HOUR																					
4:15-5:15	2	7	246	3	258	1	14	303	20	338	0	2	0	11	13	0	13	1	8	22	631

TOTALS TURNING MOVEMENT COUNT - SUMMARY

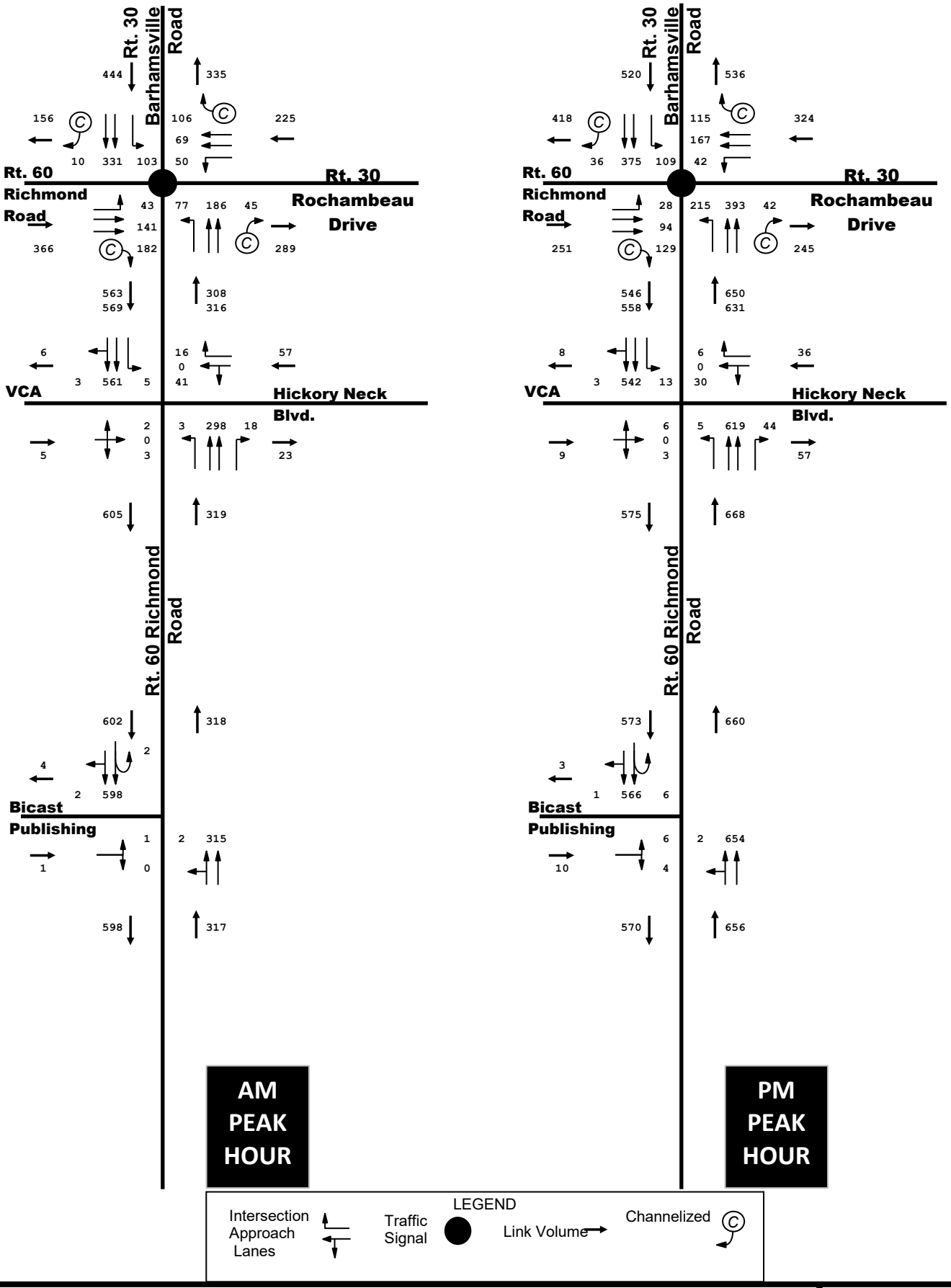
Counted by: VCU

Intersection of: Route 30 (Rochambeau Drive) | Date: September 13, 2022 | Tuesday

and: Hickory Neck Blvd | Weather: Partly Cloud, Warm

Location: James City County, VA | Entered by: ARG | Star Rating: 4

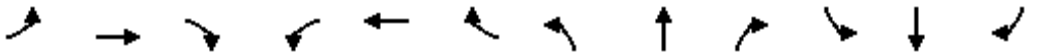
TIME	EASTBOUND on: Route 30					WESTBOUND on: Route 30					NORTHBOUND on: Hickory Neck Blvd					SOUTHBOUND on:					TOTAL N + S + E + W
	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	U-TN	LEFT	THRU	RIGHT	TOTAL	
AM																					
7:00-7:15	0	0	86	0	86	23	2	30	0	55	0	1	0	13	14	0	0	0	0	0	155
7:15-7:30	0	0	78	0	78	26	2	38	0	66	0	1	0	13	14	0	0	0	0	0	158
7:30-7:45	0	0	82	0	82	22	3	44	0	69	0	1	0	4	5	0	0	0	0	0	156
7:45-8:00	0	0	74	2	76	24	7	57	0	88	0	6	0	8	14	0	0	0	0	0	178
8:00-8:15	0	0	100	0	100	23	4	69	0	96	0	1	0	7	8	0	0	0	0	0	204
8:15-8:30	0	0	57	0	57	19	3	30	0	52	0	0	0	9	9	0	0	0	0	0	118
8:30-8:45	0	0	84	1	85	24	3	34	0	61	0	0	0	16	16	0	0	0	0	0	162
8:45-9:00	0	0	61	2	63	23	9	88	0	120	0	2	0	9	11	0	0	0	0	0	194
2 Hr Totals	0	0	622	5	627	184	33	390	0	607	0	12	0	79	91	0	0	0	0	0	1325
1 Hr Totals																					
7:00-8:00	0	0	320	2	322	95	14	169	0	278	0	9	0	38	47	0	0	0	0	0	647
7:15-8:15	0	0	334	2	336	95	16	208	0	319	0	9	0	32	41	0	0	0	0	0	696
7:30-8:30	0	0	313	2	315	88	17	200	0	305	0	8	0	28	36	0	0	0	0	0	656
7:45-8:45	0	0	315	3	318	90	17	190	0	297	0	7	0	40	47	0	0	0	0	0	662
8:00-9:00	0	0	302	3	305	89	19	221	0	329	0	3	0	41	44	0	0	0	0	0	678
PEAK HOUR																					
7:15-8:15	0	0	334	2	336	95	16	208	0	319	0	9	0	32	41	0	0	0	0	0	696
PM																					
4:00-4:15	0	0	46	1	47	13	7	84	0	104	0	2	0	5	7	0	0	0	0	0	158
4:15-4:30	0	0	70	1	71	7	6	83	0	96	0	0	0	5	5	0	0	0	0	0	172
4:30-4:45	0	0	57	1	58	13	8	87	0	108	0	0	0	7	7	0	0	0	0	0	173
4:45-5:00	0	0	66	0	66	13	8	83	0	104	0	1	0	3	4	0	0	0	0	0	174
5:00-5:15	0	0	71	1	72	21	5	87	0	113	0	1	0	6	7	0	0	0	0	0	192
5:15-5:30	0	0	49	0	49	11	15	88	0	114	0	0	0	7	7	0	0	0	0	0	170
5:30-5:45	0	0	47	1	48	15	7	88	0	110	0	2	0	2	4	0	0	0	0	0	162
5:45-6:00	0	0	44	0	44	8	5	80	0	93	0	0	0	7	7	0	0	0	0	0	144
2 Hr Totals	0	0	450	5	455	101	61	680	0	842	0	6	0	42	48	0	0	0	0	0	1345
1 Hr Totals																					
4:00-5:00	0	0	239	3	242	46	29	337	0	412	0	3	0	20	23	0	0	0	0	0	677
4:15-5:15	0	0	264	3	267	54	27	340	0	421	0	2	0	21	23	0	0	0	0	0	711
4:30-5:30	0	0	243	2	245	58	36	345	0	439	0	2	0	23	25	0	0	0	0	0	709
4:45-5:45	0	0	233	2	235	60	35	346	0	441	0	4	0	18	22	0	0	0	0	0	698
5:00-6:00	0	0	211	2	213	55	32	343	0	430	0	3	0	22	25	0	0	0	0	0	668
PEAK HOUR																					
4:15-5:15	0	0	264	3	267	54	27	340	0	421	0	2	0	21	23	0	0	0	0	0	711



2022 PEAK HOUR COUNTS
WITHOUT BALANCE

DRW Consultants, LLC
804-794-7312

Exhibit F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	141	182	50	69	106	77	194	45	103	337	10
Future Volume (veh/h)	43	141	182	50	69	106	77	194	45	103	337	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1841	1870	1693	1870	1752	1722	1707	1885	1826	1900
Adj Flow Rate, veh/h	47	153	0	54	75	0	84	211	0	112	366	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	4	2	14	2	10	12	13	1	5	0
Cap, veh/h	224	757		213	672		281	684		257	725	
Arrive On Green	0.13	0.22	0.00	0.12	0.21	0.00	0.17	0.21	0.00	0.14	0.21	0.00
Sat Flow, veh/h	1739	3469	1560	1781	3216	1585	1668	3272	1447	1795	3561	0
Grp Volume(v), veh/h	47	153	0	54	75	0	84	211	0	112	366	0
Grp Sat Flow(s),veh/h/ln	1739	1735	1560	1781	1608	1585	1668	1636	1447	1795	1735	0
Q Serve(g_s), s	1.4	2.2	0.0	1.6	1.1	0.0	2.6	3.3	0.0	3.4	5.6	0.0
Cycle Q Clear(g_c), s	1.4	2.2	0.0	1.6	1.1	0.0	2.6	3.3	0.0	3.4	5.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	224	757		213	672		281	684		257	725	
V/C Ratio(X)	0.21	0.20		0.25	0.11		0.30	0.31		0.44	0.50	
Avail Cap(c_a), veh/h	349	958		238	672		281	794		270	842	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.3	19.1	0.0	23.9	19.1	0.0	21.8	20.0	0.0	23.4	20.9	0.0
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.2	0.1	0.0	0.2	0.4	0.0	0.4	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.7	0.0	0.6	0.4	0.0	0.9	1.1	0.0	1.3	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.5	19.3	0.0	24.1	19.2	0.0	22.0	20.3	0.0	23.8	21.7	0.0
LnGrp LOS	C	B		C	B		C	C		C	C	
Approach Vol, veh/h		200			129			295			478	
Approach Delay, s/veh		20.3			21.3			20.8			22.2	
Approach LOS		C			C			C			C	

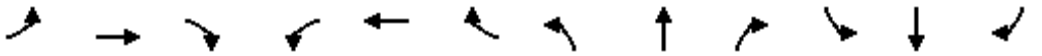
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	18.0	12.2	17.1	14.1	16.5	12.7	16.5
Change Period (Y+Rc), s	8.0	* 8	10.0	6.5	8.0	6.5	10.0	6.5
Max Green Setting (Gmax), s	5.0	* 12	3.0	14.0	5.0	12.0	7.0	10.0
Max Q Clear Time (g_c+I1), s	5.4	5.3	3.6	4.2	4.6	7.6	3.4	3.1
Green Ext Time (p_c), s	0.0	0.7	0.0	0.6	0.0	1.0	0.0	0.2

Intersection Summary		
HCM 6th Ctrl Delay		21.4
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	94	129	42	167	115	215	393	42	109	387	36
Future Volume (veh/h)	28	94	129	42	167	115	215	393	42	109	387	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1841	1870	1885	1870	1856	1870	1900	1856	1841	1856
Adj Flow Rate, veh/h	29	98	0	44	174	0	215	409	0	114	403	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	1.00	1.00	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	4	2	1	2	3	2	0	3	4	3
Cap, veh/h	209	764		200	747		324	789		257	730	
Arrive On Green	0.12	0.21	0.00	0.11	0.21	0.00	0.18	0.22	0.00	0.15	0.21	0.00
Sat Flow, veh/h	1810	3610	1560	1781	3582	1585	1767	3554	1610	1767	3589	0
Grp Volume(v), veh/h	29	98	0	44	174	0	215	409	0	114	403	0
Grp Sat Flow(s),veh/h/ln	1810	1805	1560	1781	1791	1585	1767	1777	1610	1767	1749	0
Q Serve(g_s), s	0.9	1.3	0.0	1.3	2.4	0.0	6.8	6.1	0.0	3.5	6.2	0.0
Cycle Q Clear(g_c), s	0.9	1.3	0.0	1.3	2.4	0.0	6.8	6.1	0.0	3.5	6.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	209	764		200	747		324	789		257	730	
V/C Ratio(X)	0.14	0.13		0.22	0.23		0.66	0.52		0.44	0.55	
Avail Cap(c_a), veh/h	362	994		238	747		324	860		265	730	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.8	19.1	0.0	24.2	19.7	0.0	22.7	20.5	0.0	23.4	21.2	0.0
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.2	0.2	0.0	4.0	0.8	0.0	0.4	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.5	0.0	0.5	0.9	0.0	2.7	2.2	0.0	1.3	2.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.9	19.2	0.0	24.4	19.9	0.0	26.8	21.2	0.0	23.8	22.4	0.0
LnGrp LOS	C	B		C	B		C	C		C	C	
Approach Vol, veh/h		127			218			624			517	
Approach Delay, s/veh		20.3			20.8			23.1			22.7	
Approach LOS		C			C			C			C	

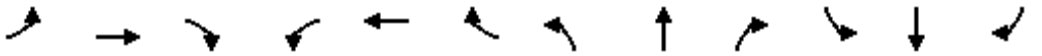
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	18.8	11.7	16.7	15.0	16.5	11.9	16.5
Change Period (Y+Rc), s	8.0	* 8	10.0	6.5	8.0	6.5	10.0	6.5
Max Green Setting (Gmax), s	5.0	* 12	3.0	14.0	7.0	10.0	7.0	10.0
Max Q Clear Time (g_c+I1), s	5.5	8.1	3.3	3.3	8.8	8.2	2.9	4.4
Green Ext Time (p_c), s	0.0	1.1	0.0	0.4	0.0	0.5	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	22.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	148	191	53	72	301	81	550	47	220	718	22
Future Volume (veh/h)	122	148	191	53	72	301	81	550	47	220	718	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1841	1870	1693	1870	1752	1722	1707	1885	1826	1900
Adj Flow Rate, veh/h	133	161	0	58	78	0	88	598	0	239	780	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	4	2	14	2	10	12	13	1	5	0
Cap, veh/h	269	733		186	518		260	827		347	1074	
Arrive On Green	0.15	0.21	0.00	0.10	0.16	0.00	0.16	0.25	0.00	0.19	0.31	0.00
Sat Flow, veh/h	1739	3469	1560	1781	3216	1585	1668	3272	1447	1795	3561	0
Grp Volume(v), veh/h	133	161	0	58	78	0	88	598	0	239	780	0
Grp Sat Flow(s),veh/h/ln	1739	1735	1560	1781	1608	1585	1668	1636	1447	1795	1735	0
Q Serve(g_s), s	5.4	3.0	0.0	2.3	1.6	0.0	3.6	13.0	0.0	9.6	15.5	0.0
Cycle Q Clear(g_c), s	5.4	3.0	0.0	2.3	1.6	0.0	3.6	13.0	0.0	9.6	15.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	269	733		186	518		260	827		347	1074	
V/C Ratio(X)	0.49	0.22		0.31	0.15		0.34	0.72		0.69	0.73	
Avail Cap(c_a), veh/h	269	733		230	539		260	970		347	1296	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.0	25.3	0.0	32.2	28.0	0.0	29.2	26.5	0.0	29.1	23.9	0.0
Incr Delay (d2), s/veh	0.5	0.2	0.0	0.4	0.2	0.0	0.3	2.6	0.0	4.7	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.1	0.0	0.9	0.6	0.0	1.3	4.7	0.0	4.1	5.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.5	25.5	0.0	32.5	28.2	0.0	29.5	29.1	0.0	33.9	25.8	0.0
LnGrp LOS	C	C		C	C		C	C		C	C	
Approach Vol, veh/h		294			136			686			1019	
Approach Delay, s/veh		27.8			30.0			29.2			27.7	
Approach LOS		C			C			C			C	

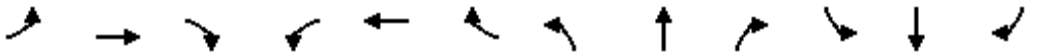
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	25.1	13.1	20.4	16.1	28.0	17.0	16.5
Change Period (Y+Rc), s	8.0	* 8	10.0	6.5	8.0	6.5	10.0	6.5
Max Green Setting (Gmax), s	11.0	* 21	5.0	12.5	5.0	26.5	7.0	10.5
Max Q Clear Time (g_c+I1), s	11.6	15.0	4.3	5.0	5.6	17.5	7.4	3.6
Green Ext Time (p_c), s	0.0	2.1	0.0	0.6	0.0	4.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	28.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	99	135	44	175	246	225	839	44	255	905	83
Future Volume (veh/h)	59	99	135	44	175	246	225	839	44	255	905	83
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1841	1870	1885	1870	1856	1870	1900	1856	1841	1856
Adj Flow Rate, veh/h	61	103	0	46	182	0	225	874	0	266	943	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	1.00	1.00	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	4	2	1	2	3	2	0	3	4	3
Cap, veh/h	217	630		159	516		354	1122		367	1189	
Arrive On Green	0.12	0.17	0.00	0.09	0.14	0.00	0.20	0.32	0.00	0.21	0.34	0.00
Sat Flow, veh/h	1810	3610	1560	1781	3582	1585	1767	3554	1610	1767	3589	0
Grp Volume(v), veh/h	61	103	0	46	182	0	225	874	0	266	943	0
Grp Sat Flow(s),veh/h/ln	1810	1805	1560	1781	1791	1585	1767	1777	1610	1767	1749	0
Q Serve(g_s), s	2.7	2.1	0.0	2.1	4.0	0.0	10.1	19.4	0.0	12.2	21.1	0.0
Cycle Q Clear(g_c), s	2.7	2.1	0.0	2.1	4.0	0.0	10.1	19.4	0.0	12.2	21.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	217	630		159	516		354	1122		367	1189	
V/C Ratio(X)	0.28	0.16		0.29	0.35		0.64	0.78		0.73	0.79	
Avail Cap(c_a), veh/h	250	630		246	516		354	1249		367	1310	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.8	30.4	0.0	36.9	33.5	0.0	31.8	27.0	0.0	32.1	25.9	0.0
Incr Delay (d2), s/veh	0.3	0.2	0.0	0.4	0.6	0.0	2.9	3.2	0.0	6.1	3.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.9	0.0	0.9	1.6	0.0	4.2	7.7	0.0	5.3	8.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	30.6	0.0	37.3	34.1	0.0	34.7	30.2	0.0	38.2	29.3	0.0
LnGrp LOS	D	C		D	C		C	C		D	C	
Approach Vol, veh/h		164			228			1099			1209	
Approach Delay, s/veh		32.3			34.7			31.1			31.3	
Approach LOS		C			C			C			C	

