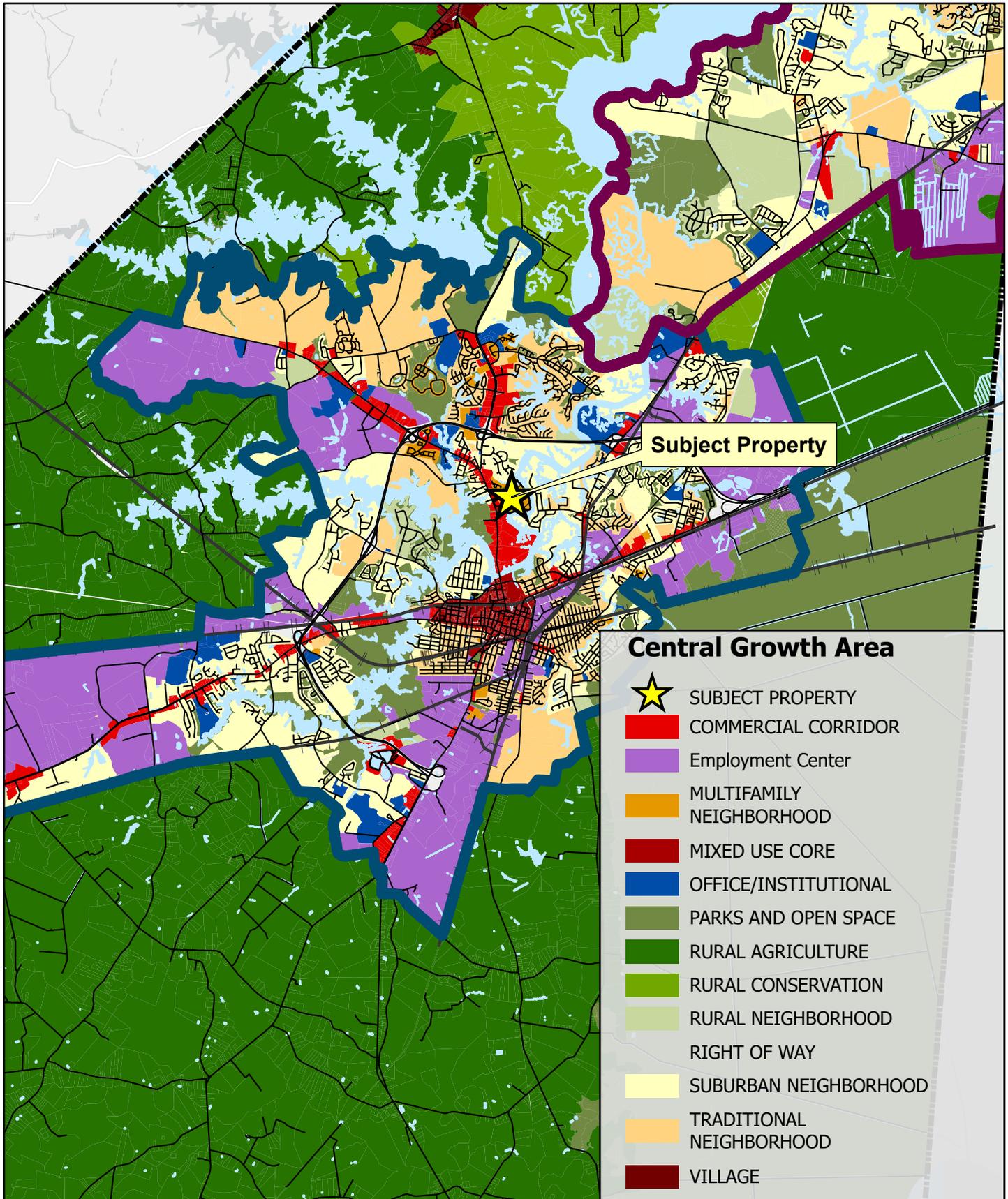


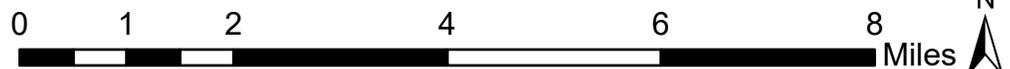


GENERAL LOCATION MAP

RZN2025-00004



Author: KOSSAI
Date: 05-05- 2025





ZONING / LAND USE MAP

RZN2025-00004



Author: KOSSAI
Date: 05-05- 2025

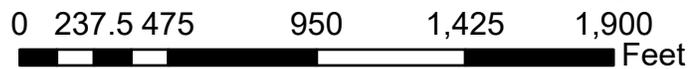


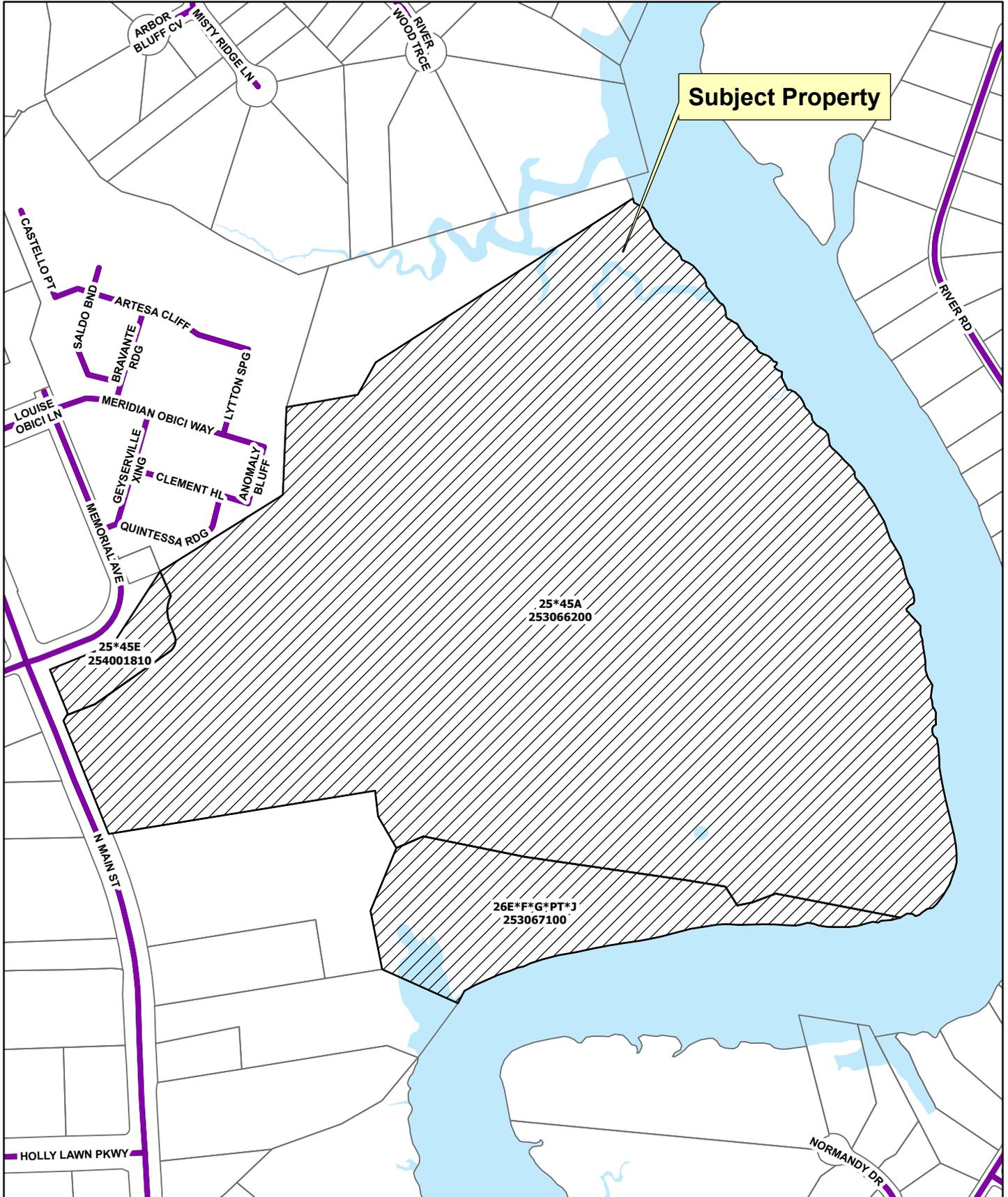
Image: Suffolk Pictometry 2024





PROPERTY MAP RZN2025-00004

EXHIBIT B



Author: KOSSAI
Date: 05-05-2025





City of Suffolk Department of Planning
APPLICATION FOR REZONING/CONDITIONAL REZONING

OFFICE INFORMATION: To be completed by staff			
Application Number:		Date Paid:	
Taxes Paid:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Application Fee Paid:	
Project Name:	Project Address or Tax Map:		
Date of Decision:		Decision:	<input type="checkbox"/> Approved <input type="checkbox"/> Denied

PART 1- GENERAL INFORMATION: To be completed by applicant

Important Notice: Only complete hard copy applications with original signatures are accepted. The estimated review time for a rezoning application is a minimum of ninety (90) days. It is highly encouraged that applicants attend a pre-submittal meeting, which is coordinated by the Department of Economic Development (514-4040), prior to submitting an application.

Select Application Type:

- Rezoning** – Base fee of \$840 + \$40 per acre or portion thereof after one acre
- Conditional Rezoning** – Base fee of \$1,040 + \$40 per acre or portion thereof after one acre
Rezoning/ Conditional Rezoning Resubmittals & Deferrals- \$500 after 2nd submittal

Significant Applications: Please acknowledge that the following projects require **an additional 30 days** of advertisement on the City’s website and a briefing before the Planning Commission and City Council the month prior to the scheduled public hearing and consideration by Planning Commission. Applications involving: a) 100 or more dwelling units, b) 100,000 SF of commercial uses, c) 100 acres or more of property, or as determined at the discretion of the Director of Planning & Community Development.

Applicant initials: _____

Property Address: _____ Tax Map Number: _____

Account Number: _____ Existing Zoning: _____

Total Site Acreage: _____ Area to be Rezoned: _____

Proposed Zoning District(s): _____

Proposed Residential Density (if applicable): _____

Summary of Proposed Uses/Improvements to the Property: _____

Rezoning Application Submittal & Review Procedure

Anticipated review time is a minimum of 3 months



- All materials labeled & submitted to Planning Department share file. Labeled with: Project name, type of document (application, narrative, exhibit, Fiscal Impact Analysis, etc.), 1st Submittal
- If seeking a waiver for the required reports, a waiver request must be submitted to the Planning Department in advance of the application in order to ensure that any reports may be waived. When submitting the full application, all reports must be provided or a waiver signed by the Director outlining the reports that have been waived. It recommended that this be 2 weeks prior to submitting the full application.
- Proof of signatory authority if signing on behalf of owner and/or entity.
- Taxes paid
- Hard copy “ink signed” application submitted to the Planning Department
- Invoice paid & receipt provided
- **BE ADVISED: There is a \$500 fee after the 2nd deferral and a \$90 fee for signs which are not returned to the Planning Department and signed in.**



- Please be advised that the minimum review (or completion) time for this application is 90 days.
- The Planner assigned will reach out to issue comments or to indicate it is ready to move forward to public hearing. Please be advised that each resubmittal will add an additional 30 days of review to the minimum review time.



- If plans need to be resubmitted:**
- All materials should be uploaded to the Planning Sharefile and labeled as follows:
 - Case number (RZN2023-00022), project name, type of document (application, title report, plan, etc.), and submittal number (2nd, 3rd, etc.)
 - Please reach out to the Planning Department at 757-514-4060 to confirm your documents have been received.
- Repeat this step until all Land Use comments have been addressed and the Planner has notified you the application is ready for Planning Commission.



- If this application is considered a significant item there will be a 30-day delay in the application moving forward to Planning Commission:**
- Once the application is ready for Planning Commission the Planner will send you email letting you know when to pick up signs and post them on the property. This signs will be required to remain posted to the property until all public hearings have been completed.
 - On the Friday before the Planning Commission meeting, a copy of Staff’s report will be provided to you. The applicant or authorized representative should be available to attend the Planning Commission meeting to speak in favor of your application or address any questions from the Commissioners. This is not required; however it is strongly recommended.
 - Once the Planning Commission makes their recommendation the application will move forward to City Council for a final decision.



- On the Friday before the City Council meeting, a copy of Staff’s report will be provided to you. The applicant or authorized representative should be available to attend the City Council meeting to speak in favor of your application or address any questions from Council. This is not required; however, it is strongly recommended.
- Once City Council has made their decision the planner will notify you when your documents are ready for pick up to be recorded at the Courthouse.

Applicants Signature:  Date: 4-30-25

City of Suffolk Department of Planning
APPLICATION FOR REZONING/CONDITIONAL REZONING



OFFICE INFORMATION: To be completed by staff			
Application Number:		Date Paid:	
Taxes Paid:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Application Fee Paid:	
Project Name:	Project Address or Tax Map:		
Date of Decision:		Decision:	<input type="checkbox"/> Approved <input type="checkbox"/> Denied

PART I- GENERAL INFORMATION: To be completed by applicant

Important Notice: Only complete hard copy applications with original signatures are accepted. The estimated review time for a rezoning application is a minimum of ninety (90) days. It is highly encouraged that applicants attend a pre-submittal meeting, which is coordinated by the Department of Economic Development (514-4040), prior to submitting an application.

- Select Application Type:
- Rezoning** – Base fee of \$840 + \$40 per acre or portion thereof after one acre
 - Conditional Rezoning** – Base fee of \$1,040 + \$40 per acre or portion thereof after one acre
 - Rezoning/ Conditional Rezoning Resubmittals & Deferrals-** \$500 after 2nd submittal

Significant Applications: Please acknowledge that the following projects require an additional 30 days of advertisement on the City’s website and a briefing before the Planning Commission and City Council the month prior to the scheduled public hearing and consideration by Planning Commission. Applications involving: a) 100 or more dwelling units, b) 100,000 SF of commercial uses, c) 100 acres or more of property, or as determined at the discretion of the Director of Planning & Community Development.

Applicant initials: AE

Property Address: 1700 & 1802 N. Main St. Tax Map Number: 25-45A, 26E*F*G*PT*J, 25*45E
 Account Number: 253066200, 253067100, 254001810 Existing Zoning: MUD, B-2 and SCOD
 Total Site Acreage: +/-89 AC Area to be Rezoned: +/-73 AC
 Proposed Zoning District(s): RU-18
 Proposed Residential Density (if applicable): +/-12.8 units per acre
 Summary of Proposed Uses/Improvements to the Property: Active adult condos, rear and front loaded towns, public park along Main Street, marina, restaurant, clubhouse, stormwater management and open space areas.

PART 2- REQUIRED INFORMATION FOR APPLICATION: To be completed by applicant

The applicant must INITIAL next to each item to acknowledge that the following materials were submitted. All materials are accepted **digitally to the Planning Division's sharefile link** with the exception of the original signed application form. If you would like to request a waiver from certain submittal requirements, the attached Waiver Request Form must be completed and signed. If you are submitting voluntary proffers as part of a Conditional Rezoning Request, the attached Voluntary Proffer Statement must be completed and signed.

1. *Narrative description of the location and size of the property* which shall include the address, tax map number, account number, legal description, size in acres and square feet, and overall location with respect to other land uses and major roadways. AE

2. *Narrative description of the proposed use(s)/improvements.* AE

3. Statement of the *reasons for seeking such amendment* and *why the current zoning is incorrect.* AE

4. *Rezoning Exhibit* which indicates the boundaries of the property to be rezoned and the existing zoning designation as well as the proposed zoning designation. Such exhibit shall be accurate and suitable to identify the property in relation to street intersections or other physical features. AE

5. *Conceptual layout (optional, but strongly recommended)* showing the proposed improvements, lots, open space, etc., and any pertinent information for review. AE

6. *Public Facilities Report* which complies with the requirements of Section 31-601, Adequate Public Facilities, of the Unified Development Ordinance. Refer to Appendix B, § B-19. AE

7. *Traffic Impact Study.* Refer to Appendix B, § B-21. AE

8. *Fiscal Impact Analysis.* Refer to Appendix B, § B-14. AE

9. *Minor or Major Water Quality Impact Assessment* if located in the Chesapeake Bay Preservation Area. Refer to Appendix B, § B-13. AE

10. A *Phase I Environmental Site Assessment* shall be required for any rezoning application that involves land disturbance for residential, assembly, day care, group home, recreation, school, library or similar use where there may be exposure to contaminants. Refer to Section 31-616. This would then indicate whether a Phase II ESA should be completed. AE

PART 2 CONTINUED - REQUIRED INFORMATION FOR APPLICATION

11. Any applicant requesting a conditional rezoning shall submit an electronically *signed proffer statement* for consideration. The original signed proffer statement must be provided prior to the public hearing.
12. Such supplemental material as may be necessary.

AE

AE

City of Suffolk
Department of Planning and Community Development
DISCLOSURE STATEMENT FORM



<i>OFFICE INFORMATION: To be completed by staff</i>			
Application Number:		Project Name:	
Project Address:		Date Submitted:	

The disclosures contained in this Form are necessary to inform public officials who may vote on the application as to whether they have a conflict of interest under Virginia law. The completion and submission of this Form is required for all applications that pertain to City real estate matters or to the development and/or use of property in the City of Suffolk requiring action by the City Council or a City board, commission or other body.

<i>PART 3 - APPLICANT DISCLOSURE: To be completed by Applicant</i>	
<u>Important Notice: Only complete, hard-copy application forms with original signatures or other approved written consent from all property owners</u> are accepted.	
APPLICANT INFORMATION	
Applicant Name: <u>NVR Inc.</u>	
Property Address(es): <u>1700 & 1802 N. Main St.</u>	
Tax Map Number(s): <u>25-45A, 26E*F*G*PT*J, 25*45E</u>	
Account Number(s): <u>253066200, 253067100, 254001810</u>	
Is Applicant the owner of the subject property? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
Does the Applicant have a Representative? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
If yes, name of Representative: <u>No</u>	
Is Applicant a corporation, partnership, firm, business, trust, or unincorporated business? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
If yes, list the names of all officers, directors, members, trustees, etc. below AND businesses that have a parent-subsiary or affiliated business entity relationship (see definitions below) with the applicant (attach list if necessary): <u>Ryan Homes</u>	

KNOWN INTEREST BY PUBLIC OFFICIAL OR EMPLOYEE

Does an official or employee of the City of Suffolk have an interest in the subject property or any proposed development contingent on the subject public action? YES NO

If yes, name of the official or employee, and description of the nature of their interest:

None

APPLICANT SERVICES DISCLOSURE

The Applicant must certify whether the following services are being provided in connection to the applicant, the subject of the application, and/or any business operating, or to be operated on the property. The name of the entity and/or individual providing such services must be identified (attach list if necessary).

SERVICE	YES NO (select one)	SERVICE PROVIDER (Name of entity and/or individual)
Financing (mortgage, deeds of trust, cross-collateralization, etc.)	<input type="checkbox"/> <input checked="" type="checkbox"/>	None
Real Estate Broker/Agent/Realtor	<input type="checkbox"/> <input checked="" type="checkbox"/>	None
Accounting/Tax Preparation	<input type="checkbox"/> <input checked="" type="checkbox"/>	None
Architect/Designer/Landscape Architect/Land Planner	<input checked="" type="checkbox"/> <input type="checkbox"/>	Land Planning Solutions
Construction Contractor	<input type="checkbox"/> <input checked="" type="checkbox"/>	None
Engineer/Surveyor/Agent	<input type="checkbox"/> <input checked="" type="checkbox"/>	None
Legal Services	<input type="checkbox"/> <input checked="" type="checkbox"/>	None

PART 4 – PROPERTY OWNER DISCLOSURE

PROPERTY OWNER DISCLOSURE

Property Owner Name: Commonwealth of Virginia, Dept. of Transportation
 (as listed on application)

Is the Owner a corporation, partnership, firm, business, trust or an unincorporated business? YES NO

If yes, the names of all officers, directors, members, or trustees below AND businesses that have a parent-subsidary or affiliated business entity relationship (see definitions below) with the Applicant (attach list if necessary): None

Does the subject property have a proposed or pending purchaser? YES NO

If yes, name of the proposed or pending purchaser: NVR, Inc.

KNOWN INTEREST BY PUBLIC OFFICIAL OR EMPLOYEE

Does an official or employee of the City of Suffolk have an interest in the subject property or any proposed development contingent on the subject public action? YES NO

If yes, name of the official or employee, and description of the nature of their interest:

None

PROPERTY OWNER SERVICES DISCLOSURE

The Owner must certify whether the following services are being provided in connection to the Applicant, the subject of the application, and/or any business operating, or to be operated on the property. The name of the entity and/or individual providing such services must be identified (attach list if necessary).

SERVICE	YES	NO	SERVICE PROVIDER
	(select one)		(Name of entity and/or individual)
Financing (mortgage, deeds of trust, cross-collateralization, etc.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>None</u>
Real Estate Broker/Agent/Realtor	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>None</u>
Accounting/Tax Preparation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>None</u>
Architect/Designer/Landscape Architect/Land Planner	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>None</u>
Construction Contractor	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>None</u>
Engineer/Surveyor/Agent	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>None</u>
Legal Services	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>None</u>

APPLICANT CERTIFICATION

- I certify that all of the information contained in this Disclosure Statement Form is complete, true, and accurate.
- I understand that I am responsible for updating this Form if any information changes at any point even if a public hearing has not yet been scheduled.
- I understand that, upon receipt of notification that the application has been scheduled for public hearing, I am responsible for updating the information provided herein two weeks prior to the meeting of Planning Commission, City Council, or any public body or committee in connection with this application.

Applicant Name (Print)	Applicant Signature	Date
NVR Inc.		4-30-25

PROPERTY OWNER CERTIFICATION

- I certify that all of the information contained in this Disclosure Statement Form is complete, true, and accurate.
- I understand that I am responsible for updating this Form if any information changes at any point even if a public hearing has not yet been scheduled.
- I understand that, upon receipt of notification that the application has been scheduled for public hearing, I am responsible for updating the information provided herein two weeks prior to the meeting of Planning Commission, City Council, or any public body or committee in connection with this application.

Property Owner Name (Print)	Property Owner Signature	Date
Commonwealth of Va	_____	_____

“Parent-subsidary relationship” means “a relationship that exists when one corporation directly or indirectly owns shares possessing more than 50 percent of the voting power of another corporation.” See State and Local Government Conflict of Interests Act, VA. Code § 2.2-3101.

“Affiliated business entity relationship” means “a relationship, other than parent-subsidary relationship, that exists when (i) one business entity has a controlling ownership interest in the other business entity, (ii) a controlling owner in one entity is also a controlling owner in the other entity, or (iii) there is shared management or control between the business entities. Factors that should be considered in determining the existence of an affiliated business entity relationship include that the same person or substantially the same person own or manage the two entities; there are common or commingled funds or assets; the business entities share the use of the same offices or employees or otherwise share activities, resources or personnel on a regular basis; or there is otherwise a close working relationship between the entities.” See State and Local Government Conflict of Interests Act, Va. Code § 2.2-3101.

APPLICANT CERTIFICATION

- I certify that all of the information contained in this Disclosure Statement Form is complete, true, and accurate.
- I understand that I am responsible for updating this Form if any information changes at any point even if a public hearing has not yet been scheduled.
- I understand that, upon receipt of notification that the application has been scheduled for public hearing, I am responsible for updating the information provided herein two weeks prior to the meeting of Planning Commission, City Council, or any public body or committee in connection with this application.

Applicant Name (Print)	Applicant Signature	Date
<u>Adam Edbauer</u>	<u></u>	<u></u>

PROPERTY OWNER CERTIFICATION

- I certify that all of the information contained in this Disclosure Statement Form is complete, true, and accurate.
- I understand that I am responsible for updating this Form if any information changes at any point even if a public hearing has not yet been scheduled.
- I understand that, upon receipt of notification that the application has been scheduled for public hearing, I am responsible for updating the information provided herein two weeks prior to the meeting of Planning Commission, City Council, or any public body or committee in connection with this application.

Property Owner Name (Print)	Property Owner Signature	Date
<u>William Ferguson</u>	<u></u>	<u>4/30/25</u>

"Parent-subsidiary relationship" means "a relationship that exists when one corporation directly or indirectly owns shares possessing more than 50 percent of the voting power of another corporation." See State and Local Government Conflict of Interests Act, VA. Code § 2.2-3101.

"Affiliated business entity relationship" means "a relationship, other than parent-subsidiary relationship, that exists when (i) one business entity has a controlling ownership interest in the other business entity, (ii) a controlling owner in one entity is also a controlling owner in the other entity, or (iii) there is shared management or control between the business entities. Factors that should be considered in determining the existence of an affiliated business entity relationship include that the same person or substantially the same person own or manage the two entities; there are common or commingled funds or assets; the business entities share the use of the same offices or employees or otherwise share activities, resources or personnel on a regular basis; or there is otherwise a close working relationship between the entities." See State and Local Government Conflict of Interests Act, Va. Code § 2.2-3101.

PART 5- CONTACT INFORMATION: To be completed by applicant, owners, and other contacts

This application must be signed by the property owner(s) or must have attached to it written evidence of the owner's consent, which may be in the form of a binding contract of sale, a letter signed by the owner(s), articles of incorporation, or operating agreement authorizing the applicant to act as his or her agent. Signing this application shall constitute the granting of authority of the City to enter onto the property for the purpose of conducting site analyses.

Applicant Information/Person or Company to be Invoiced:

Name: NVR Inc. Company: NVR Inc.
Address: 4525 South Blvd, Suite 100 City, State, Zip: Chesapeake, VA 23452
Email: aedbauer@ryanhomes.com Phone Number: 757-389-6208
Applicant Signature:  Date: 4-30-25

Property Owner(s) Information (Complete if different from applicant):

Name: Commonwealth of VA, Dept. of Transportation Company: Commonwealth of VA, Dept. of Transportation
Address: 1700 N. Main St. City, State, Zip: Suffolk, VA 23434
Email: william.ferguson@vdot.virginia.gov Phone Number: 804-225-3432
Owner Signature 1: _____ Date: _____
Name: _____ Company: _____
Address: _____ City, State, Zip: _____
Email: _____ Phone Number: _____
Owner Signature 2: _____ Date: _____

Other Contacts (Such as engineers, surveyors, architects, agents, attorneys, owners, etc.):

Name: Melissa Venable Company: Land Planning Solutions
Address: 5857 Harbour View Blvd, Suite 202 City, State, Zip: Suffolk, VA 23435
Email: mvenable@landplans.net Phone Number: 757-935-9014
Specify type of contact/relationship: Principal Land Planner
Signature:  Date: April 30, 2025
Name: _____ Company: _____
Address: _____ City, State, Zip: _____
Email: _____ Phone Number: _____
Specify type of contact/relationship: _____
Signature: _____ Date: _____

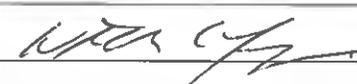
PART 5- CONTACT INFORMATION: To be completed by applicant, owners, and other contacts

This application must be signed by the property owner(s) or must have attached to it written evidence of the owner's consent, which may be in the form of a binding contract of sale, a letter signed by the owner(s), articles of incorporation, or operating agreement authorizing the applicant to act as his or her agent. Signing this application shall constitute the granting of authority of the City to enter onto the property for the purpose of conducting site analyses.

Applicant Information/Person or Company to be Invoiced:

Name: Adam Edbauer, Market Manager Company: Ryan Homes
Address: 4525 South Blvd, Suite 100 City, State, Zip: Chesapeake, VA 23452
Email: aedbauer@ryanhomes.com Phone Number: 757-389-6208
Applicant Signature: _____ Date: _____

Property Owner(s) Information (Complete if different from applicant):

Name: William C. Ferguson Company: Commonwealth of VA, Dept. of Transportation
Address: 1700 N. Main St. City, State, Zip: Suffolk, VA 23434
Email: william.ferguson@vdot.virginia.gov Phone Number: 804-225-3432
Owner Signature 1:  Date: 4/30/25
Name: _____ Company: _____
Address: _____ City, State, Zip: _____
Email: _____ Phone Number: _____
Owner Signature 2: _____ Date: _____

Other Contacts (Such as engineers, surveyors, architects, agents, attorneys, owners, etc.):

Name: Melissa Venable Company: Land Planning Solutions
Address: 5857 Harbour View Blvd, Suite 202 City, State, Zip: Suffolk, VA 23435
Email: mvenable@landplans.net Phone Number: 757-935-9014
Specify type of contact/relationship: Principal Land Planner
Signature: _____ Date: _____
Name: _____ Company: _____
Address: _____ City, State, Zip: _____
Email: _____ Phone Number: _____
Specify type of contact/relationship: _____
Signature: _____ Date: _____

WAIVER REQUEST FORM

This form shall be submitted to the Director of Planning and Community Development and must be approved prior to the application moving forward to Land Use.

Project Name & Address: VDOT Property

In accordance with Appendix B, Section B-4 of the Unified Development Ordinance, the following reports shall be submitted for a Rezoning Application. If you would like to request a waiver from one or more of the following requirements please check the appropriate boxes, provide a statement as to why the requirement(s) should be waived, and sign below.

- Public Facilities Report, Appendix B, § B-19- Questions contact Public Utilities at 757-514-7000 option #3.
- Traffic Impact Study, Appendix B, § B-21- Questions contact Public Works Traffic at 757-514-7649.
- Fiscal Impact Analysis, Appendix B, § B-14- Questions contact Planning at 757-514-4060.
- Major Water Quality Impact Assessment (if located within the Chesapeake Bay Preservation Overlay District), Appendix B, § B-13- Questions contact Public Works at 757-514-7678.
- Soils Report, Appendix B, § B-20- Questions contact Public Works at 757-514-7678.
- Environmental Site Assessment, Appendix B, § B-4 (e)(6)- Questions contact Planning at 757-514-4060.

Reasons as to why the above stated requirement(s) should be waived for this Rezoning Application:

Applicant Signature:  Date: 4-30-25

Applicant Name (please print): NVR Inc.

Applicant Phone Number: 757-389-6208

Applicant Email Address: aedbauer@ryanhomes.com

<i>To be completed by Planning Division Staff:</i>	
Application Number: _____	
Director signature for approval: _____	Date: _____

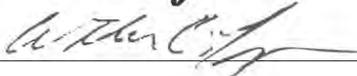
VOLUNTARY PROFFER STATEMENT

I hereby voluntarily proffer that the development of the property owned by me proposed for reclassification under this application shall be in strict accordance with the conditions set forth below.

The following conditions (add additional sheets if necessary) are voluntarily proffered for the reclassification of property identified as Tax Map Number(s) 25-45A, 26E*F*G*PT*J, 25*45E,
Block Number _____, Account Number(s) 253066200, 253067100, 254001810.