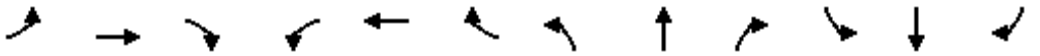
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	32.9	12.7	19.1	21.4	33.5	15.4	16.5
Change Period (Y+Rc), s	8.0	* 8	10.0	6.5	8.0	6.5	10.0	6.5
Max Green Setting (Gmax), s	14.0	* 28	7.0	10.0	12.0	30.0	7.0	10.0
Max Q Clear Time (g_c+I1), s	14.2	21.4	4.1	4.1	13.1	23.1	4.7	6.0
Green Ext Time (p_c), s	0.0	3.5	0.0	0.2	0.0	3.9	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	31.5
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	148	199	97	72	301	103	592	153	220	726	22
Future Volume (veh/h)	122	148	199	97	72	301	103	592	153	220	726	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1841	1870	1693	1870	1752	1722	1707	1885	1826	1900
Adj Flow Rate, veh/h	133	161	0	105	78	0	112	643	0	239	789	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	4	2	14	2	10	12	13	1	5	0
Cap, veh/h	266	640		227	512		270	856		343	1075	
Arrive On Green	0.15	0.18	0.00	0.13	0.16	0.00	0.16	0.26	0.00	0.19	0.31	0.00
Sat Flow, veh/h	1739	3469	1560	1781	3216	1585	1668	3272	1447	1795	3561	0
Grp Volume(v), veh/h	133	161	0	105	78	0	112	643	0	239	789	0
Grp Sat Flow(s),veh/h/ln	1739	1735	1560	1781	1608	1585	1668	1636	1447	1795	1735	0
Q Serve(g_s), s	5.5	3.1	0.0	4.3	1.6	0.0	4.7	14.2	0.0	9.8	16.0	0.0
Cycle Q Clear(g_c), s	5.5	3.1	0.0	4.3	1.6	0.0	4.7	14.2	0.0	9.8	16.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	266	640		227	512		270	856		343	1075	
V/C Ratio(X)	0.50	0.25		0.46	0.15		0.41	0.75		0.70	0.73	
Avail Cap(c_a), veh/h	266	662		227	532		270	958		343	1281	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.5	27.4	0.0	31.8	28.5	0.0	29.6	26.6	0.0	29.7	24.2	0.0
Incr Delay (d2), s/veh	0.6	0.3	0.0	0.5	0.2	0.0	0.4	3.4	0.0	5.2	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.2	0.0	1.7	0.6	0.0	1.7	5.2	0.0	4.2	6.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.1	27.7	0.0	32.3	28.7	0.0	30.0	30.0	0.0	34.8	26.3	0.0
LnGrp LOS	C	C		C	C		C	C		C	C	
Approach Vol, veh/h		294			183			755			1028	
Approach Delay, s/veh		29.2			30.8			30.0			28.3	
Approach LOS		C			C			C			C	

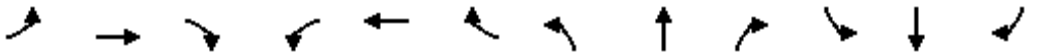
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	26.1	15.0	18.5	16.7	28.3	17.0	16.5
Change Period (Y+Rc), s	8.0	* 8	10.0	6.5	8.0	6.5	10.0	6.5
Max Green Setting (Gmax), s	11.0	* 21	5.0	12.5	5.0	26.5	7.0	10.5
Max Q Clear Time (g_c+I1), s	11.8	16.2	6.3	5.1	6.7	18.0	7.5	3.6
Green Ext Time (p_c), s	0.0	1.9	0.0	0.5	0.0	3.9	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	29.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	99	152	162	175	246	235	854	126	255	942	83
Future Volume (veh/h)	59	99	152	162	175	246	235	854	126	255	942	83
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1841	1870	1885	1870	1856	1870	1900	1856	1841	1856
Adj Flow Rate, veh/h	61	103	0	169	182	0	235	890	0	266	981	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	1.00	1.00	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	4	2	1	2	3	2	0	3	4	3
Cap, veh/h	182	479		243	603		342	1125		361	1205	
Arrive On Green	0.10	0.13	0.00	0.14	0.17	0.00	0.19	0.32	0.00	0.20	0.34	0.00
Sat Flow, veh/h	1810	3610	1560	1781	3582	1585	1767	3554	1610	1767	3589	0
Grp Volume(v), veh/h	61	103	0	169	182	0	235	890	0	266	981	0
Grp Sat Flow(s),veh/h/ln	1810	1805	1560	1781	1791	1585	1767	1777	1610	1767	1749	0
Q Serve(g_s), s	2.8	2.2	0.0	8.0	3.9	0.0	10.9	20.1	0.0	12.4	22.5	0.0
Cycle Q Clear(g_c), s	2.8	2.2	0.0	8.0	3.9	0.0	10.9	20.1	0.0	12.4	22.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	182	479		243	603		342	1125		361	1205	
V/C Ratio(X)	0.33	0.21		0.70	0.30		0.69	0.79		0.74	0.81	
Avail Cap(c_a), veh/h	247	512		243	603		342	1231		361	1291	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.8	34.1	0.0	36.3	32.1	0.0	33.0	27.4	0.0	32.8	26.3	0.0
Incr Delay (d2), s/veh	0.4	0.3	0.0	7.1	0.4	0.0	4.8	3.6	0.0	6.8	4.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.9	0.0	3.7	1.6	0.0	4.7	8.1	0.0	5.5	8.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	34.4	0.0	43.4	32.5	0.0	37.8	31.1	0.0	39.6	30.5	0.0
LnGrp LOS	D	C		D	C		D	C		D	C	
Approach Vol, veh/h		164			351			1125			1247	
Approach Delay, s/veh		35.5			37.7			32.5			32.4	
Approach LOS		D			D			C			C	

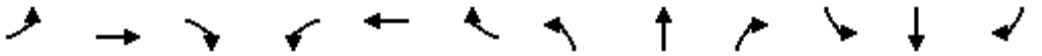
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	33.4	17.0	15.7	21.0	34.3	13.9	18.8
Change Period (Y+Rc), s	8.0	* 8	10.0	6.5	8.0	6.5	10.0	6.5
Max Green Setting (Gmax), s	14.0	* 28	7.0	10.0	12.0	30.0	7.0	10.0
Max Q Clear Time (g_c+I1), s	14.4	22.1	10.0	4.2	12.9	24.5	4.8	5.9
Green Ext Time (p_c), s	0.0	3.3	0.0	0.2	0.0	3.3	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	33.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	148	199	97	72	111	103	246	153	108	361	11
Future Volume (veh/h)	45	148	199	97	72	111	103	246	153	108	361	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1841	1870	1693	1870	1752	1722	1707	1885	1826	1900
Adj Flow Rate, veh/h	49	161	0	105	78	0	112	267	0	117	392	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	4	2	14	2	10	12	13	1	5	0
Cap, veh/h	80	526		135	583		148	530		151	629	
Arrive On Green	0.05	0.15	0.00	0.08	0.18	0.00	0.09	0.16	0.00	0.08	0.18	0.00
Sat Flow, veh/h	1739	3469	1560	1781	3216	1585	1668	3272	1447	1795	3561	0
Grp Volume(v), veh/h	49	161	0	105	78	0	112	267	0	117	392	0
Grp Sat Flow(s),veh/h/ln	1739	1735	1560	1781	1608	1585	1668	1636	1447	1795	1735	0
Q Serve(g_s), s	1.7	2.5	0.0	3.6	1.3	0.0	4.0	4.6	0.0	3.9	6.4	0.0
Cycle Q Clear(g_c), s	1.7	2.5	0.0	3.6	1.3	0.0	4.0	4.6	0.0	3.9	6.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	80	526		135	583		148	530		151	629	
V/C Ratio(X)	0.61	0.31		0.78	0.13		0.75	0.50		0.77	0.62	
Avail Cap(c_a), veh/h	197	568		202	583		162	1055		349	1456	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.9	23.3	0.0	28.0	21.2	0.0	27.5	23.6	0.0	27.7	23.3	0.0
Incr Delay (d2), s/veh	2.8	0.5	0.0	5.2	0.1	0.0	14.2	1.1	0.0	3.2	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.9	0.0	1.5	0.4	0.0	2.0	1.6	0.0	1.6	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.7	23.7	0.0	33.3	21.3	0.0	41.7	24.7	0.0	30.9	24.8	0.0
LnGrp LOS	C	C		C	C		D	C		C	C	
Approach Vol, veh/h		210			183			379			509	
Approach Delay, s/veh		25.6			28.2			29.7			26.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.2	18.0	14.7	15.9	13.5	17.7	12.8	17.7
Change Period (Y+Rc), s	8.0	* 8	10.0	6.5	8.0	6.5	10.0	6.5
Max Green Setting (Gmax), s	12.0	* 20	7.0	10.1	6.0	25.9	7.0	10.1
Max Q Clear Time (g_c+I1), s	5.9	6.6	5.6	4.5	6.0	8.4	3.7	3.3
Green Ext Time (p_c), s	0.1	1.6	0.0	0.4	0.0	2.8	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	27.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	99	152	162	175	121	235	428	126	114	444	38
Future Volume (veh/h)	29	99	152	162	175	121	235	428	126	114	444	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1841	1870	1885	1870	1856	1870	1900	1856	1841	1856
Adj Flow Rate, veh/h	30	103	0	169	182	0	235	446	0	119	462	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	1.00	1.00	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	4	2	1	2	3	2	0	3	4	3
Cap, veh/h	79	435		208	693		277	815		151	625	
Arrive On Green	0.04	0.12	0.00	0.12	0.19	0.00	0.16	0.23	0.00	0.09	0.18	0.00
Sat Flow, veh/h	1810	3610	1560	1781	3582	1585	1767	3554	1610	1767	3589	0
Grp Volume(v), veh/h	30	103	0	169	182	0	235	446	0	119	462	0
Grp Sat Flow(s),veh/h/ln	1810	1805	1560	1781	1791	1585	1767	1777	1610	1767	1749	0
Q Serve(g_s), s	1.2	1.9	0.0	6.7	3.1	0.0	9.4	8.0	0.0	4.8	9.1	0.0
Cycle Q Clear(g_c), s	1.2	1.9	0.0	6.7	3.1	0.0	9.4	8.0	0.0	4.8	9.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	79	435		208	693		277	815		151	625	
V/C Ratio(X)	0.38	0.24		0.81	0.26		0.85	0.55		0.79	0.74	
Avail Cap(c_a), veh/h	175	502		270	696		365	1072		268	863	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.7	28.9	0.0	31.3	24.9	0.0	29.7	24.6	0.0	32.5	28.2	0.0
Incr Delay (d2), s/veh	1.1	0.4	0.0	10.4	0.3	0.0	10.7	0.8	0.0	3.4	2.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.8	0.0	3.2	1.2	0.0	4.3	3.0	0.0	2.0	3.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.9	29.3	0.0	41.7	25.2	0.0	40.4	25.5	0.0	35.9	31.1	0.0
LnGrp LOS	C	C		D	C		D	C		D	C	
Approach Vol, veh/h		133			351			681			581	
Approach Delay, s/veh		30.5			33.1			30.6			32.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	24.6	18.5	15.2	19.4	19.5	13.2	20.5
Change Period (Y+Rc), s	8.0	* 8	10.0	6.5	8.0	6.5	10.0	6.5
Max Green Setting (Gmax), s	11.0	* 22	11.0	10.1	15.0	17.9	7.0	14.1
Max Q Clear Time (g_c+I1), s	6.8	10.0	8.7	3.9	11.4	11.1	3.2	5.1
Green Ext Time (p_c), s	0.0	2.6	0.0	0.3	0.1	1.9	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	31.6
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	3	41	0	16	3	298	18	5	561	3
Future Vol, veh/h	2	0	3	41	0	16	3	298	18	5	561	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	400	-	75	310	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	5	0	0	0	11	0	60	4	0
Mvmt Flow	2	0	3	44	0	17	3	320	19	5	603	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	781	960	303	638	942	160	606	0	0	339	0	0
Stage 1	615	615	-	326	326	-	-	-	-	-	-	-
Stage 2	166	345	-	312	616	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.6	6.5	6.9	4.1	-	-	5.3	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.55	4	3.3	2.2	-	-	2.8	-	-
Pot Cap-1 Maneuver	288	259	699	355	265	863	982	-	-	888	-	-
Stage 1	450	485	-	652	652	-	-	-	-	-	-	-
Stage 2	825	640	-	665	485	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	281	257	699	351	263	863	982	-	-	888	-	-
Mov Cap-2 Maneuver	414	418	-	524	420	-	-	-	-	-	-	-
Stage 1	449	482	-	650	650	-	-	-	-	-	-	-
Stage 2	806	638	-	658	482	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	11.6	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	982	-	-	548	524	863	888	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.084	0.02	0.006	-	-
HCM Control Delay (s)	8.7	-	-	11.6	12.5	9.3	9.1	-	-
HCM Lane LOS	A	-	-	B	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	1	0	2	316	2	601	2
Future Vol, veh/h	1	0	2	316	2	601	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-
Veh in Median Storage, #	2	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	10	0	5	0
Mvmt Flow	1	0	2	340	2	646	2

Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	825	324	648	0	340	-	0
Stage 1	651	-	-	-	-	-	-
Stage 2	174	-	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	6.4	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	2.5	-	-
Pot Cap-1 Maneuver	315	678	947	-	883	-	-
Stage 1	486	-	-	-	-	-	-
Stage 2	845	-	-	-	-	-	-
Platoon blocked, %				-		-	-
Mov Cap-1 Maneuver	313	678	947	-	883	-	-
Mov Cap-2 Maneuver	448	-	-	-	-	-	-
Stage 1	485	-	-	-	-	-	-
Stage 2	842	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	947	-	448	-	-
HCM Lane V/C Ratio	0.002	-	0.002	-	-
HCM Control Delay (s)	8.8	0	13.1	0	-
HCM Lane LOS	A	A	B	A	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	3	30	0	6	5	638	44	13	542	3
Future Vol, veh/h	6	0	3	30	0	6	5	638	44	13	542	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	400	-	75	310	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	2	8	4	0
Mvmt Flow	7	0	3	33	0	7	5	693	48	14	589	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	976	1370	296	1026	1323	347	592	0	0	741	0	0
Stage 1	619	619	-	703	703	-	-	-	-	-	-	-
Stage 2	357	751	-	323	620	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.26	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.28	-	-
Pot Cap-1 Maneuver	208	148	706	192	158	655	994	-	-	823	-	-
Stage 1	448	483	-	399	443	-	-	-	-	-	-	-
Stage 2	639	421	-	669	483	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	202	145	706	188	155	655	994	-	-	823	-	-
Mov Cap-2 Maneuver	382	321	-	352	337	-	-	-	-	-	-	-
Stage 1	446	475	-	397	441	-	-	-	-	-	-	-
Stage 2	629	419	-	655	475	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.2	15.4	0.1	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	994	-	-	451	352	655	823	-	-
HCM Lane V/C Ratio	0.005	-	-	0.022	0.093	0.01	0.017	-	-
HCM Control Delay (s)	8.6	-	-	13.2	16.3	10.6	9.5	-	-
HCM Lane LOS	A	-	-	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	6	4	2	675	6	568	1
Future Vol, veh/h	6	4	2	675	6	568	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-
Veh in Median Storage, #	2	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	2	0	4	0
Mvmt Flow	7	4	2	742	7	624	1

Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	1014	313	625	0	742	-	0
Stage 1	639	-	-	-	-	-	-
Stage 2	375	-	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	6.4	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	2.5	-	-
Pot Cap-1 Maneuver	238	689	966	-	493	-	-
Stage 1	493	-	-	-	-	-	-
Stage 2	671	-	-	-	-	-	-
Platoon blocked, %				-		-	-
Mov Cap-1 Maneuver	232	689	966	-	493	-	-
Mov Cap-2 Maneuver	419	-	-	-	-	-	-
Stage 1	491	-	-	-	-	-	-
Stage 2	656	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	966	-	497	-	-
HCM Lane V/C Ratio	0.002	-	0.022	-	-
HCM Control Delay (s)	8.7	0	12.4	0.1	-
HCM Lane LOS	A	A	B	A	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	3	43	0	17	3	659	19	5	954	3
Future Vol, veh/h	2	0	3	43	0	17	3	659	19	5	954	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	400	-	75	310	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	5	0	0	0	11	0	60	4	0
Mvmt Flow	2	0	3	46	0	18	3	709	20	5	1026	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1399	1773	515	1238	1754	355	1029	0	0	729	0	0
Stage 1	1038	1038	-	715	715	-	-	-	-	-	-	-
Stage 2	361	735	-	523	1039	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.6	6.5	6.9	4.1	-	-	5.3	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.55	4	3.3	2.2	-	-	2.8	-	-
Pot Cap-1 Maneuver	102	84	510	129	86	647	683	-	-	576	-	-
Stage 1	251	311	-	381	438	-	-	-	-	-	-	-
Stage 2	636	428	-	498	310	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	98	83	510	127	85	647	683	-	-	576	-	-
Mov Cap-2 Maneuver	228	247	-	306	248	-	-	-	-	-	-	-
Stage 1	250	308	-	379	436	-	-	-	-	-	-	-
Stage 2	615	426	-	491	307	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.7	16.5	0	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	683	-	-	341	306	647	576	-	-
HCM Lane V/C Ratio	0.005	-	-	0.016	0.151	0.028	0.009	-	-
HCM Control Delay (s)	10.3	-	-	15.7	18.8	10.7	11.3	-	-
HCM Lane LOS	B	-	-	C	C	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	1	0	2	678	2	996	2
Future Vol, veh/h	1	0	2	678	2	996	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-
Veh in Median Storage, #	2	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	10	0	5	0
Mvmt Flow	1	0	2	729	2	1071	2

Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	1445	537	1073	0	729	-	0
Stage 1	1076	-	-	-	-	-	-
Stage 2	369	-	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	6.4	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	2.5	-	-
Pot Cap-1 Maneuver	125	494	657	-	502	-	-
Stage 1	293	-	-	-	-	-	-
Stage 2	675	-	-	-	-	-	-
Platoon blocked, %				-		-	-
Mov Cap-1 Maneuver	123	494	657	-	502	-	-
Mov Cap-2 Maneuver	266	-	-	-	-	-	-
Stage 1	292	-	-	-	-	-	-
Stage 2	668	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.6	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	657	-	266	-	-
HCM Lane V/C Ratio	0.003	-	0.004	-	-
HCM Control Delay (s)	10.5	0	18.6	0.1	-
HCM Lane LOS	B	A	C	A	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	3	32	0	6	5	1096	46	14	1067	3
Future Vol, veh/h	6	0	3	32	0	6	5	1096	46	14	1067	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	400	-	75	310	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	2	8	4	0
Mvmt Flow	7	0	3	35	0	7	5	1191	50	15	1160	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1798	2443	582	1811	2394	596	1163	0	0	1241	0	0
Stage 1	1192	1192	-	1201	1201	-	-	-	-	-	-	-
Stage 2	606	1251	-	610	1193	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.26	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.28	-	-
Pot Cap-1 Maneuver	51	32	461	50	34	452	608	-	-	525	-	-
Stage 1	202	263	-	199	260	-	-	-	-	-	-	-
Stage 2	456	246	-	453	263	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	49	31	461	48	33	452	608	-	-	525	-	-
Mov Cap-2 Maneuver	175	162	-	173	171	-	-	-	-	-	-	-
Stage 1	200	255	-	197	258	-	-	-	-	-	-	-
Stage 2	446	244	-	437	255	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22	28.2	0	0.2
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	608	-	-	221	173	452	525	-	-
HCM Lane V/C Ratio	0.009	-	-	0.044	0.201	0.014	0.029	-	-
HCM Control Delay (s)	11	-	-	22	31	13.1	12.1	-	-
HCM Lane LOS	B	-	-	C	D	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0	0.1	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	6	4	2	1135	6	1095	1
Future Vol, veh/h	6	4	2	1135	6	1095	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-
Veh in Median Storage, #	2	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	2	0	4	0
Mvmt Flow	7	4	2	1234	7	1190	1

Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	1826	596	1191	0	1234	-	0
Stage 1	1205	-	-	-	-	-	-
Stage 2	621	-	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	6.4	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	2.5	-	-
Pot Cap-1 Maneuver	70	452	593	-	239	-	-
Stage 1	251	-	-	-	-	-	-
Stage 2	504	-	-	-	-	-	-
Platoon blocked, %				-		-	-
Mov Cap-1 Maneuver	63	452	593	-	239	-	-
Mov Cap-2 Maneuver	212	-	-	-	-	-	-
Stage 1	248	-	-	-	-	-	-
Stage 2	460	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.9	0.1	1
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	593	-	269	-	-
HCM Lane V/C Ratio	0.004	-	0.04	-	-
HCM Control Delay (s)	11.1	0.1	18.9	0.9	-
HCM Lane LOS	B	A	C	A	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	3	43	0	17	3	829	19	5	1017	3
Future Vol, veh/h	2	0	3	43	0	17	3	829	19	5	1017	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	400	-	75	310	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	5	0	0	0	11	0	60	4	0
Mvmt Flow	2	0	3	46	0	18	3	891	20	5	1094	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1558	2023	549	1454	2004	446	1097	0	0	911	0	0
Stage 1	1106	1106	-	897	897	-	-	-	-	-	-	-
Stage 2	452	917	-	557	1107	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.6	6.5	6.9	4.1	-	-	5.3	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.55	4	3.3	2.2	-	-	2.8	-	-
Pot Cap-1 Maneuver	78	59	485	89	60	565	644	-	-	469	-	-
Stage 1	228	289	-	295	361	-	-	-	-	-	-	-
Stage 2	562	354	-	475	288	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	75	58	485	87	59	565	644	-	-	469	-	-
Mov Cap-2 Maneuver	205	216	-	247	217	-	-	-	-	-	-	-
Stage 1	227	286	-	294	359	-	-	-	-	-	-	-
Stage 2	541	352	-	467	285	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.7	19.7	0	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	644	-	-	314	247	565	469	-	-
HCM Lane V/C Ratio	0.005	-	-	0.017	0.187	0.032	0.011	-	-
HCM Control Delay (s)	10.6	-	-	16.7	22.9	11.6	12.8	-	-
HCM Lane LOS	B	-	-	C	C	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	1	0	0	90	0	170	2	678	36	2	60	996	2
Future Vol, veh/h	1	0	0	90	0	170	2	678	36	2	60	996	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	0	-	-	200	-	300	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	2	2	2	0	10	2	0	2	5	0
Mvmt Flow	1	0	0	97	0	183	2	729	39	2	65	1071	2

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	1575	1978	537	1403	1940	365	1073	0	0	729	768	0	0
Stage 1	1206	1206	-	733	733	-	-	-	-	-	-	-	-
Stage 2	369	772	-	670	1207	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.54	6.9	7.54	6.54	6.94	4.1	-	-	6.4	4.14	-	-
Critical Hdwy Stg 1	6.5	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.02	3.3	3.52	4.02	3.32	2.2	-	-	2.5	2.22	-	-
Pot Cap-1 Maneuver	76	61	494	100	65	632	657	-	-	502	842	-	-
Stage 1	198	255	-	378	424	-	-	-	-	-	-	-	-
Stage 2	629	407	-	413	254	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	50	56	494	~ 93	59	632	657	-	-	808	808	-	-
Mov Cap-2 Maneuver	170	189	-	268	198	-	-	-	-	-	-	-	-
Stage 1	197	234	-	376	422	-	-	-	-	-	-	-	-
Stage 2	445	405	-	379	233	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.3	17.4	0	0.6
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	657	-	-	170	268	632	808	-	-
HCM Lane V/C Ratio	0.003	-	-	0.006	0.361	0.289	0.083	-	-
HCM Control Delay (s)	10.5	0	-	26.3	25.8	13	9.9	-	-
HCM Lane LOS	B	A	-	D	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	1.6	1.2	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	3	32	0	6	5	1203	46	14	1239	3
Future Vol, veh/h	6	0	3	32	0	6	5	1203	46	14	1239	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	400	-	75	310	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	2	8	4	0
Mvmt Flow	7	0	3	35	0	7	5	1308	50	15	1347	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2043	2747	675	2022	2698	654	1350	0	0	1358	0	0
Stage 1	1379	1379	-	1318	1318	-	-	-	-	-	-	-
Stage 2	664	1368	-	704	1380	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.26	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.28	-	-
Pot Cap-1 Maneuver	34	20	401	35	22	414	516	-	-	472	-	-
Stage 1	155	214	-	169	229	-	-	-	-	-	-	-
Stage 2	421	217	-	398	214	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	32	19	401	~ 34	21	414	516	-	-	472	-	-
Mov Cap-2 Maneuver	136	135	-	146	142	-	-	-	-	-	-	-
Stage 1	153	207	-	167	227	-	-	-	-	-	-	-
Stage 2	410	215	-	382	207	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.9	33.5	0	0.1
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	516	-	-	174	146	414	472	-	-
HCM Lane V/C Ratio	0.011	-	-	0.056	0.238	0.016	0.032	-	-
HCM Control Delay (s)	12.1	-	-	26.9	37.2	13.8	12.9	-	-
HCM Lane LOS	B	-	-	D	E	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.9	0	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	6	0	4	76	0	107	2	1135	127	6	172	1095	1
Future Vol, veh/h	6	0	4	76	0	107	2	1135	127	6	172	1095	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	0	-	-	200	-	300	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	2	2	2	0	2	2	0	2	4	0
Mvmt Flow	7	0	4	83	0	116	2	1234	138	7	187	1190	1

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	2200	2955	596	2221	2817	617	1191	0	0	1234	1372	0	0
Stage 1	1579	1579	-	1238	1238	-	-	-	-	-	-	-	-
Stage 2	621	1376	-	983	1579	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.54	6.54	6.94	4.1	-	-	6.4	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.54	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.54	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.52	4.02	3.32	2.2	-	-	2.5	2.22	-	-
Pot Cap-1 Maneuver	25	15	452	~ 24	18	433	593	-	-	239	496	-	-
Stage 1	116	171	-	186	246	-	-	-	-	-	-	-	-
Stage 2	446	215	-	267	168	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	12	9	452	~ 16	10	433	593	-	-	468	468	-	-
Mov Cap-2 Maneuver	80	18	-	110	84	-	-	-	-	-	-	-	-
Stage 1	114	101	-	183	242	-	-	-	-	-	-	-	-
Stage 2	321	212	-	155	99	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.3	51.4	0.1	2.5
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	593	-	-	119	110	433	468	-	-
HCM Lane V/C Ratio	0.004	-	-	0.091	0.751	0.269	0.413	-	-
HCM Control Delay (s)	11.1	0.1	-	38.3	100.9	16.3	18	-	-
HCM Lane LOS	B	A	-	E	F	C	C	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	4.1	1.1	2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	3	43	0	17	3	483	19	5	649	3
Future Vol, veh/h	2	0	3	43	0	17	3	483	19	5	649	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	400	-	75	310	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	5	0	0	0	11	0	60	4	0
Mvmt Flow	2	0	3	46	0	18	3	519	20	5	698	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	976	1255	351	884	1236	260	701	0	0	539	0	0
Stage 1	710	710	-	525	525	-	-	-	-	-	-	-
Stage 2	266	545	-	359	711	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.6	6.5	6.9	4.1	-	-	5.3	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.6	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.55	4	3.3	2.2	-	-	2.8	-	-
Pot Cap-1 Maneuver	208	173	651	235	178	745	905	-	-	712	-	-
Stage 1	395	440	-	496	533	-	-	-	-	-	-	-
Stage 2	722	522	-	624	439	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	201	171	651	232	176	745	905	-	-	712	-	-
Mov Cap-2 Maneuver	356	351	-	415	354	-	-	-	-	-	-	-
Stage 1	394	437	-	495	531	-	-	-	-	-	-	-
Stage 2	702	520	-	617	436	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.4	13.4	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	905	-	-	489	415	745	712	-	-
HCM Lane V/C Ratio	0.004	-	-	0.011	0.111	0.025	0.008	-	-
HCM Control Delay (s)	9	-	-	12.4	14.8	10	10.1	-	-
HCM Lane LOS	A	-	-	B	B	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	1	0	0	90	0	170	2	332	36	2	60	631	2
Future Vol, veh/h	1	0	0	90	0	170	2	332	36	2	60	631	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	0	-	-	200	-	300	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	2	2	2	0	10	2	0	2	5	0
Mvmt Flow	1	0	0	97	0	183	2	357	39	2	65	678	2

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	996	1213	340	834	1175	179	680	0	0	357	396	0	0
Stage 1	813	813	-	361	361	-	-	-	-	-	-	-	-
Stage 2	183	400	-	473	814	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.54	6.9	7.54	6.54	6.94	4.1	-	-	6.4	4.14	-	-
Critical Hdwy Stg 1	6.5	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.02	3.3	3.52	4.02	3.32	2.2	-	-	2.5	2.22	-	-
Pot Cap-1 Maneuver	202	181	662	261	190	833	922	-	-	862	1159	-	-
Stage 1	343	390	-	630	624	-	-	-	-	-	-	-	-
Stage 2	807	600	-	541	390	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	150	170	662	249	178	833	922	-	-	1134	1134	-	-
Mov Cap-2 Maneuver	301	318	-	428	327	-	-	-	-	-	-	-	-
Stage 1	342	367	-	628	622	-	-	-	-	-	-	-	-
Stage 2	628	598	-	509	367	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17	12.4	0	0.7
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	922	-	-	301	428	833	1134	-	-
HCM Lane V/C Ratio	0.002	-	-	0.004	0.226	0.219	0.059	-	-
HCM Control Delay (s)	8.9	0	-	17	15.9	10.5	8.4	-	-
HCM Lane LOS	A	A	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.9	0.8	0.2	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	3	32	0	6	5	777	46	14	741	3
Future Vol, veh/h	6	0	3	32	0	6	5	777	46	14	741	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	400	-	75	310	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	2	8	4	0
Mvmt Flow	7	0	3	35	0	7	5	845	50	15	805	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1270	1742	404	1288	1693	423	808	0	0	895	0	0
Stage 1	837	837	-	855	855	-	-	-	-	-	-	-
Stage 2	433	905	-	433	838	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.26	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.28	-	-
Pot Cap-1 Maneuver	127	88	602	123	94	585	826	-	-	717	-	-
Stage 1	332	385	-	323	378	-	-	-	-	-	-	-
Stage 2	577	358	-	577	384	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	123	86	602	120	91	585	826	-	-	717	-	-
Mov Cap-2 Maneuver	287	253	-	281	265	-	-	-	-	-	-	-
Stage 1	330	377	-	321	376	-	-	-	-	-	-	-
Stage 2	567	356	-	562	376	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	18.3	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	826	-	-	348	281	585	717	-	-
HCM Lane V/C Ratio	0.007	-	-	0.028	0.124	0.011	0.021	-	-
HCM Control Delay (s)	9.4	-	-	15.6	19.6	11.2	10.1	-	-
HCM Lane LOS	A	-	-	C	C	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0	0.1	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	6	0	4	76	0	107	2	709	127	6	172	597	1
Future Vol, veh/h	6	0	4	76	0	107	2	709	127	6	172	597	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	0	-	-	200	-	300	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	2	2	2	0	2	2	0	2	4	0
Mvmt Flow	7	0	4	83	0	116	2	771	138	7	187	649	1

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	1428	1951	325	1488	1813	386	650	0	0	771	909	0	0
Stage 1	1038	1038	-	775	775	-	-	-	-	-	-	-	-
Stage 2	390	913	-	713	1038	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.54	6.54	6.94	4.1	-	-	6.4	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.54	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.54	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.52	4.02	3.32	2.2	-	-	2.5	2.22	-	-
Pot Cap-1 Maneuver	97	65	677	86	78	612	946	-	-	472	745	-	-
Stage 1	251	311	-	357	406	-	-	-	-	-	-	-	-
Stage 2	611	355	-	389	306	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	62	47	677	~ 68	57	612	946	-	-	723	723	-	-
Mov Cap-2 Maneuver	191	132	-	218	190	-	-	-	-	-	-	-	-
Stage 1	250	228	-	356	404	-	-	-	-	-	-	-	-
Stage 2	493	354	-	283	224	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19	20.2	0	2.7
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	946	-	-	268	218	612	723	-	-
HCM Lane V/C Ratio	0.002	-	-	0.041	0.379	0.19	0.268	-	-
HCM Control Delay (s)	8.8	0	-	19	31.3	12.3	11.8	-	-
HCM Lane LOS	A	A	-	C	D	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	1.7	0.7	1.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	L	T	T	L	T	T	L	T	TR
Maximum Queue (ft)	44	65	35	41	22	13	108	88	103	119	142	121
Average Queue (ft)	10	17	4	6	1	1	36	34	41	41	67	44
95th Queue (ft)	33	47	19	25	10	7	85	70	84	89	119	94
Link Distance (ft)		2497	2497		3301	3301		2318	2318		1438	1438
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			250			290			310		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 2: Rt. 60 Richmond Road & VCA/Hickory Neck

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	LT	R	L	R	L
Maximum Queue (ft)	27	61	26	14	1	25
Average Queue (ft)	4	23	11	1	0	2
95th Queue (ft)	21	49	30	7	1	13
Link Distance (ft)	752	337	337			
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				400	75	310
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Rt. 60 Richmond Road & Bicast

Movement	EB	NB	SB
Directions Served	LR	LT	UT
Maximum Queue (ft)	18	31	19
Average Queue (ft)	1	2	1
95th Queue (ft)	9	15	9
Link Distance (ft)	650	980	1700
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	L	T	T	L	T	T	L	T	TR
Maximum Queue (ft)	37	44	13	40	22	23	232	189	136	128	163	144
Average Queue (ft)	4	9	1	5	1	2	127	55	68	44	86	63
95th Queue (ft)	22	31	7	23	10	11	228	127	114	93	142	119
Link Distance (ft)		2497	2497		3301	3301		2318	2318		1438	1438
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			250			290			310		
Storage Blk Time (%)							1	0				
Queuing Penalty (veh)							1	0				

Intersection: 2: Rt. 60 Richmond Road & VCA/Hickory Neck

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	LT	R	L	L
Maximum Queue (ft)	33	57	23	14	26
Average Queue (ft)	8	19	5	1	4
95th Queue (ft)	30	46	21	8	15
Link Distance (ft)	752	337	337		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				400	310
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Rt. 60 Richmond Road & Bicast

Movement	EB	NB	SB
Directions Served	LR	LT	UT
Maximum Queue (ft)	37	28	38
Average Queue (ft)	9	1	5
95th Queue (ft)	32	14	24
Link Distance (ft)	650	980	1700
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 2