1. A maximum of 497 total dwelling units may be constructed within the RU-18 zoned portion of the property. This shall include 168 age-restricted Active Adult units which are limited to residents ages 55 or older in accordance with HUD standards and 329 single-family attached townhome units.
2. The residential buildings shall be developed in substantial conformance with the architectural elevations included in the Pattern Book dated July 11, 2025, prepared by Land Planning Solutions.
3. The developer shall make the road improvements as outlined in the approved Traffic Impact Study, prepared by VHB dated August 13, 2025.
4. The applicant will convey the existing District Office building and the surrounding +/-2.3 acres of property within 30 days of subdivision plat approval. This conveyance will be in lieu of the schools impact to advance capacity for this proposed development, which are calculated to be \$4,708,322.87. The property's appraised value is \$6,270,000. The applicant and City of Suffolk will complete a development agreement for the land within the +/-2.3 acre area that surrounds the existing building.
5. The applicant and the Economic Development Authority will complete a maintenance agreement for the common open space for the 6.6 acres of B2 property adjacent to Main Street.

Applicant Signature:  Date: 8/14/25

Property Owner Signature:  Date: 8/14/25

Property Owner Signature: _____ Date: _____



5857 Harbour View Boulevard, Suite 202
Suffolk, Virginia 23435
O. 757.935.9014 F. 757.935.9015
www.landplanningsolutions.com

Riversbend - Rezoning Narrative Description

The applicant, NVR Inc., is seeking a rezoning of +/-72 acres of the former VDOT operations site located at 1700 North Main Street south of the Meridian Obici development and within 2 miles of downtown. The affected parcels include Tax Map Parcels 25*45A, 26E*F*G*PT*J, and 25*45E and total +/-89 acres. The first two parcels (along Main Street) are currently zoned B-2, General Commercial, along a Special Corridor Overlay District. The third parcel, Tax Map 25*45E, would remain zoned MUD, Mixed-Use Development, to allow for a +/-1.3-acre public park and serve as the secondary entry road to the Meridian Obici site and the proposed RU-18 residential neighborhood.

Creating a grand entry by re-aligning the existing Memorial Drive from Main Street to the existing MUD and the current VDOT property will emphasize connectivity and walkability and allow us to consolidate access points along Main Street. It will create an alternative road network parallel to Main Street by extending Memorial Avenue south helping to eliminate additional trips onto Main Street. A shared road network with sidewalks will promote walkability between the adjacent mixed-use development, retail sites and the proposed community.

The applicant proposes to rezone +/-72 acres of the +/-89 acres to the RU-18, Residential Urban zoning district, to develop a total of 497 dwelling units comprised of 168 active adult units, 4-story back-to-back townhomes, and 3-story front and rear loaded townhomes. The mix of residential products will provide housing for several different buyers in Suffolk, Virginia. The product mix allows for the much-needed active adult housing to allow Suffolk residents to age in place. The back-to-back townhome product fulfills the need for the “missing middle” housing. This concept highlights the need for diverse, affordable housing choices in sustainable, walkable neighborhoods. The development will also provide traditional townhomes and rear load townhomes. Some homes will back up to the preserved wetland area and Nansemond River while other homes will be arranged in a rowhouse style with an alley in the rear and fronts facing onto pedestrian friendly roadways or a passive green space.

A +/-6.6-acre site fronting North Main Street adjacent to the existing Ford dealership and the Economic Development Authority’s property will be reserved as B-2 zoning to allow for commercial uses consistent with the remainder of the corridor. The front commercial site is envisioned to include neighborhood services for the adjacent communities. The B-2 area will also include the renovated historic office building. We envision saving some of the large trees within a park like setting where a gathering space for the community could be created. We envision open play, food trucks and other programmed gatherings to take place in the large park area shown on the Conceptual Plan along Main Street.

A second +/-8.7-acre commercial site is reserved at the southeastern corner of the property along the Nansemond River to allow for a small public marina, water access, a restaurant or event space, and community clubhouse and pool.

The applicant has proffered that the existing historic 3-story district office building (+/-38,000 SF in size), formerly used by VDOT, will be dedicated to the City of Suffolk in lieu of school proffers. The calculated impact of school proffers is \$4,708,322.87 and the property's appraised value is \$6,270,000. Approximately 2.3 acres of land that includes the existing building and appropriate parking area shall be dedicated at the time of subdivision approval.

The Master Plan features an appropriate balance of non-residential and residential uses for the area, a walkable street grid, 2 public parks, several private parks, preserved wetlands, forested areas, and appropriate transitions in uses that are compatible to surrounding properties. Overall, this is an excellent opportunity to fill an existing void along North Main Street, extend the road network parallel to Main Street and create a mixed-use, infill neighborhood that promotes a pedestrian friendly network north of downtown.

This application is consistent with the 2045 Comprehensive Plan as the front of the property will remain part of the Commercial land use district and the majority of the rear of the site will be converted to the Multifamily land use district. The Comprehensive Plan supports retail, restaurants, personal services, office and multifamily uses at this location. The proposed density of roughly 13 units per acre falls within the middle of the Comprehensive Plan's recommended density of 8-16 dwelling units per acre. The Comprehensive Plan also encourages building heights of 2 or more stories, short walkable blocks, on-street and off-street parking, and pocket parks, which have all been incorporated into the Conceptual Master Plan.

Sincerely,

Melissa Venable
Land Planning Solutions

Riversbend Rezoning Exhibit

Suffolk, Virginia
April 22, 2025 - REV. July 9, 2025

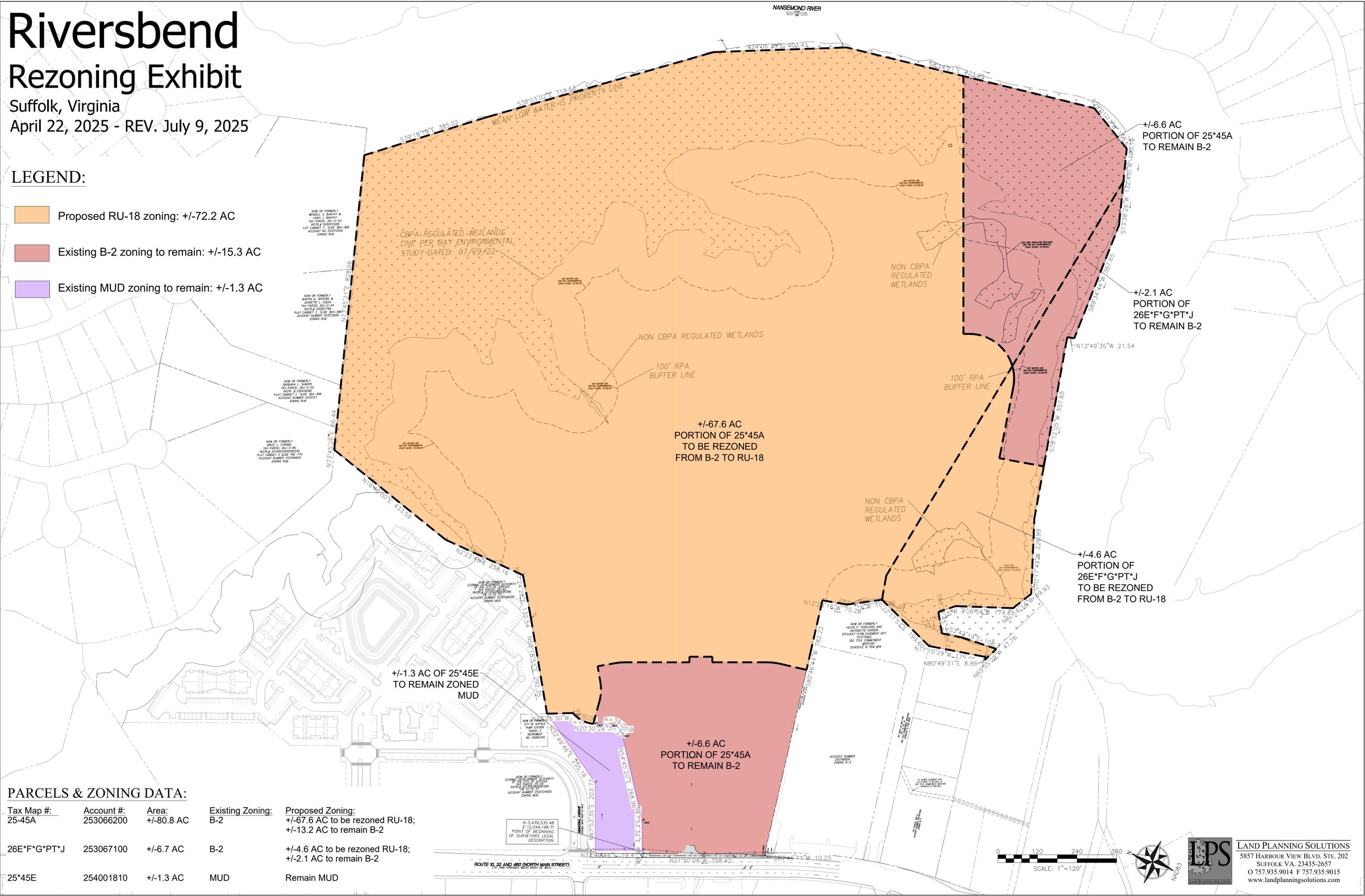
LEGEND:

- Proposed RU-18 zoning: +/-72.2 AC
- Existing B-2 zoning to remain: +/-15.3 AC
- Existing MUD zoning to remain: +/-1.3 AC

PARCELS & ZONING DATA:

Tax Map #:	Account #:	Area:	Existing Zoning:	Proposed Zoning:
25-45A	253066200	+/-80.8 AC	B-2	+/-67.6 AC to be rezoned RU-18; +/-13.2 AC to remain B-2
26E*F*G*PT*J	253067100	+/-6.7 AC	B-2	+/-4.6 AC to be rezoned RU-18; +/-2.1 AC to remain B-2
25*45E	254001810	+/-1.3 AC	MUD	Remain MUD

G:\Projects\NWR\RYH031 - VDOT\Cadd\Prelim\RYH031 - Preliminary VDOT - Rezoning Master7 - 9JUL25.dwg, Plotted By: Amy, Plotted: Jul 09, 2025 11:38am



+/-6.6 AC
PORTION OF 25*45A
TO REMAIN B-2

+/-2.1 AC
PORTION OF
26E*F*G*PT*J
TO REMAIN B-2

+/-4.6 AC
PORTION OF
26E*F*G*PT*J
TO BE REZONED
FROM B-2 TO RU-18

+/-67.6 AC
PORTION OF 25*45A
TO BE REZONED
FROM B-2 TO RU-18

+/-1.3 AC OF 25*45E
TO REMAIN ZONED
MUD

+/-6.6 AC
PORTION OF 25*45A
TO REMAIN B-2

LPS LAND PLANNING SOLUTIONS
5857 HARBOUR VIEW BLVD, STE. 202
SUFFOLK VA. 23435-2657
O 757.935.9014 F 757.935.9015
www.landplanningsolutions.com

Riversbend Conceptual Master Plan

Suffolk, Virginia
March 31, 2025 - REV. July 9, 2025

SITE DATA:

Tax Map #s: 25-45A, 26E*F*G*PT*J, 25*45E

Current Zoning:	B-2 (SCOD) & MUD
Proposed Zoning:	B-2 (SCOD), MUD and RU-18
Total Site Area:	+/-88.8 ac.
Area to Remain B-2:	+/-15.3 ac.
Area to Remain MUD:	+/-1.3 ac.
Proposed RU-18 Area:	+/-72.2 ac.
Critical Area:	+/-35.9 ac.
Net Site Area:	+/-36.3 ac.

TABULATION:

RU-18 Development:

4 Story Condo Active Adult (Mosaic):	168 units
Parking Provided:	296 space or 1.7 per unit
4 Story Back to back Towns (Romeo & Juliet):	200 units
3 Story Townhomes Front Load (20x42'):	75 units
3 Story Townhomes Rear Load(20x42'):	54 units
Total Units Provided:	497 units
Net Density:	13.7 units/acre

Notes:

1. No 1 bedroom units are proposed.
2. Permits shall be pulled to remove any AST/UST that may be on-site through the Fire Marshal's Office.



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O:\Projects\NVA\RYH031 - Prelim\Code\Preim\RYH031 - Rezoning_Master7 - 9JUL25.dwg - Plotted By: Amy, Plotted: Jul 11, 2025 - 11:33am

RIVERSBEND

Suffolk, Virginia
Revised July 11, 2025
Prepared for:



Prepared by:



LAND PLANNING SOLUTIONS
5857 HARBOUR VIEW BLVD, SUITE 202
SUFFOLK, VA 23435
O 757.935.9014 F 757.935.9015



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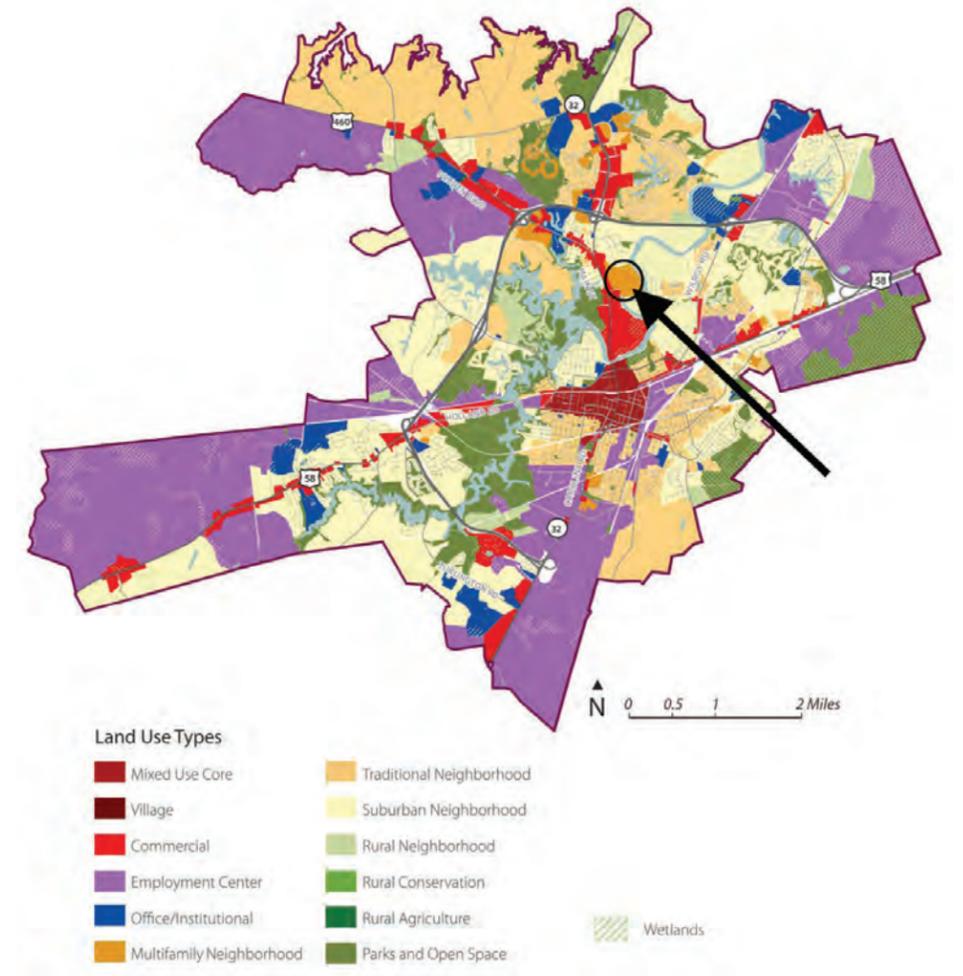
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ARCHITECTURE	PG 9
- ELEVATIONS	PG 10-11
AMENITIES	PG 12-13





INTRODUCTION

Riversbend is located at 1700 North Main Street, Suffolk, Virginia. The site is located one mile south of the Route 58 Bypass and 1.1 miles north of the Constance Road/N. Main Street intersection. This proposed development is consistent with the 2045 Comprehensive Plan as the front of the property will remain part of the Commercial land use district and the majority of the rear of the site will be converted to the Multifamily land use district.

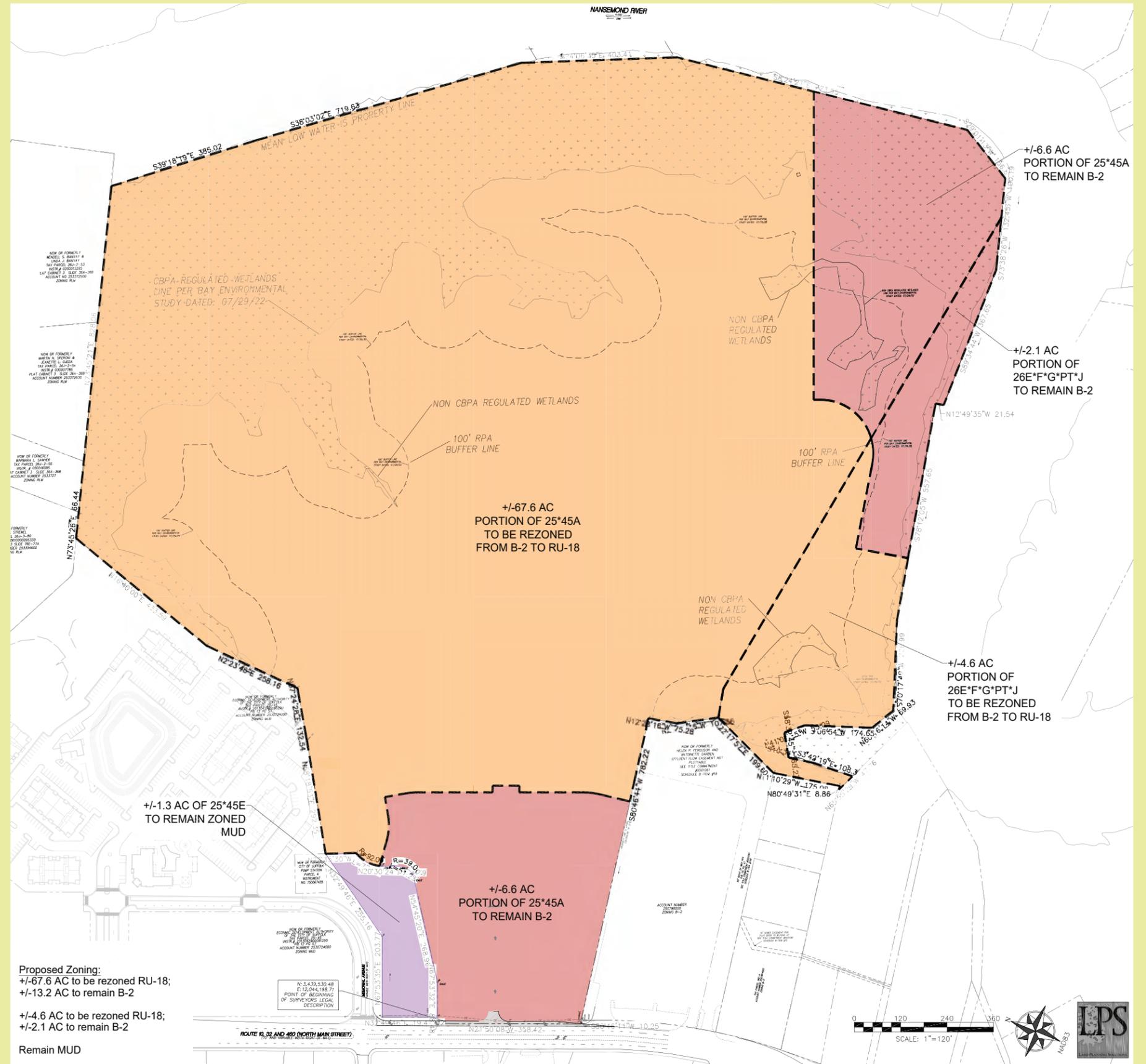


REZONING

The affected parcels include Tax Map Parcels 25*45A, 26E*F*G*PT*J, and 25*45E. The first two parcels are currently zoned B-2, General Commercial, and SCOD, Special Corridor Overlay District. The third parcel, Tax Map 25*45E, is owned by the Economic Development Authority and would remain zoned MUD to allow for a +/-1.6-acre park. The majority of the property will be rezoned to the RU-18, Residential Urban zoning district, to develop a total of roughly 497 dwelling units. A +/-6.6-acre site fronting North Main Street adjacent to the Ford dealership is reserved for commercial use and a second +/-8.7-acre commercial site is reserved at the southeastern corner of the property along the Nansemond River to allow for a small public marina, restaurant or event space, and community clubhouse and pool.

LEGEND:

- Proposed RU-18 zoning: +/-72.2 AC
- Existing B-2 zoning to remain: +/-15.3 AC
- Existing MUD zoning to remain: +/-1.3 AC



CONCEPTUAL MASTER PLAN

Riversbend is proposed to develop a total of roughly 497 dwelling units comprised of a mix of 4-story active adult buildings, 4-story back-to-back townhomes, and 3-story front and rear loaded townhomes. The front commercial site contains a historic 3-story brick building approximately 38,000 square feet in size that is suitable for office space and has the potential for two vertical mixed-use buildings. The rear commercial site along the Nansemond River will allow for a public marina, restaurant or event space, and community clubhouse and pool.

SITE DATA:

Tax Map #: 25-45A, 26E*F*G*PT*J, 25*45E

Current Zoning:	B-2 (SCOD) & MUD
Proposed Zoning:	B-2 (SCOD), MUD and RU-18
Total Site Area:	+/-88.8 ac.
Area to Remain B-2:	+/-15.3 ac.
Area to Remain MUD:	+/-1.3 ac.
Proposed RU-18 Area:	+/-72.2 ac.
Critical Area:	+/-35.9 ac.
Net Site Area:	+/-36.3 ac.

TABULATION:

RU-18 Development:

4 Story Condo Active Adult (Mosaic):	168 units
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3 Story Townhomes Front Load (20x42'):	75 units
3 Story Townhomes Rear Load(20x42'):	54 units
Total Units Provided:	497 units
Net Density:	13.7 units/acre

Notes:

1. No 1 bedroom units are proposed.
2. Permits shall be pulled to remove any AST/UST that may be on-site through the Fire Marshal's Office.



RIVERSBEND

CITY OF SUFFOLK

STREETS

LEGEND:

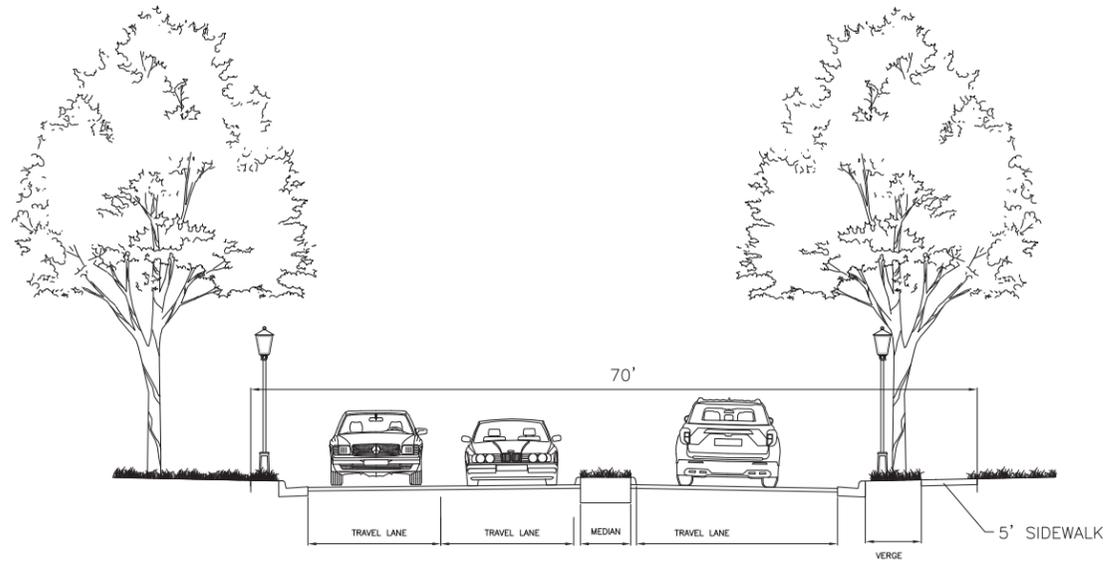
-  70' PUBLIC ROW (ENTRY ROAD)
-  60' PUBLIC ROW
-  50' PUBLIC ROW
-  PRIVATE ALLEYS

Notes:

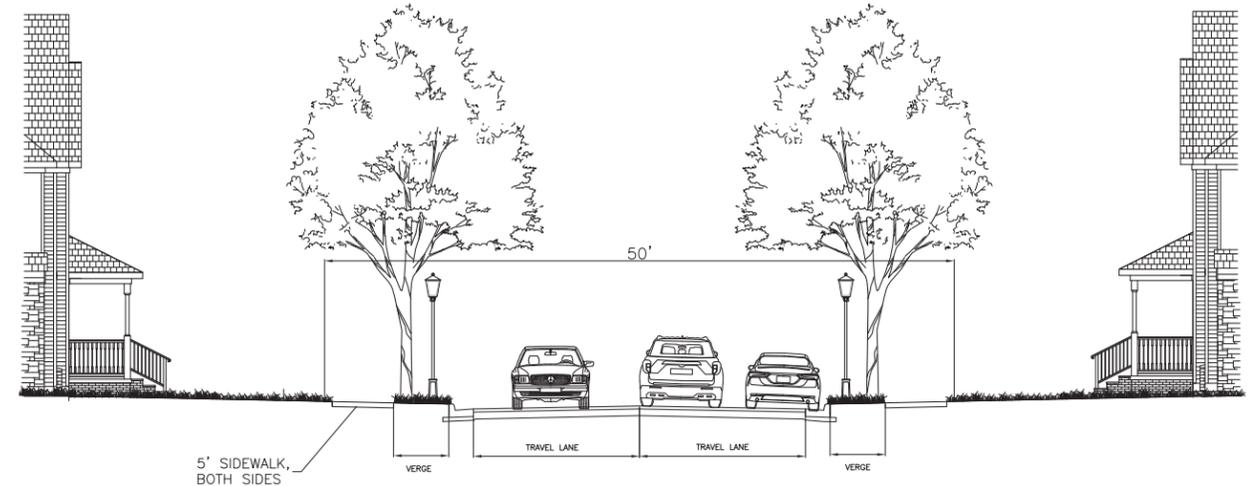
1. Local residential street segments carrying 400 vehicles per day shall feature 36-foot pavement width.
2. Streets providing access to the boat ramp and restaurant shall be adequately designed to accommodate vehicles with trailers.



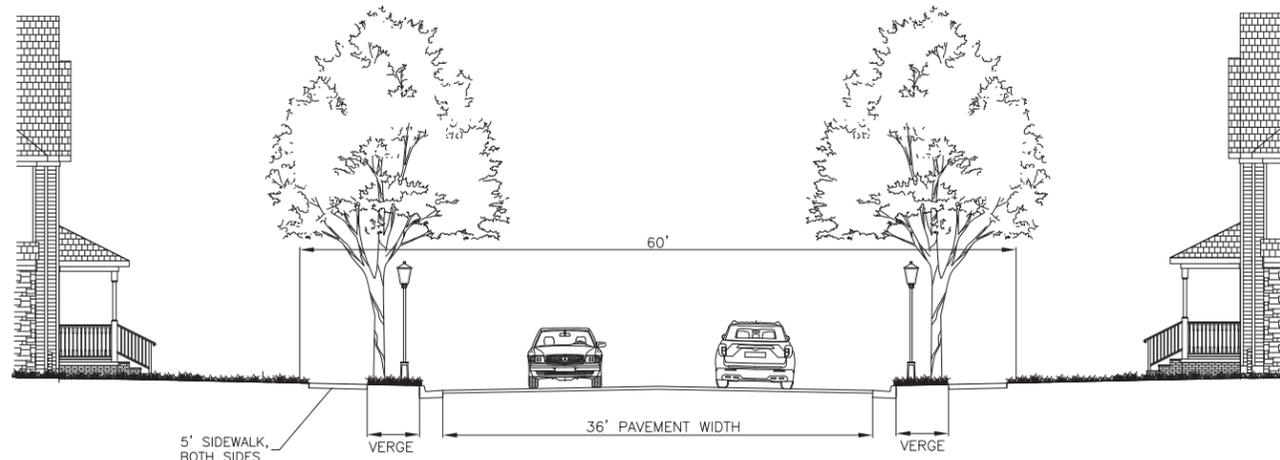
STREET SECTIONS



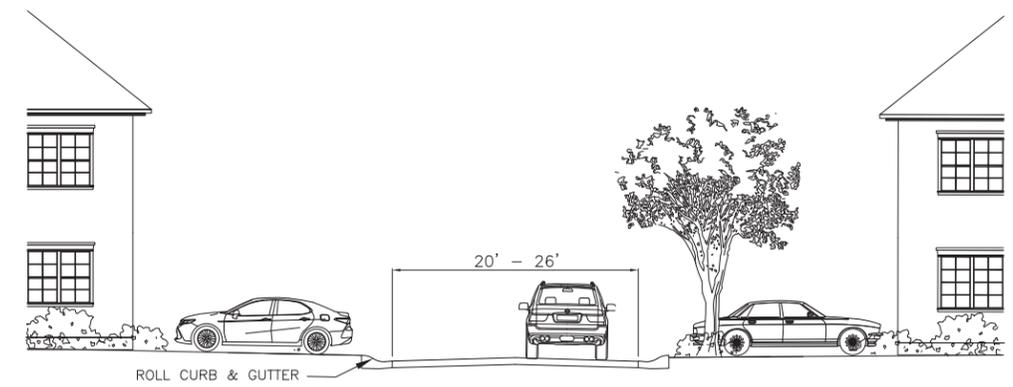
 **70' PUBLIC ROW - ENTRY ROAD**
 NOT TO SCALE
 NO ON-STREET PARKING



 **50' PUBLIC ROW**
 NOT TO SCALE
 ON-STREET PARKING ONE SIDE ONLY



 **60' PUBLIC ROW**
 NOT TO SCALE



 **PRIVATE ALLEYS**
 NOT TO SCALE

OPEN SPACE PLAN

SITE DATA:

Tax Map #: 25-45A, 26E*F*G*PT*J, 25*45E

Current Zoning:	B-2 (SCOD) & MUD
Proposed Zoning:	B-2 (SCOD), MUD and RU-18
Total Site Area:	+/-88.8 ac.
Area to Remain B-2:	+/-15.3 ac.
Area to Remain MUD:	+/-1.3 ac.

Proposed RU-18 Area:	+/-72.2 ac.
Critical Area:	+/-35.9 ac.
Net Site Area:	+/-36.3 ac.

LEGEND:

- WETLANDS
- PRESERVED TREE CANOPY/RPA BUFFER
- PONDS
- OPEN SPACE
- PARKS/GREENS
- PRESERVED TREES IF POSSIBLE
- SIDEWALKS

PATTERN BOOK

Riversbend will feature over 35 acres of environmentally sensitive areas, a waterfront boardwalk, pool, and numerous pocket parks, greens between buildings, and trails for residents to enjoy. All of these open space areas interspersed throughout the community will encourage outdoor recreation.





ARCHITECTURE

The architectural design of the community blends timeless character with contemporary living. This section showcases the elevations of proposed condos, townhomes, and back-to-back townhomes, illustrating a cohesive aesthetic that emphasizes quality, variety, and a strong sense of place.





BACK TO BACK TOWNHOMES







**SIDE ELEVATION APPLICABLE TO FRONT AND REAR LOAD TOWNHOMES*



AMENITIES

All amenities shall be architecturally integrated with their surroundings in terms of size, shape, color, texture, and lighting so that they are complimentary to the overall design of the buildings.

The overall landscape shall be designed to unify and be in harmony with the various components of the development through the use of appropriate plantings along the streetscape, buffers and entrances to the community.



WATERFRONT DINING



BIKE RACKS



BENCHES



MARINA



TRAILS



FULL CUTOFF LIGHTING

APPRAISAL OF REAL PROPERTY

Office Building
1700 N Main Street
Suffolk, Virginia 23434
Account Number 2530-66200

PREPARED FOR

Mr. Adam Edbauer
Market Manager of Land
4525 South Boulevard Suite 100
Virginia Beach, Va 23452

PREPARED BY

Michael Fine
Fine Valuations
Certified General Appraiser
1113 Ditchley Road
Virginia Beach, Va 23451

DATE OF VALUE ESTIMATE

August 01, 2026

DATE OF APPRAISAL

June 10, 2025

June 10, 2025

Mr. Adam Edbauer
Ryan Homes
4525 South Boulevard Suite 100
Virginia Beach, Va 23452

Re: Appraisal of Office Building
Acct. No. 52225
1700 N Main Street
Norfolk, Virginia 23513
Account Number 2530-66200

Dear Mr. Edbauer:

In regard to your request and for the purpose of estimating the market value, as completed, of the leased fee interest in the above referenced property, I have viewed the property and analyzed all data pertinent to the establishment of value.

The subject property consists of a hypothetical 2.5 acre site improved with a 32,266 SF office building and associated site improvements. The property has a street address of 1700 N Main Street, Suffolk, Virginia 23434. This narrative report summarizes my approach to value.

The analyses, opinions, and conclusions were developed, and this appraisal report has been prepared in conformity with the requirements of the Uniform Standards of Professional Appraisal Practice of the Appraisal Foundation's Appraisal Standards Board, the Code of Professional Ethics and the Standards of Professional Practice.

Mr. Adam Edbauer
Ryan Homes
June 10, 2025

Based on my analysis, and subject to the limiting conditions and definitions in this report, it is my opinion that the market value, as completed, of the leased fee interest in the subject property, as of August 1, 2026, will be:

**SIX MILLION TWO HUNDRED SEVENTY THOUSAND DOLLARS
(\$6,270,000)**

Thank you for this opportunity to be of service to you.

Respectfully submitted,

A handwritten signature in blue ink that reads "Michael Garrett Fine". The signature is written in a cursive style with a small "Fine" written at the end.

Michael Garrett Fine
VA Certified General Real
Estate Appraiser #4001018664

EXECUTIVE SUMMARY

Property	Office Building
Location	1700 N Main Street, Norfolk, Virginia 23513
Account Number	2530-66200
Land Size	<u>Acres</u> <u>SF</u> 2.5 108,900
Building Area (SF)	32,266 SF
Year Built	1949
Effective Age	10 years
Remaining Economic Life	30 years
Highest and Best Use	
As if Vacant	Commercial Development
As If Improved	Existing Improvements
Zoning	B-2, General Commercial
Flood Zone	The Flood Insurance Rate Map Community Panel Number 5101560114E, revised August 3, 2015, indicates that the parcel is located in Flood Zone X.
Property Rights Appraised	Leased Fee Estate
Value Indications	
Land Value	Not Developed
Cost Approach	Not Developed
Income Approach	\$6,270,000
Sales Comparison Approach	\$6,290,000
Market Value	\$6,270,000
Date of Value	August 1, 2026
Date of Appraisal	June 10, 2025
Exposure Time	6 months or less

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Subject Photographs

Deed

Task Order

Qualifications of Michael Fine Certified General Appraiser/License

APPRAISAL PROBLEM

The subject property consists of a hypothetical 108,900 SF site improved with a 32,266 SF office building and associated site improvements. There is an extraordinary assumption that market conditions will continue to be similar to today's conditions. The property has a street address of 1700 N Main Street, Suffolk, Virginia 23434. This appraisal will estimate the market value, as completed, of the leased fee interest in the subject property.

PURPOSE OF THE APPRAISAL

The purpose of this appraisal is to estimate the market value, as completed, of the leased fee estate in the land and improvements located at 1700 N Main Street, Suffolk, Virginia 23462. This is to help with NVR to make an acquisition decision.

PROPERTY RIGHTS APPRAISED

The Economic Development Authority of The City of Suffolk owns the fee simple interest in the subject property. The value estimate set forth in this appraisal report is the market value of the leased fee estate in the hypothetically subdivided and leased subject property that will be renovated to contemporary standards and code.

The leased fee estate is defined as:

“A leased fee estate is the ownership interest that a landlord or lessor retains in a property while it is leased to a tenant or lessee. The leased fee owner retains the right to receive rent and eventually the right to reoccupy the property upon the lease's expiration, while the tenant has the right to use and occupy the property.¹”

FUNCTION OF THE APPRAISAL

The function of this appraisal is to estimate the leased fee estate in the subject property for asset valuation purposes.

DATE OF THE VALUE ESTIMATE

The date to which the value estimate applies is August,1 2026.

DATE OF APPRAISAL

This appraisal was prepared on June 10, 2025.

COMPETENCY

Michael G Fine has significant experience in the valuation of income producing properties. These properties include but are not limited to large and small apartment complexes, central

¹ Appraisal Institute, The Dictionary of Real Estate Appraisal, Sixth Edition (Chicago, 2015), pg. 90.

business district and suburban office buildings, neighborhood shopping centers, industrial buildings, office/warehouse buildings, vacant land, and residential subdivisions.

Mr. Fine is licensed by the Commonwealth of Virginia as a Certified General Real Estate Appraiser.

DEFINITION OF MARKET VALUE

Market value, as used herein, is defined by OCC Rule 12 CFR 34.44 (f), and FDIC Rules and Regulations, Vol. 1, Part 323.2 as:

“The most probable price in terms of money which a property should bring in an open and competitive market under all conditions requisite to a fair sale, the buyer and seller, each acting prudently, knowledgeably, and assuming the price is not affected by undue stimulus.

Implicit in this definition are the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

1. Buyer and seller are typically motivated
1. Both parties are well informed or well advised, and acting in what they consider their own self-interests
1. A reasonable time is allowed for exposure in the open market,
1. Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto
1. The price represents normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.”

COVID-19 PANDEMIC

The local and regional economy has and will be significantly impacted by COVID-19 pandemic. Therefore, the effects of COVID-19 can have varying effects on real estate each day depending on current events. Demand for certain types of retail and office properties has decreased from prospective tenants to prospective buyers. In contrast, demand for industrial properties has remained strong and may even benefit from the pandemic. The long-term impact on all property types is currently unknown.

EXPOSURE TIME

Exposure time, as used herein, is defined by the Appraisal Institute, The Dictionary of Real Estate Appraisal, Sixth Edition (Chicago, 2015), pg. 83, as:

“The time a property remains on the market; The estimated length of time the property interest being appraised would have been offered on the market prior to the hypothetical consummation of a sale at market value on the effective date of the appraisal; a retrospective estimate based on an analysis of past events assuming a competitive and open market.”

In reviewing the comparables used for this report, and considering the interviews held with lawyers, investors, and agents, there is a continued demand for the subject office property within Southside Hampton Roads, due to its lease and market conditions. If the subject property were to be offered on the market, I estimate an exposure time of 6 months or less.

EXTRAORDINARY ASSUMPTIONS

Extraordinary Assumption, as used herein, is defined by the Appraisal Institute, The Dictionary of Real Estate Appraisal, Sixth Edition (Chicago, 2015), pg. 83-84, as:

“An assumption, directly related to a specific assignment, which, if found to be false, could alter the appraiser’s opinions or conclusions. Extraordinary assumptions presume as fact otherwise uncertain information about physical, legal, or economic characteristics of the subject property; or about conditions external to the property such as market conditions or trends; or about the integrity of the data used in an analysis.”

This appraisal is based on the extraordinary assumption that market conditions will remain similar on August 1, 2026 (the time of lease commencement and improvement completion) as the current (as of the date of this report’s) overall market conditions.

HYPOTHETICAL CONDITIONS

Hypothetical condition is defined as follows:

“That which is contrary to what exists but is supposed for the purpose of analysis. Hypothetical conditions assume conditions contrary to known facts about physical, legal, or economic characteristics of the subject property; or about conditions external to the property, such as market conditions or trends; or about the integrity of data used in an analysis².”

The valuation of the subject property is based on these hypothetical conditions:

- That the VDOT office building and its surrounding 2.5 acres of parking have been subdivided from the larger 86.84-acre parcel at 1700 N Main Street.
- The remaining acreage is assumed to have been developed into a residential community featuring modern amenities such as a park, signalized intersection, newly constructed streets, and signage.
- The improvements to the building will have been significantly renovated to a finish that is equivalent or better than contemporary office space. The landscaping and parking surfaces will be maintained and replaced if need be.
- The building will be leased to the City of Suffolk Department of Education for a 10 year term with rent paid at \$500,000 annually on a triple net lease with 3% annual escalations.

COMPLIANCE

² Appraisal Institute, The Dictionary of Real Estate Appraisal, Sixth Edition (Chicago, 2015), pg. 113.

This appraisal report conforms to the minimum standards set forth on 12 C.F.R. Part 1608, Standards 1 and 2 of the Uniform Standards of Professional Appraisal Practice promulgated by the Appraisal Standards Board of the Appraisal Foundation.

PROPERTY IDENTIFICATION

The subject property has a street address of 1700 N Main Street, Suffolk, Virginia. The Real Estate Assessor for the City of Suffolk identifies the subject property as Account number 253066200. The subject's legal description is presented below.

SCHEDULE A

All that certain lot, piece or parcel of land with all improvements thereon and appurtenances thereunto belonging, lying and being in the City of Suffolk, Virginia, containing 1.004 acres, more or less, being identified as a portion of Tax Map Parcel 25*45A, Account No. 253066200, and being more particularly shown on the plat of survey entitled "BOUNDARY LINE AGREEMENT BETWEEN PROPERTY OF COMMONWEALTH OF VIRGINIA, DEPARTMENT OF TRANSPORTATION (D.B. 156, PG. 501) (D.B. 296, PG. 663) AND ECONOMIC DEVELOPMENT AUTHORITY OF THE CITY OF SUFFOLK, VIRGINIA (INSTRUMENT #150067435, PG 1-8)" made by MSA, P.C., dated March 21, 2022.

Being further described by metes and bounds on the MSA Plat as follows: beginning at a found pin along the easterly boundary of North Main Street (State Routes 460, 10 and 32) where the southwest corner of the parcel of land now or formerly belonging to the Economic Development Authority of the City of Suffolk meets the southwest corner of the parcel of land now or formerly belonging to the Commonwealth of Virginia, Department of Transportation, said pin being located at coordinates N 3439547.33, E 12044208.99; thence from said point of beginning N 32° 49' 46" E a distance of 248.95 feet to a found pin; thence continuing N 32° 49' 46" E a distance of 255.16 feet to a point; thence S 23° 35' 30" E a distance of 78.88 feet to a point; thence along a curve to the left having a radius of 92.00 feet, an arc length of 77.80 feet, and a bearing of S 3° 43' 11" W along a chord length of 75.50 feet; thence S 20° 30' 24" E a distance of 44.79 feet to a point; thence along a curve to the right having a radius of 39.00 feet, an arc length of 51.23 feet, and a bearing of S 17° 07' 28" W along a chord length of 47.62 feet; thence S 54° 45' 20" W a distance of 268.96 feet to a point; thence S 67° 53' 35" a distance of 88.48 feet to the point and place of beginning.

PROPERTY OWNERSHIP AND SALES HISTORY

The fee simple interest in the subject property is vested in the name of The Economic Development Authority of The City of Suffolk, which acquired the subject property by Deed from The Commonwealth of Virginia Department of Transportation, for \$800,000, recorded July 14th, 2023 as Instrument Number 230007994, on file in the Clerk's Office of the Circuit Court of Suffolk. A copy of the deed is included in the addendum of this report. The subject property is currently under contract.

TYPE OF APPRAISAL REPORT

This Appraisal Report was prepared in accordance with Standards Rule 2-2 (a) of the *Uniform Standards of Professional Appraisal Practice (2024)*. As such, it presents sufficient information to enable the client and other intended users, as identified, to understand it properly.

INTENDED USER

Ryan Homes is the intended user of this report. No other person or entity may use this report without the written consent of Ryan Homes and Fine Valuations.

INTENDED USE AND SCOPE OF THE APPRAISAL

This appraisal is intended to be used by Ryan Homes to aid in a purchase decision. The scope of this assignment included the following:

- Mr. Adam Edbauer, Market Manager of Land for Ryan Homes, engaged Fine Valuations on May 23, 2025 to estimate the market value, as is, of the subject property.
- Michael Fine viewed and photographed the subject property on June 2, 2025.
- The neighborhood and surrounding sections of Suffolk were also viewed on June 2, 2025.
- City records have been researched for information on ownership, real estate assessment, taxes, utility availability and zoning regulations. City departments and agencies have been consulted to determine compliance with applicable regulations, anticipated land use changes and proposed projects potentially impacting the subject and its neighborhood.
- New and proposed developments in the neighborhood were researched to determine the impact to the subject property.
- Rental rates for office, and flex, space within the subject's submarket and nearby submarkets were researched to determine a reasonable market rent for the subject property.
- Recent sales and listings of similar quality buildings within the neighborhood and beyond the immediate market were researched to determine the existing and proposed inventory, marketability and feasibility of uses within the subject's classification.
- Recent sales of office buildings with high credit tenants and long term leases were researched on the east coast to provide comparable sales of office buildings to investors.
- During the course of the research every effort was made to verify information through public records and personal interviews.

- The most pertinent data was assembled and analyzed in relation to the subject property.
- This information and analysis were then processed into an indication of value for the subject property using generally accepted appraisal principles and practices.

PRIVACY REQUIREMENTS

Collection and Use of Personal Information

In the course of providing appraisal services, we collect and utilize personal information that we determine to be reasonably necessary to perform such services. The categories of personal information collected may include, but are not limited to, information furnished by clients through engagement letters, written communications, electronic correspondence, and oral discussions, such as names, addresses, telephone numbers, income and expense data, financing information, and sales price details pertaining to the subject property.

Disclosure of Nonpublic Personal Information

Except as otherwise set forth herein, we do not disclose nonpublic personal information regarding our clients or former clients to any nonaffiliated third parties. We do not sell, rent, trade, or otherwise disseminate personal information to any party for marketing purposes, including telemarketing or direct mail solicitations.

We may disclose nonpublic personal information solely under the following circumstances:

- (i) As necessary to facilitate or complete a transaction or service authorized by the client, including but not limited to the processing of a loan or other financial transaction;
- (ii) As required or permitted by applicable law, regulation, or legal process, including but not limited to disclosures necessary to protect against fraud, unauthorized transactions, claims, or other liabilities, or in response to judicial process, regulatory inquiry, or law enforcement requests;
- (iii) To other financial institutions with whom we have joint marketing agreements, but only to the extent necessary to offer, endorse, or sponsor a financial product or service.

Safeguarding Information

We maintain appropriate physical, electronic, and procedural safeguards to protect the confidentiality and security of nonpublic personal information in accordance with applicable laws and regulations.

STATEMENT OF LIMITING CONDITIONS

The appraiser assumes no responsibility for matters pertaining to the legal status or title of the subject property, nor does the appraiser render any opinion regarding the condition of title. Title is presumed to be good, marketable, and free of encumbrances unless otherwise stated herein.

The subject property is appraised under the assumption that it is owned under responsible ownership and managed competently, and that it is free and clear of all liens and encumbrances, unless otherwise noted.

No survey of the subject property has been conducted by the appraiser, and no responsibility is assumed with respect to such matters. Any photographs, drawings, or sketches included in the report are provided solely for the purpose of assisting the reader in visualizing the subject property. The Site Summary section of this report is based upon a visual inspection conducted on June 2 2025, and data obtained from the Real Estate Assessor's Office of the City of Suffolk, VDOT officials, as well as an interior inspection from a prior appraisal of the subject. The Improvement Summary section is based upon the site inspections and information from the aforementioned source.

The information utilized in preparing this appraisal was obtained from sources customarily considered reliable within the industry, including, but not limited to, public records and third-party sources. However, such information is not guaranteed to be accurate or complete, and no warranty or representation as to its accuracy is made.

The appraiser shall not be obligated to provide testimony or appear in any legal proceedings with reference to this appraisal, unless prior contractual arrangements have been made. The fee for this appraisal does not include compensation for court testimony or additional consultation services.

No testing or engineering studies have been conducted by the appraiser to determine the load-bearing capacity of the site, percolation rates, subsoil conditions, or drainage characteristics. No analysis or consideration has been given to the necessity for flood insurance coverage related to the property, nor to the impact of any flood zone designation on the property value.

Further, no evaluation has been made regarding the existence of any environmental restrictions, pollutants, or nuisances imposed by federal, state, or local government authorities or agencies. The appraiser assumes no responsibility for the detection of, or the effect on value caused by, the presence of hazardous materials, toxic wastes, urea formaldehyde foam insulation, asbestos, or any other potentially hazardous substances. In the event that such materials are subsequently discovered by a qualified expert, the appraised value stated herein may require revision.

Fine Valuations expressly reserves the right to amend, alter, or withdraw any opinion of value based upon information that was withheld, misrepresented, or otherwise not disclosed during the ordinary course of a diligent investigation.

Disclosure of the contents of this report is subject to the Bylaws, Regulations, and Code of Professional Ethics of the professional organizations with which the appraiser is affiliated.

The appraiser has not conducted a specific compliance survey or analysis of the subject property to determine whether it meets the requirements of the Americans with Disabilities Act ("ADA"), which became effective on January 26, 1992. It is possible that a detailed compliance survey and analysis would reveal deficiencies under the ADA that could adversely affect the value of the subject property. As the appraiser possesses no direct evidence concerning ADA compliance, no consideration has been given to potential ADA non-compliance in the valuation conclusions stated herein.

Restrictions on Disclosure and Use

Neither all nor any part of the contents of this report—including conclusions as to property

value, the identity of the appraiser, or Fine Valuations—shall be disseminated to the public through advertising media, news media, sales media, or any other public means of communication without the prior written consent and approval of Fine Valuations.

Acceptance of, and/or reliance upon, this report constitutes acknowledgment and agreement to all terms, conditions, and limitations set forth herein.

CERTIFICATION

I certify that, to the best of my knowledge and belief:

- The statements of fact contained in this report are true and correct.
- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.
- I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved.
- I have performed services, as an appraiser, regarding the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment. The last appraisal made on this property was performed on May 14th, 2025 for 'as is' conditions.
- I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
- My engagement in this assignment was not contingent upon developing or reporting predetermined results.
- My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
- The reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics & Standards of Professional Appraisal Practice of the Appraisal Institute, which include the *Uniform Standards of Professional Appraisal Practice*.
- The use of this report is subject to the requirements of the Commonwealth of Virginia relating to review by its duly authorized representatives.
- I have made a personal viewing of the property that is the subject of this report.
- No other person provided real property appraisal assistance to the person signing this certification.
- As of the date of this report, Michael Garrett Fine has completed the continuing education program to be up to date with state certification requirements.
- The market value, as is, of the leased fee interest in the subject property, as of August 1, 2026 (the date upon completion), is \$6,270,000.



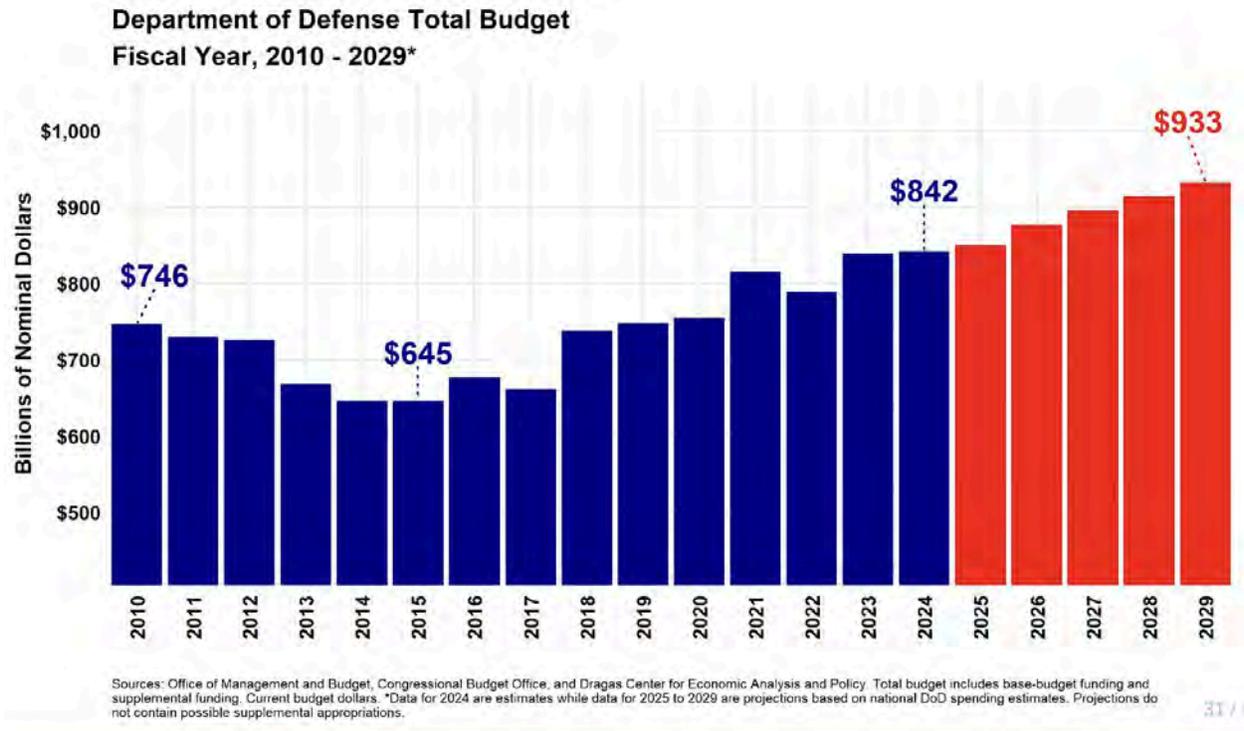
Michael Garrett Fine
VA Certified General
Real Estate Appraiser #4001018664

June 10, 2025

Date

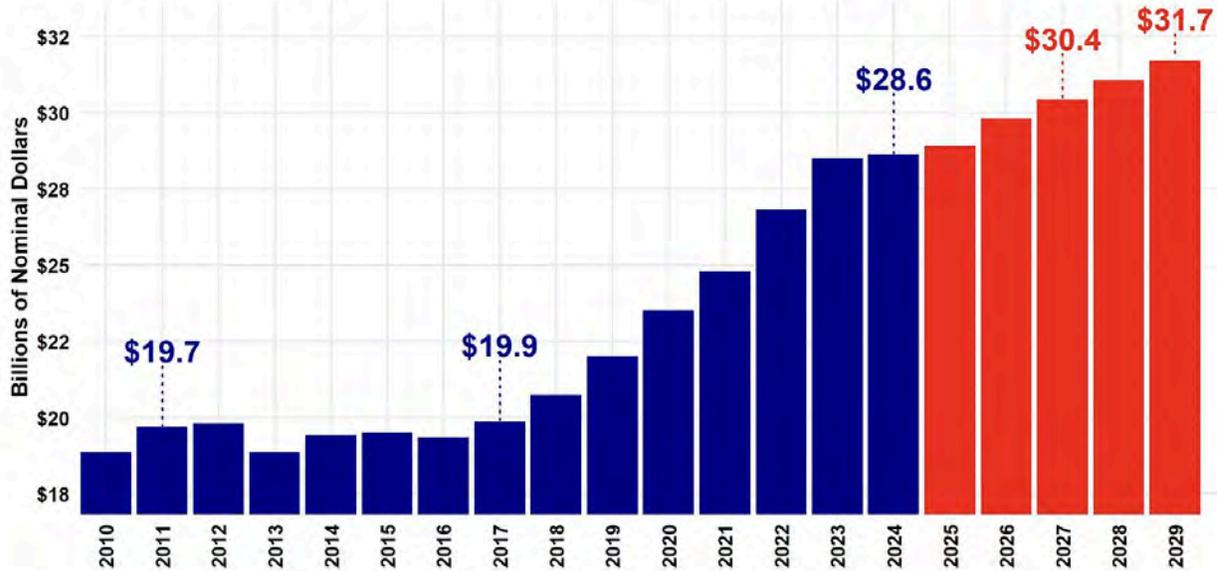
MARKET OVERVIEW

The Hampton Roads economy has long relied on three main pillars: the military, the Port of Virginia, and tourism. Among these, defense spending has historically been the most significant driver of economic activity. The region holds a unique and strategic position in the national security framework of the United States. As Department of Defense (DoD) budgets increase, so too does defense spending in Hampton Roads.



In 2022 alone, the DoD spent nearly \$26 billion in the region, generating close to \$40 billion in total economic activity. With the passage of the Fiscal Year 2024 National Defense Authorization Act (NDAA) and the omnibus appropriations bill, the base DoD budget rose to \$883.7 billion. Barring any major shifts in defense policy, direct defense spending in Hampton Roads is expected to surpass \$30 billion by the end of the decade.

**Estimated Department of Defense Direct Spending
Hampton Roads, 2010 - 2029***

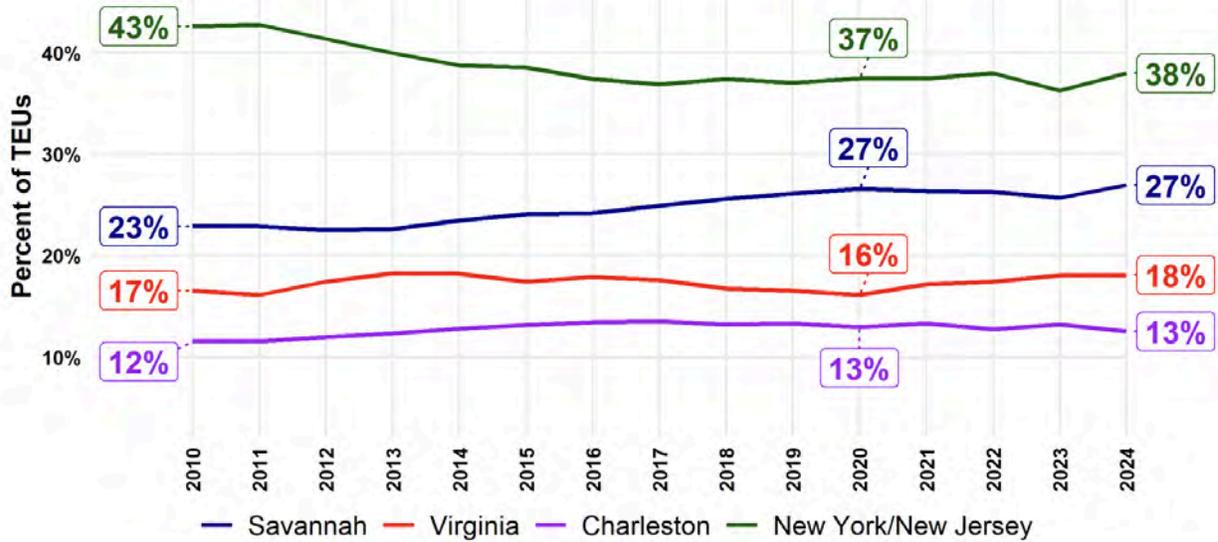


Sources: Department of Defense and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Includes federal civilian and military personnel and procurement.
*FY 2010 – 2023 are actual expenditures, 2024 is our estimate, and 2025 – 2029 are our forecasts.

The Department of Defense (DoD) has a profound impact on the Hampton Roads economy, with approximately \$28.6 billion in direct spending in 2024, emphasizing the region’s strong economic dependence on military operations. DoD activities account for 22.8% of all regional economic activity, encompassing federal civilian payroll, contract awards, and other defense-related expenditures. Employment is heavily influenced by the military, with about 20% of the workforce made up of active-duty personnel, DoD civilian employees, and defense contractors, while another 15% of jobs are indirectly supported by defense-related activity. Although Hampton Roads captures a smaller portion of total DoD contract spending, it still receives 29% of Virginia’s share. Nationally, Hampton Roads represents 3.5% of all U.S. defense spending, including 5.1% of personnel costs and 2.9% of contract spending, highlighting its strategic importance to the country’s defense infrastructure.

Over the past decade, the Port of Virginia has proven to be a vital asset to the Hampton Roads economy. Unlike many other ports that faced challenges handling cargo in the past year, the Port of Virginia successfully increased traffic with minimal delays. The rise in cargo volume and return to profitability reflect stronger, more efficient management. Despite these gains, concerns about market share persist—likely tied to the region's economic performance.