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	151	107	69	43	63	20	8	61	127	209	222	134
Average Queue (ft)	59	22	10	3	9	1	0	4	45	120	121	4
95th Queue (ft)	133	79	55	21	39	8	4	29	100	187	193	52
Link Distance (ft)		2497	2497			3301	3301			2318	2318	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	250			370	290			195
Storage Blk Time (%)	1	0									1	0
Queuing Penalty (veh)	1	0									0	0

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	232	244	223
Average Queue (ft)	114	136	119
95th Queue (ft)	206	205	193
Link Distance (ft)		1438	1438
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	310		
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 2: Rt. 60 Richmond Road & VCA/Hickory Neck

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	LT	R	L	L
Maximum Queue (ft)	33	81	28	12	33
Average Queue (ft)	6	30	11	1	3
95th Queue (ft)	25	65	30	8	18
Link Distance (ft)	752	337	337		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				400	310
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Rt. 60 Richmond Road & Bicast

Movement	EB	NB	NB	SB
Directions Served	LR	LT	T	UT
Maximum Queue (ft)	12	48	12	29
Average Queue (ft)	1	2	0	2
95th Queue (ft)	8	24	11	13
Link Distance (ft)	650	980	980	1700
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 1

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	109	61	34	35	51	41	44	87	290	404	337	194
Average Queue (ft)	29	9	4	1	7	9	9	11	175	189	168	6
95th Queue (ft)	69	32	18	12	29	29	29	51	298	343	267	64
Link Distance (ft)		2497	2497			3301	3301			2318	2318	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	250			370	290			195
Storage Blk Time (%)									7	1	3	0
Queuing Penalty (veh)									30	3	1	0

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	310	592	430
Average Queue (ft)	204	274	258
95th Queue (ft)	354	452	394
Link Distance (ft)		1438	1438
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	310		
Storage Blk Time (%)	7	3	
Queuing Penalty (veh)	30	8	

Intersection: 2: Rt. 60 Richmond Road & VCA/Hickory Neck

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	LT	R	L	L
Maximum Queue (ft)	52	93	23	21	38
Average Queue (ft)	8	32	4	2	5
95th Queue (ft)	32	73	18	12	18
Link Distance (ft)	752	337	337		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				400	310
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Rt. 60 Richmond Road & Bicast

Movement	EB	SB	SB
Directions Served	LR	UT	TR
Maximum Queue (ft)	30	163	167
Average Queue (ft)	9	25	14
95th Queue (ft)	31	99	76
Link Distance (ft)	650	1700	1700
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 72

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	159	77	53	38	101	27	14	61	153	239	262	174
Average Queue (ft)	63	20	8	2	29	2	1	4	61	134	134	14
95th Queue (ft)	132	55	31	19	80	15	8	28	125	210	213	97
Link Distance (ft)		2497	2497			3301	3301			2318	2318	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	250			370	290			195
Storage Blk Time (%)	0									0	1	0
Queuing Penalty (veh)	0									0	2	0

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	234	261	249
Average Queue (ft)	119	150	128
95th Queue (ft)	212	238	213
Link Distance (ft)		1438	1438
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	310		
Storage Blk Time (%)	0	0	
Queuing Penalty (veh)	2	0	

Intersection: 2: Rt. 60 Richmond Road & VCA/Hickory Neck

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	LT	R	L	R	L
Maximum Queue (ft)	35	83	33	16	5	39
Average Queue (ft)	6	30	11	1	0	3
95th Queue (ft)	27	68	32	8	5	20
Link Distance (ft)	752	337	337			
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				400	75	310
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Rt. 60 Richmond Road & Bicast/Hankins-Dunn

Movement	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LTR	LT	R	LT	R	UL	T	TR
Maximum Queue (ft)	15	287	118	23	8	79	8	12
Average Queue (ft)	1	157	39	1	0	26	0	0
95th Queue (ft)	10	344	97	12	5	59	7	9
Link Distance (ft)	650	896	896	973			1699	1699
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)					200	300		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 4

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	76	63	42	37	224	162	132	41	256	314	318	195
Average Queue (ft)	23	13	4	3	107	21	9	2	142	171	177	39
95th Queue (ft)	59	41	20	22	215	130	66	19	252	282	279	166
Link Distance (ft)		2497	2497			3301	3301			2318	2318	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	250			370	290			195
Storage Blk Time (%)					2	0	0		3	1	4	0
Queuing Penalty (veh)					2	1	0		11	2	5	1

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	308	443	427
Average Queue (ft)	178	246	233
95th Queue (ft)	310	387	372
Link Distance (ft)		1438	1438
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	310		
Storage Blk Time (%)	2	2	
Queuing Penalty (veh)	10	6	

Intersection: 2: Rt. 60 Richmond Road & VCA/Hickory Neck

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	LT	R	L	L	TR
Maximum Queue (ft)	45	110	23	18	23	0
Average Queue (ft)	10	36	4	2	4	0
95th Queue (ft)	35	92	19	10	16	0
Link Distance (ft)	752	337	337			2318
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				400	310	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Rt. 60 Richmond Road & Bicast/Hankins-Dunn

Movement	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LT	R	LT	T	R	UL	T	TR
Maximum Queue (ft)	201	909	903	94	50	28	281	365	228
Average Queue (ft)	101	787	595	5	2	5	154	51	35
95th Queue (ft)	236	1079	1251	42	28	21	294	285	235
Link Distance (ft)	650	896	896	973	973			1699	1699
Upstream Blk Time (%)		63	51						
Queuing Penalty (veh)		0	0						
Storage Bay Dist (ft)						200	300		
Storage Blk Time (%)					0		7	3	
Queuing Penalty (veh)					0		39	5	

Network Summary

Network wide Queuing Penalty: 81

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	L	T	T	L	T
Maximum Queue (ft)	64	64	46	20	83	18	7	134	107	112	109	161
Average Queue (ft)	12	20	5	1	21	1	0	55	44	52	41	79
95th Queue (ft)	40	53	25	14	63	10	4	111	89	93	86	134
Link Distance (ft)		2497	2497			3301	3301		2318	2318		1438
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	250			290			310	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	SB
Directions Served	TR
Maximum Queue (ft)	136
Average Queue (ft)	51
95th Queue (ft)	106
Link Distance (ft)	1438
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Rt. 60 Richmond Road & VCA/Hickory Neck

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	LT	R	L	L
Maximum Queue (ft)	32	82	30	12	26
Average Queue (ft)	5	28	11	1	2
95th Queue (ft)	24	63	31	6	13
Link Distance (ft)	752	337	337		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				400	310
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Rt. 60 Richmond Road & Bicast/Hankins-Dunn

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	LT	R	UL	TR
Maximum Queue (ft)	21	95	78	22	6	44	6
Average Queue (ft)	1	42	34	1	0	13	0
95th Queue (ft)	10	79	60	14	4	35	3
Link Distance (ft)	650	896	896	973			1699
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					200	300	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Rt. 60 Richmond Road & Rt. 30 Rochambeau Drive & Rt. 30 Barhamsville Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	L	T	T	L	T	T	L	T	TR
Maximum Queue (ft)	44	54	21	150	32	30	224	137	140	127	194	183
Average Queue (ft)	6	13	2	55	3	2	112	65	80	51	117	91
95th Queue (ft)	24	39	11	120	18	15	193	118	126	104	180	169
Link Distance (ft)		2497	2497		3301	3301		2318	2318		1438	1438
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			250			290			310		
Storage Blk Time (%)							0		0			
Queuing Penalty (veh)							0		0			

Intersection: 2: Rt. 60 Richmond Road & VCA/Hickory Neck

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	LT	R	L	R	L
Maximum Queue (ft)	34	65	23	17	4	23
Average Queue (ft)	8	21	4	1	0	3
95th Queue (ft)	29	50	19	7	4	13
Link Distance (ft)	752	337	337			
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				400	75	310
Storage Blk Time (%)						
Queuing Penalty (veh)						

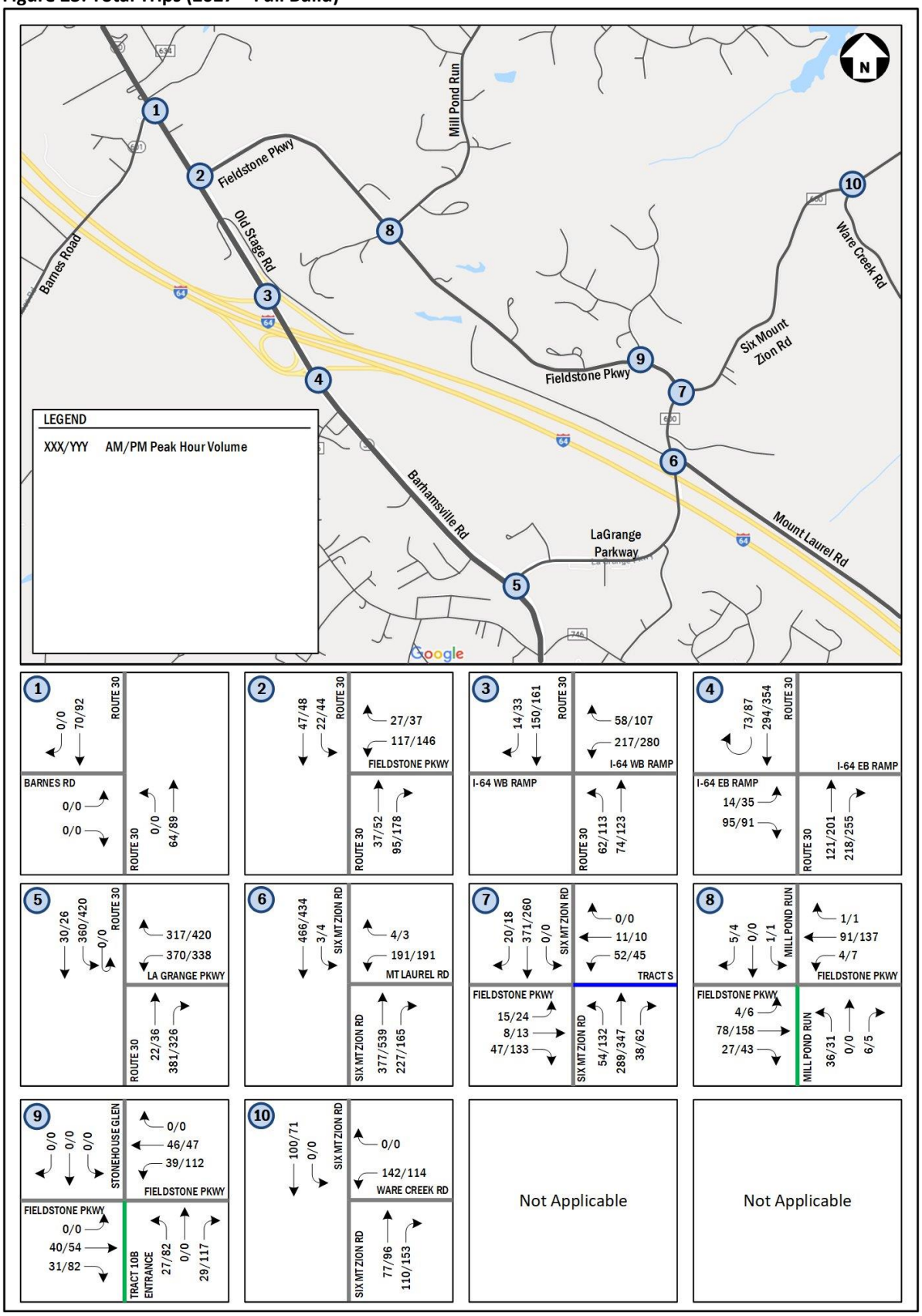
Intersection: 3: Rt. 60 Richmond Road & Bicast/Hankins-Dunn

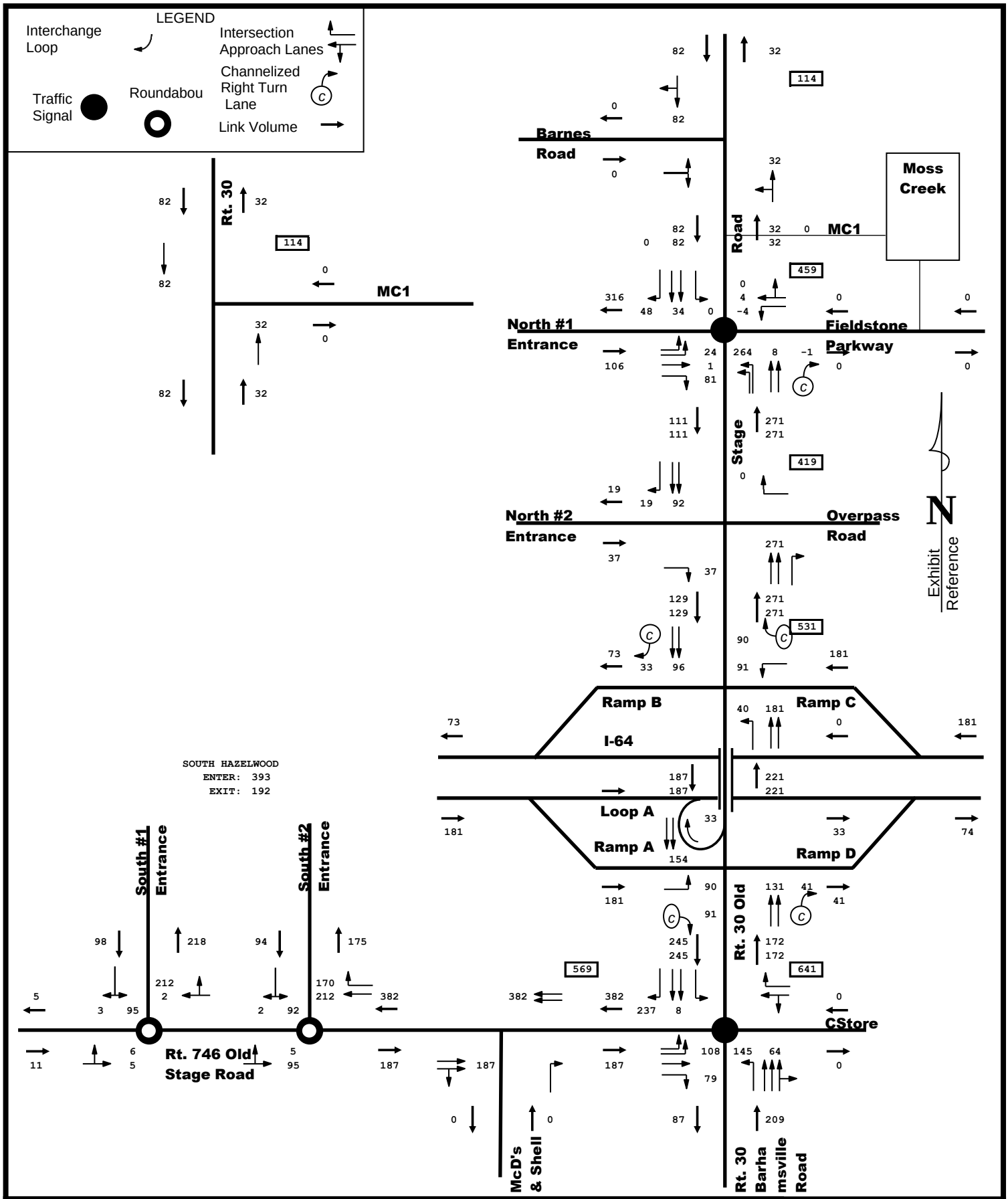
Movement	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LTR	LT	R	LT	R	UL	T	TR
Maximum Queue (ft)	49	496	170	51	37	147	11	2
Average Queue (ft)	11	287	60	3	6	62	0	0
95th Queue (ft)	37	633	320	25	24	118	6	2
Link Distance (ft)	650	896	896	973			1699	1699
Upstream Blk Time (%)		3	2					
Queuing Penalty (veh)		0	0					
Storage Bay Dist (ft)					200	300		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 0

Figure 23: Total Trips (2027 – Full Build)

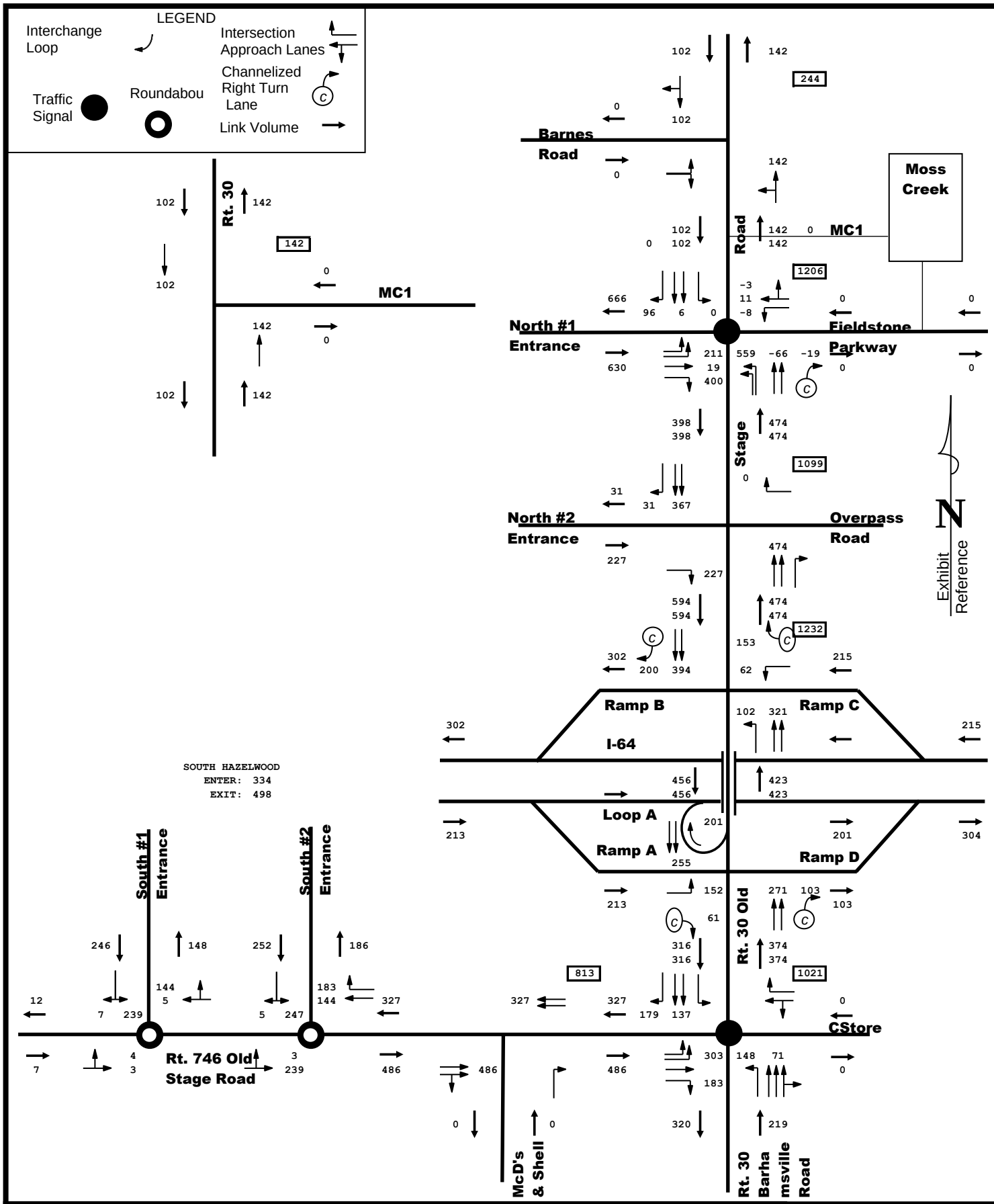




NORTH AND SOUTH HAZELWOOD FARMS
AM PEAK HOUR TRIPS

DRW Consultants, LLC
804-794-7312

Exhibit Q1



NORTH AND SOUTH HAZELWOOD FARMS
PM PEAK HOUR TRIPS

DRW Consultants, LLC
804-794-7312

Exhibit Q2

DRW Consultants, LLC
Traffic Impact Studies
Development Access
Condemnation Damages

TO: Paul Holt, Director, JCC Planning
FROM: Dexter R. Williams, P. E.
SUBJECT: TIA Workscope For Hankins-Dunn Property
DATE: July 15, 2022

HHHunt proposes to rezone the Hankins-Dunn property (Parcel ID 1240100011) to permit residential development. This memo and attachment provide a proposed scope of work for the rezoning traffic impact analysis (TIA).