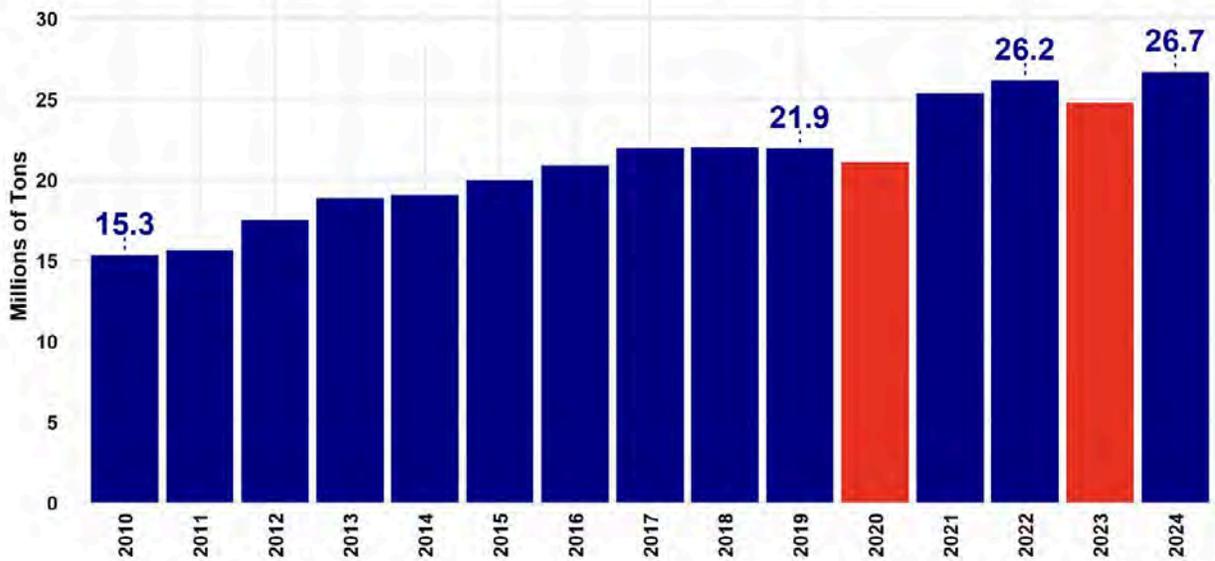
**Shares of Total Loaded TEUs
Selected East Coast Ports, 2010 - 2024***



Sources: American Association of Port Authorities, websites of ports and the Old Dominion University Economic Forecasting Project. Market shares are based on TEUs for Baltimore, Boston, Charleston, Virginia, New York/New Jersey, and Savannah. *Data for 2024 are through November 2024.

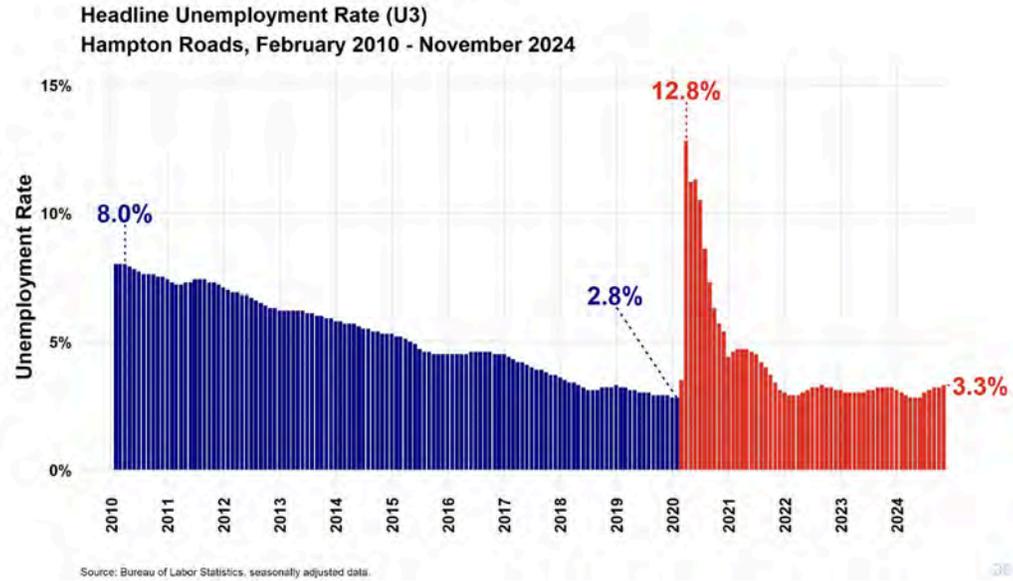
Cargo at the Port of Virginia saw a modest increase in 2024. Looking ahead, the port expects a rise in traffic in 2025, driven by the completion of a dredging project that will deepen and widen its shipping channels. This upgrade will allow the port to handle larger container ships and enhance the overall efficiency of cargo movement.

**General Cargo Tonnage
Port of Virginia, 2010 - 2024**

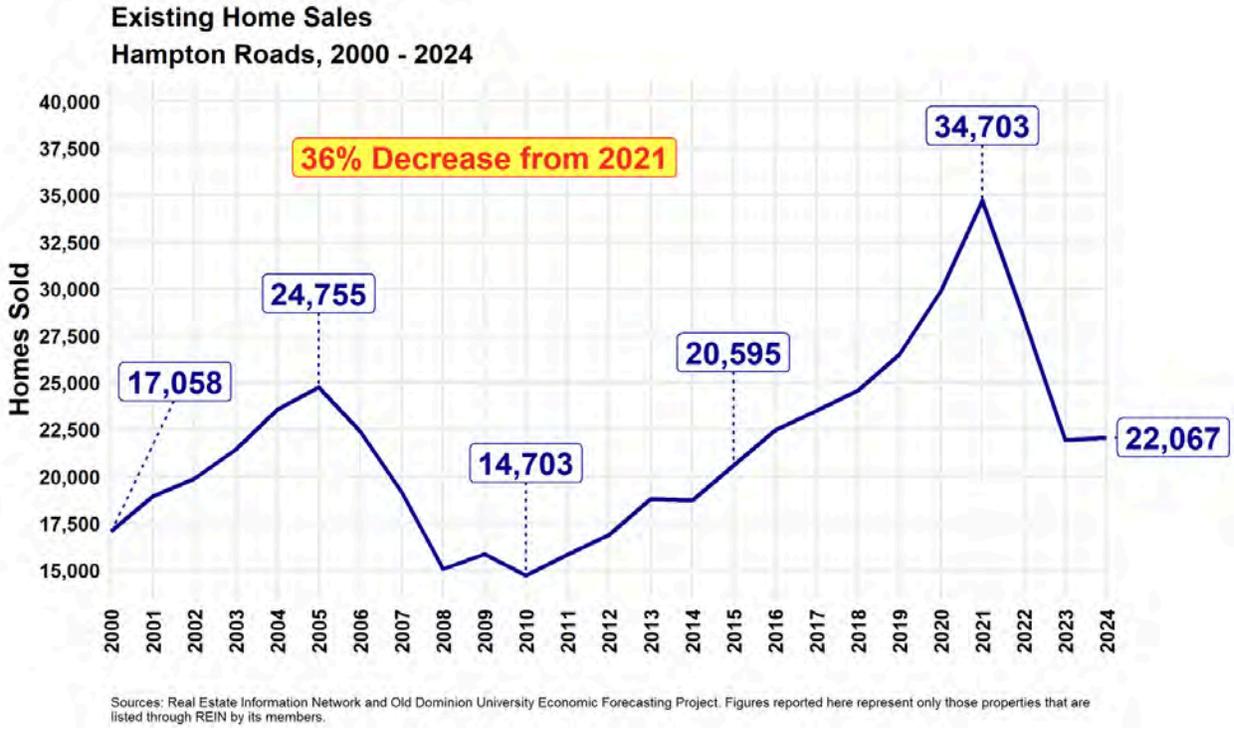


Sources: Virginia Port Authority and Dragas Center for Economic Analysis and Policy.

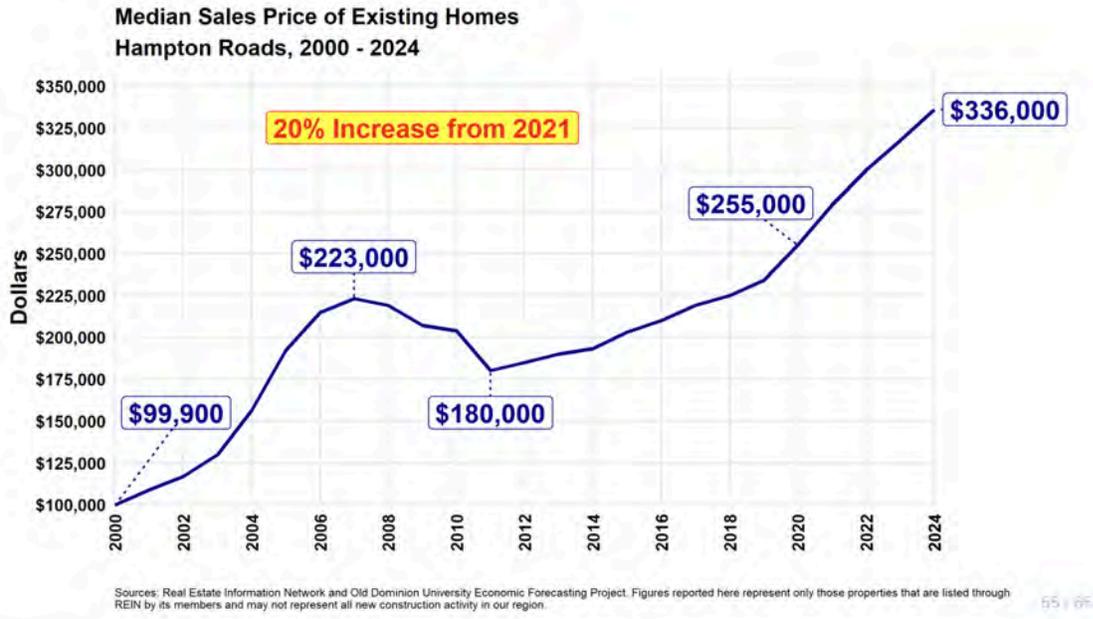
Before the pandemic, Hampton Roads trailed both Virginia and the nation in job growth, gaining only 9.4% from 2010 to early 2020. In February 2020, the region hit a record 803,300 jobs, but lost over 100,000 jobs within two months due to the pandemic. By the end of 2020, it was still down 40,200 jobs from its peak. Recovery was slow, with 29,800 fewer jobs by the end of 2021 and about 25,000 still missing by mid-2022. At the current pace, full recovery may take another 18–24 months. Between May 2019 and May 2022, job growth was limited to transportation, warehousing, utilities, and construction, while local government, manufacturing, and financial activities saw the largest declines. Unemployment has remained low over the last few years, hovering around 3.3%.



The unemployment rate in Hampton Roads has been on a downward trend, reaching a low of 3.1% in December 2023, but has recently shown signs of rising, climbing to 3.3% in the fourth quarter of 2024. Economic experts predict a potential slowdown in mid-2025, which could lead to higher unemployment. Factors such as economic growth, inflation, and interest rates continue to influence these trends. While job growth has been solid, a decrease in job openings suggests the previously tight labor market may be beginning to loosen.



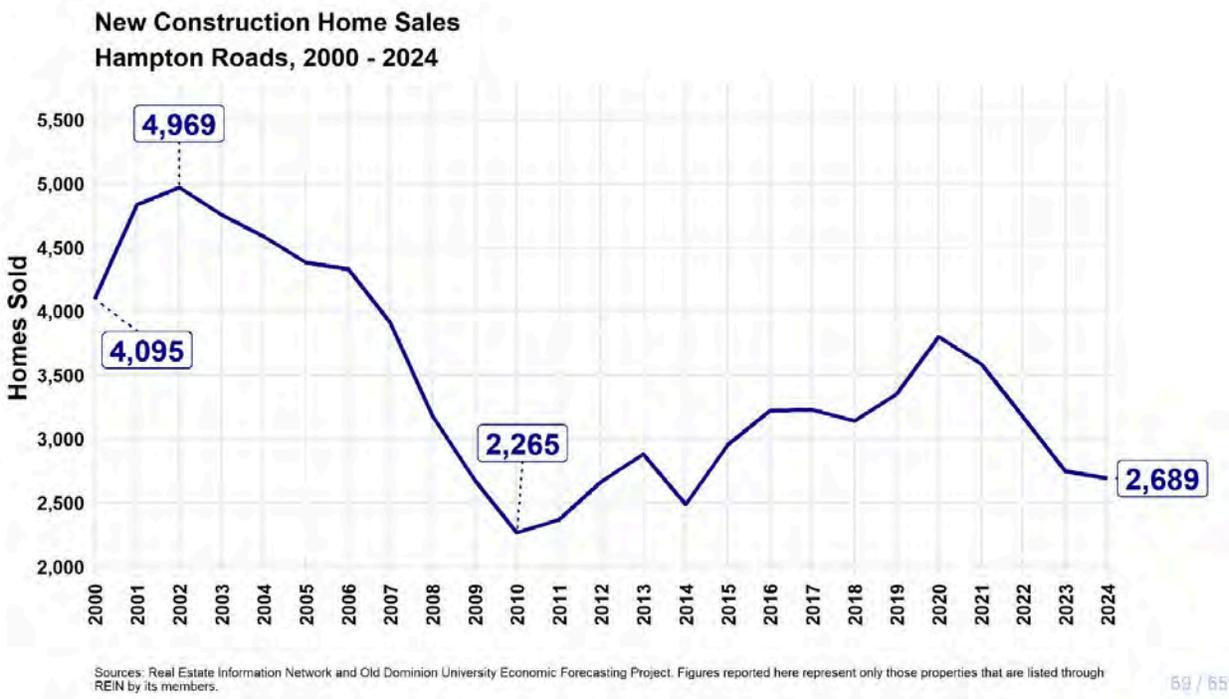
Hampton Roads is experiencing a housing shortage, with demand outpacing the supply of available homes. Although there has been a slight uptick in inventory in recent months, the number of active listings remains below historical levels. This shortfall is driving up both home prices and rental costs, with affordable housing being especially hard to find.



Hampton Roads Housing Factors:

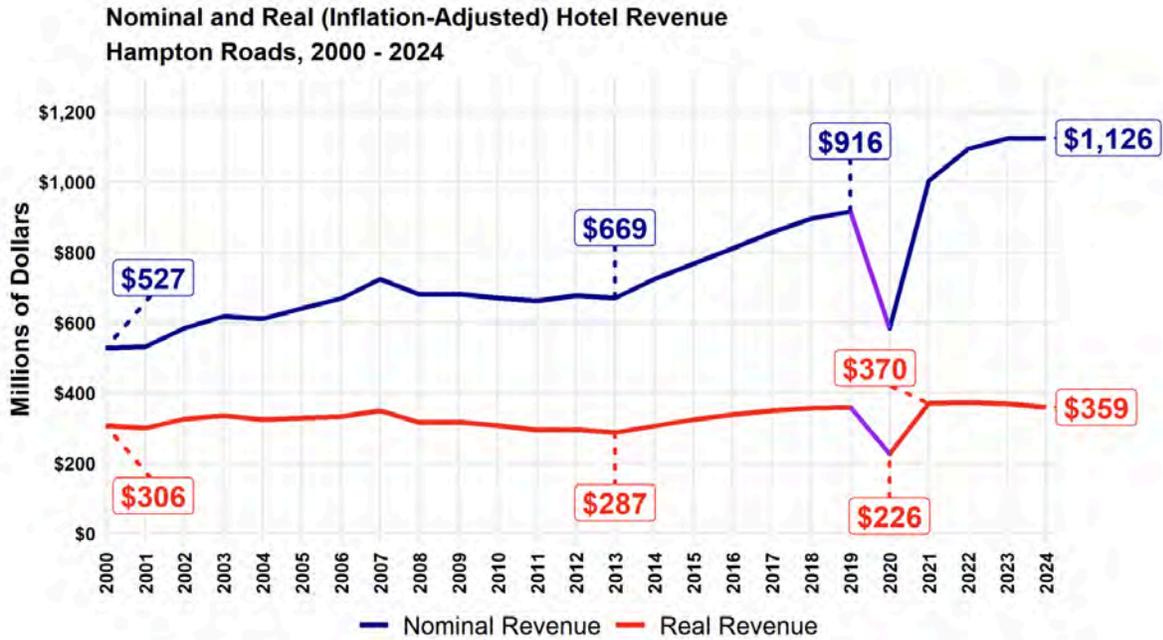
- Ongoing Shortage: Demand for housing continues to exceed supply across the region.
- Limited Inventory: Recent increases in listings have not been enough to offset historically low supply levels.
- Affordable Housing Strain: The shortage is most severe in the affordable housing segment, affecting low- and moderate-income households.
- Rising Prices: The tight supply is fueling higher home prices and rents.
- Economic Impact: The housing shortage is seen as a significant barrier to economic growth in Hampton Roads.

The Months' Supply of Inventory (MSI)—which shows how long the current supply of homes would last if no new homes were added—rose to 2.12 months from 1.72 months in January 2024. This means homes are still selling fairly quickly, but there's a bit more breathing room than before. Meanwhile, new construction home sales dropped, with only 170 newly built homes sold in January 2025 compared to 215 in January 2024.



The Hampton Roads hospitality sector is expected to continue limited growth in 2025. The region has largely recovered from the pandemic’s impact on the hotel industry, with some areas even surpassing pre-pandemic performance levels. A rise in leisure travel, along with a rebound

in group travel, is projected to further strengthen hotel performance across the region. Specific areas such as the Virginia Beach oceanfront are seeing particularly strong growth in hotel revenues, highlighting the overall positive momentum in the hospitality sector.

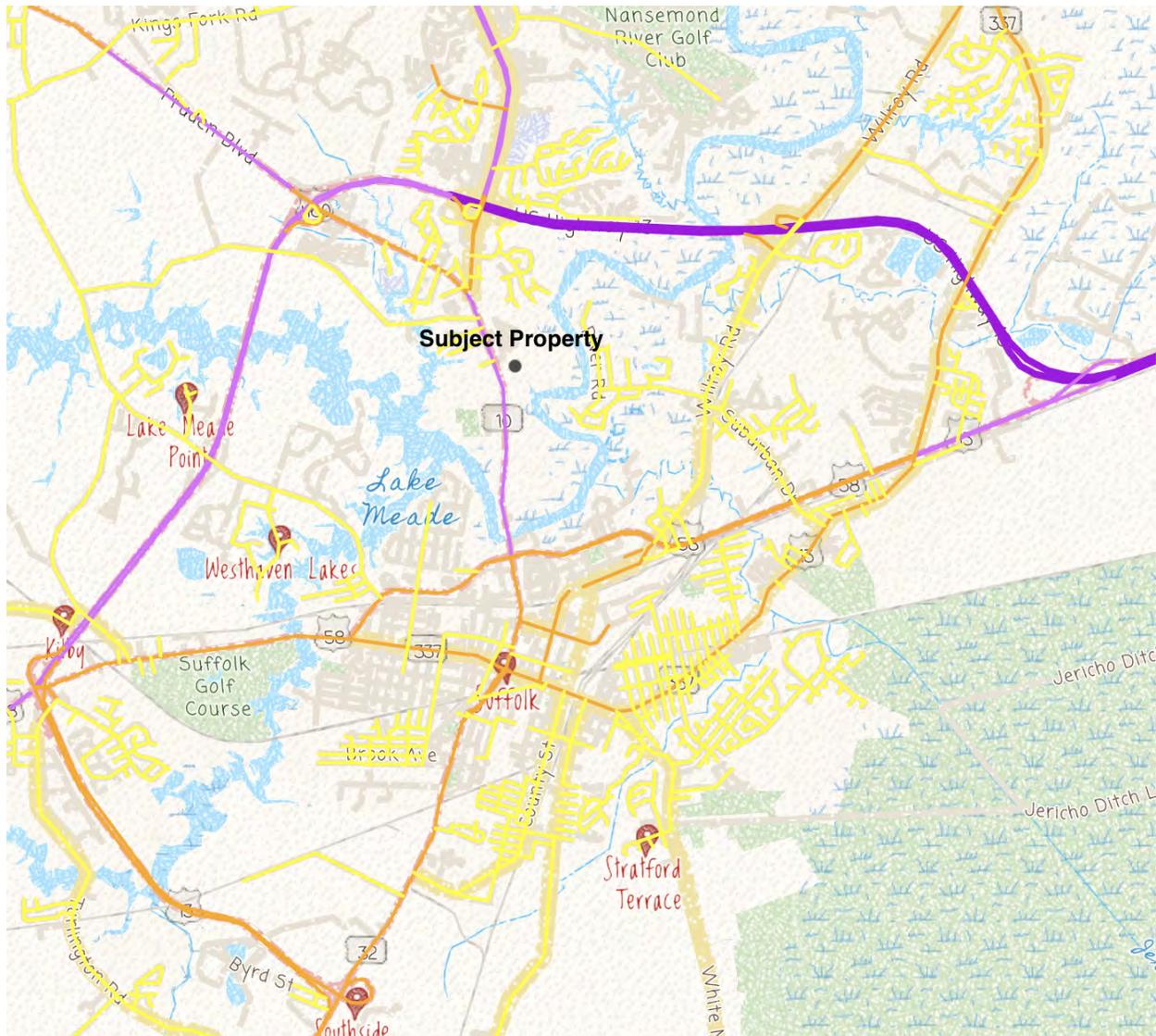


Sources: STR Trend Report January 2024, STR Monthly Report January 2025, Bureau of Labor Statistics (1982-84=100), and the Dragas Center for Economic Analysis and Policy.

In Summary, 2025 defense spending will continue to support the Hampton Roads economy. Home sales are expected to stabilize, while median home prices will likely keep rising. Going forward, uncertainty in Washington, especially on size and type of reduction in federal workforce, and increases in tariffs either by country, or by ownership or by commodities, will remain to be a major concern for the health and growth of the regional economy.

NEIGHBORHOOD SUMMARY

The subject is located within the South Suffolk/Downtown neighborhood in Suffolk Virginia. The immediate subject neighborhood is generally bounded by Route 58 on the east, north, and west, and Washington Street on the South. Research conducted for this section was obtained through REIN MLS, CoStar, ODU Economic Forecasts, and discussions with real estate agents who are familiar with this market.



Access to the neighborhood is generally convenient from route 58 and route 460. 58 connects the subject to all points in Hampton Roads via Interstate 64. North Main Street provides a retail corridor with ample traffic estimated at 26,000 vehicles per day in either direction. This immediate area on North Main Street is characterized by newer retail development, new multi-family development, car dealerships, second generation retail, and smaller office buildings.

Contiguous with the property toward the north, Meridian Obici is an apartment complex that was built in 2016, has 224 units, and was sold in 2018 for a reported \$32,000,000. On the southern side of the property, Barton Ford is a local car dealership selling Ford vehicles.

The surrounding retail within two miles includes Applebee's Grill + Bar, Chick-fil-A, Dunkin Donuts, Jersey Mike's Subs, Panera Bread, Papa Johns Pizza, Wawa, 7 Eleven, ALDI Grocery Store, Kroger, LOWE'S, Walmart Supercenter, and Planet Fitness. Lake Meade Park as well as other small parks give plenty of recreational opportunities for residents in the area.

Sentara Obici Hospital, located less than 1.5 miles north of the subject, is a modern, 175-bed, full-service medical facility located on Godwin Boulevard in Suffolk, Virginia. The hospital serves the Western Tidewater region designed with advanced healthcare technology. The facility provides a wide range of comprehensive medical services to meet the needs of the surrounding communities. Sentara Obici Hospital remains a healthcare resource for individuals and families across the region.

Less than two miles south of the subject is the Suffolk Court House and Downtown area. This area is characterized by office buildings built before 1975 and is populated mostly by government services from the aforementioned court to the Suffolk Educational department and other city services.

As of Q2 2025, the South Suffolk office submarket has a low vacancy rate of 2.6%, slightly below its five- and ten-year average of 3.8%. The vacancy rate has held relatively steady over the past year with a minor 0.1% decrease, due to no new deliveries and net absorption of -1,300 SF.

Currently, about 30,000 SF is listed as available, and there is no office space under construction, despite a historical average of 2,600 SF under development annually.

The submarket has a total inventory of 1.2 million SF, much smaller than the 56.6 million SF in the overall Hampton Roads area. Average asking rents in South Suffolk are \$21.00/SF (full service), slightly below the market average of \$22.00/SF. Rent growth over the past year was 0.5%, trailing both the market-wide growth of 1.2% and the submarket's own five-year average (3.3%) and ten-year average (2.8%).

A total of 636 single-family homes were sold within a 3 mile radius of the subject in the last year. The average home had 4 bedrooms, 2 bathrooms, 1,927 square feet of living space, and sat on 0.425 acres. List prices averaged \$353,209 (\$185.85/SF), and sale prices closely followed at an average of \$352,395 (\$185.07/SF), reflecting a strong average sale-to-list ratio of 99%. The median home featured 3 bedrooms, 2 bathrooms, 1,800 square feet, and sold for \$334,950, which was 100% of the \$330,000 list price. Homes were typically built around 1988 on average, with the median build year being 2000. Properties sold quickly, with a median of 25 days on market and an average of 35 days.

In summary, the subject property benefits from convenient access to major transportation routes, including Interstate 64 and Route 460. The surrounding area is well-supported by retail services and medical facilities, offering a full range of amenities suitable for both residential and office use. The City of Suffolk has continued to gentrify over the last 10-15 years and looks to

continue that trend with a lower cost of living and is attractive for those who desire a suburban lifestyle.

SITE SUMMARY

Location

The subject property is located on the east side of North Main Street.

Size/Shape/Frontage

The subject site is currently irregularly shaped and will hypothetically be subdivided into a rectangular 2.5 acre site(with improvements). The subject will sit behind a multifamily development fronting North Main Street.

Access/Visibility

The subject site will be provided with two curb cuts along an access road that connects to North Main Street. There will be a third curb cut on the north side of the site. Cross access is given to a shared parking lot as well that will also be used by proposed multi family. The visibility of the site is hindered from North Main Street by the proposed multi family development.

Easements

The subject site is not encumbered by any recorded easements.

Topography

The subject site is generally level, above street grade and appears to have adequate off-site drainage.

Flood Zone

According to The Flood Insurance Rate Map Community Panel Number 5101560114E, revised August 3, 2015, the parcel is located in Flood Zone X.

AICUZ

The subject property is not encumbered by AICUZ restrictions.

Transportation Linkages

Access to the neighborhood is generally convenient to most of Hampton Roads due to the proximity to Interstate 64. Route 460 provides access to the neighborhood from the western part of the state.

Utilities

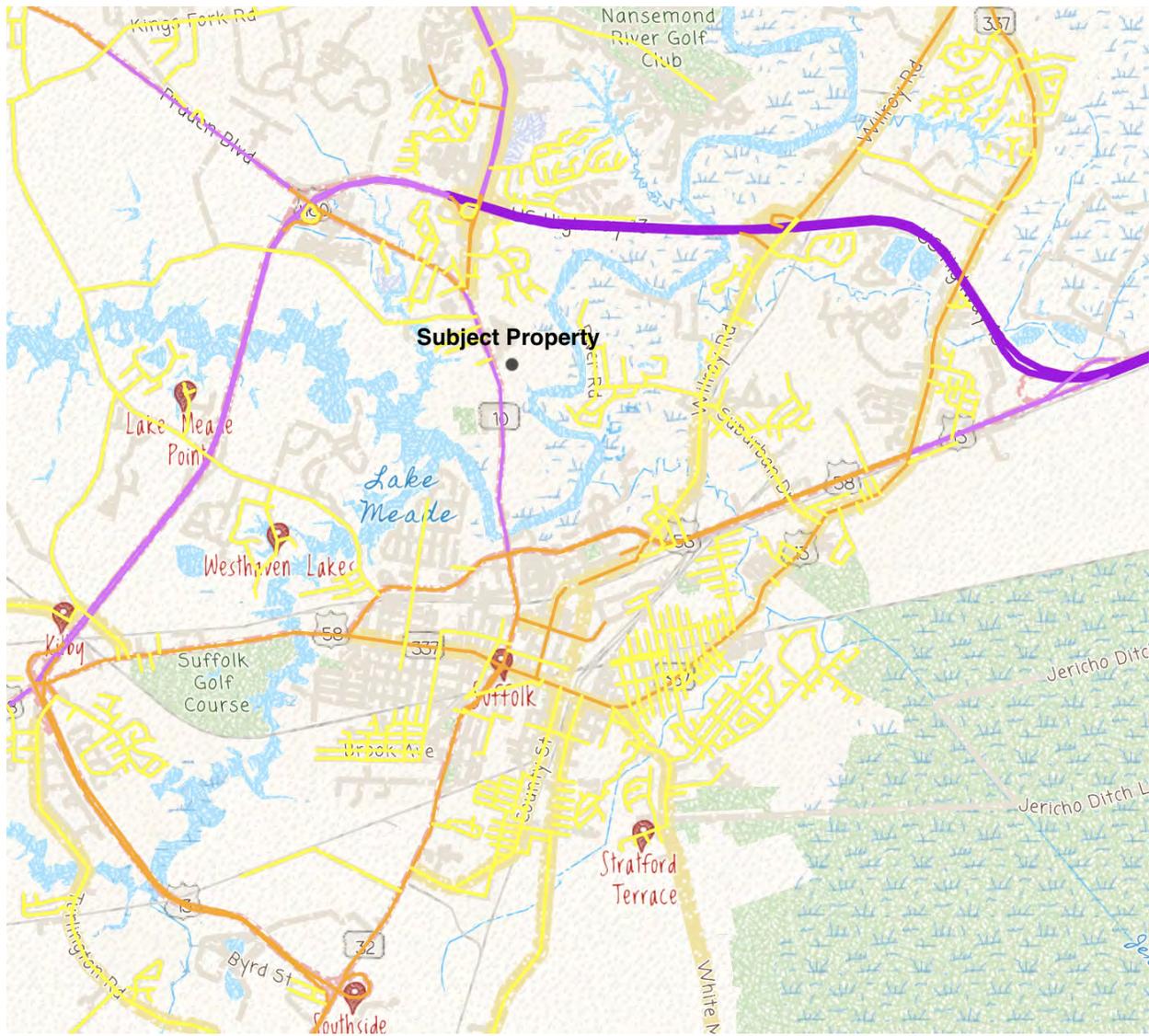
Utilities available to the property are water, sewer, electricity, natural gas, cable and telephone service.

Environmental Hazards

The existence of hazardous materials, which may or may not be present on or in the subject property, was not observed by the appraiser. The value estimate stated herein is subject to modification in the event that a qualified expert detects on or in the property any such potentially hazardous material. The value estimate stated in this appraisal report is predicated on the assumption that there is no such material on or in the property that would cause a loss in value.

Conclusion

The parcel is well situated within South Suffolk, between route 58 and downtown Suffolk. The site will contain 108,900 SF and benefits from its proximity to the interstate, Obici Hospital, retail services, housing, and Suffolk government offices. The site is provided with adequate curb cuts feeding to North Main Street. Considering the subject's size, location, and access, the parcel could appeal to a variety of users.



SUBJECT LOCATION MAP



AERIAL VIEW



TAX MAP

National Flood Hazard Layer FIRMette



76°35'15"W 36°45'28"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

76°34'38"W 36°44'59"N

FLOOD ZONE MAP

IMPROVEMENT SUMMARY

The subject site is improved with a two story plus basement office building constructed in 1949 and contains 32,266 SF. Site improvements will consist of an asphalt paved parking lot, overhead lighting, and attractive landscaping. The surrounding development will be improved in phases which will be a benefit to the subject.

The following is a description of the subject building based on the interior viewing on May 7th, 2025, a second exterior viewing on June 2nd, 2025, and hypothetical conditions proposed by the client.

Foundation

Concrete Basement

Frame

Steel and Brick

Roof

Ballasted Flat Roof- areas of the building suffered from leaks and will require either a new roof or

Exterior Walls

Red Brick

Windows

The building is provided with fixed, insulated glass in anodized frames, as well as single hung windows in some offices.

Access

The building has a double-door entrance facing North Main Street. Numerous access points surround the building's rear.

Floor Plan

The building will have a more contemporary floor plan that accommodates the proposed tenant.

Interior Finishes

The interior will have contemporary finishes including LED lighting, LVT flooring, painted drywall, and similar bathroom finishes.

HVAC

The building is served with multiple HVAC units. The new buildout will likely include new systems. It is assumed that this will be in good working order.

Sprinkler System

The building was not designed with a sprinkler system.

Plumbing

Each floor is served with both men's and women's restrooms. Hypothetically these restrooms will be renovated in some fashion to be brought up to today's standards. Each floor also has janitorial closets allowing for a mop and bucket as well as a floor sink.

Electrical System

The building is provided with ample power for office use. In the interior inspection there were numerous electrical rooms and an abnormal amount of breaker boxes. The renovation should address this with consolidation.

Site Improvements

The site will include a resurfaced and modified parking lot with LED pole lighting. The landscaping will be maintained.

Parking

The subject currently has adequate parking. The proposed re-development will use some of the existing parking as well as share parking for other mixed use buildings.

Effective Age

The building was constructed in 1949 with multiple additions in the decades following its initial build. The building will be renovated with a new floor plan, contemporary interior finishes, new roofing, and a new resurfaced parking lot. The building will have an estimated effective age of approximately 10 years with a remaining economic life (as-is) of 30 years.

Conclusion:

The subject building was constructed in 1949 with good quality materials and designed for the VDOT. The building has curable functional design flaws for general use, but will be renovated for contemporary office use. The building could accommodate a variety of businesses that desire a location within this section of Suffolk.

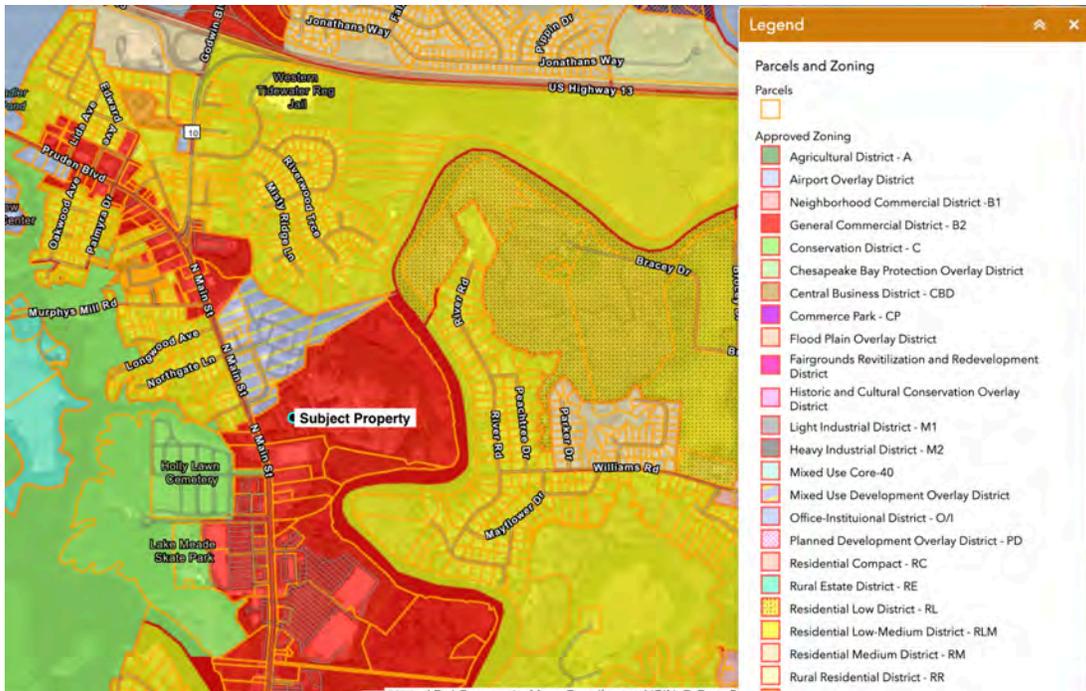
ZONING

The property is zoned **B-2, General Commercial**. The city of Suffolk’s description of this zoning is as follows: “B-2 (GENERAL COMMERCIAL). General commercial activities designed to serve the community such as repair shops, wholesale businesses, warehousing and general commercial sales with some outdoor display of goods but with limited outdoor operations. The redevelopment of existing shopping centers to eliminate large expanses of surface parking and to promote a "Main Street" appearance is encouraged. This district promotes a broad range of commercial operations and services necessary for large regions of the City, providing community balance. Applicable Place Types: Downtown/Town Center, Traditional Neighborhood Center, Suburban Center, Corridor, and Special District.”

Dimensional requirements for the B-2 zoning district including minimum lot size and lot width are shown in the chart below, along with the subject’s actual lot dimensions.

DIMENSIONAL REQUIREMENTS FOR B-2 ZONING DISTRICT			
	B-2	Subject	Complies (Yes or No)
Minimum Lot Size	5,000 SF	108,900 SF	Yes
Minimum Front Yard Setback	10 FT	>10 FT	Yes
Minimum Side Yard Setback	20 FT	>20 FT	Yes
Minimum Rear Yard Setback	30 FT	>30 FT	Yes

The subject site and building improvements conforming with the B-2 zoning regulations.



ZONING MAP

REAL ESTATE ASSESSMENT AND TAX LIABILITY

Property in Suffolk is assessed annually at a purported 100% of market value; with annual reassessments made to keep valuations current. The tax year is a fiscal year from July 1 through June 30. The tax rate for the 2024/25 tax year is \$1.07/\$100 of assessed value.

The subject property is identified by the City of Suffolk Real Estate Assessor as Account Number 2530-66-200. The subject's real estate assessment and tax liability for the current and previous two years is presented below.

Real Estate Assessment and Tax Liability			
Tax Year	2022/2023	2023/2024	2024/2025
Land	\$12,305,300	\$12,305,300	\$12,305,300
Improvements	<u>\$3,772,300</u>	<u>\$3,772,300</u>	<u>\$3,772,300</u>
Total	\$16,077,600	\$16,077,600	\$16,077,600
Tax Rate	<u>\$0.0107</u>	<u>\$0.0107</u>	<u>\$0.0107</u>
Liability	\$172,030.32	\$172,030.32	\$172,030.32
% Change		0.0%	0.0%

HIGHEST AND BEST USE

In the process of determining the highest and best use of a property, the highest and best use of the land *as though vacant* and available for development to its highest and best use must be considered first. Then the highest and best use of the property *as improved* is considered.

Highest and Best Use is defined by the Appraisal Institute, The Dictionary of Real Estate Appraisal, Sixth Edition (Chicago, 2015), pg. 108, as:

“The reasonably probable and legal use of vacant land or an improved property that is physically possible, appropriately supported, financially feasible and that results in the highest value.”

HIGHEST AND BEST USE-AS THOUGH VACANT

Legally Permissible: The property is zoned **B-2, General Commercial**. B-2 (General Commercial) zoning allows a broad mix of commercial uses, including retail, repair shops, warehousing, and wholesale businesses, with limited outdoor operations and displays. It encourages redevelopment of shopping centers into walkable, "Main Street"-style environments and supports commercial activity that serves larger areas of the city. Suitable locations include Downtowns, Neighborhood Centers, Corridors, and Special Districts.

The minimum lot size is 5,000 square feet. The subject site contains 108,900 SF. The subject will be subdivided into a legal conforming use.

Physically Possible: The size, shape, terrain and accessibility of the land and the risk of natural disasters such as floods or earthquakes affect the uses under which the property may be developed. The utility of the property may also depend on its frontage and depth. Irregularly shaped parcels may cost more to develop and, after development, may have less utility than regularly shaped (e.g., rectangular) parcels of the same size. Ease of access enhances the utility of the site.

The subject site will be mostly rectangularly shaped, containing 108,900 SF, and in close proximity to North Main Street. While the size of the subject is adequate for general commercial development, the utility would increase(if vacant) if assembled with the surrounding adjacent land.

Financially Feasible and Maximally Productive: The uses which are physically possible and legally permissible are examined to determine if they are financially feasible. All uses which generate sufficient income to meet or exceed operating expenses and provide an adequate return on investment are considered financially feasible.

Vacant commercial land varies greatly in Suffolk depending on proximity to neighborhoods, business districts, and use. The general range of ‘commercially’ zoned land in Suffolk ranges from \$200,000-\$400,000 per acre. The range of multi-family land has a higher value toward \$800,000 per acre. Considering the proposed development of the surrounding parcel into

multi-family and mixed use, the subject property would be best utilized - as vacant- as assembled with the surrounding parcels for multi-family development.

Conclusion to Highest and Best Use –As Vacant: Therefore, after considering the legally permissible, physically possible, financially feasible and maximally productive uses, the highest and best use of the subject site as though vacant is for assemblage with the adjacent land for further multifamily development. The likely buyer of the subject would be a local or regional developer.

HIGHEST AND BEST USE-AS IMPROVED

The same tests apply to the analysis as improved as were examined in the as if vacant analysis.

Legally Permissible: The subject improvements are conforming within the B-2 zoning regulations.

Physically Possible: The building was constructed in 1949 and designed for VDOT office use. The building contains 32,266 SF, and has a floor plan that reflects that era. The hypothetical condition of this appraisal is that the building is renovated to reflect contemporary office standards. The building will have a functional design, adequate on-site parking, and good access from its connections to North Main Street.

Financially Feasible and Maximally Productive: The research indicated that there is good demand for office space in the immediate and adjacent sub-markets. There were few available units for lease. The subject is owner occupied.

As of Q2 2025, the South Suffolk office submarket has a low vacancy rate of 2.6%, slightly below its five- and ten-year average of 3.8%. The vacancy rate has held relatively steady over the past year with a minor 0.1% decrease, due to no new deliveries and net absorption of -1,300 SF.

Currently, about 30,000 SF is listed as available, and there is no office space under construction, despite a historical average of 2,600 SF under development annually.

The submarket has a total inventory of 1.2 million SF, much smaller than the 56.6 million SF in the overall Hampton Roads area. Average asking rents in South Suffolk are \$21.00/SF (full service), slightly below the market average of \$22.00/SF. Rent growth over the past year was 0.5%, trailing both the market-wide growth of 1.2% and the submarket's own five-year average (3.3%) and ten-year average (2.8%).

In the hypothetical condition of this report, the subject will be subject to a 10 year lease with annual rents starting at \$15.50/SF (NNN) and escalating at 3% annually. This rent is deemed to be market considering the hypothetical conditions of the improvements for the tenant. Whereas the above paragraph states that the Full Service rent is \$21/SF in South Suffolk, a triple net (NNN) lease typically cuts out \$7-8 dollars of expense to the landlord. The new condition of the space more than makes up for the difference in rent (\$15.50-\$14).

Conclusion: There is currently no alternate use that could financially justify a removal of the existing improvements and a re-use of the site. The current proposed use is considered the highest and best use as improved. The likely buyer of the subject property would be a regional or national investor.

APPROACH TO VALUE

Typically, property is valued by application of the three standard approaches to value: Cost Approach, Income Capitalization Approach and Sales Comparison Approach.

1. The principle of the **Cost Approach** embodies the concept of substitution. By principle, no one will pay more for a property than the amount for which he could acquire a comparable site and construct a building with similar utility. The technique of this approach, therefore, is to value the land as if vacant and available for immediate development to its highest and best use and to add the replacement cost new less accrued depreciation of the improvements. The Cost Approach is generally a good indicator of value for newly constructed properties. Its reliability is severely reduced when valuing older buildings. This is primarily due to the difficulty in estimating accrued depreciation.
2. The **Income Approach** to value is applied to properties, which are attractive to investors. These properties are bought and sold on the basis of their income producing potential. This approach is the basic tool for the valuation of income producing real estate because it is related to investor thinking and motivation. The principle of the Income Approach is anticipation: an investor in real estate is trading a sum of money for the right to future income streams. In the Income Approach, the sources of revenue and expenses have been analyzed to arrive at a net operating income for the property. This net operating income has then been capitalized into a value estimate indicative of the market value of the subject.
3. The **Sales Comparison or Market Data Approach** is a systematic process of comparing the properties, which have sold to the property being appraised. This approach involves accumulating information on sales of properties judged to be comparable to the property under analysis. The data is reduced to a common denominator, or in appraisal terminology, units of comparison which, when applied to the subject, give an indication of market value.

The approaches are interrelated as well as tied to underlying and emerging trends identified in the area neighborhood and competitive market analysis considerations of this appraisal report. Judgments are made regarding the reliability and quality of the data, with each approach weighted and analyzed in light of the property being appraised. The final step involves a reconciliation of the value indications into one final value estimate.

The purpose of the appraisal is to estimate the market value, as is, of the leased fee estate in the subject property. The Income and Sales Comparison Approaches have been developed for estimating the market value, as is. The approaches to value are presented on the following pages.

INCOME CAPITALIZATION APPROACH

The Income Approach is based on the theory that the value of a property is the present worth of the net income it will produce during the remainder of its productive life.

The Income Approach is a method of estimating value by capitalization of the net income produced by a given property. The procedure includes: (1) estimation of economic rent predicated on rental data, giving consideration to the rental rates being achieved for similar properties in the subject market area; (2) estimation of vacancy and credit losses; (3) estimation of expenses, including a reserve for replacement; (4) selection of applicable interest and capitalization rates; and (5) translation of the estimated net income into a value indication by the use of capitalization techniques.

Economic or market rent may be defined as what the space would bring in the open market at the time of appraisal. It is best estimated in this report by an analysis of rental data on similar properties. Vacancy and credit loss, as well as expenses, can best be estimated in the same manner. Care is necessary in analyzing this data because most owners tend to overlook the necessity to provide reserves, which are a legitimate expense.

Income producing real estate derives value from its ability to pay expenses and generate income. The income generated is valued by converting or capitalizing the projected net income into value. This procedure is known as the Income Capitalization Approach. There are two different types of capitalization - direct and yield - which can be applied to the net income to arrive at an estimate of value via the Income Approach. For this report that there was enough available data to use direct capitalization which gives the best market derived estimate of a capitalization rate. Yield Capitalization was not used.

Direct capitalization is a method used to convert a single year's estimate of income into a value indication. This is accomplished in one step by either dividing the income estimate by an appropriate income rate or by multiplying the income estimate by an appropriate income factor. The income rates and factors express the relationship of income and value and are derived from market data. It is essential that the market comparables reflect risk, income, expenses and physical and locational characteristics similar to those of the property being appraised.

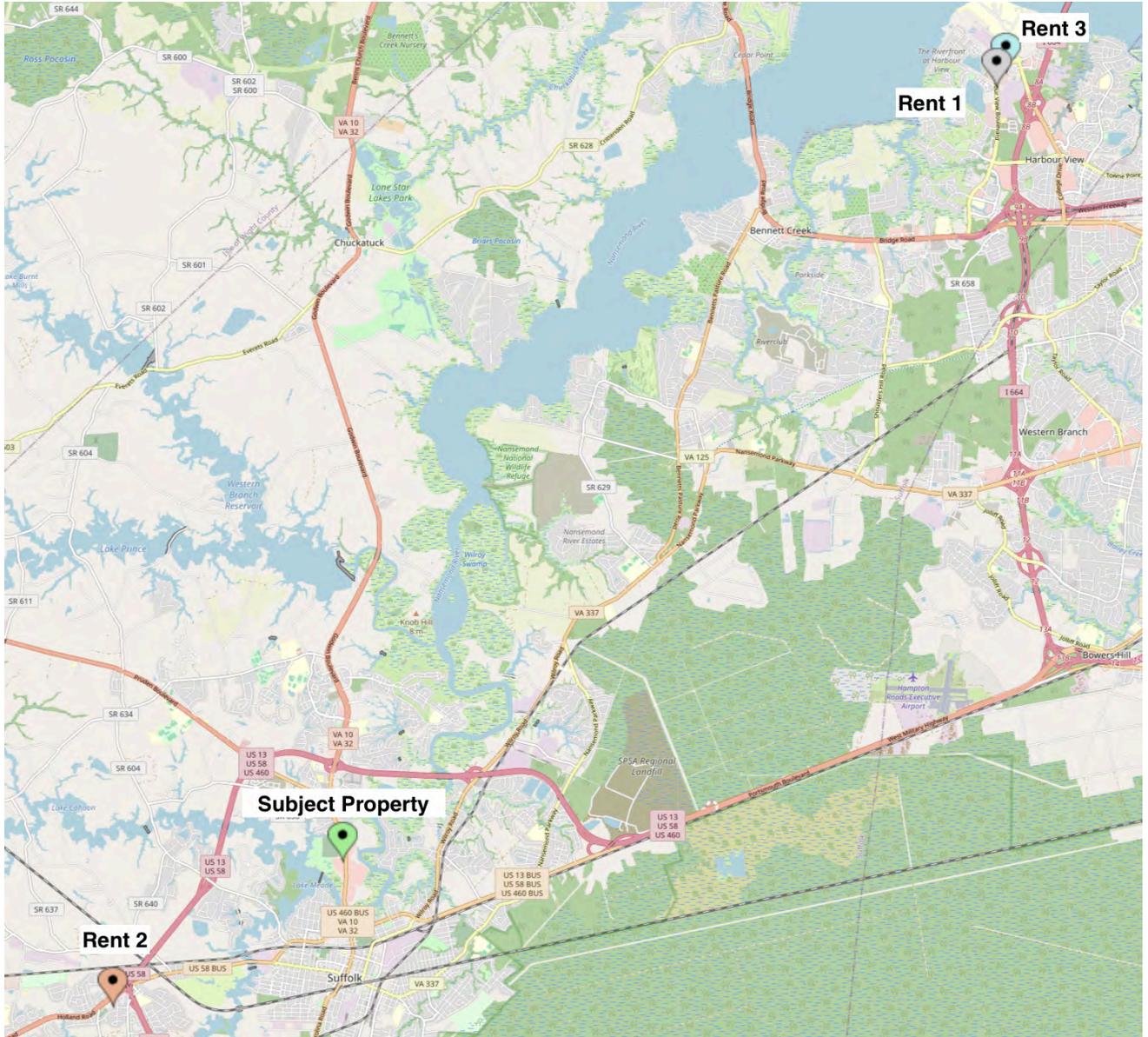
In *yield capitalization*, future benefits are converted to present value by applying an appropriate yield rate. In yield capitalization, an appraiser (1) selects a holding period, (2) identifies all future cash flows or patterns and relationships between present and future cash flows, (3) selects an appropriate yield (discount) rate, and (4) converts the future benefits to value by discounting each annual future benefit or by developing an overall rate that reflects the income pattern, value change, and the yield rate. Yield capitalization procedures consist of the application of capitalization rates that reflect an appropriate yield rate and use of present value factors such as in discounted cash flow analysis. Mortgage-equity formulas and yield rate/value change formulas may be used to derive overall capitalization rates.

Direct capitalization will be used to value the property.

Leasing Structure

The leasing structure for single tenant office space in this section of Suffolk is commonly triple net. A triple net lease will require the tenant to be responsible for paying the real estate tax liability, insurance premium, storm water management fee, utilities and maintenance expense. The landlord would be responsible for paying the management/leasing fee and maintaining a reserve for replacement account. In some instances, the landlord will provide free rent while the tenant completes the interior build-out or pay the upfront expense for the build-out and amortize the expense of the lease term.

For this analysis, and as is typical of the lease information researched for this assignment, a triple net rental rate will be estimated for the 32,266 SF of building. The rent comparables are presented on the following pages.



RENT COMPARABLES MAP

Office Building Rent

Comparable #1

Location/Address: 7025 Harbour View Blvd
Neighborhood Harbour View
City: Suffolk
Date: 6/19/22
Lessor: Bridgeway 7025 LLC
Lessee: Confirmed
Terms: \$14.00 NNN
Building Size 122,936
Leased Area 6,471
Year Built: 2001
Rent (SF): \$14.00
Rent (Monthly): \$7,550
Expenses Paid By...
Taxes: T **Insurance:** T **W/S:** T **Electricity:** T **Janitorial:** T
Maintenance (int): T **Maintenance (ext):** O

Building Remark: This is a single story multi tenant office building with ample parking. Tenants include contractors and service businesses.

Lease Remark: The agent indicated the commencement rent is \$14/SF, NNN. The landlord would be responsible for the roof and other exterior maintenance.



Office Building Rent

Comparable #2

Location/Address: 1514 Holland Road
Neighborhood South Suffolk
City: Suffolk
Date: 1/1/2024
Lessor: 1514 Holland Road LLC
Lessee: Confirmed
Terms: \$16/SF NN
Building Size 11,782
Leased Area 4,480
Year Built: 2000
Rent (SF): \$16.00
Rent (Monthly): \$5,973
Expenses Paid By...
Taxes: **Insurance:** **W/S:** **Electricity:** **Janitorial:**
Maintenance (int): **Maintenance (ext):**

Building Remark: This is a single story office building. The 1-story building is located in Southwest Suffolk. There is ample parking with retail contiguous to the site.

Lease Remark: The agent confirmed that the tenant signed a multi year lease starting at \$16/SF NN.



Office Building Rent

Comparable #3

Location/Address: 7007 Harbour View Blvd
Neighborhood Harbour View
City: Suffolk
Date: 2/22/2024
Lessor: Continental Technology Associates LP
Lessee: Confirmed
Terms: 5 years, \$15/SF NNN
Building Size 71,306
Leased Area 9,448
Year Built: 2006
Rent (SF): \$15.00
Rent (Monthly): \$11,810
Expenses Paid By...
Taxes: T **Insurance:** T **W/S:** T **Electricity:** T **Janitorial:** T
Maintenance (int): T **Maintenance (ext):** O

Building Remark: This is a single story office building in Suffolk. The building is occupied by multiple tenants.

Lease Remark: The tenant signed a 5 year lease. The owner has minimal responsibilities including the roof and other exterior maintenance.



MARKET RENT ANALYSIS

The surrounding Suffolk sub-markets were researched to provide a general rental rate range for the subject property. The comparables have been adjusted, if necessary, to reflect a triple net rental rate.

Rent Comparable #	Subject	1	2	3
Location	1700 N Main St	7025 Harbour View Blvd	Holland Rd	7007 Harbour view Blvd
Neighborhood	South Suffolk	North Suffolk	South Suffolk	North Suffolk
City	Suffolk	Suffolk	Suffolk	Suffolk
Date	NA	6/19/2022	1/1/2024	2/22/2024
Rental Rate	NA	\$14.00	\$16.00	\$15.00
Year Built/Renovated	1949/2025	2001	2000	2006
Building Area (SF)	32,266	122,936	11,782	71,306
Leased Area	32,266	6,471	4,480	9,448
Lease Type	NNN	NNN	NN	NNN
Rent Adjustments				
Real Estate Taxes		\$0.00	\$1.20	\$0.00
Building Insurance		\$0.00	\$0.25	\$0.00
Water/Sewer		\$0.00	\$0.00	\$0.00
Electricity		\$0.00	\$0.00	\$0.00
Janitorial		\$0.00	\$0.00	\$0.00
Maintenance (Ext.)		\$0.00	\$0.25	\$0.00
Maintenance (Int.)		\$0.00	\$0.00	\$0.00
Condition		\$1.00	\$1.00	\$1.00
Total Adjustment		\$1.00	\$0.70	\$1.00
Adjusted Rent	NNN	\$15.00	\$15.30	\$16.00

Rent #1 is the rent for office space in a large single story office building. The asking rent was \$14.00/SF, NNN for 6,476 SF with ample on-site parking. Comparable #2 is the lease information for a smaller office building. The building includes adequate parking and is adjacent to a retail shopping center. Comparable #3 is for 9,446 SF of space in a similar single story office building in an office park near Comparable #1. The space rented for \$15 NNN with tenant buildout.

The subject property will be rented at \$15.50/SF NNN. This rent is within market standards, especially considering the level of tenant buildout expected and the surrounding amenities to the building.



The subject property benefits from its proximity to 64, surrounding amenities, and buildout. Based on the rent comparables used for this analysis, coupled with the design and size of the subject building, a market rent of **\$15.50/SF, NNN**, is estimated for the 32,266 SF subject.

Vacancy and Credit Loss

As of Q2 2025, the South Suffolk office submarket has a low vacancy rate of 2.6%, slightly below its five- and ten-year average of 3.8%. The vacancy rate has held relatively steady over the past year with a minor 0.1% decrease, due to no new deliveries and net absorption of -1,300 SF.

Currently, about 30,000 SF is listed as available, and there is no office space under construction, despite a historical average of 2,600 SF under development annually.

The submarket has a total inventory of 1.2 million SF, much smaller than the 56.6 million SF in the overall Hampton Roads area. Average asking rents in South Suffolk are \$21.00/SF(full service), slightly below the market average of \$22.00/SF. Rent growth over the past year was 0.5%, trailing both the market-wide growth of 1.2% and the submarket’s own five-year average (3.3%) and ten-year average (2.8%).

This information- the clear lack of high quality office space in the subject’s submarket- coupled with the hypothetical lease in place to a government entity would give any investor a high level of confidence in the subject.

Based on the market information researched for this report and considering the subject's location, the subject is estimated to have no vacancy or credit loss. The subject's effective gross income is presented below.

Gross Annual Income:						
Building Area						
32,266	SF	@	\$15.50	/SF	=	\$500,000
<i>Less Vacancy/Credit Loss; est.</i>		@	0%		=	<u>\$0</u>
Effective Gross Income						\$500,000

Operating Expenses

A triple net lease assigns the tenant to be responsible for paying the real estate tax liability, insurance premium, storm water management fee, utilities, trash removal, and interior maintenance. The landlord is responsible for a reserve for replacement fund on major capital items, paying a management/leasing fee (typically), and the roof and structure. The landlord expenses are discussed below.

Reserves

A reserve for replacement fund of **3%** of effective gross income has been estimated for this analysis.

Management & Professional Fees

Management and leasing charges are proper expenses of operation where property managers and services are contracted or provided by the property owner. Typical commercial management and leasing fees for Office Buildings are in the 3% to 6% range. A management/professional fees expense of **3%** is considered reasonable and has been used for this expense analysis.

NET OPERATING INCOME

The projected net operating income for the subject building is estimated to be \$470,000. The income and expense pro-forma are presented below.

**Office Building
1700 N Main Street
Suffolk Va**

Gross Annual Income:						
Office Building						
	32,266	SF	@	\$15.50 /SF	=	\$500,000
<i>Less Vacancy/Credit Loss; est.</i>			@	0.0%	=	<u>\$0</u>
Effective Gross Income						\$500,000
Less Expenses:						
				<u>\$/SF</u>		
Real Estate Taxes		(Tenant)		\$0.00		\$0
Insurance		(Tenant)		\$0.00		\$0
Storm Water Mgmt. Fee		(Tenant)		\$0.00		\$0
Utilities		(Tenant)		\$0.00		\$0
Janitorial		(Tenant)		\$0.00		\$0
Trash Removal		(Tenant)		\$0.00		\$0
Landscaping/Grounds		(Tenant)		\$0.00		\$0
Repairs & Maint.		(Tenant)		\$0.00		\$0
Reserves		(Owner)		3% of EGI		\$15,000
Management/Leasing		(Owner)	@	<u>3%</u> of EGI		<u>\$15,000</u>
Total Expenses				\$0.93		<u>\$30,000</u>
Net Operating Income						\$470,000
<i>(Before Deprec., Inc Taxes or Debt Service)</i>						

CAPITALIZATION

Capitalization is the process of converting income into value. There are two commonly accepted types of capitalization: Direct Capitalization is defined as *a method used to convert an estimate of a single year's income expectancy into an indication of value in one direct step -either by dividing the income estimate by an appropriate income rate or by multiplying the income estimate by an appropriate factor.* (The Dictionary of Real Estate Appraisal, Sixth Edition, Chicago: Appraisal Institute, 2015.)

Direct capitalization will be used to value the subject property.

Market Derived Capitalization Rates

Buildings like the subject are typically owner occupied. Sales of similar government leased commercial properties purchased by regional or national investors have been researched to provide an indication of market derived capitalization rates. The indicated rates are summarized in the following table.

Address	Column1	State	Sale Date	Sale Price	Cap Rate	Rent	NOI	Term	Lease	Rent Increases	Tenant
219 Arch Ave	Waynesboro	VA	Feb-25	\$ 1,000,000	6.27%	\$ 65,000	\$ 62,700	5	NN	10% in Options	VA ABC
201 Chowan Dr	Portsmouth	VA	Aug-24	\$ 725,000	7.07%	\$ 56,870	\$ 51,290	3.5	NN	5% in Options	USPS
3281 Peoples Dr	Harrisonburg	VA	Jun-24	\$ 2,000,000	7.20%	\$ 180,367	\$ 144,054	10	NN	2% Annual	DMV
1121 Mall Dr	Richmond	VA	May-24	\$ 2,025,000	6.51%	\$ 147,291	\$ 131,868	5	NN	10% in Options	USPS
155 Ponce DeLeon Blvd	De Leon Springs	FL	Jun-24	\$ 1,540,000	6.99%	\$ 114,150	\$ 107,645	4	NN	10% in Options	USPS

The sales occurred between February 2024 and August 2024 and suggest a capitalization rate range from 6.27% to 7.2%. The sales were encumbered by long-term leases, which provided an attractive return to the buyers. The subject is a general office building which will be encumbered by a 10 year lease.

The Boulder Group provides ranges of capitalization rates for institutional sales throughout the country and indicates overall rates ranging from **6.5% to 7.8%** for retail and office properties during the 1st quarter of 2025. Trying to correlate these national surveys to the subject property may be misleading. That being said, the trend can be telling.

NET LEASE CAP RATE TRENDS



Conclusion

An Overall Capitalization rate of **7.50%** is estimated for the subject property via the market derived rates with considering the Boulder Group capitalization rate study. Applying the capitalization rate (Ro) of **7.50%** derived above, to the previously estimated net operating income for the property, will calculate a value estimate.