PROPERTY LOCATION

The attached Hankins Dunn Parcel – Access Plan PDF shows the entire 157.61-acre parcel. The primary practical access to the property is at the Rt. 60 Richmond Road crossover with an entrance to Bicast Publishing across Rt. 60 from the property. This is shown as Boulevard Entrance on the Access Plan. Two other access locations are shown to provide connectivity to adjacent parcels.

TRIP GENERATION

Single family detached and attached residential units are proposed for the development. The following table shows trip generation for estimated units using Trip Generation Manual, 11th Edition (TGM11):

TABLE ONE: HANKINS-DUNN PARCEL
TRIP GENERATION

		LAND			WEEKDAY TRIP GENERATION						
		USE	SQ.FT.,		AM PEAK HOUR			PM PEAK HOUR			
VALUE	LAND USE	CODE	OTHER UNITS		Enter	Exit	Total	Enter	Exit	Total	DAILY
eq.-adj. st.	Single-Family Detached	210	484	units	81	232	313	276	162	438	4305
eq.-adj. st.	Single-Family Attached	215	85	units	12	27	39	27	20	47	597
				TOTAL:	93	259	352	303	182	485	4902

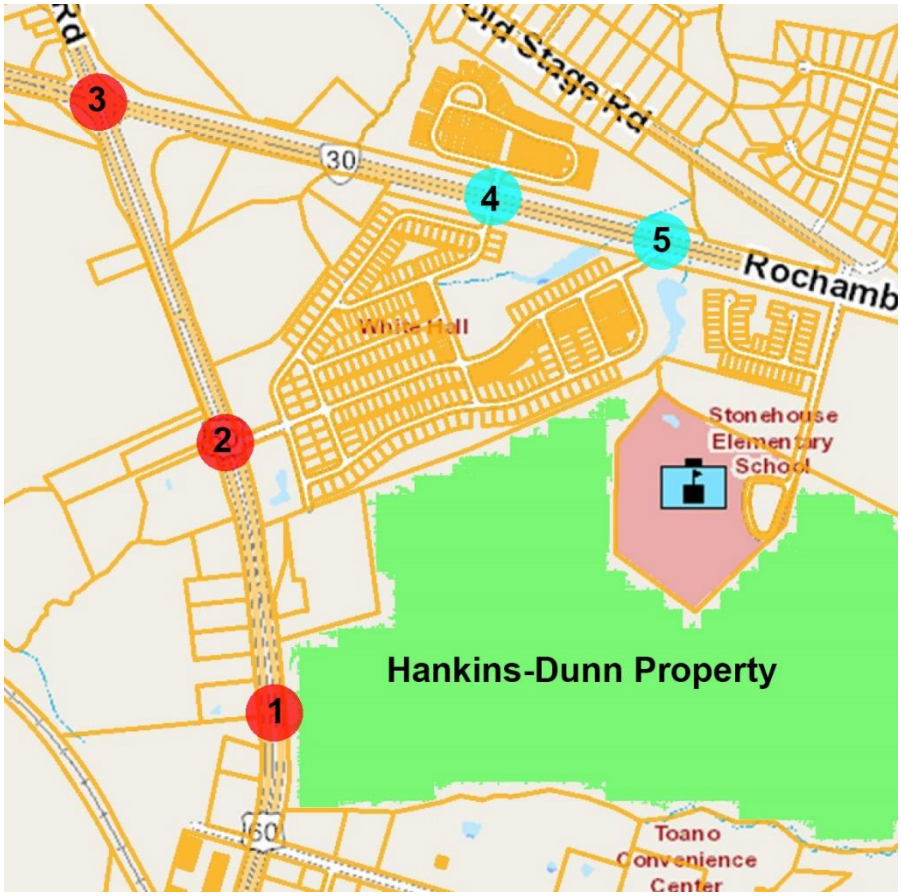
Daily trip generation is less than the 5,000 vehicle per day threshold for requiring a VDOT Ch. 527 traffic study.

DATA COLLECTION

7 to 9 AM and 4 to 6 PM turning movements counts will be conducted at the five locations shown on Figure 1:

2319 Latham Place
Midlothian, VA 23113
phone 804-794-7312

Figure 1: Peak Hour Count Locations



Following is an explanation of selected count locations:

1. Rt. 60 Richmond Road/Bicast Publishing. Unsignalized Crossover. This is the primary/only likely access for the Hankins-Dunn property development. This is an analysis intersection.
2. Rt. 60 Richmond Road/VCA Andersons Corner Animal Hospital/Hickory Neck Blvd. Unsignalized crossover. This is an analysis intersection and also part of the trip distribution counts for White Hall.
3. Rt. 60 Richmond Road/Rt. 30 Barhamsville Road/Rt. 30 Rochambeau Drive. Signalized intersection. This is an analysis intersection.
4. Rt. 30 Rochambeau Drive/Preston Lane/Geddy Terrace. Unsignalized crossover. This is not an analysis intersection and is part of the trip distribution counts for White Hall.
5. Rt. 30 Rochambeau Drive/Hickory Neck Boulevard. Unsignalized crossover. This is not an analysis intersection and is part of the trip distribution counts for White Hall.

TRAFFIC ANALYSIS SCENARIOS

There are three traffic analysis scenarios:

1. 2022 counts.
2. 2025 background traffic without site (traffic increase based on last five years VDOT daily

counts and growth trend).

3. 2025 with site. Site trips assigned to network and added to 2025 background traffic for 2025 total traffic.

SITE TRIP DISTRIBUTION

Site trip distribution will be derived from the three count locations for White Hall.

TRAFFIC ANALYSIS

Synchro intersection LOS reports and SimTraffic queuing reports will be generated for AM and PM peak hours of the three analysis scenarios for intersections 1, 2 and 3. General VDOT TOSAM v2.0 criteria will be used (e.g., turn lane storage length measurement, peak hour factors) will be used.

WHITEHALL COMMUNITY

STONEHOUSE ELEMENTARY SCHOOL

ROCHAMBEAU DRIVE

RICHMOND ROAD (ROUTE 60)

2-LANE SUBDIVISION STREET STUB TO ADJACENT PARCEL FOR FUTURE DEVELOPMENT

BOULEVARD ENTRANCE ALIGNED WITH ROUTE 60 MEDIAN (2 LANE DIVIDED ROADWAY WITH RAISED MEDIAN)

2-LANE SUBDIVISION STREET STUB TO ADJACENT PARCEL FOR FUTURE DEVELOPMENT

NOTE: THE LOCATION OF ACCESS POINTS SHOWN ON THIS PLAN ARE CONCEPTUAL AND SUBJECT TO CHANGE DURING FINAL DESIGN

NAD 83-VCS (SOUTH ZONE)

N

0 200' 400'

SCALE 1"=200'

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HANKINS DUNN

CONCEPTUAL ACCESS PLAN

SCALE: 1" = 200'
DATE: 4/22/2022

DESIGNED BY: TJW
DRAWN BY: TJW

Exhibit R4

Path: R:\REDevelopment\2 Communities\2 Current\VA – JCC– Hankins–Dunn\2 Feasibility\Site Plans\2022–04–22 Access Exhibit for VDOT Meeting\2022–04–22 Hankins Dunn Parcel – Access Plan.dwg, Plot Created Apr 22, 2022 – 10:35am by tjwomble

Rt 60 & 30 Andersons Corner

Phase Timing

10/13/2022 7:15:40 AM

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Min Green	3	10	3	10	3	10	5	10	0	0	0	0	0	0	0	0
Veh Ext	2.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Green 1	20	35	30	35	20	35	40	35	0	0	0	0	0	0	0	0
Max Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Green 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Ext	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow	5.0	5.5	5.0	5.5	5.0	5.5	5.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clr	3.0	1.0	5.0	1.0	3.0	1.0	5.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adv Flash	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bike MG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sol DW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Early Wlk	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Wlk	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	0	20	0	0	0	20	0	0	0	0	0	0	0	0	0	0
Min Gap	1.0	3.0	1.0	3.0	1.0	3.0	1.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce After	5	10	5	10	5	10	5	10	0	0	0	0	0	0	0	0
TTReduce	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Max Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Neg Ped	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AP Disc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pmt Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pmt Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pmt Ped Clr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Return Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Rt 60 & 30 Andersons Corner

Phase Options

10/13/2022 7:15:40 AM

Phases	1-8								9-16							
Min Recalls		2				6										
Max Recalls																
Ped Recalls																
Soft Recall																
Dual Entry				4				8								
Red Rest																
Walk Rest																
Walk Expand																
Ped Recycle																
Sim Ped Term																
PC Thru Clr																
Guar Passage		2				6										
No Simult Gap																
Yel Lock																
Red Lock																
PhaseNext Lock	1	2	3	4	5	6	7	8								
No Term Call	1	2	3	4	5	6	7	8								
Cond Serv																
CS Enable																
Cond Reserve																
Reserve																
Veh Omit																
Ped Omit																
Perm Phase																
Protect Calls																
Protect Calls 2																
Flash Entry																
Flash Exit																
Flash Exit Yel																
Flash Exit Red																
Ped Scramble																
No Min Yel																
No Min Red Rev																
Max Scramble Walk																
Flash Yellow																
Flash FYA																
CNA 1																
CNA 2																

Rt 60 & 30 Andersons Corner

Phase Startup Options

10/13/2022 7:15:40 AM

Startup Flash	0	Mode	Yel->Red
Startup All Red	0	Yellow	0.0

Phases	1-8								9-16							
Startup Phases		2				6										
Startup Yellow		2				6										
Startup Red																
Startup No Walk																
Startup Next				4				8								
Startup Yel Fls																
Startup FYA																
No Veh Call	1	2	3	4	5	6	7	8								
No Ped Call		2		4		6		8								

Phase Startup Timing

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Start Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Max Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Unit

Red Revert	0.0	Ped Protect	No	AdvFls in Flash	No

Rt 60 & 30 Andersons Corner

Ring Sequence / Conflicting Phases

10/13/2022 7:15:40 AM

Ringgroup 1

Ring 1	1	2	4	3	0	0	0	0	0	0	0	0	0	0	0	0
Ring 2	5	6	7	8	0	0	0	0	0	0	0	0	0	0	0	0

Ringgroup 2

Custom Sequences

Seq 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seq 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seq 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seq 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seq 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seq 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seq 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seq 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Conflicting Phases

	1-8							9-16							
Phase 1															
Phase 2															
Phase 3						7									
Phase 4															
Phase 5															
Phase 6															
Phase 7															
Phase 8															
Phase 9															
Phase 10															
Phase 11															
Phase 12															
Phase 13															
Phase 14															
Phase 15															
Phase 16															

Rt 60 & 30 Andersons Corner

FYA/FRA

10/13/2022 7:15:40 AM

FYA	1	2	3	4	5	6	7	8
Prot Phs	0	0	0	0	0	0	0	0
Opp Thru	0	0	0	0	0	0	0	0
Start Phs	0	0	0	0	0	0	0	0
Opp Ped	0	0	0	0	0	0	0	0
Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min FYA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Skip Prot Red	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
Head Mode	FYA 1	FYA 1	FYA 1	FYA 1	FYA 1	FYA 1	FYA 1	FYA 1

Ped Hawk 1

Veh Phase	0		
Ped Phase	0		
Flash Yel	0.0	Dark Signal	Yes
Flash Delay	0.0	Flash Carryover	0.0
Green Mode	Normal		

Ped Hawk 2

Veh Phase	0		
Ped Phase	0		
Flash Yel	0.0	Dark Signal	Yes
Flash Delay	0.0	Flash Carryover	0.0
Green Mode	Normal		

Ped Hawk 3

Veh Phase	0		
Ped Phase	0		
Flash Yel	0.0	Dark Signal	Yes
Flash Delay	0.0	Flash Carryover	0.0
Green Mode	Normal		

Ped Hawk 4

Veh Phase	0		
Ped Phase	0		
Flash Yel	0.0	Dark Signal	Yes
Flash Delay	0.0	Flash Carryover	0.0
Green Mode	Normal		

Rt 60 & 30 Andersons Corner

Coordination Options

10/13/2022 7:15:40 AM

Sync Time	00:00	RTC Set Time	00:00
Transition Mode	Best	Ped Adjust	None
Trans Short %	0	Trans Long %	0
Offset Reference	Lag FO	Short Cycles	0
Dual Entry	Normal	Overlap F/O	Disabled
Master Sync Mode	RTC	Master Sync Length	0
Adapt Thresh	0	Adapt Step	0
External Plan Max	0		
Hardwire No Match	Sched	Hardwire Sync Fail	0
Override Omit/Recall	No		

Phases	1-8	9-16
No Trans Recall		
Trans Ped Recall		
Trans Phases		

Rt 60 & 30 Andersons Corner

Hardwire Plans

10/13/2022 7:15:40 AM

Hardwire	Plan Select							Pattern	Offset	Mode
Plan 1								0	0	Hardwire
Plan 2								0	0	Hardwire
Plan 3								0	0	Hardwire
Plan 4								0	0	Hardwire
Plan 5								0	0	Hardwire
Plan 6								0	0	Hardwire
Plan 7								0	0	Hardwire
Plan 8								0	0	Hardwire
Plan 9								0	0	Hardwire
Plan 10								0	0	Hardwire
Plan 11								0	0	Hardwire
Plan 12								0	0	Hardwire
Plan 13								0	0	Hardwire
Plan 14								0	0	Hardwire
Plan 15								0	0	Hardwire
Plan 16								0	0	Hardwire
Plan 17								0	0	Hardwire
Plan 18								0	0	Hardwire
Plan 19								0	0	Hardwire
Plan 20								0	0	Hardwire
Plan 21								0	0	Hardwire
Plan 22								0	0	Hardwire
Plan 23								0	0	Hardwire
Plan 24								0	0	Hardwire
Plan 25								0	0	Hardwire
Plan 26								0	0	Hardwire
Plan 27								0	0	Hardwire
Plan 28								0	0	Hardwire
Plan 29								0	0	Hardwire
Plan 30								0	0	Hardwire
Plan 31								0	0	Hardwire
Plan 32								0	0	Hardwire

Rt 60 & 30 Andersons Corner

Soft Interconnect

10/13/2022 7:15:40 AM

Mode	Slave	Remote Int Number	0
Yield Delay	0		
Yield Duration	0		
Permissive	0		
Local Hold Limit	0		

Phases	1-8	9-16
Local Control Phases		
Local Hold Phases		
Local Perm Phases		
Local Call Phases		
Remote Perm Phases		
Remote Hold Phases		

Rt 60 & 30 Andersons Corner

Preempt Inputs

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Preempt Input	1	2	3	4	5	6	7	8	9	10
Delay	0	0	0	0	0	0	0	0	0	0
Checkout Limit	0	0	0	0	0	0	0	0	0	0
Locked	No	No	No	No	No	No	No	No	No	No
Interlock	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
Input Number	0	0	0	0	0	0	0	0	0	0
Input Priority	All	All	All	All	All	All	All	All	All	All
Delay Mode	Inp	Inp	Inp	Inp	Inp	Inp	Inp	Inp	Inp	Inp

Preempt Priority

Preempt	1	2	3	4	5	6	7	8	9	10
Priority	0	0	0	0	0	0	0	0	0	0

Remote Preemption

Remote Preempt	RM 1	RM 2	RM 3	RM 4	RM 5	RM 6	RM 7	RM 8
Int Number	0	0	0	0	0	0	0	0
PE Number	0	0	0	0	0	0	0	0
Mode	Dis	Dis	Dis	Dis	Dis	Dis	Dis	Dis
Slack	0	0	0	0	0	0	0	0
Travel Time	0	0	0	0	0	0	0	0
Alt TT 1	0	0	0	0	0	0	0	0
Alt TT 2	0	0	0	0	0	0	0	0
Alt TT 3	0	0	0	0	0	0	0	0
Alt TT 4	0	0	0	0	0	0	0	0
Alt TT 5	0	0	0	0	0	0	0	0
Alt TT 6	0	0	0	0	0	0	0	0
Alt TT 7	0	0	0	0	0	0	0	0