Capitalized Value of Property	\$470,000	Capitalized	@	7.50%	=	\$6,266,667
TOTAL INDICATED VALUE - INCOME					(rounded)	\$6,270,000

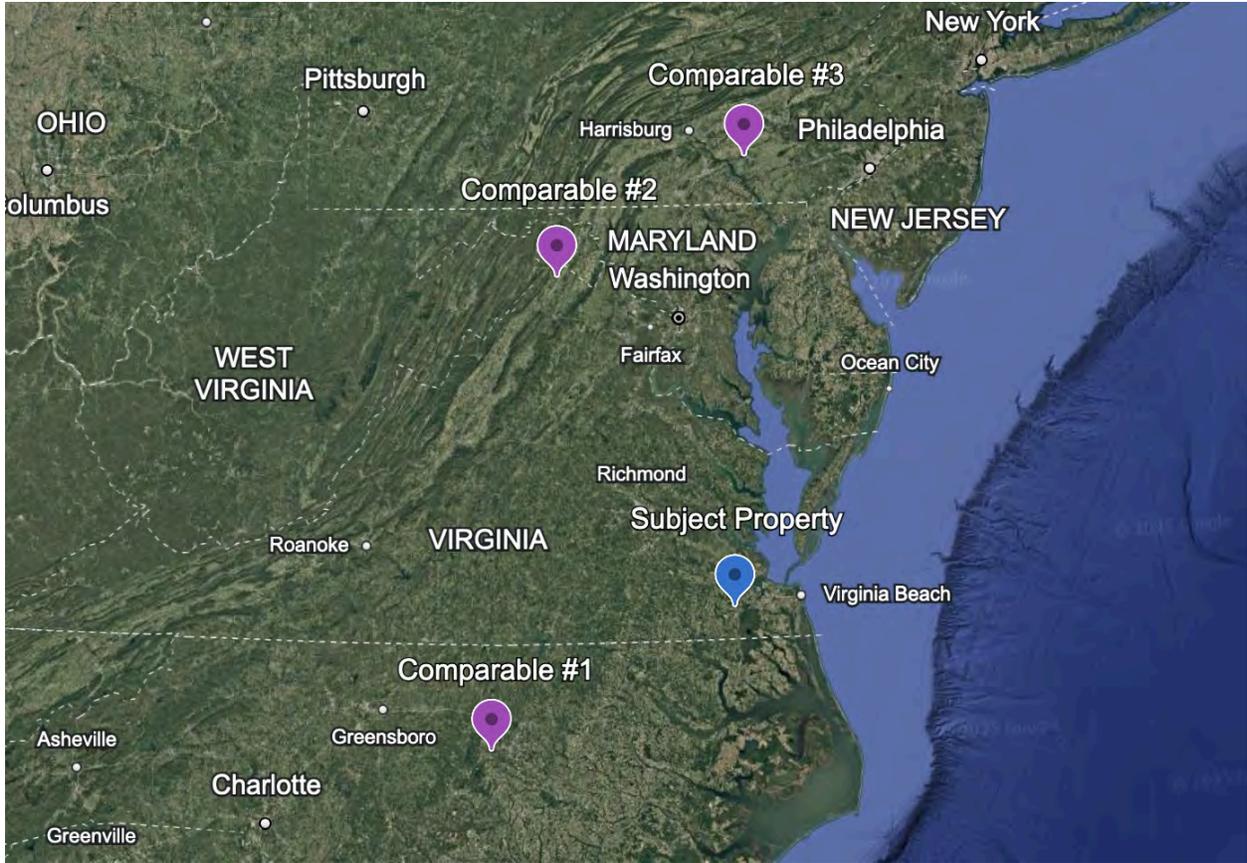
Therefore, based on the Direct Capitalization analysis, the market value, as is, of the leased fee interest in the subject property, via the Income Approach, as of August 1, 2026, was (rounded) **\$6,270,000**.

SALES COMPARISON APPROACH

The Sales Comparison Approach, also known as the Market Data Approach, is an application of the principle of substitution. This method of estimating value is accomplished by comparing the prices paid for similar properties, with adjustments made for dissimilarities which a typical purchaser would recognize. Generally speaking, many buyers and sellers arrive at their opinion of value by this method. Before purchasing a property, they usually acquaint themselves with various properties that are available or have recently been sold and compare the different features of each along with the sales prices.

Caution must be exercised in evaluating the market from a comparable sales approach. Even if a physically identical property sells, the comparison would at best be a rough indication of value unless every factor influencing the sale can be verified. These factors include buyer/seller motivation, complete income and expense information, physical differences etc. It is frequently difficult to obtain accurate insights into all these factors.

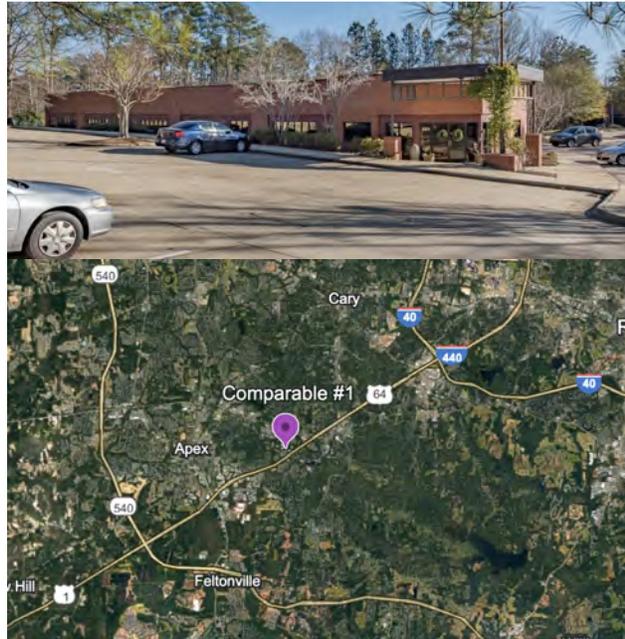
The three office building sales presented on the following pages have been selected as being the most comparable to the subject property.



IMPROVED SALES MAP

Comparable Sale # 1

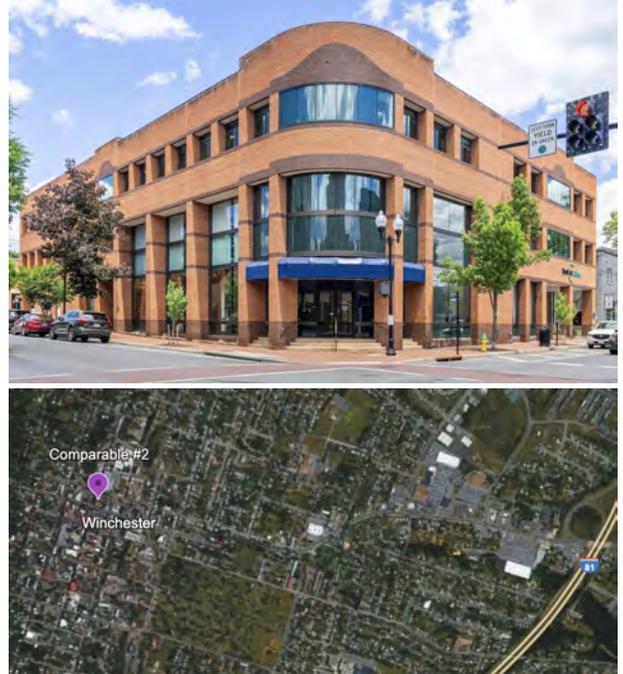
Property: Mackenan
Location/Address: 201 Mackenan Dr
Neighborhood: MacGregor Park
City/County: Cary, NC
Zoning: ORD
Tax Reference: 0193-191
Grantor: Hamilton Mackenan LLC
Grantee: ITAC 551 LLC
Deed Date: 6/11/2024
Document Number: 019646-00821
Rights Conveyed: Leased fee
Condition of Sale: Arm's Length
Sale Price: \$3,250,000
Cap Rate: 7.59%
Land Size (AC): 1.93 Acres
Building Size: 13,283
Year Built: 1992
Price per square foot: \$244.67



This is a single story brick building. It is built into a hillside. The building is inside Interstate 540 adjacent to Hwy 64 on the border between Cary and Apex. The building is occupied by a single tenant with a long term triple net lease.

Comparable Sale # 2

Property: Bank of Clarke
Location/Address: 202 N Loudoun Street
Neighborhood: Winchester
City/County: Winchester City, Va
Zoning: CBD
Tax Reference: 173-01-N1
Grantor: Bank of Clarke
Grantee: Dave Holland Rentals LLC
Deed Date: 12/18/2024
Document Number: 24000507
Rights Conveyed: Leased fee
Condition of Sale: Arm's Length
Sale Price: \$8,000,000
Cap Rate: 6.50%
Land Size (AC): .69
Building Size: 43,780
Year Built: 1986
Price per square foot: \$182.73



This is a multi story brick building on the corner of East Piccadilly Street and N Loudoun Street. The bank building square footage includes finished basement space. The Bank of Clarke occupies the entire building and the lease that encumbers the building is triple net. That, coupled with the 10 year term made this building attractive to investors.

Comparable Sale # 3

Location/Address: 2124 Ambassador Circle
Neighborhood: Lancaster
City/County: Lancaster County, Pa
Zoning: C-O
Tax Reference: 290-37763-0-0000
Grantor: RRA Manheim, LLC
Grantee: Ambassador Circle Partners LLC
Deed Date: 2/14/2025
Document Number: 20250005593
Rights Conveyed: Leased fee
Condition of Sale: Arm's Length
Sale Price: \$3,250,000
Cap Rate: 6.23%
Land Size (AC): 3.2
Building Size: 15,277
Year Built: 1994
Price per square foot: \$212.74



This is a single story split face block building. It is surrounded by high credit worthy retail buildings as well as residential. The property was encumbered by a private Elementary and Secondary school. It was founded in 2005. The property had 5 years remaining on the lease with a 5 year option.

Improved Sales Analysis

The following discussion references the chart below. The three buildings are all on the east coast, all have triple net leases, and were all investment grade. Prior to adjustments, the three comparables ranged in unit value from \$182.73/SF to \$244.67/SF.

Improved Sale #	Subject	1	2	3
Location	1700 N Main St	Mackenan Dr	Loudoun St	Ambassador Cir
Neighborhood	Downtown Suffolk	MacGregor Park	Winchester City	Lancaster
City, State	Suffolk	Cary, NC	Winchester, Va	Lancaster, Pa
Date	NA	6/11/2024	12/18/2024	2/14/2025
Consideration	NA	\$3,250,000	\$8,000,000	\$3,250,000
Zoning	B-2	ORD	CBD	CO
Year Built/Renovated	1949	1992	1986	1994
Land Size (AC)	2.50	1.93	0.69	3.20
Building Area (SF)	32,266	13,283	43,780	15,277
Price/SF	NA	\$244.67	\$182.73	\$212.74
Cap Rate		7.59%	6.50%	6.23%
Property Rights Appraised		Leased Fee	Leased Fee	Leased Fee
Adjustment		0%	0%	0%
Adjusted Price/SF		\$244.67	\$182.73	\$212.74
Financing		Market	Market	Market
Adjustment		0%	0%	0%
Adjusted Price/SF		\$244.67	\$182.73	\$212.74
Condition of Sale		Arm's Length	Arm's Length	Arm's Length
Adjustment		0%	0%	0%
Adjusted Price/SF		\$244.67	\$182.73	\$212.74
Market Conditions				
Adjustment	0% /year	0.00%	0.00%	0.00%
Adjusted Price/SF		\$244.67	\$182.73	\$212.74
Other Adjustments				
Location		-5%	0%	0%
Building Size - SF		0%	0%	0%
Age/Condition		0%	0%	0%
Net Adjustment		-5%	0%	0%
Adjusted Unit Value Range - \$/SF		\$232.44	\$182.73	\$212.74
Adjusted Sale Price		\$3,087,500	\$8,000,000	\$3,250,000

EXPLANATION OF ADJUSTMENTS

Property Rights Conveyed

The transaction price of a property is generally based on the type of real property interest being transferred. Buyer motivations can vary depending on whether a leased fee interest or a leased fee interest is being acquired, which can in turn affect the property's price. In the case of the three comparable sales, all interests conveyed were leased fee. Therefore, no adjustment was necessary for differences in property rights.

Financing Terms

The transaction price of one property may differ from that of an identical property due to different financing arrangements. The research did not reveal unusual financing terms for the comparable sales, therefore, no other adjustment was necessary.

Conditions of Sale

Adjustments for conditions of sale must be made to accurately reflect the motivations of the seller and the buyer if it is determined that the sale was not truly an arm's length transaction. An arm's length transaction is defined as a transaction between unrelated parties under no duress. (The Dictionary of Real Estate Appraisal, Fifth Edition, Chicago: Appraisal Institute 2010). The Comparables were arm's length transfers and required no adjustment.

Market Conditions

Market conditions change over time due to inflation, deflation, changes in supply and demand, etc. This adjustment, often referred to as an adjustment for "time", takes these changes into consideration. In the past 2 years there is no evidence that office building sales have increased. Therefore no market condition adjustments have been applied.

Physical & Other Attributes

Location

Sale #1 was downward adjusted due to its superior location in Cary, North Carolina. Sales #2 and #3 did not warrant a location adjustment, as they have similar market dynamics.

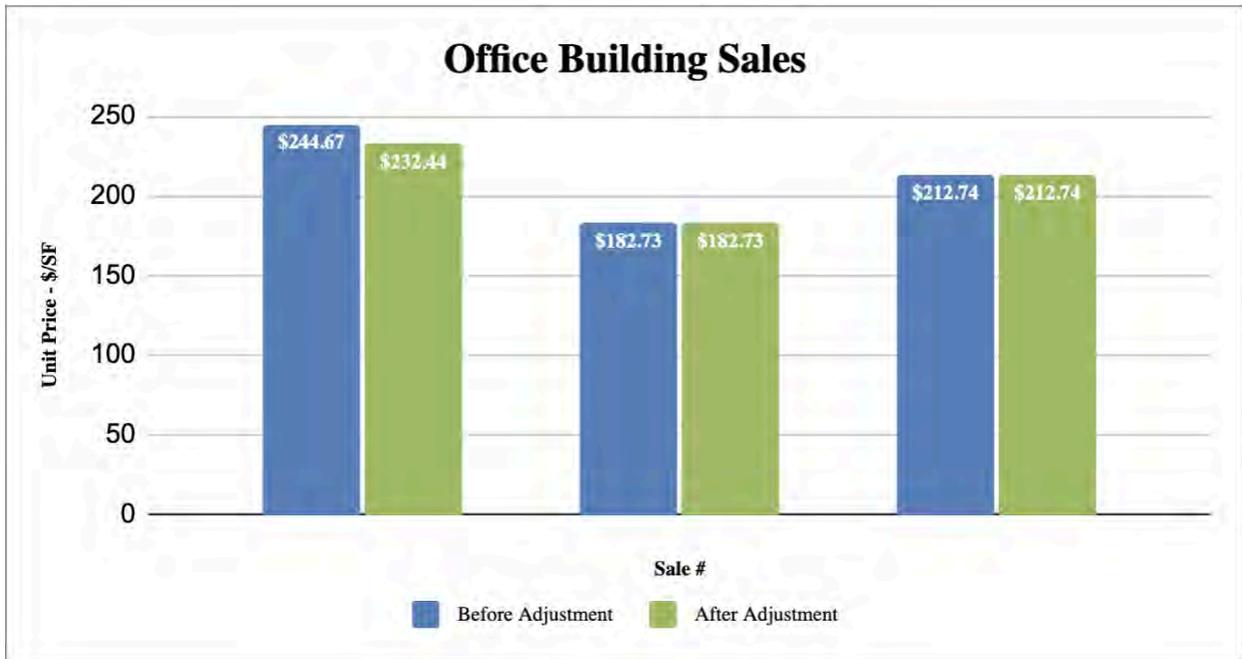
Building Size

As buildings get larger, construction economies can often be realized because typically there are only small or no increases in building costs or site costs. The size differences between the comparable buildings and subject property were not large enough to warrant a size adjustment.

Age/Condition

As newer and higher-quality buildings will have potentially less maintenance expense, prospective purchasers will most likely be willing to pay a premium for them (or less for older or lower-quality buildings). All of the comparable buildings are within the market norms for contemporary building conditions and therefore do not need to be adjusted.

Reconciliation



After adjustments, the three comparables range in unit price from \$182.73/SF to \$232.44/SF and provide a general range of unit prices for single tenant triple net buildings on the east coast. The greatest weight was given to comparable sale #2 based on the similarities in square footage, basement square footage, lease term, and submarket dynamics. Based on the buildings analyzed for the Sales Comparison Approach, a unit value of **\$195/SF** has been estimated for the subject building.

Therefore, based on the Sales Comparison Approach the market value, as is, of the leased fee interest in the subject, as of August 1, 2026, was:

<u>Size (SF)</u>	x	<u>Unit Value (\$/SF)</u>	=	<u>MV</u>
32,266	x	\$195	=	\$6,291,870
			Rounded	\$6,290,000

RECONCILIATION AND FINAL VALUE ESTIMATE

Each of the approaches to value described herein has been allowed to draw its own logical conclusion without conscious bias or manipulation on the part of the appraiser.

With regard to reconciling the value indications of each of the approaches, each indication has been analyzed and weighed in light of its dependability as an indication of the probable actions of buyers and sellers on the open market.

These indications are summarized as follows:

Cost Approach	Not Developed
Income Approach	\$6,270,000
Sales Comparison Approach	\$6,290,000

The appraiser did not develop the Cost Approach to value for this property due to the age and construction quality of the building. The appraiser believes the primary approaches to value are the Sales Comparison and Income Approaches.

The Income Approach is an accurate method of estimating value of income producing properties. The Income Approach was developed to estimate the market value, to be completed, of the 32,266 SF building. The building is being appraised as renovated, with a 10 year lease, renting for \$500,000 annually with 3% annual increases. The tenant will be the City of Suffolk, giving high credibility. A market rent of **\$15.50/SF, triple net** was estimated based on asking and actual rental rate for nearby space. A stabilized occupancy of 100% was estimated for the building based on tenant credit and market vacancy rate. Operating expenses reflected the modified gross lease arrangement and totaled \$.93/SF. A capitalization rate of 7.50% was estimated for the building and was based on recent transfers of buildings. The Income Approach is well-supported, but has been supported by the Sales Comparison Approach.

When properly developed, the Sales Comparison Approach is an excellent indicator of value since it represents the actions of buyers and sellers in the market place. This approach is largely based upon the principle of substitution as a prudent investor will not pay more for a property than it will cost to buy a comparable substitute property. In this analysis price comparisons were based on price per square foot of building area. The sales occurred between June 11, 2024 and February 2025 and provided a good range of unit prices for similar utility buildings. For these reasons, the Sales Comparison Approach is considered a good indication of value for the subject property.

There is a small difference in value between the Sale Comparison Approach and the Income Approach. The biggest reason for this is that buyer motivations for the Sales Comparison Approach and Income Approach were similar. The subject building- as proposed in the hypothetical condition- matches what investors in the marketplace are looking for, and therefore a similar price would be expected.

After considering the factors pertinent to the valuation of the subject, it is my opinion that the best indication of the market value, as is, of the leased fee interest in the subject property, is the **Income Capitalization Approach**, with support from the **Sales Comparison Approach**.

Based on my analysis, and subject to the limiting conditions and definitions in this report, it is my opinion that the market value, as is, of the leased fee interest in the subject property, as of August 1, 2026, was:

SIX MILLION TWO HUNDRED SEVENTY THOUSAND DOLLARS
(\$6,270,000)

ADDENDUM

COMMONWEALTH of VIRGINIA
Department of Professional and Occupational Regulation
9960 Mayland Drive, Suite 400, Richmond, VA 23233
Telephone: (804) 367-8500

EXPIRES ON
09-30-2026

NUMBER
4001018664

REAL ESTATE APPRAISER BOARD
CERTIFIED GENERAL REAL ESTATE APPRAISER

 **MICHAEL GARRETT FINE**
1113 DITCHLEY RD
VIRGINIA BEACH, VA 23451



Barbara
Barbara H. Wolford, Director

Status can be verified at <http://www.dpor.virginia.gov>

(SEE REVERSE SIDE FOR PRIVILEGES AND INSTRUCTIONS)

DPOR-LIC (02/2017)



















VIRGINIA LAND RECORD COVER SHEET
Commonwealth of Virginia VA CODE § 57-1-20, 22, 1-24
FORM A - COVER SHEET CONTENT

AUG-1 '21 @10:28

Instrument Date: 7/14/2021

Instrument Type: 000

Number of Parcels: 1 Number of Pages: 1

City County: SUFFOLK COUNTY
COURT/COURT

Tax Exempt: VIRGINIA FEDERAL CODE SECTION

Grantee: 58.1-211(A) (1) 58.1-211(C) (4)

Grantee: 58.1-211(B) (1) 58.1-211(C) (4)

Business/Name

X Grantee: COMMONWEALTH OF VIRGINIA, DEPARTMENT OF TRANSPORTATION

Grantee:

X Grantee: ECONOMIC DEVELOPMENT AUTHORITY OF THE CITY OF SUFFOLK

Grantee:

Grantee Address

Name: ECONOMIC DEVELOPMENT AUTHORITY OF THE CITY OF SUFFOLK

Address: 440 HAZARD STREET

City: SUFFOLK

State: VA

Zip Code: 23134

Consideration: \$400,000.00 Existing Debt: \$0.00 Actual Value/Assessed: 1991,000.00

VIRGINIA INSTRUMENT UNDER \$10,000.00

Original Principal: \$0.00

Pay Method Value Received: \$0.00

Original Book No.:

Original Page No.:

Original Instrument No.:

Prior Recording At: City County

Percentage In This Jurisdiction: 100%

Book Number:

Page Number:

Instrument Number:

Parcel Identification Number/Tax Map Number: 253064220

Short Property Description: PT 440, BRICO, BRICI HOSPITAL

Current Property Address: 470 N WALK STREET

City: SUFFOLK

State: VA

Zip Code: 23134

Instrument Prepared By: OFFICE OF THE ATTORNEY GENERAL Recording Paid By: EXEMPT

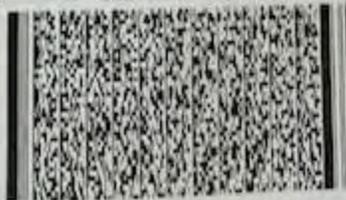
Recording Released To: WACY FIDELITY TITLE & SETTLEMENT

Address: 181 STONES WALK ROAD

City: ORANGE

State: VA

Zip Code: 22962



This document prepared by: OFFICE OF THE ATTORNEY GENERAL
 Consideration: \$800,000.00
 Actual Value: \$450,000.00
 Tax Map Parcel: Part of 25*45A
 Title Company: N/A
 Tax ID No: portion of 253066200

THIS DEED IS EXEMPT FROM RECORDING TAXES PURSUANT TO §§ 58.1-811(A)(3) and 58.1-811(C)(4) OF THE CODE OF VIRGINIA (1950), AS AMENDED, AND (II) FROM THE PAYMENT OF CLERK'S FEES PURSUANT TO §§ 17.1-266 AND 17.1-279.E OF SAID CODE.

DEED

This DEED, dated the 14th day of July, 2023, by and between the **COMMONWEALTH OF VIRGINIA, DEPARTMENT OF TRANSPORTATION** (the "Grantor,"), and the **ECONOMIC DEVELOPMENT AUTHORITY OF THE CITY OF SUFFOLK**, a political subdivision of the Commonwealth of Virginia (the "Grantee"), recites and provides as follows:

WITNESSETH

WHEREAS, the Commonwealth of Virginia (the "Commonwealth") owns certain real property, with improvements thereon, in the City of Suffolk, Virginia, being more particularly described in Schedule A, attached hereto and incorporated herein (the "Property"), which Property has been in the possession of the Commonwealth of Virginia, Department of Transportation; and

WHEREAS, 2017 Session Virginia Acts of Assembly, Chapter 836 (House Bill 1506) provides in Item C-41.10 that Grantor is "authorized to market, sell and convey all or a portion of the Hampton Roads District Headquarters in Suffolk, Virginia, containing 88,463 acres, more or less" of which the Property forms a part;

NOW, THEREFORE, FURTHER WITNESSETH:

That for and in consideration of the sum of Ten Dollars (\$10.00), paid by Grantee to Grantor, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and with authority of Virginia Code § 2.2-1150 and other applicable laws, the Grantor does hereby grant and convey to the Grantee, without warranty of title, the Property more particularly described as follows:

All that certain lot, piece or parcel of land with all improvements thereon and appurtenances thereunto belonging, lying and being in the City of Suffolk, Virginia, containing 1.004 acres, more or less, being identified as a portion of Tax Map Parcel 25*45A, Account No. 253066200, and being more particularly shown on the plat of survey entitled "BOUNDARY LINE AGREEMENT

TRANSPORTATION (D.B. 156, PG. 501) (D.B. 296, PG. 661) AND ECONOMIC DEVELOPMENT AUTHORITY OF THE CITY OF SUFFOLK, VIRGINIA (INSTRUMENT #150067435, PG 1-8)" made by MSA, P.C., dated March 21, 2022, a copy of which is attached hereto and to be recorded herewith in the Clerk's Office of the Circuit Court of the City of Suffolk in Plat Book —, at page —. Recorded Simultaneously immediately prior to this deed.

The Property is conveyed in its "AS IS WHERE IS, WITH ALL FAULTS" condition, without warranty or representation as to its acreage, boundary lines, condition, value, or permitted use, and without any warranty or representation with regard to the presence of any toxic or hazardous substances or materials of any nature (including but not limited to petroleum, lead, radon, asbestos or asbestos-containing materials).

This conveyance is made expressly subject to the exceptions set forth on the attached "EXHIBIT A"

This transaction has been approved by the Governor of Virginia, acting through the Secretary of Administration, pursuant to 2017 Session Virginia Acts of Assembly, Chapter 836 (House Bill 1500) and other applicable law, as evidenced by the following or attached approval, which is incorporated herein by reference.

(Signatures begin on next page.)

WITNESS the following signatures and seals

GRANTOR:

COMMONWEALTH OF VIRGINIA,
DEPARTMENT OF TRANSPORTATION

By: *William C. Ferguson, P.E.*
William C. Ferguson, P.E., Director
Division of Capital Outlay and Facility Management

COMMONWEALTH OF VIRGINIA
CITY OF RICHMOND, to-wit:

The foregoing Deed was acknowledged before me this 14 day of July, 2023 by
William C. Ferguson, acting in his capacity as Director of Capital Outlay and Facility Management,
Commonwealth of Virginia, Department of Transportation, on behalf of the Department.

My commission expires: 11/30/2026

My commission number: 7794538

Nguyễn Diễm Kiều
Notary Public



GRANTEE'S ADDRESS:
City of Suffolk
c/o Kevin Hughes
442 West Washington St.
Suite 2017
Suffolk, VA 23434

OFFICE OF THE ATTORNEY GENERAL
Approved as to Form:

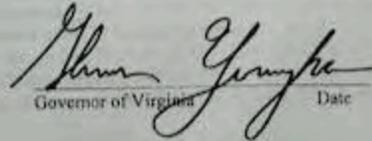
By: 
Senior Assistant Attorney General

RECOMMEND APPROVAL:
DEPARTMENT OF GENERAL SERVICES

By: 
Director

APPROVAL BY THE GOVERNOR:

Pursuant to 2017 Session Virginia Acts of Assembly, Chapter 836 (House Bill 1500), I hereby approve the conveyance of the Property described in the attached or foregoing Deed, and the execution of this instrument.


Governor of Virginia

7-14-23

Date

SCHEDULE A

All that certain lot, piece or parcel of land with all improvements thereon and appurtenances therunto belonging, lying and being in the City of Suffolk, Virginia, containing 1.003 acres, more or less, being identified as a portion of Tax Map Parcel 25*45A, Account No. 253066200, and being more particularly shown on the plat of survey entitled "BOUNDARY LINE AGREEMENT BETWEEN PROPERTY OF COMMONWEALTH OF VIRGINIA, DEPARTMENT OF TRANSPORTATION (D.B. 156, PG. 501) (D.B. 296, PG. 663) AND ECONOMIC DEVELOPMENT AUTHORITY OF THE CITY OF SUFFOLK, VIRGINIA (INSTRUMENT #150067435, PG 1-8)" made by MSA, P.C., dated March 21, 2022.

Being further described by metes and bounds on the MSA Plat as follows: beginning at a found pin along the easterly boundary of North Main Street (State Routes 460, 10 and 32) where the southwest corner of the parcel of land now or formerly belonging to the Economic Development Authority of the City of Suffolk meets the southwest corner of the parcel of land now or formerly belonging to the Commonwealth of Virginia, Department of Transportation, said pin being located at coordinates N 3439547.33, E 12044208.99; thence from said point of beginning N 32° 49' 46" E a distance of 248.95 feet to a found pin; thence continuing N 32° 49' 46" E a distance of 255.16 feet to a point; thence S 23° 35' 30" E a distance of 78.88 feet to a point; thence along a curve to the left having a radius of 92.00 feet, an arc length of 77.80 feet, and a bearing of S 3° 43' 11" W along a chord length of 75.50 feet; thence S 20° 30' 24" E a distance of 44.79 feet to a point; thence along a curve to the right having a radius of 39.00 feet, an arc length of 51.23 feet, and a bearing of S 17° 07' 28" W along a chord length of 47.62 feet; thence S 54° 45' 20" W a distance of 268.96 feet to a point; thence S 67° 53' 35" a distance of 88.48 feet to the point and place of beginning.

EXHIBIT A

This conveyance is made expressly subject to the following exceptions: (i) any and all rights, privileges, covenants, easements, conditions, restrictions and agreements as are of record, insofar as they may be lawfully applicable to the Property; (ii) any unrecorded utility easements, including any relocated easements for utilities and any relocated utility lines and related facilities, located upon, under, above or across the Property; and (iii) any and all prior grants, conveyances and/or reservations of the coal, oil, gas, including coal methane gas, stone, sand, minerals, and/or other subsurface rights or interest, as are of record, insofar as they may be lawfully applicable to the Property; and, to the extent of any such prior grants, conveyances and/or reservations of coal, oil, gas, including coal methane gas, stone, sand, minerals and/or other subsurface rights and interests therein, the same shall not be included with the Property.

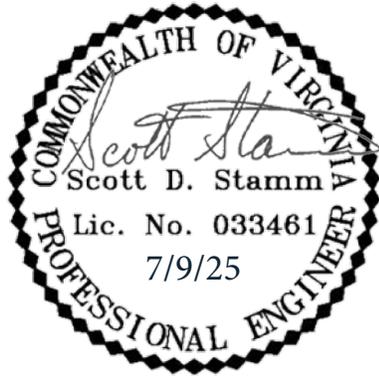
VIRGINIA STATE BUDGET

2017 Session
Budget Bill - HB1500 (Chapter 836)
Bill Order & Office of Transportation - Item C-41.10
Department of Transportation

Item C-41.10

Notwithstanding any provisions of Chapter 11 of Title 22 of the Code of Virginia to the contrary, the Virginia Department of Transportation (VDOT) is hereby authorized to market, sell and convey all or a portion of the Hampton Roads District Headquarters in Suffolk, Virginia, containing 88.463 acres, more or less, as shown on a plot of survey entitled, "Boundary Survey Of Tax Parcels 25-45A & 26B F-G-PT-1 Property Of Commonwealth Of Virginia," by Andrew T. Brady, L. S., dated September 22, 2014. In addition, VDOT is authorized to lease from the successful purchaser all or part of the Hampton Roads District Headquarters property, following its conveyance, in order to continue operations until all necessary facilities are available, in the judgment of VDOT, to begin full-time operations at the chosen replacement site. Any proceeds from the sale not needed for the acquisition, construction and other expenses related to the relocation shall be deposited in the Transportation Trust Fund.

INSTRUMENT # 230007994
RECORDED IN CLERK'S OFFICE OF SUFFOLK ON
Aug 01, 2023 AT 10:32:02 am
W. RANDOLPH CARTER, JR. by NDB



PREPARED FOR:



LAND PLANNING SOLUTIONS
1403 GREENBRIER PARKWAY STE. 205
CHESAPEAKE, VA 23320
O 757.935.9014 F 757.935.9015

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5857 Harbour View Boulevard, Suite 202
Suffolk, Virginia 23435
O. 757.935.9014 F. 757.935.9015
www.landplanningsolutions.com

VDOT PROPERTY

Suffolk, Virginia

Major Water Quality Impact Assessment

July 9, 2025

DRAINAGE NARRATIVE

Project Description

NVR, Inc plans to redevelop an ±87.46-acre site in the Suffolk Borough of Suffolk, Virginia, located at 1700 N. Main Street into a mixed use development. The site is located on Parcel Map No. 25*45A on the east side of N. Main Street between downtown and U.S. Rt. 58/460. The site is currently zoned B-2. It is proposed to rezone the parcel to RU-18 and construct approximately 329 residential townhouse units, 168 active adult condo units, 12,000 s.f. of commercial space, and 38,000 s.f. of office space, as well as associated parking areas, a clubhouse, and a waterfront park. Approximately 46 acres will be disturbed during construction, including approximately 0.90 acres of offsite area to realign Memorial Avenue to serve as an entrance to the site. The property is currently owned by The Commonwealth of Virginia and was previously used by the Virginia Department of Transportation as a district office.

This property is located within the Chesapeake Bay Preservation Overlay District as shown on the City of Suffolk's Official Preservation Area District Map. The site contains approximately 26 acres of tidal wetlands and 0.92 acres of non-tidal freshwater wetlands. Tidal wetlands are protected by a 100-foot RPA buffer. Impacts to the existing wetlands will be avoided to the greatest extent possible.

The site is bounded to the west by N. Main Street and commercial property, to the south by the Nansemond River and commercial property, to the east by the Nansemond River, and to the north by multifamily residential property. Due to the topography & control measures, no negative erosion & sediment control impacts are anticipated to affect adjacent properties.

Existing Conditions

The existing site contains varying topography and drains towards the eastern and southern boundary into the Nansemond River, which empties into the James River. The western portion of the site is primarily managed turf. The upland portions of the site are currently developed with various office and maintenance buildings with paved areas for vehicle parking and materials storage. The developed upland areas are relatively flat, with slopes ranging from .5 to 3%. The eastern portion of the site is surrounded by approximately 26 acres of tidal wetlands adjacent to the Nansemond River. Adjacent to the tidal wetlands, wooded slopes rise at 10-30% up to the developed area, with pockets of steeper slopes up to 45%. There are several pockets of non-CPBA regulated freshwater wetlands (without a required RPA buffer) in the upland portions of the site totaling approximately 0.92 acres.

The ALTA survey of the property shows various existing yard drains and driveway culverts are installed throughout the site to provide drainage. It is unclear where the existing stormwater conveyance channels and outfalls are located. There appears to be a relatively small concrete-lined pond at the southeast corner of the site. The pond is located adjacent to a road salt storage building, so it is likely the pond is for the containment of road salt or other hazardous materials spills. A topographic survey will be obtained during final design that will provide more information regarding the existing drainage areas, stormwater conveyance pipes and channels, and stormwater management facilities currently on site.

The site contains various underground storage tanks and hazardous materials storage areas that were identified in the Phase I and Phase II environmental site assessment by Bay Environmental, Inc. The presence of petroleum products and other hazardous substances at the site were identified under the Phase I ESA, and further analysis of hazardous materials was conducted under the Phase II ESA. Soil and water samples were obtained and analyzed to determine the impact the fuel and other hazardous materials may have had on the groundwater or surrounding soils. Please refer to the Phase I and Phase II environmental site assessments for further information.

The United States Geological Survey (USGS) maintains a monitoring station on site for measuring compaction of the aquifer system (Site Number 58C 52 - 364512076343701). The monitoring station is housed in a shed at the east side of the site near the Nansemond River and is accessible through a 20-foot ingress egress easement from N. Main Street. During final site plan development, the access easement will be relocated as necessary.

This property is located within the Chesapeake Bay Preservation Overlay District as shown on the City of Suffolk's Official Preservation Area District Map. A 100-foot Resource Protection Area (RPA) is located around the perimeter of the eastern side of the site adjacent to the wetlands. The site contains approximately 26 acres of tidal wetlands. The usable portion of the site lies within flood zone X (outside 500-year floodplain), while the remaining wetland portion of the site lies in Special Flood Hazard Area AE (base flood elevation 10) on community-panel number 5101560114E of the FEMA Flood Insurance Rate Map dated August 3, 2015. Portions adjacent to Zone AE on the south side of the site are shaded on the flood map indicating a 0.2% annual chance flood hazard.

According to the Natural Resources Conservation Service online Web Soil Survey, the soils for this site consist of five types. Water is located in the section of the Nansemond River along the eastern and southern property line. Bohicket silty clay loam is located adjacent to the water on the east side of the site and is considered very poorly drained with a Hydraulic Soils Group (HSG) rating of D. Nansemond loamy fine sand, 15 to 30 percent slopes is located in the steep wooded areas adjacent to the wetlands at the north and east sides of the site and is considered moderately well drained with an HSG rating of B. Udorthents, loamy soils occupy much of the southern portion of the site and have no drainage class rating or HSG rating since this soil class consists of a mixture of various soil types. For stormwater management calculations, these areas will be considered to have a conservative HSG rating of D. Tetotum fine sandy loam, 0 to 2 percent slopes occupies a small portion of the northwest corner of the site and is considered moderately well drained with an HSG rating of C. Goldsboro fine sandy loam, 0 to 2 percent slopes occupies most of the developed area at the middle and western portions of the site and is considered moderately well drained with an HSG rating of C. The soils on the developable portion of the site have a low potential for shrink/swell, and the Bohicket silty clay loam soil located in the wetlands has a high potential for shrink/swell. Please refer to the Custom Soil Resource report in Appendix A for information regarding the soils on site.

The site and offsite areas to be developed in their current state consists of approximately 45.86 acres of undisturbed forest and open space, 21.59 acres of managed turf, and 20.91 acres of impervious cover consisting of building roofs, pavement, and concrete sidewalks. This includes approximately 0.9 acres of offsite area will be disturbed to realign Memorial Avenue to serve as an entrance to the site and to provide a connection to the Meridian Obici property to the north. The offsite area consists of approximately 0.32 acres of impervious cover and 0.58 acres of managed turf.

The site is currently served by City water and sewer. Additional survey information and supporting calculations will be provided during final site plan development to ensure the capacity of both of these systems to the site.

Proposed Conditions

It is proposed to rezone the parcel to RU-18 and construct a clubhouse, 329 residential townhomes, 168 active adult condo units, 38,000 SF Office space, 12,000 SF commercial space, as well as a waterfront park and parking areas. The proposed development will be divided into several drainage areas, which will be based on the existing topography and the BMP locations to be determined during final design. In general, drainage from the site will be collected in the proposed storm sewer system and piped to several BMPs before being discharged to the Nansemond River at the south and east sides of the site. The wet retention ponds will be incorporated into the site for Stormwater management purposes and will also meet the City's buffer area sediment and nutrient removal requirements described in the Water Quality Impact Assessment requirements. The site will be designed to comply with all applicable state and local stormwater regulations during the development of the site and after final stabilization has been achieved. To the greatest extent possible, runoff will be directed to the stormwater basins for treatment before being released downstream at a rate less than the pre-developed condition. Supporting calculations for the

stormwater management will be provided in the Drainage and Stormwater Management report during final design.

Final site plan will minimize encroachment into the 100' RPA buffer area to the greatest extent possible. Anticipated clearing and grubbing required in the RPA buffer is to be limited to that required for installation of the BMP outfalls and the realignment of an access road to the USGS monitoring station at the east end of the site. With the exception of some recreational trails, it is expected that no impervious surfaces will be installed in the buffer area, and grading in this area will be minimized as much as possible. Minimal disturbance to the CBPA wetlands will be required for installation of the BMP outfalls. Disturbance to the RPA will be minimized to the greatest extent possible, and any necessary mitigation will be coordinated with the U.S. Army Corps of Engineers. Impacts to the freshwater wetlands will be minimized to the greatest extent possible, but some impacts are expected for roadway and parking lot construction.

Areas of existing soil and water contamination from fuel and hazardous materials storage on the site were identified in the Phase I and Phase II Environmental Site Assessments by Bay Environmental, Inc. Bay Environmental recommends the Phase II ESA be submitted to DEQ's Tidewater Regional Office, Petroleum Program for their review and remediation recommendations of the petroleum contamination identified at the site. The report also recommends consulting the DEQ's Voluntary Remediation Program (VRP) for mitigating lower levels of volatile and semi-volatile organic compounds, pesticides and metals contamination identified at the site.

Preliminary stormwater management calculations are based on the following assumptions:

- The 41.77 acres located within the RPA will remain as undisturbed protected forest and open space.
- Approximately 42.17 acres of the site will be developed as multifamily townhomes with an average impervious cover of 51%.
- Approximately 4.83 acres of the site will be developed as commercial and office space with an average impervious cover of 70%.
- The remaining areas on site will be managed turf.
- Approximately 0.9 acres of offsite area will be disturbed to realign Memorial Avenue to provide access to the site from N. Main Street and the Meridian Obici site to the north. The existing alignment of Memorial Avenue consists of approximately 0.32 acres of impervious cover and the realigned offsite road will consist of approximately 0.50 acres of impervious cover.

The post-development site and offsite areas will therefore contain approximately 41.77 acres of preserved forest and open space, 21.73 acres of managed turf, and 24.86 acres of impervious cover.

The site will be served by City water and sewer. Connections will be made to either the existing water and sewer mains on site or in N. Main Street. During final design, we will determine if public or private water service will be extended throughout the site. Due to the location of the anticipated connections, the installation of these services will not disturb any environmentally sensitive areas. Calculations supporting these connections are provided in the Public Facilities Analysis report.

Water Quality Impact Assessment

The stormwater management for this site will consist of Water Quality and Water Quantity controls based on the 2014 VA Stormwater Regulations. The Water Quality Compliance calculations utilize the Virginia Runoff Reduction Method Redevelopment spreadsheet in accordance with 9VAC25-870-65. Compliance with Water Quality requirements is met through the use of conservation of forested and open space and Level 1 and/or Level 2 (coastal plain) wet detention ponds.

The total phosphorus load reduction required is 19.29 lb/yr. and the load reduction achieved is 29.29 lb/yr.; therefore the Water Quality Compliance for the site has been met with an excess of 10.01 lb./yr. Water Quality Compliance can be met with forested/open space and Level 1 wet ponds (coastal plain) which has a phosphorus removal of efficiency of 45%. During final design, other types of BMPs may be selected that may be better suited to work within the constraints of the site layout.

Water Quantity compliance for the site will be met in accordance with 9VAC25-870-66. Concentrated stormwater flow will be released into a natural conveyance system and meet the requirements for channel protection (Section B), under subsection 3a. 'Energy Balance' Method. The proposed BMPs will be designed to detain the one-year 24-hour storm so that the post-development peak flow rate to the receiving channel meets the criteria of the formula:

$$Q_{\text{Developed}} \leq I.F. * (Q_{\text{Pre-developed}} * R_{V_{\text{Pre-Developed}}}) / R_{V_{\text{Developed}}}$$

Flood protection (Section C) will be achieved in accordance with subsection 1. The post development peak flow rate for the 10-year storm event will be confined to the stormwater conveyance system. The limit of analysis for flood protection is at the mapped flood plain depicted as Special Flood Hazard Area AE (base flood elevation 10) on community-panel number 5101560114E of the FEMA Flood Insurance Rate Map dated August 3, 2015. The proposed storm sewer system and BMPs will be designed so that they contain the 10-year storm event without overtopping the system.

Additional Hydrogeological Assessments

- (i) Disturbance to the tidal wetlands and RPA will be required for installation of the storm sewer outfall pipes. Any necessary mitigation due to this disturbance will be coordinated with the U.S. Army Corps of Engineers. No other disturbances or impacts are expected to take place in the tidal wetlands or RPA areas. Disturbance to the upland freshwater wetlands will be minimized to the greatest extent possible, but mitigation will be performed for any disturbance that may be required during final design.
- (ii) Due to the City's and State's Stormwater regulations, wet retention basins or other applicable BMPs will be constructed for stormwater management. These basins will be designed to treat and release storm runoff as required by the applicable standards. Disruption or reduction in the supply of water to the downstream wetlands and resources will be minimized to the greatest extent possible.
- (iii) It is anticipated that no disruption to existing hydrology including wetland and stream circulation patterns will be realized by this development.

- (iv) Final site design will balance cut and fill materials on-site as much as possible. A large amount of fill material for site development is not anticipated.
- (v) Dredging and likewise dumping of such material onsite will not be required for site development.
- (vi) No known shellfish beds, submerged aquatic vegetation, or fish spawning areas exist on site. BMPs will be incorporated in the site to minimize any impact to these resources which likely exist downstream in the Nansemond River.
- (vii) The estimated pre- development pollutant load in runoff is 61.16 pounds of phosphorus per year. The estimated post- development pollutant load in runoff is 69.32 pounds/year. Supporting calculations are included in Section I of this report.
- (viii) The assumed impervious percent for this site is 51% for the portions of the site to be developed as residential townhomes and 70% for the portions of the site to be developed as commercial and office space. Anticipated impervious area totals approximately 24.86 acres out of a total of 87.46 acres. This yields a post-developed impervious number of 28%. The post-developed impervious area will be increased by roughly 119% of the estimated pre-developed condition (20.91 acres impervious). Surfacing materials will include buildings, asphalt paving, and concrete walks and curbing.
- (ix) The total site area is 87.46 acres plus 0.9 acres of offsite area to be disturbed to realign Memorial Avenue. Of this, roughly 41.77 acres are undisturbed wooded areas and wetlands. It is anticipated that roughly 4.1 acres of wooded areas will need to be cleared for site development. The percent of the project area to be cleared is 8.8%. At this time, we are assuming that only the RPA will remain as undisturbed, but opportunities for further preservation of forested open space will be explored during final design.
- (x) It is expected to begin the project immediately after rezoning and construction plan approval, which is anticipated to be one year from now.
- (xi) It is anticipated that permits required to complete this project will be required from: The City of Suffolk, and the Virginia DEQ.
- (xii) Proposed mitigation measures for potential hydrogeological impacts include implementing an Erosion and Sedimentation Control Plan completed by a Licensed Virginia PE, temporary construction and permanent stormwater management systems, and a site design to minimize cut and fill. It is anticipated that less than 0.1 acre wetlands will be disturbed; this will not require any wetland mitigation measures to be implemented. Petroleum and other hazardous materials at the site identified in the Phase I and Phase II Environmental Site Assessments should be mitigated as recommended by the Virginia DEQ Petroleum Program and Voluntary Remediation Program (VRP) prior to any land disturbing activities.

Landscape Element

Existing vegetation in the wooded area ranges from small understory trees to large hardwood canopy trees. General limits of clearing will be at and directly adjacent to the sites proposed features. The clearing and grading will be minimized to the greatest extent practical. Existing mature canopy trees at the western portion of the site will be preserved to the greatest extent possible. The attached plans in Sections II and III of this report show the location of all significant plant material on the site and depict which trees will be removed and which will be saved.

Mitigation will be implemented for the impacted trees removal consistent with the tree canopy requirements of the City. Trees and shrubs will be selected from the approved plan list found in the City's UDO.

SECTION I
STORMWATER QUALITY CALCULATIONS

2011 BMP Standards and Specifications 2013 Draft BMP Standards and Specifications

Project Name: **VDOT Property**
 Date: **3/4/2025**
 Linear Development Project? No

CLEAR ALL
 (Ctrl+Shift+R)

data input cells
 constant values
 calculation cells
 final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area (acres) → **45.60**

Check: 2013 Draft Stds & Specs
 Linear project? No

Maximum reduction required: **20%**
 The site's net increase in impervious cover (acres) is: **3.95**
 Post-Development TP Load Reduction for Site (lb/yr): **19.29**

Land cover areas entered correctly?
 Total disturbed area entered?

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) – undisturbed forest/open space		13.30	2.00	30.56	45.86
Managed Turf (acres) – disturbed, graded for yards or other turf to be mowed/managed		0.56	14.21	6.82	21.59
Impervious Cover (acres)		0.00	16.62	4.29	20.91
					88.36

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) – undisturbed, protected forest/open space or reforested land		12.59	1.55	27.63	41.77
Managed Turf (acres) – disturbed, graded for yards or other turf to be mowed/managed		1.19	13.88	6.66	21.73
Impervious Cover (acres)		0.08	17.40	7.38	24.86
					88.36

* Forest/Open Space areas must be protected in accordance with the Virginia Runoff Reduction Method

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
% (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

LAND COVER SUMMARY – PRE-REDEVELOPMENT

Land Cover Summary-Pre		
Pre-Development	Listed	Adjusted ¹
Forest/Open Space Cover (acres)	45.86	42.40
Weighted Rv(forest)	0.04	0.04
% Forest	52%	50%
Managed Turf Cover (acres)	21.59	21.10
Weighted Rv(turf)	0.23	0.23
% Managed Turf	24%	25%
Impervious Cover (acres)	20.91	20.91
Rv(impervious)	0.95	0.95
% Impervious	24%	25%
Total Site Area (acres)	88.36	84.41
Site Rv	0.30	0.31

LAND COVER SUMMARY – POST DEVELOPMENT

Land Cover Summary-Post (Final)		Land Cover Summary-Post		Land Cover Summary-Post	
Post ReDev. & New Impervious		Post-ReDevelopment		Post-Development New Impervious	
Forest/Open Space Cover (acres)	41.77	Forest/Open Space Cover (acres)	41.77		
Weighted Rv(forest)	0.04	Weighted Rv(forest)	0.04		
% Forest	47%	% Forest	49%		
Managed Turf Cover (acres)	21.73	Managed Turf Cover (acres)	21.73		
Weighted Rv (turf)	0.23	Weighted Rv (turf)	0.23		
% Managed Turf	25%	% Managed Turf	26%		
Impervious Cover (acres)	24.86	ReDev. impervious Cover (acres)	20.91	New Impervious Cover (acres)	3.95
Rv(impervious)	0.95	Rv(impervious)	0.95	Rv(impervious)	0.95
% Impervious	28%	% Impervious	25%		
Final Site Area (acres)	88.36	Total ReDev. Site Area (acres)	84.41		
Final Post Dev Site Rv	0.34	ReDev Site Rv	0.32		

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	2.2346	2.2113
Pre-ReDevelopment Treatment Volume (cubic feet)	97,337	96,323
Pre-ReDevelopment TP Load (lb/yr)	61.16	60.52
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	0.69	0.72
Baseline TP Load (lb/yr) 0.41 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover		34.61

Treatment Volume and Nutrient Load

Final Post-Development Treatment Volume (acre-ft)	2.5329	Post-ReDevelopment Treatment Volume (acre-ft)	2.2202	Post-Development Treatment Volume (acre-ft)	0.3127
Final Post-Development Treatment Volume (cubic feet)	110,333	Post-ReDevelopment Treatment Volume (cubic feet)	96,712	Post-Development Treatment Volume (cubic feet)	13,622
Final Post-Development TP Load (lb/yr)	69.32	Post-ReDevelopment Load (TP) (lb/yr)*	60.76	Post-Development TP Load (lb/yr)	8.56
Final Post-Development TP Load per acre (lb/acre/yr)	0.78	Post-ReDevelopment TP Load per acre (lb/acre/yr)	0.72		
		Max. Reduction Required (Below Pre-ReDevelopment Load)	20%		

¹ Adjusted Land Cover Summary:
 Pre-ReDevelopment land cover minus pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column 1 shows load reduction requirement for new impervious cover (based on new development load limit, 0.41 lbs/acre/year).

TP Load Reduction Required for Redeveloped Area (lb/yr)	12.35	TP Load Reduction Required for New Impervious Area (lb/yr)	6.94
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Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr) **19.29**

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	437.51	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	495.92
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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)		12.59	1.55	27.63	41.77	0.04
Managed Turf (acres)		1.19	13.88	6.66	21.73	0.23
Impervious Cover (acres)		0.08	17.40	7.38	24.86	0.95
Total					88.36	

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. A (lb/yr)	65.17
Post Development Treatment Volume in D.A. A (ft ³)	103,722

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	0.00	
1.b. Vegetated Roof #2 (Spec #5)	60				0	0	0	0	0.00	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-Infiltration #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-Bioretenion #1 (Spec #9)	40			0	0	0	0	25	0.00	0.00	0.00	0.00	
2.g. To Rain Garden #2, Micro-Bioretenion #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	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	

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

Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
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

Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
3. Permeable Pavement (RR)				
25	0.00	0.00	0.00	0.00
25		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)
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

Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
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)													
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	
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	

6. Bioretention (RR)				
40	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)	65.17	
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)	65.17	
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			0	0	0	0	50	0.00	0.00	0.00	0.00	
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	0	21.73	24.86	0	0	103,722	103,722	45	0.00	65.09	29.29	35.80	
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	
14. Manufactured Treatment Devices (no RR)													
14.a. Manufactured Treatment Device-Hydrodynamic	0			0	0	0	0	20	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	
14.c. Manufactured Treatment Device-Generic	0			0	0	0	0	20	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	0.00	0.00	0.00
20	0.00	465.68	93.14	372.54
40	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00
14. Manufactured BMP (no 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)	24.86	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	21.73	AREA CHECK: OK.

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)	19.29
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr)	65.17
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	29.29
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)	29.29
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. A (lb/yr)	35.88
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)	93.14
TOTAL NITROGEN REMOVED IN D.A. A (lb/yr)	93.14

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)	41.77	0.00	0.00	0.00	0.00	OK
IMPERVIOUS COVER (ac)	24.86	0.00	0.00	0.00	0.00	OK
IMPERVIOUS COVER TREATED (ac)	24.86	0.00	0.00	0.00	0.00	OK
MANAGED TURF AREA (ac)	21.73	0.00	0.00	0.00	0.00	OK
MANAGED TURF AREA TREATED (ac)	21.73	0.00	0.00	0.00	0.00	OK
AREA CHECK	OK	OK	OK	OK	OK	
Site Treatment Volume (ft³)	110,333					
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	0	0	0	0	0
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	65.17	0.00	0.00	0.00	0.00	65.17
TP LOAD REDUCTION ACHIEVED (lb/yr)	29.29	0.00	0.00	0.00	0.00	29.29
TP LOAD REMAINING (lb/yr)	35.88	0.00	0.00	0.00	0.00	35.88
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	93.14	0.00	0.00	0.00	0.00	93.14
Total Phosphorus						
FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	69.32					
TP LOAD REDUCTION REQUIRED (lb/yr)	19.29					
TP LOAD REDUCTION ACHIEVED (lb/yr)	29.29					
TP LOAD REMAINING (lb/yr)	40.03					
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr)	0.00 **					
** TARGET TP REDUCTION EXCEEDED BY 10.01 LB/YEAR **						
Total Nitrogen (For Information Purposes)						
POST-DEVELOPMENT LOAD (lb/yr)	495.92					
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	93.14					
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	402.78					

SECTION II
CONCEPTUAL MASTER PLAN

Riversbend

Conceptual Master Plan

Suffolk, Virginia
 March 31, 2025 - REV. July 9, 2025

SITE DATA:

Tax Map #s: 25-45A, 26E*F*G*PT*J, 25*45E

Current Zoning:	B-2 (SCOD) & MUD
Proposed Zoning:	B-2 (SCOD), MUD and RU-18
Total Site Area:	+/-88.8 ac.
Area to Remain B-2:	+/-15.3 ac.
Area to Remain MUD:	+/-1.3 ac.
Proposed RU-18 Area:	+/-72.2 ac.
Critical Area:	+/-35.9 ac.
Net Site Area:	+/-36.3 ac.

TABULATION:

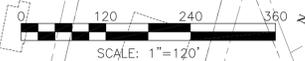
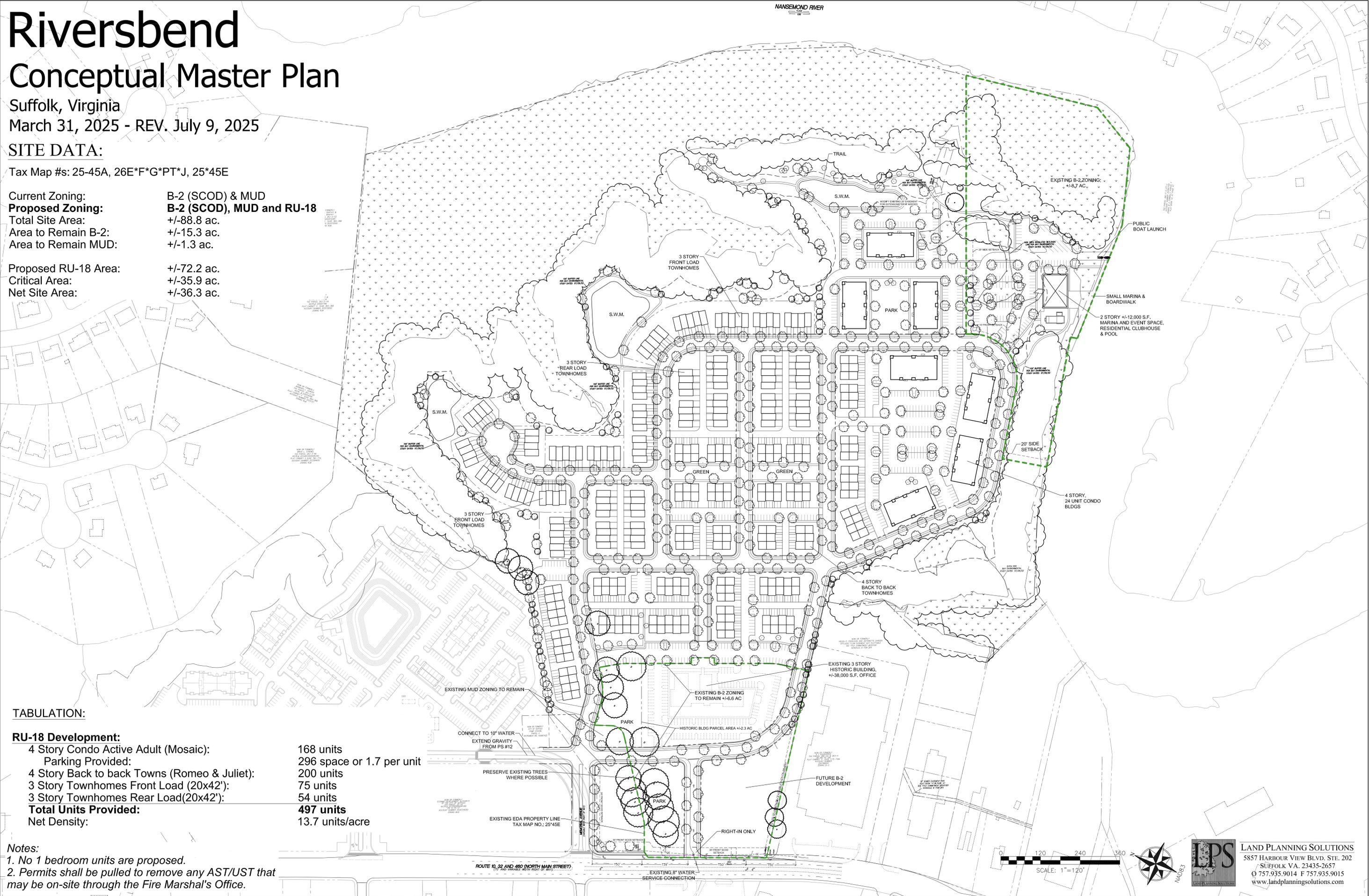
RU-18 Development:

4 Story Condo Active Adult (Mosaic):	168 units
Parking Provided:	296 space or 1.7 per unit
4 Story Back to back Towns (Romeo & Juliet):	200 units
3 Story Townhomes Front Load (20x42'):	75 units
3 Story Townhomes Rear Load (20x42'):	54 units
Total Units Provided:	497 units
Net Density:	13.7 units/acre

Notes:

1. No 1 bedroom units are proposed.
2. Permits shall be pulled to remove any AST/UST that may be on-site through the Fire Marshal's Office.