Rt 60 & 30 Andersons Corner

Preempt 1 (Configuration)

10/13/2022 7:15:40 AM

Enabled	Yes	Dwell Mode	Normal	Output Mode	All
Output2 Mode	All	Fail Action	Preempt Off	Exit Mode	Normal
Override Flash	No	Change Phasenext	Yes		

	1-8	9-16
Enable Phases		
Preempt Inputs	1	

	1-8		
LRV Disable		Max	0
LRV Dwell Flash			
LRV Omit		Delay	0
LRV No Yel			

Preempt 1 (Timing/Phases/Overlaps)

Phases/Overlaps	1-8	9-16
Omit Olap Grn Clr		
Phs EWlk to Grn		
TClr 1 Veh Phases		
TClr 1 Ped Phases		
TClr 1 Olap		
TClr 1 Olap Ped		
TClr 2 Veh Phases		
TClr 2 Ped Phases		
TClr 2 Olap		
TClr 2 Olap Ped		
Init Dwell Phases		
Dwell Veh Phases	1 6	
Dwell Ped Phases		
Dwell Olap		
Dwell Olap Ped		
Exit Veh Phases		
Exit Ped Phases		
Exit Olap		
Exit Olap Ped		
Zero Phase Walk		
Zero Phase Ped Clr		
Zero Phase Green	1 2 3 4 5 6 7 8	
Zero Olap Walk		
Zero Olap Ped Clr		
Zero Olap Green		
Dwell-Phase Red		
Dwell-Phase Red Flash		
Dwell-Phase Yel Flash		
Dwell-Olap Red Flash		
Dwell-Olap Yel Flash		
Dwell-Ped Dark		
Dwell-Olap Ped Dark		

Start Green	0	Start Walk	0
		Start Ped Clr	0
Track Clear 1	0	Track Clear 2	0
TC1 Extend	0	TC1 Max	0
Exit Ped Clr	0	Exit Yellow	0.0
Exit Red	0.0		
Min Dwell	0	Min Duration	0
Dwell Extend	0		
Max Dwell	0	Max Call	180
Reserve Inh Same	0		
Reserve Inh All	0		
Delay	0		

Phases/Overlaps	1-8	9-16
TClr 1 FR Olap		
TClr 2 FR Olap		
Dwell FR Olap		
TClr 1 FYA		
TClr 2 FYA		
Dwell FYA		

Rt 60 & 30 Andersons Corner

Preempt 2 (Configuration)

10/13/2022 7:15:40 AM

Enabled	Yes	Dwell Mode	Normal	Output Mode	All
Output2 Mode	All	Fail Action	Preempt Off	Exit Mode	Normal
Override Flash	No	Change Phasenext	Yes		

	1-8	9-16
Enable Phases		
Preempt Inputs	2	

	1-8		
LRV Disable		Max	0
LRV Dwell Flash			
LRV Omit		Delay	0
LRV No Yel			

Preempt 2 (Timing/Phases/Overlaps)

Phases/Overlaps	1-8	9-16
Omit Olap Grn Clr		
Phs EWlk to Grn		
TClr 1 Veh Phases		
TClr 1 Ped Phases		
TClr 1 Olap		
TClr 1 Olap Ped		
TClr 2 Veh Phases		
TClr 2 Ped Phases		
TClr 2 Olap		
TClr 2 Olap Ped		
Init Dwell Phases		
Dwell Veh Phases	2 5	
Dwell Ped Phases		
Dwell Olap		
Dwell Olap Ped		
Exit Veh Phases		
Exit Ped Phases		
Exit Olap		
Exit Olap Ped		
Zero Phase Walk		
Zero Phase Ped Clr		
Zero Phase Green	1 2 3 4 5 6 7 8	
Zero Olap Walk		
Zero Olap Ped Clr		
Zero Olap Green		
Dwell-Phase Red		
Dwell-Phase Red Flash		
Dwell-Phase Yel Flash		
Dwell-Olap Red Flash		
Dwell-Olap Yel Flash		
Dwell-Ped Dark		
Dwell-Olap Ped Dark		

Start Green	0	Start Walk	0
		Start Ped Clr	0
Track Clear 1	0	Track Clear 2	0
TC1 Extend	0	TC1 Max	0
Exit Ped Clr	0	Exit Yellow	0.0
Exit Red	0.0		
Min Dwell	0	Min Duration	0
Dwell Extend	0		
Max Dwell	0	Max Call	180
Reserve Inh Same	0		
Reserve Inh All	0		
Delay	0		

Phases/Overlaps	1-8	9-16
TClr 1 FR Olap		
TClr 2 FR Olap		
Dwell FR Olap		
TClr 1 FYA		
TClr 2 FYA		
Dwell FYA		

Rt 60 & 30 Andersons Corner

Preempt 3 (Configuration)

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Enabled	Yes	Dwell Mode	Normal	Output Mode	All
Output2 Mode	All	Fail Action	Preempt Off	Exit Mode	Normal
Override Flash	No	Change Phasenext	Yes		

	1-8	9-16
Enable Phases		
Preempt Inputs	3	

	1-8		
LRV Disable		Max	0
LRV Dwell Flash			
LRV Omit		Delay	0
LRV No Yel			

Preempt 3 (Timing/Phases/Overlaps)

Phases/Overlaps	1-8	9-16
Omit Olap Grn Clr		
Phs EWlk to Grn		
TClr 1 Veh Phases		
TClr 1 Ped Phases		
TClr 1 Olap		
TClr 1 Olap Ped		
TClr 2 Veh Phases		
TClr 2 Ped Phases		
TClr 2 Olap		
TClr 2 Olap Ped		
Init Dwell Phases		
Dwell Veh Phases	3 8	
Dwell Ped Phases		
Dwell Olap		
Dwell Olap Ped		
Exit Veh Phases		
Exit Ped Phases		
Exit Olap		
Exit Olap Ped		
Zero Phase Walk		
Zero Phase Ped Clr		
Zero Phase Green	1 2 3 4 5 6 7 8	
Zero Olap Walk		
Zero Olap Ped Clr		
Zero Olap Green		
Dwell-Phase Red		
Dwell-Phase Red Flash		
Dwell-Phase Yel Flash		
Dwell-Olap Red Flash		
Dwell-Olap Yel Flash		
Dwell-Ped Dark		
Dwell-Olap Ped Dark		

Start Green	0	Start Walk	0
		Start Ped Clr	0
Track Clear 1	0	Track Clear 2	0
TC1 Extend	0	TC1 Max	0
Exit Ped Clr	0	Exit Yellow	0.0
Exit Red	0.0		
Min Dwell	0	Min Duration	0
Dwell Extend	0		
Max Dwell	0	Max Call	180
Reserve Inh Same	0		
Reserve Inh All	0		
Delay	0		

Phases/Overlaps	1-8	9-16
TClr 1 FR Olap		
TClr 2 FR Olap		
Dwell FR Olap		
TClr 1 FYA		
TClr 2 FYA		
Dwell FYA		

Rt 60 & 30 Andersons Corner

Preempt 4 (Configuration)

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Enabled	Yes	Dwell Mode	Normal	Output Mode	All
Output2 Mode	All	Fail Action	Preempt Off	Exit Mode	Normal
Override Flash	No	Change Phasenext	Yes		

	1-8	9-16
Enable Phases		
Preempt Inputs	4	

	1-8		
LRV Disable		Max	0
LRV Dwell Flash			
LRV Omit		Delay	0
LRV No Yel			

Preempt 4 (Timing/Phases/Overlaps)

Phases/Overlaps	1-8	9-16
Omit Olap Grn Clr		
Phs EWlk to Grn		
TClr 1 Veh Phases		
TClr 1 Ped Phases		
TClr 1 Olap		
TClr 1 Olap Ped		
TClr 2 Veh Phases		
TClr 2 Ped Phases		
TClr 2 Olap		
TClr 2 Olap Ped		
Init Dwell Phases		
Dwell Veh Phases	4 7	
Dwell Ped Phases		
Dwell Olap		
Dwell Olap Ped		
Exit Veh Phases		
Exit Ped Phases		
Exit Olap		
Exit Olap Ped		
Zero Phase Walk		
Zero Phase Ped Clr		
Zero Phase Green	1 2 3 4 5 6 7 8	
Zero Olap Walk		
Zero Olap Ped Clr		
Zero Olap Green		
Dwell-Phase Red		
Dwell-Phase Red Flash		
Dwell-Phase Yel Flash		
Dwell-Olap Red Flash		
Dwell-Olap Yel Flash		
Dwell-Ped Dark		
Dwell-Olap Ped Dark		

Start Green	0	Start Walk	0
		Start Ped Clr	0
Track Clear 1	0	Track Clear 2	0
TC1 Extend	0	TC1 Max	0
Exit Ped Clr	0	Exit Yellow	0.0
Exit Red	0.0		
Min Dwell	0	Min Duration	0
Dwell Extend	0		
Max Dwell	0	Max Call	180
Reserve Inh Same	0		
Reserve Inh All	0		
Delay	0		

Phases/Overlaps	1-8	9-16
TClr 1 FR Olap		
TClr 2 FR Olap		
Dwell FR Olap		
TClr 1 FYA		
TClr 2 FYA		
Dwell FYA		

Rt 60 & 30 Andersons Corner

TOD Pattern Events

10/13/2022 7:15:40 AM

	Time	DOW							Holidays								Mode	Pattern	Offset
Event 1	00:00																Sched	0	0
Event 2	00:00																Sched	0	0
Event 3	00:00																Sched	0	0
Event 4	00:00																Sched	0	0
Event 5	00:00																Sched	0	0
Event 6	00:00																Sched	0	0
Event 7	00:00																Sched	0	0
Event 8	00:00																Sched	0	0
Event 9	00:00																Sched	0	0
Event 10	00:00																Sched	0	0
Event 11	00:00																Sched	0	0
Event 12	00:00																Sched	0	0
Event 13	00:00																Sched	0	0
Event 14	00:00																Sched	0	0
Event 15	00:00																Sched	0	0
Event 16	00:00																Sched	0	0
Event 17	00:00																Sched	0	0
Event 18	00:00																Sched	0	0
Event 19	00:00																Sched	0	0
Event 20	00:00																Sched	0	0
Event 21	00:00																Sched	0	0
Event 22	00:00																Sched	0	0
Event 23	00:00																Sched	0	0
Event 24	00:00																Sched	0	0
Event 25	00:00																Sched	0	0
Event 26	00:00																Sched	0	0
Event 27	00:00																Sched	0	0
Event 28	00:00																Sched	0	0
Event 29	00:00																Sched	0	0
Event 30	00:00																Sched	0	0
Event 31	00:00																Sched	0	0
Event 32	00:00																Sched	0	0

Rt 60 & 30 Andersons Corner

TS1 Outputs (Connector A)

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	Pin D	Pin E	Pin F	Pin G	Pin H	Pin J	Pin X	Pin Y
Output	VehRed	DntWlk	VehRed	DntWlk	PedClr	Walk	Flash	Free
Index	1	1	2	2	2	2	0	0

	Pin Z	Pin a	Pin b	Pin c	Pin d	Pin e	Pin r	Pin s
Output	VehYel	PedClr	VehYel	VehGrn	PhsChk	PhsOn	Free	VehGrn
Index	1	1	2	2	2	2	0	1

	Pin t	Pin u	Pin CC	Pin DD
Output	Walk	PhsChk	Free	PhsOn
Index	1	1	0	1

TS1 Outputs (Connector B)

	Pin A	Pin C	Pin D	Pin E	Pin F	Pin G	Pin H	Pin J
Output	PhsNxt	PhsNxt	VehGrn	VehYel	VehRed	VehRed	PedClr	DntWlk
Index	1	2	3	3	3	4	4	4

	Pin K	Pin Y	Pin Z	Pin a	Pin b	Pin c	Pin d	Pin e
Output	PhsChk	Walk	PedClr	DntWlk	VehGrn	VehYel	Walk	PhsOn
Index	4	3	3	3	4	4	4	4

	Pin f	Pin p	Pin q	Pin r	Pin s	Pin t	Pin u	Pin w
Output	PhsNxt	OlpYel	OlpRed	PhsChk	PhsOn	PhsNxt	OlpRed	OlpGrn
Index	4	1	1	3	3	3	4	4

	Pin AA	Pin BB	Pin CC	Pin DD	Pin EE	Pin FF	Pin GG	Pin HH
Output	OlpGrn	OlpYel	OlpRed	OlpRed	OlpYel	OlpGrn	OlpGrn	OlpYel
Index	1	2	2	3	4	3	2	3

Rt 60 & 30 Andersons Corner

TS1 Outputs (Connector C)

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	Pin A	Pin B	Pin C	Pin D	Pin E	Pin F	Pin G	Pin H
Output	Free	Free	DntWlk	VehRed	VehYel	VehRed	VehRed	VehRed
Index	0	0	8	8	7	7	6	5
	Pin J	Pin K	Pin L	Pin M	Pin N	Pin c	Pin d	Pin e
Output	VehYel	PedClr	DntWlk	PhsNxt	PhsOn	Free	Walk	VehYel
Index	5	5	5	5	5	0	8	8
	Pin f	Pin g	Pin h	Pin i	Pin j	Pin k	Pin w	Pin x
Output	VehGrn	VehGrn	VehYel	VehGrn	Walk	PhsChk	PedClr	VehGrn
Index	7	6	6	5	5	5	8	8
	Pin y	Pin z	Pin AA	Pin BB	Pin CC	Pin DD	Pin FF	Pin GG
Output	DntWlk	DntWlk	PedClr	PhsChk	PhsOn	PhsNxt	PhsChk	PhsOn
Index	7	6	6	6	6	6	8	8
	Pin HH	Pin JJ	Pin KK	Pin LL	Pin MM	Pin NN	Pin PP	
Output	PhsNxt	Walk	PedClr	Walk	PhsChk	PhsOn	PhsNxt	
Index	8	7	7	6	7	7	7	

TS1 Outputs (Connector D)

	Pin z	Pin AA	Pin BB	Pin CC	Pin DD	Pin EE	Pin FF	Pin GG
Output	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed
Index	0	0	0	0	0	0	0	0
	Pin HH	Pin JJ	Pin LL					
Output	VehRed	VehRed	VehRed					
Index	0	0	0					

Rt 60 & 30 Andersons Corner

TS1 Inputs (Connector A)

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	Pin K	Pin L	Pin M	Pin N	Pin P	Pin R	Pin S	Pin T
Input	VehDet	PedDet	Hold	StopTm	MaxInh	ExtStr	IntAdv	None
Index	2	2	2	5	1	1	1	0

	Pin f	Pin g	Pin h	Pin i	Pin j	Pin k	Pin m	Pin n
Input	VehDet	PedDet	Hold	Force	MinRec	ManCtrl	CNA	None
Index	1	1	1	1	1	1	1	0

	Pin q	Pin v	Pin w	Pin x	Pin y	Pin z	Pin AA	Pin BB
Input	None	PedOmt	OmtRed	RedRst	None	CNA	None	None
Index	0	2	1	1	0	2	0	0

	Pin EE	Pin FF	Pin GG	Pin HH
Input	PedOmt	PedRcy	MaxII	None
Index	0	1	1	0

TS1 Inputs (Connector B)

	Pin B	Pin L	Pin M	Pin N	Pin P	Pin R	Pin S	Pin T
Input	None	VehDet	PedDet	VehDet	PedDet	VehOmt	VehOmt	PedOmt
Index	0	4	4	3	3	3	2	5

	Pin U	Pin V	Pin W	Pin X	Pin g	Pin h	Pin i	Pin j
Input	VehOmt	PedRcy	None	None	VehOmt	Hold	Hold	PedOmt
Index	1	2	0	0	4	4	3	3

	Pin k	Pin m	Pin n	Pin v	Pin x	Pin z
Input	PedOmt	PedOmt	PedOmt	None	PedOmt	MaxII
Index	6	7	8	0	4	2

Rt 60 & 30 Andersons Corner

TS1 Inputs (Connector C)

10/13/2022 7:15:40 AM

	Pin P	Pin R	Pin S	Pin T	Pin U	Pin V	Pin W	Pin X
Input	VehDet	PedDet	VehDet	PedDet	PedDet	VehDet	PedDet	Hold
Index	5	5	6	6	7	7	8	8
	Pin Y	Pin Z	Pin a	Pin b	Pin m	Pin n	Pin p	Pin q
Input	Force	StopTm	MaxInh	None	Hold	VehOmt	None	VehOmt
Index	2	2	2	0	5	5	0	6
	Pin r	Pin s	Pin t	Pin u	Pin v	Pin EE		
Input	VehOmt	VehOmt	VehDet	RedRst	OmtRed	Hold		
Index	7	8	8	2	2	7		

TS1 Inputs (Connector D)

	Pin A	Pin B	Pin C	Pin D	Pin E	Pin F	Pin G	Pin H
Input	VehDet	None	Preempt	None	None	None	VehDet	None
Index	9	0	5	0	0	0	10	0
	Pin J	Pin K	Pin L	Pin M	Pin N	Pin P	Pin R	Pin S
Input	Preempt	Preempt	Preempt	Preempt	None	None	None	None
Index	1	2	3	4	0	0	0	0
	Pin T	Pin U	Pin V	Pin W	Pin X	Pin Y	Pin Z	Pin a
Input	Alarm	None	None	None	None	None	None	None
Index	4	0	0	0	0	0	0	0
	Pin b	Pin c	Pin d	Pin e	Pin f	Pin g	Pin h	Pin i
Input	None	None	None	Alarm	Alarm	None	Alarm	None
Index	0	0	0	2	3	0	14	0
	Pin j	Pin k	Pin m	Pin n	Pin p	Pin q	Pin r	Pin s
Input	Alarm	Alarm	Alarm	Alarm	None	None	None	None
Index	1	2	3	4	0	0	0	0
	Pin t	Pin u	Pin v	Pin w	Pin x	Pin y		
Input	Preempt	Preempt	Preempt	Preempt	None	None		
Index	1	2	3	4	0	0		

Rt 60 & 30 Andersons Corner

Vehicle Detector 1

10/13/2022 7:15:40 AM

Delay	0.0	Extend	0.0	Carryover	0.0	Queue Limit	0
Mode	No Disc	Added	Enabled	System	Enabled		
Fail Mode	None	Max Pres	0	No Act	0	Erratic	0
Fail Time	0						
Delay 2	0.0						

Phases	1-8	9-16
Call Phases	4	
Yellow Lock Phases		
Red Lock Phases		
Extend Phases	4	
XSwitch Phases		
Bike Call Phases		

Vehicle Detector 2

Delay	0.0	Extend	0.0	Carryover	0.0	Queue Limit	0
Mode	No Disc	Added	Enabled	System	Enabled		
Fail Mode	None	Max Pres	0	No Act	0	Erratic	0
Fail Time	0						
Delay 2	0.0						

Phases	1-8	9-16
Call Phases	4	
Yellow Lock Phases		
Red Lock Phases		
Extend Phases	4	
XSwitch Phases		
Bike Call Phases		

Rt 60 & 30 Andersons Corner

Vehicle Detector 3

10/13/2022 7:15:40 AM

Delay	0.0	Extend	0.0	Carryover	0.0	Queue Limit	0
Mode	No Disc	Added	Enabled	System	Enabled		
Fail Mode	None	Max Pres	0	No Act	0	Erratic	0	Fail Time	0
Delay 2	0.0						

Phases	1-8								9-16							
Call Phases							7									
Yellow Lock Phases																
Red Lock Phases																
Extend Phases							7									
XSwitch Phases																
Bike Call Phases																

Vehicle Detector 4

Delay	0.0	Extend	0.0	Carryover	0.0	Queue Limit	0
Mode	No Disc	Added	Enabled	System	Enabled		
Fail Mode	None	Max Pres	0	No Act	0	Erratic	0	Fail Time	0
Delay 2	0.0						

Phases	1-8								9-16							
Call Phases		2														
Yellow Lock Phases																
Red Lock Phases																
Extend Phases		2														
XSwitch Phases																
Bike Call Phases																

Rt 60 & 30 Andersons Corner

Vehicle Detector 5

10/13/2022 7:15:40 AM

Delay	0.0	Extend	0.0	Carryover	0.0	Queue Limit	0
Mode	No Disc	Added	Enabled	System	Enabled		
Fail Mode	None	Max Pres	0	No Act	0	Erratic	0
Fail Time	0						
Delay 2	0.0						

Phases	1-8	9-16
Call Phases	5	
Yellow Lock Phases		
Red Lock Phases		
Extend Phases	5	
XSwitch Phases		
Bike Call Phases		

Vehicle Detector 6

Delay	0.0	Extend	0.0	Carryover	0.0	Queue Limit	0
Mode	No Disc	Added	Enabled	System	Enabled		
Fail Mode	None	Max Pres	0	No Act	0	Erratic	0
Fail Time	0						
Delay 2	0.0						

Phases	1-8	9-16
Call Phases	8	
Yellow Lock Phases		
Red Lock Phases		
Extend Phases	8	
XSwitch Phases		
Bike Call Phases		

Rt 60 & 30 Andersons Corner

Vehicle Detector 7

10/13/2022 7:15:40 AM

Delay	0.0	Extend	0.0	Carryover	0.0	Queue Limit	0
Mode	No Disc	Added	Enabled	System	Enabled		
Fail Mode	None	Max Pres	0	No Act	0	Erratic	0
Fail Time	0						
Delay 2	0.0						

Phases	1-8	9-16
Call Phases	8	
Yellow Lock Phases		
Red Lock Phases		
Extend Phases	8	
XSwitch Phases		
Bike Call Phases		

Vehicle Detector 8

Delay	0.0	Extend	0.0	Carryover	0.0	Queue Limit	0
Mode	No Disc	Added	Enabled	System	Enabled		
Fail Mode	None	Max Pres	0	No Act	0	Erratic	0
Fail Time	0						
Delay 2	0.0						

Phases	1-8	9-16
Call Phases	3	
Yellow Lock Phases		
Red Lock Phases		
Extend Phases	3	
XSwitch Phases		
Bike Call Phases		

Rt 60 & 30 Andersons Corner

Vehicle Detector 9

10/13/2022 7:15:40 AM

Delay	0.0	Extend	0.0	Carryover	0.0	Queue Limit	0
Mode	No Disc	Added	Enabled	System	Enabled		
Fail Mode	None	Max Pres	0	No Act	0	Erratic	0
Fail Time	0						
Delay 2	0.0						

Phases	1-8								9-16							
Call Phases						6										
Yellow Lock Phases																
Red Lock Phases																
Extend Phases						6										
XSwitch Phases																
Bike Call Phases																

Vehicle Detector 10

Delay	0.0	Extend	0.0	Carryover	0.0	Queue Limit	0
Mode	No Disc	Added	Enabled	System	Enabled		
Fail Mode	None	Max Pres	0	No Act	0	Erratic	0
Fail Time	0						
Delay 2	0.0						

Phases	1-8								9-16							
Call Phases	1															
Yellow Lock Phases																
Red Lock Phases																
Extend Phases	1															
XSwitch Phases																
Bike Call Phases																

Fiscal Impact Analysis Comment

In alignment with the 2045 Comprehensive Plan, on February 28, 2023, the Board of Supervisors adopted a resolution directing staff to use the County's Fiscal Impact Model to assess proposed developments. To that end, staff has taken the information provided by the applicant in the fiscal input form dated 2/15/23 and used the County's model to analyze fiscal impacts.

1. Overall fiscal impact (capital and operating costs). The fiscal model output information is below – this includes the model default (standard) assessed unit values based on average data for the applicable fiscal analysis zone within the County (Attachment A).
2. Capital Expenditures. This amount represents impacts to County facilities and services attributable to this proposed development. This amount is shown in Attachment A and is further broken out below by type of capital expenditure and by unit type (Attachment B).

Staff has also run the model using the estimatedassessed unit values as projected by the applicant for informational purposes (Attachment C).

Attachment A

NET FISCAL IMPACT	Hankins Dunn//Default Values	%
PROJECTED REVENUES		
General Property Taxes	$43,782,889	84%
Other Local Taxes	$5,025,911	10%
Licenses, Permits & Fees	$885,161	2%
Fines & Forfeitures	$77,048	0%
Use of Money & Prop	$0	0%
Commonwealth	$0	0%
Federal Government	$0	0%
Charges for Services	$2,583,858	5%
Miscellaneous	$0	0%
Total General Fund Revenues	$52,354,866	100%
Schools Revenues (Non-Count	$22,572,894	
GRAND TOTAL REVENUES	**$74,927,760**	
PROJECTED EXPENDITURES		
Operating Expenditures		
General Adminstration	$193,237	0%
Court Services	$216,718	0%
Public Safety	$6,840,807	10%
Financial Administration	$192,214	0%
Info Resources Management	$116,506	0%
Community Development	$47,151	0%
General Services	$1,520,776	2%
Parks & Recreation	$264,410	0%
Other Contributions And Transfe	$5,278,964	8%
Total General Fund Expenditure	$14,670,784	22%
School Operating Expenditures	$52,445,365	78%
GRAND TOTAL OPERATIN	**$67,116,149**	**100%**
Capital Expenditures		
Non-Schools Capital	$4,023,838	31%
Schools Capital	$9,052,430	69%
GRAND TOTAL OPERATIN	**$13,076,268**	**100%**
GRAND TOTAL EXPENDITURES	**$80,192,417**	
CUMULATIVE NET FISCAL IMPACT	**($5,264,658)**	
Average Annual Net Fiscal Impact	($210,586)	

Attachment B

CAPITAL IMPACTS PER UNIT	Hankins Dunn//Default
Transportation	
Single Family Detached	$112.79
Single Family Attached	$86.12
Parks and Recreation	
Single Family Detached	$3,795.86
Single Family Attached	$2,511.11
Fire and Emergency Services	
Single Family Detached	$1,149.45
Single Family Attached	$760.40
Police	
Single Family Detached	$723.49
Single Family Attached	$478.62
Library	
Single Family Detached	$480.63
Single Family Attached	$317.95
General Government	
Single Family Detached	$143.22
Single Family Attached	$94.74
General Services	
Single Family Detached	$268.48
Single Family Attached	$177.61
Courts	
Single Family Detached	$844.93
Single Family Attached	$558.96
Schools	
Single Family Detached	$17,542.50
Single Family Attached	$9,216.56
TOTAL	
Single Family Detached	**$25,061.35**
Single Family Attached	**$14,202.08**

Attachment C

NET FISCAL IMPACT	Hankins Dunn//Developer Values	%
PROJECTED REVENUES		
General Property Taxes	$51,106,980	85%
Other Local Taxes	$5,468,125	9%
Licenses, Permits & Fees	$1,041,464	2%
Fines & Forfeitures	$77,048	0%
Use of Money & Prop	$0	0%
Commonwealth	$0	0%
Federal Government	$0	0%
Charges for Services	$2,583,858	4%
Miscellaneous	$0	0%
Total General Fund Revenues	$60,277,475	100%
Schools Revenues (Non-Count	$22,572,894	
GRAND TOTAL REVENUES	**$82,850,368**	
PROJECTED EXPENDITURES		
Operating Expenditures		
General Adminstration	$193,237	0%
Court Services	$216,718	0%
Public Safety	$6,840,807	10%
Financial Administration	$192,214	0%
Info Resources Management	$116,506	0%
Community Development	$47,151	0%
General Services	$1,520,776	2%
Parks & Recreation	$264,410	0%
Other Contributions And Transfe	$5,278,964	8%
Total General Fund Expenditure	$14,670,784	22%
School Operating Expenditures	$52,445,365	78%
GRAND TOTAL OPERATIN	**$67,116,149**	**100%**
Capital Expenditures		
Non-Schools Capital	$4,023,838	31%
Schools Capital	$9,052,430	69%
GRAND TOTAL OPERATIN	**$13,076,268**	**100%**
GRAND TOTAL EXPENDITURES	**$80,192,417**	

CUMULATIVE NET FISCAL IMPACT	**$2,657,951**
Average Annual Net Fiscal Impact	$106,318

Project Arborist Report

To: Hans C. Klinger hcklinger@hhhunt.com

From: Troy Savage, ISA Certified Arborist: ISA/MA-6146A, tsavage@wetlands.com 757-513-6041

CC: Rebecca Napier/ rnapier@wetlands.com

Date: June 13th, 2023

Project: Hankins-Dunn Site – Arborist Hardwood Forest Assessment

Location: James City County, Virginia

WSSI Project #31914.01

1.	Project Arborist Hardwood Forest Assessment. Hankins-Dunn (AKA White Hall Extension) 4.97ac

2.	Forest Conditional Assessment: Staff Qualifications
	The Hankins-Dunn site was assessed by Troy Savage P.W.S., P.W.D., Q.E.P., C.A., C.E. *Professional Wetland Scientist #2556, Society of Wetlands Scientists Certification Program, Inc.; Certified Professional Wetland Delineator #34020000168, VDPOR Board of Professional Soil Scientists and Wetland Delineators, Qualified Environmental Professional #1406630, Certified Arborist ISA/MA-6146A, Ecological Society of America; Certified Ecologist. Field work was conducted on June 5, 2023.*

3.	Forest Conditional Assessment:
	Summarize Site Location: The study area is located entirely in James City County and adjacent to the Hankins-Dunn property, east of School House Lane and New Elementary School. See Attached Exhibit A.

4.	Forest Conditional Assessment:
	Methods:
	The entire site was transected with qualitative measurements taken on each distinct assemblage of trees. Measurements included relative dominance of each species in the assemblage, approximate age of dominant trees based on Diameter at Breast Height (DHB), and approximate age and composition of understory tree species if present.

5.	Forest Conditional Assessment: Conclusions
	The entire site consists of late successional hardwood forest in excellent condition. The forest stand is best defined as an Oak-Beech-Hickory-Poplar assemblage with most individuals ranging between 55 and 110 years old, with occasional outliers and specimen trees that are significantly older. Bottomland areas also contain mature Maple, Elm, Iron wood, and Polar. It is my professional opinion that the site meets the conditions set forth in: **the James City County bonus density item in code section 24-549.H:**

H.	Preserving a single area of healthy, mature, mixed hardwood forestland at least two acres in size within the developable portion of the site. The planning director may request that the developer provide confirmation, prepared by a certified horticulturalist, that these qualities are present	1

Photo #1: Hickory-Beech forest on the northeastern portion of the site.



Photo #2: Oak-Beech assemblage located on the western portion of the site.



Photo #3: Oak-Hickory-Beech assemblage in the south-central portion of the site.



Photo #4: Oak-Hickory-Beech assemblage in the south-central portion of the site.



Photo #5: Oak-Poplar-Beech assemblage in the central portion of the site.





Site (4.97 ac)

Vicinity Map
Hankins Dunn Tree Assessment

NORTH
0 500
Feet
Original Scale:
1 in = 500 ft

Source: World Street Map - ESRI

Wetland Studies and Solutions, Inc.
a DAVEY company

Exhibit 1

Terry Costello

From: Carey Sydney <careysydney21@gmail.com>
Sent: Thursday, December 15, 2022 11:48 AM
To: Terry Costello
Subject: [External]Questions and concerns about proposed development on Richmond Rd

Hello,

It's my understanding that there is a rezoning proposal by HH Hunt to rezone about 200 acres on Richmond Rd (near Whitehall) to allow for residential construction of 460 single family homes and 85 town homes. I'm very concerned about the impact of this proposed neighborhood on WJCC schools, traffic along Richmond Rd, and the rural character of upper James City County. I would appreciate answers to my questions/concerns below.

What schools would this neighborhood be zoned for? How will the county mitigate the burden of extra students on the already over-crowded upper JCC schools? Based on the limited location information I have, it seems the new neighborhood would be zoned for Stonehouse Elementary, which is already over-capacity and the most crowded elementary school in WJCC. The next closes school, Norge Elementary, is close to capacity. How will the county address this? Are there enough classrooms and teachers at these schools to handle the extra students? Enough bus drivers and buses? Will classroom size at the schools increase (a fact which is correlated to decreased classroom performance)? The JCC Board of Supervisors has made it clear they do not support building a new elementary school to deal with the already overcrowded situation, so I'm concerned about the impact of additional students in this area without a clear plan to address this. As a parent of two WJCC elementary students, education and student safety are is my top priorities. I don't want classroom sizes getting bigger or the quality of education degraded. I don't want my children taught in a trailer or taking tests in hallways because there is not enough room (something already happening in WJCC). I'm attaching a screenshot of WJCC's recent enrollment projections which is concerning enough as it is prior to this proposed neighborhood.

Elementary – MO

School	Effective Capacity
Clara Byrd Baker*	618
Laurel Lane*	628
DJ Montague*	582
Norge*	736

How will the county address the impact of this new neighborhood on traffic on Richmond Rd and surrounding areas in upper JCC? I already deal with an abundant number of tailgaters, reckless drivers, road ragers on this part of Richmond Rd as it is. I'm concerned about the impact on the increase of traffic on road safety in this area. There have already been two fatal accidents in this part of JCC in the past few months. Increased traffic will just make this worse.

Are there any measures in place to ensure this won't further erode the rural character of upper JCC? I'm confused how this can even happen after the JCC BOS passed a policy requiring 20 acre minimum purchases. The public in JCC has overwhelming voiced their preference for preserving JCC's rural spaces and character and to limit development. Are our voices being heard? Like the overwhelming majority of the county, I'm concerned about overdevelopment that erodes our county's history and character, and any negative impact to my own property value.

Thank you,

Carey Sydney

Terry Costello

From: Crystal Orlowsky <crystalranee78@gmail.com>
Sent: Thursday, December 15, 2022 11:15 AM
To: Terry Costello
Subject: [External]Proposed rezoning in upper JCC

Good afternoon,

I am a resident of upper JCC and have some concerns about the proposed rezoning and development by HHHunt. I live in the section of White Hall on Schoolhouse Ln. We only have the one entrance into our neighborhood because it is not connected to the main part of White Hall on Rochambeau/Richmond Rd. That entrance is already a challenge with the amount of traffic during school pick up and drop off times for both Stonehouse Elementary and Williamsburg Christian academy. There have been times that I have had to wait upwards of 30 minutes to just get from Rochambeau, to the entrance of White Hall on Schoolhouse Ln. With the proposed new development, there will be even more families and even longer lines to wait in.
Also, the current traffic at the intersection of Rochambeau and Schoolhouse Ln is already dangerous. Add over 500 more cars to the area and that intersection becomes an even bigger problem. Visibility during pick up and drop off is minimal and if there is not an officer sitting near by, many people still turn left onto Rochambeau from across the street. I worry about the safety of all those children, and my neighbors.
In order to support this new development, we would need a connecting road between the two sections of Whitehall, a traffic light at the intersection, and another Elementary school to support the influx of new families.
Also, the reason why many of us chose to live in upper JCC is because of the calmness and lack of traffic. It is slowly being erased.

Thank you for your sincere consideration.

Terry Costello

From: Michael Lemn <mclemn@msn.com>
Sent: Thursday, December 15, 2022 6:37 PM
To: Terry Costello
Subject: [External]White Hall Project

Sir,
I was unable to attend tonight's meeting but thank you for reaching out to the public.
My question concerns the local school systems. With the new Ryan Homes project and the development for Lennar Homes this will add around 600 plus homes to the area. If we add 400 plus to this number think of the impact to the schools. Has the county and school board taken this under study and what are the plans for additional schools to accommodate these additional children.
I just moved to Stonehouse 3 years ago. I came from Virginia Beach, and I saw firsthand the overgrowth of too many projects being built to fast without planning for the growth in the schools.
How many portables will be needed to accommodate this growth. These are my questions and concerns.
Thank you,
Michael Lemn

Sent from Outlook

Terry Costello

From: solilly@aol.com
Sent: Wednesday, December 14, 2022 8:32 PM
To: Terry Costello
Subject: [External]12/15 2022 meeting

I have plans that I can not change for this meeting but I am against this development and will do my best to be at other meetings and want to know how and what I can do to help stop this move. I live in the Croaker area of Williamsburg and we need to stop the growth. Thanks for any information you can give me. Yours truly Lillian Sommerville

Terry Costello

From: Cheryl Mathews <cheryl.m.mathews@gmail.com>
Sent: Sunday, July 23, 2023 10:29 PM
To: Terry Costello; Planning
Subject: [External]Proposed Hankins Development

Dear Sirs:

I find it difficult to believe that having so recently put into place the change to one house to 20 acres in upper James City County you could even entertain the high density housing proposed by this project. Would you allow me to subdivide my 46 acres on Forge Road at this density? Of course not! I am stunned and ashamed that the planning commission would allow this proposal to even be discussed.
I vehemently oppose such additional development in the upper county. It appears that you did not really intend to preserve what is left of our agricultural property when you imposed that 20 acre minimum.
Please turn this project down outright and without delay. I can see no justification for approving such an outrageous proposal. Do not let a developer override what a planning commission should be protecting.
Sincerely,
Cheryl M Mathews
2116 Forge Road

Sent from my iPhone

Terry Costello

From: Alia Stutts <stutts.alia@yahoo.com>
Sent: Sunday, July 23, 2023 2:10 AM
To: Terry Costello
Cc: Planning
Subject: [External]Rezoning Toano

I am appalled at this proposal to rezone Toano. I live off of Racefield Dr. There is enough traffic here especially when I-64 is backed up. No amount of stop lights is going to change that and adding 582 residents will be detrimental to our traffic as that's AT LEAST 582 more cars if not more. When will the construction end? We live in/near a colonial area yet everything is being built over. The schools are already packed here and I'm sure with the staffing crises they are understaffed. The poor deer barely have anywhere to go now you constantly see them watching cars at night right by the street and dead on the road. Think of how many more animals will be dead and have no habitat. Think of how much more littering will occur. Think of the residents already here, isn't stone house enough? Will humans ever stop to think about how all of this will kill the planet? Look at how many businesses can't even survive in the heart of williamsburg yet let's build more and more… NOT! I'm begging you all to consider how ridiculous this is. PLEASE PRESERVE TOANO !!!!

Toano Resident

Sent from Yahoo Mail for iPhone

Terry Costello

From: Anne Atkinson <annehatkinson@gmail.com>
Sent: Wednesday, July 26, 2023 6:25 PM
To: Terry Costello; Planning
Subject: [External]Development next to White Hall at Route 60 in Toano.

It is not advisable to allow the developers to have the property referenced above rezoned to allow over 3 homes per acre, an increase from the current 1 house per 20 acres. This valuable agricultural land is needed for the area.

The proposed change would mean a dramatic increase in traffic, a lower quality of life for current residents, a greater demand on the area's water and services as well as an increase in pollution.

I look forward to the upcoming hearing.

Thank you,

Anne Atkinson

Terry Costello

From: intnl1732@aol.com
Sent: Monday, August 28, 2023 9:12 PM
To: Terry Costello
Subject: [External]HH Hunt Toano Development

Dear Mr. Costello

On September 6th, HH Hunt will submit a request for zoning change to build 582 residences on Rt; 60 (Richmond Road) in Toano. This development will be ajacent to the existing White Hall community.

As a resident of White Hall, I cannot begin to tell you how adversely 582 additional residences will impact logistics and the quality of life in our area.

Not only will there be more than 870 additional vehicles **daily** jamming Rts. 60 and 30, more road usage will only contribute to the already heavy traffic in greater Toano. At the single entry/exit point of the planned community, there is not even a proposed traffic signal to ensure smooth traffic flow and pedestrian safety.

There will also be greater demands on schools, emergency services and police as well as increased strain on County water, sewer, power, gas and connectivity.

This development is a bad idea that will affect Toano's and James City County's livability for decades to come. I urge you and the Commission to reject HH Hunt's zoning proposal and to not consider high density building permits for this area now and in the future.

Sincerely,

Robert Mandrioli
3432 Westham Lane
Toano, Virginia 23168

Date: August 30, 2023

From: Linda Rice, President of Friends of Forge Road and Toano
2394 Forge Road
Toano, VA 23168
lindarice678@cox.net

To: The Honorable Members of the Planning Commission

Re: Opposition to Rezoning Application Z-22-0004 and Special Use Permit Application SUP-22-0026

Friends of Forge Road and Toano (F.O.R.T.) is a non-profit group founded in 2004 by concerned citizens in Upper James City County. We work with neighborhood associations and various other groups to promote the preservation of rural areas, enhance awareness of our region's historical significance, and support agri-tourism. We currently have approximately 125 paid members. Some of our members have served on the James City County Planning Commission, the Chesapeake Bay Board, the Wetlands Board, the James City County Historical Commission and the Purchase of Development Rights Committee.

F.O.R.T strongly objects to this rezoning application, which is in direct opposition to the general welfare and quality of life of the citizens of the upper James City County.

In the ten months since this rezoning application was filed, it has been reviewed by:

Planning Staff
JCSA
Senior Landscaping Planner
Fire Department
Police Department
VDOT
Stormwater and Resource Protection Division

The review process generated over 80 documents on PermitLink on the County website. This lengthy process has consumed countless hours of staff time, at an untold cost to the taxpayers of James City County.

The developer purported to obtain input from F.O.R.T. on this project. In two meetings with the developer, we strongly communicated our community concerns with this project, most particularly its density and the attendant consequences of that density. What was the developer's response to these concerns?

The proposed development WAS ACTUALLY EXPANDED
from 549 homes to 582 homes on 155 acres!

This project will increase daily traffic on already-congested Richmond Road by at least 582 cars. Per the County's formula, (which we believe is unrealistically conservative) the development will add at least 82 students to Stonehouse Elementary School which was already **over capacity** by 55 students for the 2022-

2023 school year. And, it will further strain the availability of ground water. Many residents of the upper county are on wells and rely on ground water for personal and farm use.

This land is currently zoned A-1, allowing 1 residence for every 20 acres. That is not dense enough for this developer. The developer was advised to apply for rezoning to R-2, which would permit one single-family home per acre. This is still not dense enough for this developer. So, overlays have been added through a complicated "point system" to allow for 3.74 homes per buildable acre. In fact, per the JCC Police Department, the streets of this development are so narrow that parking will have to be restricted to one side of each street to allow emergency vehicles to pass.

In a meeting with F.O.R.T. on July 12, 2023, the developer was asked why they were cramming so many homes into this project. The developer's unpersuasive response was simply that we like density.

In this rezoning effort the developer has proposed a few modest accommodations that amount to mere window dressing, and do not address citizen concerns. For example, the developer has offered:

--"Up to 3" acres of land to the County for expansion of Stonehouse Elementary School. Unfortunately, the County has determined that this land is unusable. The developer disagrees.

--A couple of "pocket parks" which are actually long, narrow alleys between long rows of homes, and are not in any way "parks."

--Five acres of this entire tract be set aside as a mini-farm that the Homeowners Association will have to maintain. A large home is planned by the developer on this mini-farm, and will likely be sold for yet more revenue.

The developer will argue that this land is located in the PSA and thus is ideal for housing. However, the US Department of Agriculture disagrees. The USDA has conducted comprehensive soil testing throughout the country, and designated this property as "prime farmland." As stated on USDA.gov:

"*Prime farmland* is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland."

Clearly, rezoning land to allow 582 houses on 155 acres is neither responsible nor wise use of our prime farmland.

Yes, this is private property. However, private property rights must be exercised within the parameters of existing zoning laws. Such laws are not mere suggestions to be discarded in response to one family's desires. They exist to protect the citizens of James City County from developments like this one. The developer will leave, but all JCC citizens will have to pay for the long-term impacts.

We respectfully submit that this rezoning application must be rejected, or we will continue down the slippery slope of uncontrolled growth, losing valuable farmland and our community's distinct character.

PLANNING DIRECTOR'S REPORT
September 2023

This report summarizes the status of selected Department of Community Development activities during the past month.

- **Planning**
  - **Monthly Case Report:** For a list of all cases received in the last month, please see the attached document.
  - **Board Action Results:**
    - The Board of Supervisors did not meet in August.

Neighborhood Development and Housing completed three replacement homes for elderly, low-income residents using Community Development Block Grant funds provided by the Virginia Department of Housing and Community Development. All the homes are energy-efficient and accessible, so owners can safely age in place.







The Clara Byrd Baker Safe Routes to School Project is substantially complete. The sidewalk now provides safe access to residents in the surrounding neighborhoods walking and biking to the Clara Byrd Baker Elementary School. The project includes pedestrian crosswalks across John Tyler Highway and across Ironbound Road each with pedestrian signals to help residents cross.







Spreadsheet Listing New Cases Received for September						
Plan Type	**Plan Number**	**Case Title**	**Address**	**Plan District**	**Plan Description**	**Plan Assigned To**
Agricultural & Forestal District	AFD-23-0001	1105 Stewarts Road Agriculture and Forest District Addition	1105 STEWARTS RD Lanexa, VA 23089	Powhatan	Adding ± 46.95 acres into the Barnes Swamp Agriculture and Forest District	Ben Loppacker
Appeal / Variance	BZA-23-0003	Requesting variance to Zoning Ordinance Sec. 24-238	8224 BRIDLINGTON WAY Williamsburg, VA 23188	Stonehouse	Requesting reduction in rear yard setback line for the construction of code compliant 160sq.ft. deck and stairs.	John Rogerson
Conceptual Plan	C-23-0040	5715 Richmond Road EV Charger	5715 RICHMOND RD Williamsburg, VA 23188	Powhatan	5715 Richmond Road EV Charger	Jose Ribeiro
	C-23-0047	Chickahominy Riverfront Park/Williamsburg Boat Club Rowing center improvements.	1350 JOHN TYLER HWY Williamsburg, VA 23188	Berkeley	Stormwater/permitting considerations within the Resource Protection Area limits for additional Americans with Disability Act access and dock/ramp improvements.	Ben Loppacker
	C-23-0048	9200 Barhamsville Road Auto Shop	9200 BARHAMSVILLE RD Toano, VA 23168	Stonehouse	9200 Barhamsville Road Auto Shop	Tess Lynch
	C-23-0049	Clark Lane Duplexes and Proposed R-3 Rezoning	179 CLARK LN Williamsburg, VA 23188	Powhatan	Proposed 2 phase subdivision. Phase 1 includes a 4 lot subdivision with a proposal for 4 duplex structures. Phase 2 would be a rezoning of the remaining parcels to R-3 for a 41 lot (40 single family and 1 multi-family) subdivision.	John Risinger
	C-23-0050	4515 News Road Dentist Office	4515 NEWS RD Williamsburg, VA 23188	Jamestown	Proposed dental clinic/office of an approximate 7,500 sf footprint size.	Terry Costello
	C-23-0051	3494 Brick Bat Road Outdoor Storage	3494 BRICK BAT RD Williamsburg, VA 23188	Berkeley	Outdoor storage lot for boats, trailers, rv's, campers.	Not Assigned
	C-23-0052	1239 Oak Drive Demolish Home	1239 OAK DR Williamsburg, VA 23185	Roberts	Proposed removal of a preexisting home to build a brand new unit on parcel.	Not Assigned
	C-23-0053	250 Sandy Bay Road Residential Rezoning	250 SANDY BAY RD Williamsburg, VA 23185	Roberts	Looking for comments for the rezoning application process and submission requirements needed for review.	Terry Costello
	C-23-0054	3468 Chickahominy Road Short Term Rental	3468 CHICKAHOMINY RD Toano, VA 23168	Stonehouse	Proposed short term rental property and home restoration by owners.	Terry Costello
	C-23-0055	360 Racefield Drive Solar Farm	360 RACEFIELD DR Toano, VA 23168	Powhatan	Construction of small-scale solar generation facility in accordance with SUP-21-022.	John Risinger
	C-23-0056	8849 Hicks Island Road Conceptual Subdivision	8849 HICKS ISLAND RD Lanexa, VA 23089	Powhatan	Requesting a review of a proposed subdivision that will consist of splitting the aforementioned parcel into two buildable ± 5.0 acre lots.	Ben Loppacker

Spreadsheet Listing New Cases Received for September						
Plan Type	**Plan Number**	**Case Title**	**Address**	**Plan District**	**Plan Description**	**Plan Assigned To**
Subdivision Plat	S-23-0032	Colonial Heritage 5-2B Subdivision Plat	499 JOLLY POND RD Williamsburg, VA 23188	Stonehouse	Colonial Heritage 5-2B Subdivision Plat	Jose Ribeiro
	S-23-0033	2756 & 3008 Jolly Pond Road Boundary Line Adjustment	3008 JOLLY POND RD Williamsburg, VA 23188	Powhatan	2756 & 3008 Jolly Pond Road Boundary Line Adjustment	Terry Costello
	S-23-0034	8869 Hicks Island Road Courthouse Plat	8869 HICKS ISLAND RD 0920100025 Lanexa, VA 23089	Powhatan	8869 Hicks Island Road Courthouse Plat	Josh Crump
Site Plan	SP-23-0048	Hampton Roads Sanitation District College Creek Valve Replacement 199 Humelsine Parkway	8869 HUMELSINE PKWY Williamsburg, VA 23185	Roberts	Hampton Roads Sanitation District Main Line Valve at College Creek. Removal and replacement of (2) Existing 30" HRSD Valves	Ben Loppacker
	SP-23-0054	7114 Merrimac Trail 7-Eleven Parking Bollards	7114 MERRIMAC TRL Williamsburg, VA 23185	Roberts	7114 Merrimac Trail 7-Eleven Parking Bollards	Jose Ribeiro
	SP-23-0063	6648 Richmond Road- Express Laundry Site Plan Amendment Fence	6648 RICHMOND RD Williamsburg, VA 23188	Stonehouse	Installation of 4 foot tall wrought iron fence around the perimeter of the outside customer seating area.	Paxton Condon
	SP-23-0064	1725 Endeavor Drive- Peerless Carpet Care Office/Warehouse Site Plan	1725 ENDEAVOR DR Williamsburg, VA 23185	Roberts	1725 Endeavor Drive- Peerless Carpet Care Office/Warehouse Site Plan	John Risinger
	SP-23-0065	240 McLaws Circle Bank of America Lighting Site Plan Amendment	240 MCLAWS CIR Williamsburg, VA 23185	Roberts	Amendment to replace 3 existing fixtures add 1 new fixture, add 3 new poles with 4 new fixtures.	Paxton Condon
	SP-23-0066	227 Industrial Blvd Parcel 11 Site Plan Amendment	227 INDUSTRIAL BLVD Toano, VA 23168	Stonehouse	Site Plan Amendment to JCC SP-18-0066 Amended Site Plan of Parcels 3,4,5, & 11 Jacobs Industrial Center.	Terry Costello
	SP-23-0067	4541 John Tyler Hwy. PNC Bank Lighting Plan Site Plan Amendment	4541 JOHN TYLER HWY Williamsburg, VA 23185	Berkeley	4541 John Tyler Highway PNC Bank Lighting Plan Site Plan Amendment.	Thomas Wysong
	SP-23-0068	Installation of panel stands to feed Tesla chargers	434 MCLAWS CIR Williamsburg, VA 23185	Roberts	Installation of 400amp meter base with (2) 200amp panels on permanent stand to feed 4 Tesla chargers.	Not Assigned
	SP-23-0069	434 McLaws Circle Electric Vehicle Charging Stations Site Plan Amendment	428 MCLAWS CIR Williamsburg, VA 23185	Roberts	434 McLaws Circle Electric Vehicle Charging Stations Site Plan Amendment.	Ben Loppacker
	SP-23-0070	Lafayette High School Annex Courtyard Site Plan Amendment	4460 LONGHILL RD Williamsburg, VA 23188	Powhatan	Site Plan amendment for courtyard and drainage improvements associated with Annex Building renovation.	Tess Lynch
	SP-23-0071	239 Industrial Blvd. Jacobs Industrial Center, Parcel 10	239 INDUSTRIAL BLVD Toano, VA 23168	Stonehouse	Construction of commercial buildings, paved parking areas, paved access drive, stone storage yards, and related stormwater management.	Tess Lynch
Special Use Permit	SUP-23-0021	Barn to use as a Special Event Location 4-5 times a year. All proceeds benefit a Non-profit 501c3 - Rico Foundation, Inc.	145 OLD STAGE RD Toano, VA 23168	Powhatan	Barn to use as a Special Event Location 4-5 times a year. All proceeds benefit a Non-profit 501c3 - Rico Foundation, Inc.	Josh Crump
	SUP-23-0022	Westport James City Service Authority Water System Tie-In	4891 CENTERVILLE RD Williamsburg, VA 23188	Berkeley	Westport James City Service Authority Water System Tie-In	Thomas Wysong
	SUP-23-0023	Liberty Ridge James City Service Authority Water System Tie-In	5207 COLONNADE PKWY Williamsburg, VA 23188	Powhatan	Liberty Ridge James Cith Service Authority Water System Tie-In	Thomas Wysong

Spreadsheet Listing New Cases Received for September						
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Zoning Verification Letter	ZVL-23-0019	8952 Richmond Road Zoning Verification Letter	8952 RICHMOND RD Toano, VA 23168	Powhatan	8952 Richmond Road Zoning Verificaton Letter	Taylor Orne
	ZVL-23-0020	494 McLaws Circle Zoning Verification Letter	494 MCLAWS CIR Williamsburg, VA 23185	Roberts	Our client is purchasing this property and the lender is asking for a zoning letter.	John Rogerson
	ZVL-23-0021	496 McLaws Circle Zoning Verification Letter	496 MCLAWS CIR Williamsburg, VA 23185	Roberts	Our client is purchasing property and the lender is asking for a zoning letter. Thank you.	Taylor Orne