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LPS LAND PLANNING SOLUTIONS
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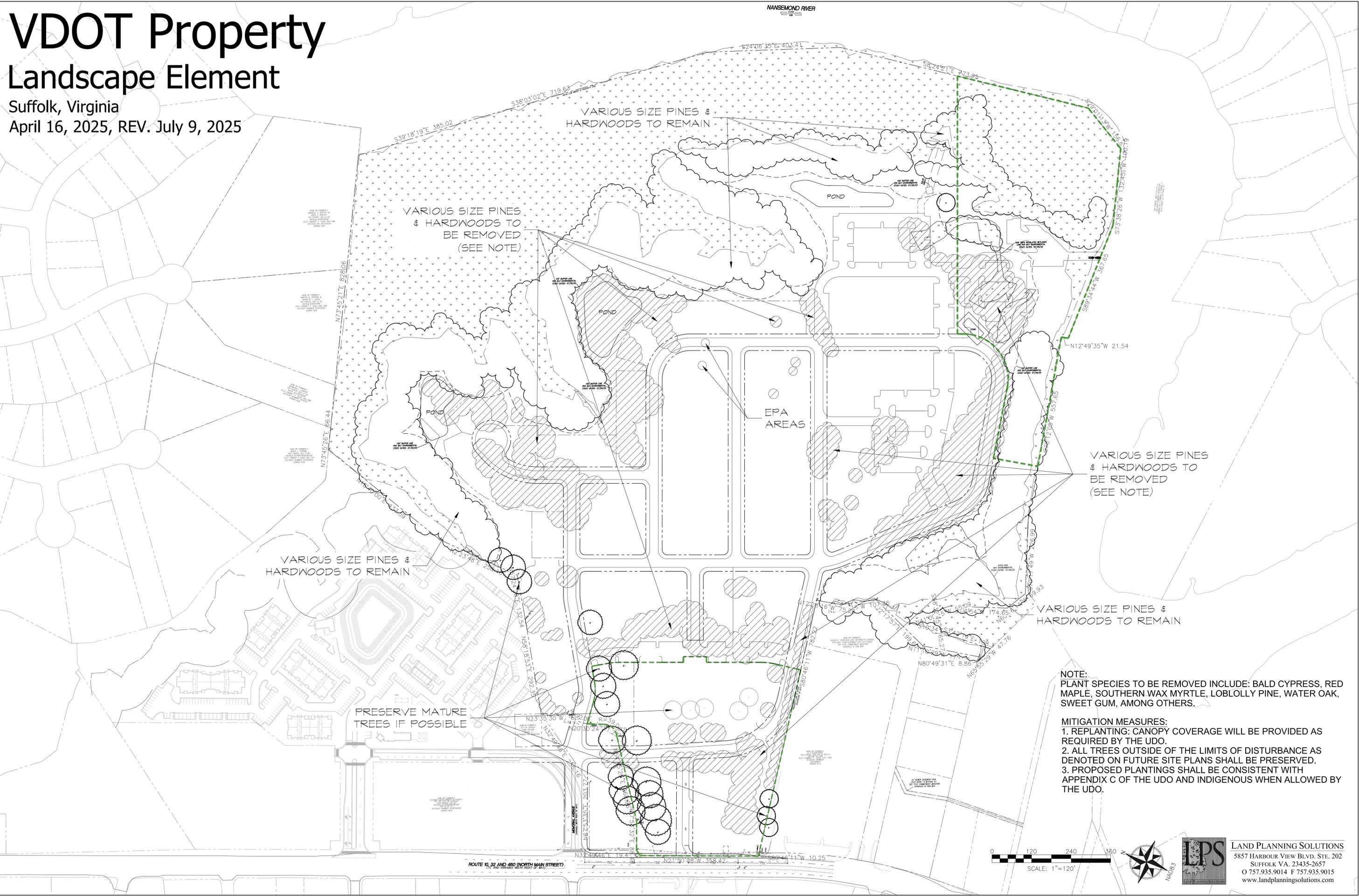
SECTION III
LANDSCAPE ELEMENT DRAWING

VDOT Property Landscape Element

Suffolk, Virginia

April 16, 2025, REV. July 9, 2025

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NOTE:
PLANT SPECIES TO BE REMOVED INCLUDE: BALD CYPRESS, RED MAPLE, SOUTHERN WAX MYRTLE, LOBLOLLY PINE, WATER OAK, SWEET GUM, AMONG OTHERS.

MITIGATION MEASURES:
1. REPLANTING: CANOPY COVERAGE WILL BE PROVIDED AS REQUIRED BY THE UDO.
2. ALL TREES OUTSIDE OF THE LIMITS OF DISTURBANCE AS DENOTED ON FUTURE SITE PLANS SHALL BE PRESERVED.
3. PROPOSED PLANTINGS SHALL BE CONSISTENT WITH APPENDIX C OF THE UDO AND INDIGENOUS WHEN ALLOWED BY THE UDO.

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APPENDIX A
CUSTOM SOIL RESOURCE REPORT



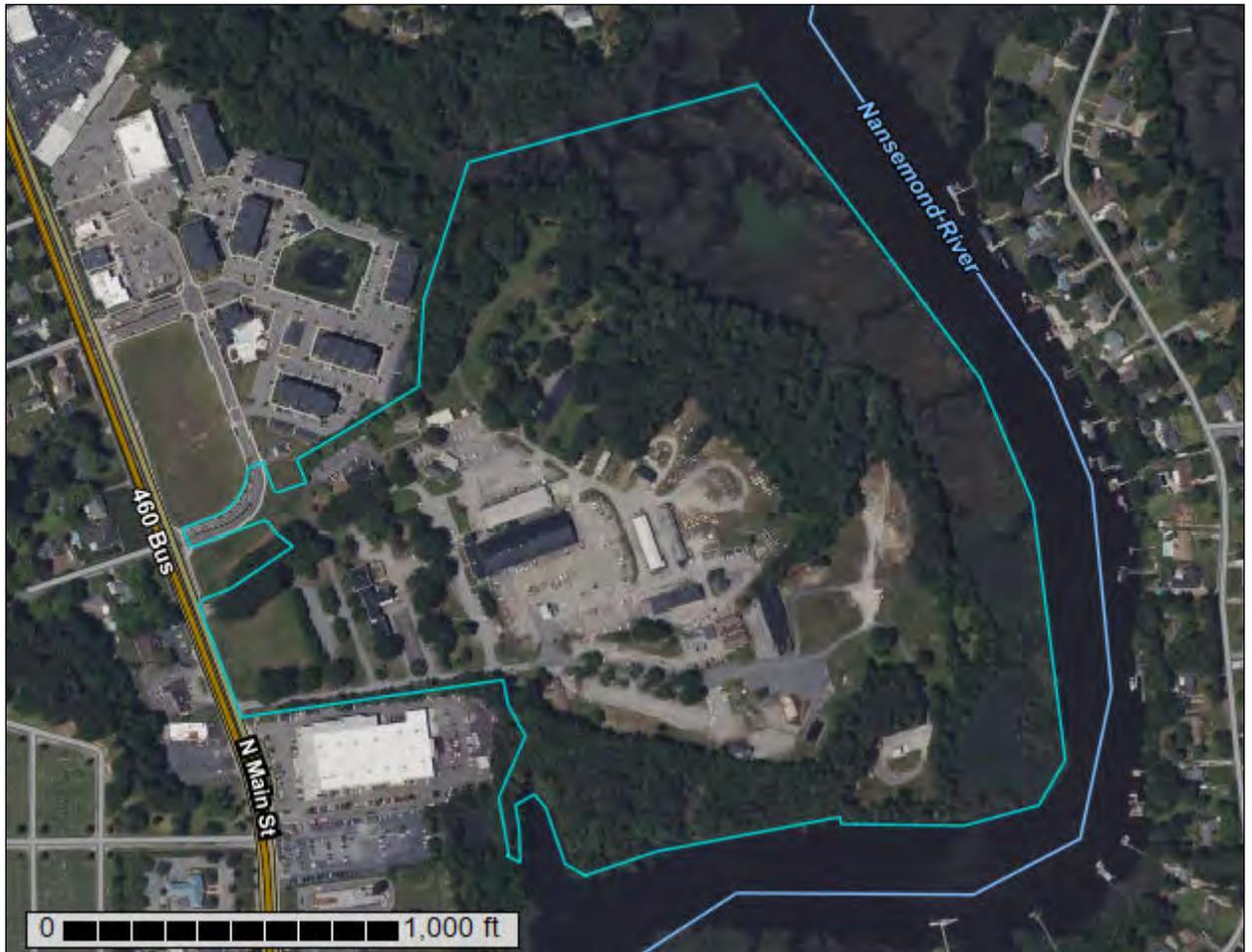
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for City of Suffolk, Virginia



Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

Custom Soil Resource Report Soil Map



Map Scale: 1:6,100 if printed on A landscape (11" x 8.5") sheet.

0 50 100 200 300 Meters

0 250 500 1000 1500 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

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

Background

 Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: City of Suffolk, Virginia
 Survey Area Data: Version 18, Sep 5, 2023

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

Date(s) aerial images were photographed: May 18, 2022—May 31, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	1.2	1.3%
26	Udorthents, loamy	21.4	24.2%
W	Water	1.8	2.1%
Totals for Area of Interest		88.4	100.0%

Map Unit Descriptions

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

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

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

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

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

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

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

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

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

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

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

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

City of Suffolk, Virginia

3—Bohicket silty clay loam

Map Unit Setting

National map unit symbol: 41s1
Elevation: 0 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 68 to 72 degrees F
Frost-free period: 165 to 192 days
Farmland classification: Not prime farmland

Map Unit Composition

Bohicket and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bohicket

Setting

Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy and clayey marine deposits

Typical profile

H1 - 0 to 13 inches: silty clay loam
H2 - 13 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Maximum salinity: Slightly saline to strongly saline (7.0 to 775.0 mmhos/cm)
Sodium adsorption ratio, maximum: 66.0
Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: D
Ecological site: R153BY130NC - Tidal Marsh on Mineral Soil
Hydric soil rating: Yes

9A—Goldsboro fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 41sb
Elevation: 0 to 450 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 68 to 72 degrees F
Frost-free period: 165 to 192 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Goldsboro and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Goldsboro

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 18 inches: fine sandy loam
H2 - 18 to 70 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F153BY040NC - Moist Loamy Rises and Flats, F153AY040NC - Moist Loamy Rises and Flats
Hydric soil rating: No

Minor Components

Rains

Percent of map unit: 5 percent

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Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions,
F153AY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

15E—Nansemond loamy fine sand, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: 41rb
Elevation: 0 to 450 feet
Mean annual precipitation: 43 to 53 inches
Mean annual air temperature: 68 to 72 degrees F
Frost-free period: 165 to 192 days
Farmland classification: Not prime farmland

Map Unit Composition

Nansemond and similar soils: 80 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nansemond

Setting

Landform: Marine terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 18 inches: loamy fine sand
H2 - 18 to 29 inches: fine sandy loam
H3 - 29 to 70 inches: loamy fine sand

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

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Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B

*Ecological site: F153BY040NC - Moist Loamy Rises and Flats, F153AY040NC -
Moist Loamy Rises and Flats*

Hydric soil rating: No

Minor Components

Rains

Percent of map unit: 8 percent

Landform: Depressions

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

*Ecological site: F153BY060NC - Wet Loamy Flats and Depressions,
F153AY060NC - Wet Loamy Flats and Depressions*

Hydric soil rating: Yes

Tomotley

Percent of map unit: 7 percent

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Convex

*Ecological site: F153BY060NC - Wet Loamy Flats and Depressions,
F153AY090NC - Flooded Mineral Soil Floodplains and Terraces*

Hydric soil rating: Yes

23A—Tetotum fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 41rs

Elevation: 0 to 50 feet

Mean annual precipitation: 43 to 53 inches

Mean annual air temperature: 68 to 72 degrees F

Frost-free period: 165 to 192 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Tetotum and similar soils: 85 percent

Minor components: 7 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tetotum

Setting

Landform: Stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Convex

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Parent material: Loamy fluviomarine deposits

Typical profile

H1 - 0 to 11 inches: fine sandy loam

H2 - 11 to 65 inches: clay loam

H3 - 65 to 85 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)

Depth to water table: About 18 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: C

Ecological site: F153BY040NC - Moist Loamy Rises and Flats, F153AY040NC -
Moist Loamy Rises and Flats

Hydric soil rating: No

Minor Components

Tomotley

Percent of map unit: 7 percent

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: F153BY060NC - Wet Loamy Flats and Depressions,
F153AY090NC - Flooded Mineral Soil Floodplains and Terraces

Hydric soil rating: Yes

26—Udorthents, loamy

Map Unit Setting

National map unit symbol: 41rx

Elevation: 0 to 150 feet

Mean annual precipitation: 43 to 53 inches

Mean annual air temperature: 68 to 72 degrees F

Frost-free period: 165 to 192 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 70 percent

Custom Soil Resource Report

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Fluviomarine deposits

Properties and qualities

Slope: 0 to 50 percent

Depth to restrictive feature: More than 80 inches

Runoff class: Very high

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Minor Components

Tomotley

Percent of map unit: 5 percent

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: Yes

W—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Building Site Development

Building site development interpretations are designed to be used as tools for evaluating soil suitability and identifying soil limitations for various construction purposes. As part of the interpretation process, the rating applies to each soil in its described condition and does not consider present land use. Example interpretations can include corrosion of concrete and steel, shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

Lawns, Landscaping, and Golf Fairways

ENG - Engineering

This interpretation rates soils for their use in establishing and maintaining turf for lawns and golf fairways and ornamental trees and shrubs for residential or commercial landscaping. Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required.

The ratings are based on the use of soil material at the site, which may have been altered by some land smoothing. Irrigation may or may not be needed and is not a criterion in rating. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness,

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and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. Soils that are subject to flooding are limited by the duration and intensity of flooding and the season when flooding occurs. In planning for lawns, landscaping, or golf fairways, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Lawns, Landscaping, and Golf Fairways

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Flooding (1.00)	18.8	21.3%
				Sodium content (1.00)		
				Depth to saturated zone (1.00)		
				Sulfur content (1.00)		
				Salinity (1.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Very limited	Goldsboro (95%)	Low exchange capacity (1.00)	31.3	35.4%
				Dusty (0.01)		
			Rains (5%)	Depth to saturated zone (1.00)		
				Low exchange capacity (0.75)		
				Dusty (0.05)		
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Low exchange capacity (1.00)		
				Depth to saturated zone (0.19)		
				Droughty (0.11)		
			Rains (8%)	Depth to saturated zone (1.00)		
				Low exchange capacity (0.75)		
				Dusty (0.05)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
				Low exchange capacity (0.75)		
				Dusty (0.14)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Tetotum (85%)	Low exchange capacity (0.75)	1.2	1.3%
				Depth to saturated zone (0.19)		
				Dusty (0.08)		

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Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	64.0	72.3%
Somewhat limited	1.2	1.3%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Lawns, Landscaping, and Golf Fairways

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Shallow Excavations

ENG - Engineering

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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Tables—Shallow Excavations

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Flooding (1.00)	18.8	21.3%
				Depth to saturated zone (1.00)		
				Unstable excavation walls (0.51)		
				Too clayey (0.28)		
				Dusty (0.24)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Very limited	Goldsboro (95%)	Depth to saturated zone (1.00)	31.3	35.4%
				Dusty (0.01)		
				Unstable excavation walls (0.01)		
			Rains (5%)	Depth to saturated zone (1.00)		
				Dusty (0.05)		
				Unstable excavation walls (0.01)		
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Depth to saturated zone (1.00)		
				Unstable excavation walls (0.07)		
			Rains (8%)	Depth to saturated zone (1.00)		
				Dusty (0.05)		
				Unstable excavation walls (0.01)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
				Dusty (0.14)		
				Unstable excavation walls (0.01)		

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Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Very limited	Tetotum (85%)	Depth to saturated zone (1.00)	1.2	1.3%
				Dusty (0.08)		
				Unstable excavation walls (0.01)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
				Dusty (0.14)		
				Unstable excavation walls (0.01)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	65.1	73.7%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Shallow Excavations

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Small Commercial Buildings

ENG - Engineering

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification of the soil). The properties that

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affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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Tables—Small Commercial Buildings

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Flooding (1.00)	18.8	21.3%
				Depth to saturated zone (1.00)		
				Shrink-swell (1.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Not limited	Goldsboro (95%)		31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Depth to saturated zone (0.39)		
			Rains (8%)	Depth to saturated zone (1.00)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Tetotum (85%)	Depth to saturated zone (0.39)	1.2	1.3%
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	32.7	37.0%
Not limited	31.3	35.4%
Somewhat limited	1.2	1.3%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Small Commercial Buildings

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Local Roads and Streets

ENG - Engineering

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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Tables—Local Roads and Streets

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Depth to saturated zone (1.00)	18.8	21.3%
				Shrink-swell (1.00)		
				Flooding (1.00)		
				Low strength (1.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Not limited	Goldsboro (95%)		31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Depth to saturated zone (0.19)		
			Rains (8%)	Depth to saturated zone (1.00)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Tetotum (85%)	Depth to saturated zone (0.19)	1.2	1.3%
				Low strength (0.01)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	32.7	37.0%
Not limited	31.3	35.4%
Somewhat limited	1.2	1.3%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Local Roads and Streets

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Dwellings With Basements

ENG - Engineering

Dwellings are single-family houses of three stories or less. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil

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Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Dwellings With Basements

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Flooding (1.00)	18.8	21.3%
				Depth to saturated zone (1.00)		
				Shrink-swell (1.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Very limited	Goldsboro (95%)	Depth to saturated zone (1.00)	31.3	35.4%
			Rains (5%)	Depth to saturated zone (1.00)		
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Depth to saturated zone (1.00)		
			Rains (8%)	Depth to saturated zone (1.00)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Very limited	Tetotum (85%)	Depth to saturated zone (1.00)	1.2	1.3%
			Tomotley (7%)	Depth to saturated zone (1.00)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	65.1	73.7%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Dwellings With Basements

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Dwellings Without Basements

ENG - Engineering

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Dwellings Without Basements

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Flooding (1.00)	18.8	21.3%
				Depth to saturated zone (1.00)		
				Shrink-swell (1.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Not limited	Goldsboro (95%)		31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Depth to saturated zone (0.39)		
			Rains (8%)	Depth to saturated zone (1.00)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Tetotum (85%)	Depth to saturated zone (0.39)	1.2	1.3%
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	32.7	37.0%
Not limited	31.3	35.4%
Somewhat limited	1.2	1.3%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Dwellings Without Basements

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Corrosion of Concrete

ENG

Engineering

AGR

Agronomy

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

Table—Corrosion of Concrete

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	High	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Moderate	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	High	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	High	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Corrosion of Concrete

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Corrosion of Steel

ENG

Engineering

AGR

Agronomy

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

Table—Corrosion of Steel

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	High	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	High	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	High	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	High	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Corrosion of Steel

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Construction Materials

Construction materials interpretations are tools designed to provide guidance to users in selecting a site for potential source of various materials. Individual soils or groups of soils may be selected as a potential source because they are close at hand, are the only source available, or they meets some or all of the physical or chemical properties required for the intended application. Example interpretations include roadfill, sand and gravel, topsoil and reclamation material.

Gravel Source

ENG - Engineering

Gravel consists of natural aggregates (2 to 75 millimeters in diameter) suitable for commercial use with a minimum of processing. It is used in many kinds of construction. Specifications for each use vary widely. Only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable

Custom Soil Resource Report

material, and the content of rock fragments. If the bottom layer of the soil contains gravel, the soil is considered a likely source regardless of thickness. The assumption is that the gravel layer below the depth of observation exceeds the minimum thickness. The ratings are for the whole soil, from the surface to a depth of about 6 feet. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be gravel.

The soils are rated "good," "fair," or "poor" as potential sources of gravel. A rating of "good" or "fair" means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Gravel Source

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Poor	Bohicket (90%)	Bottom layer (0.00)	18.8	21.3%
				Thickest layer (0.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Poor	Goldsboro (95%)	Bottom layer (0.00)	31.3	35.4%
				Thickest layer (0.00)		
			Rains (5%)	Bottom layer (0.00)		
				Thickest layer (0.00)		
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Poor	Nansemond (80%)	Bottom layer (0.00)	13.9	15.7%
				Thickest layer (0.00)		
			Rains (8%)	Bottom layer (0.00)		
				Thickest layer (0.00)		
			Tomotley (7%)	Bottom layer (0.00)		
				Thickest layer (0.00)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Poor	Tetotum (85%)	Bottom layer (0.00)	1.2	1.3%
				Thickest layer (0.00)		
			Tomotley (7%)	Bottom layer (0.00)		
				Thickest layer (0.00)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Poor	65.1	73.7%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Gravel Source

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Roadfill Source

ENG - Engineering

Roadfill is soil material that is excavated in one place and used in road embankments in another place. The soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments. The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The soils are rated "good," "fair," or "poor" as potential sources of roadfill. The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential). Normal compaction, minor processing, and other standard construction practices are assumed.

Numerical ratings between 0.00 and 0.99 are given after the specified features. These numbers indicate the degree to which the features limit the soils as sources of roadfill. The lower the number, the greater the limitation.

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Roadfill Source

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Poor	Bohicket (90%)	Wetness (0.00)	18.8	21.3%
				Low strength (0.00)		
				Shrink-swell (0.13)		
				Dusty (0.77)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Fair	Goldsboro (95%)	Wetness (0.89)	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Fair	Nansemond (80%)	Slope (0.08)	13.9	15.7%
				Wetness (0.53)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Fair	Tetotum (85%)	Wetness (0.53)	1.2	1.3%
				Low strength (0.78)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Fair	46.3	52.4%
Poor	18.8	21.3%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Roadfill Source

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Sand Source

ENG - Engineering

Custom Soil Resource Report

Sand is a natural aggregate (0.05 millimeter to 2 millimeters in diameter) suitable for commercial use with a minimum of processing. It is used in many kinds of construction. Specifications for each use vary widely. Only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand, the soil is considered a likely source regardless of thickness. The assumption is that the sand layer below the depth of observation exceeds the minimum thickness. The ratings are for the whole soil, from the surface to a depth of about 6 feet.

The soils are rated "good," "fair," or "poor" as potential sources of sand. A rating of "good" or "fair" means that sand is likely to be in or below the soil. The bottom layer and the thickest layer of the soil are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand. The number 0.00 indicates that the layer is a "poor source." The number 1.00 indicates that the layer is a "good source." A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Sand Source

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Poor	Bohicket (90%)	Bottom layer (0.00)	18.8	21.3%
				Thickest layer (0.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Fair	Goldsboro (95%)	Bottom layer (0.00)	31.3	35.4%
				Thickest layer (0.06)		
			Rains (5%)	Bottom layer (0.00)		
				Thickest layer (0.04)		
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Fair	Nansemond (80%)	Bottom layer (0.06)	13.9	15.7%
				Thickest layer (0.28)		
			Rains (8%)	Bottom layer (0.00)		
				Thickest layer (0.04)		
			Tomotley (7%)	Thickest layer (0.00)		
				Bottom layer (0.07)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Fair	Tetotum (85%)	Thickest layer (0.00)	1.2	1.3%
				Bottom layer (0.04)		
			Tomotley (7%)	Thickest layer (0.00)		
				Bottom layer (0.07)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Fair	46.3	52.4%
Poor	18.8	21.3%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Sand Source

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Topsoil Source

ENG - Engineering

Topsoil is used to cover an area so that vegetation can be established and maintained. The surface layer of most soils is generally preferred for topsoil because of its content of organic matter. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. Normal compaction, minor processing, and other standard construction practices are assumed.

The soils are rated "good," "fair," or "poor" as potential sources of topsoil. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

Numerical ratings between 0.00 and 0.99 are given after the specified features. These numbers indicate the degree to which the features limit the soils as sources of topsoil. The lower the number, the greater the limitation.

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Topsoil Source

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Poor	Bohicket (90%)	Wetness (0.00)	18.8	21.3%
				Sodium content (0.00)		
				Too clayey (0.00)		
				Salinity (0.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Fair	Goldsboro (95%)	Exchange capacity (0.82)	31.3	35.4%
				Wetness (0.89)		
				Too acid (0.93)		
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Poor	Nansemond (80%)	Slope (0.00)	13.9	15.7%
				Too sandy (0.26)		
				Exchange capacity (0.50)		
				Wetness (0.53)		
				Too acid (0.80)		
			Rains (8%)	Wetness (0.00)		
				Too acid (0.90)		
				Exchange capacity (0.91)		
			Tomotley (7%)	Wetness (0.00)		
				Too acid (0.50)		
				Exchange capacity (0.88)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Fair	Tetotum (85%)	Too acid (0.50)	1.2	1.3%
				Wetness (0.53)		
				Exchange capacity (0.83)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Fair	32.5	36.7%
Poor	32.7	37.0%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Topsoil Source

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Nonirrigated Capability Class

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

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Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Table—Nonirrigated Capability Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	8	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	2	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	6	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	2	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Nonirrigated Capability Class

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Land Management

Land management interpretations are tools designed to guide the user in evaluating existing conditions in planning and predicting the soil response to various land management practices, for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture, and rangeland. Example interpretations include suitability for a variety of irrigation practices, log landings, haul roads and major skid trails, equipment operability, site preparation, suitability for hand and mechanical planting, potential erosion hazard associated with various practices, and ratings for fencing and waterline installation.

Erosion Hazard (Off-Road, Off-Trail)

FOR - Forestry

As of 9/30/2022, this rating is not working as intended. All components appear as not rated. This rating will be fixed on 10/01/2023.

The ratings in this interpretation indicate the hazard of soil loss from off-road and off-trail areas after disturbance activities that expose the soil surface. The ratings are based on slope, soil erosion factor K, and an index of rainfall erosivity (R). The

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soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance.

The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," "severe," or "very severe." A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions; "moderate" indicates that some erosion is likely and that erosion-control measures may be needed; "severe" indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and "very severe" indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Tables—Erosion Hazard (Off-Road, Off-Trail)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Slight	Bohicket (90%)		18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Slight	Goldsboro (95%)		31.3	35.4%
			Rains (5%)			
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Severe	Nansemond (80%)	Surface kw times slope times R index (0.85)	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Slight	Tetotum (85%)		1.2	1.3%
			Tomotley (7%)			
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Slight	51.3	58.0%
Severe	13.9	15.7%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Erosion Hazard (Off-Road, Off-Trail)

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Erosion Hazard (Road, Trail)

FOR - Forestry

The ratings in this interpretation indicate the hazard of soil loss from unsurfaced roads and trails. The ratings are based on soil erosion factor K, slope, and content of rock fragments.

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The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," or "severe." A rating of "slight" indicates that little or no erosion is likely; "moderate" indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and "severe" indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Tables—Erosion Hazard (Road, Trail)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Slight	Bohicket (90%)		18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Slight	Goldsboro (95%)		31.3	35.4%
			Rains (5%)			
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Severe	Nansemond (80%)	Slope/erodibility (0.95)	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Slight	Tetotum (85%)		1.2	1.3%
			Tomotley (7%)			
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Slight	51.3	58.0%
Severe	13.9	15.7%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Erosion Hazard (Road, Trail)

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Harvest Equipment Operability

FOR - Forestry

Ratings for this interpretation indicate the suitability for use of forestland harvesting equipment. The ratings are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification of the soil, depth to a water table, and ponding. Standard rubber-tire skidders and bulldozers are assumed to be used for ground-based harvesting and transport.

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The ratings are both verbal and numerical. Rating class terms indicate the degree to which the soils are suited to this aspect of forestland management. "Well suited" indicates that the soil has features that are favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. "Moderately suited" indicates that the soil has features that are moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. "Poorly suited" indicates that the soil has one or more properties that are unfavorable for the specified management aspect. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Tables—Harvest Equipment Operability

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Poorly suited	Bohicket (90%)	Wetness (1.00)	18.8	21.3%
				Low strength (0.50)		
				Dusty (0.24)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Well suited	Goldsboro (95%)	Dusty (0.01)	31.3	35.4%
			Rains (5%)	Dusty (0.05)		
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Moderately suited	Nansemond (80%)	Slope (0.50)	13.9	15.7%
			Tomotley (7%)	Low strength (0.50)		
				Dusty (0.14)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Well suited	Tetotum (85%)	Dusty (0.08)	1.2	1.3%
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Well suited	32.5	36.7%
Poorly suited	18.8	21.3%
Moderately suited	13.9	15.7%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Harvest Equipment Operability

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Potential for Seedling Mortality

FOR - Forestry

Custom Soil Resource Report

The ratings in this interpretation indicate the likelihood of death of naturally or artificially propagated tree seedlings, as influenced by soil characteristics, physiographic features, and climatic conditions. Considered in the ratings are flooding, ponding, depth to a water table, content of lime, reaction, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope.

The ratings are both verbal and numerical. The soils are described as having a "low," "moderate," or "high" potential for seedling mortality. "Low" indicates that seedling mortality is unlikely. Good performance can be expected, and little or no maintenance is needed. "Moderate" indicates that seedling mortality can occur because one or more soil properties are less than desirable. Fair performance can be expected, and some maintenance is needed. "High" indicates that seedling mortality can occur because of one or more soil properties and that overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration.

Numerical ratings indicate gradations between the point at which the potential for seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Tables—Potential for Seedling Mortality

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	High	Bohicket (90%)	Wetness (1.00) Salinity (1.00)	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Low	Goldsboro (95%)		31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Low	Nansemond (80%)		13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Low	Tetotum (85%)		1.2	1.3%
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Low	46.3	52.4%
High	18.8	21.3%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Potential for Seedling Mortality

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Recreational Development

Recreational Development interpretations are tools designed to guide the user in identifying and evaluating the suitability of the soil for specific recreational uses. Example interpretations include camp areas, picnic areas, playgrounds, paths and trails, and off-road motorcycle trails.

Camp Areas

URB/REC - Urban and Recreational Land Uses

Camp areas are tracts of land used intensively as sites for tents, trailers, campers, and the accompanying activities of outdoor living. Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic.

The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, saturated hydraulic conductivity (Ksat), and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, saturated hydraulic conductivity (Ksat), and toxic substances in the soil.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect development. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

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Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report

Tables—Camp Areas

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Depth to saturated zone (1.00)	18.8	21.3%
				Sodium content (1.00)		
				Flooding (1.00)		
				Slow water movement (1.00)		
				Salinity (1.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Goldsboro (95%)	Dusty (0.01)	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Too sandy (0.79)		
				Depth to saturated zone (0.39)		
			Rains (8%)	Depth to saturated zone (1.00)		
				Dusty (0.05)		
				Too sandy (0.00)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
				Dusty (0.14)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Tetotum (85%)	Depth to saturated zone (0.39)	1.2	1.3%
				Dusty (0.08)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Somewhat limited	32.5	36.7%
Very limited	32.7	37.0%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Camp Areas

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Paths and Trails

URB/REC - Urban and Recreational Land Uses

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling.

The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Tables—Paths and Trails

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Depth to saturated zone (1.00)	18.8	21.3%
				Flooding (0.60)		
				Dusty (0.24)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Goldsboro (95%)	Dusty (0.01)	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Somewhat limited	Nansemond (80%)	Slope (0.92)	13.9	15.7%
				Too sandy (0.79)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Tetotum (85%)	Dusty (0.08)	1.2	1.3%
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Somewhat limited	46.3	52.4%
Very limited	18.8	21.3%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Paths and Trails

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Picnic Areas

URB/REC - Urban and Recreational Land Uses

Custom Soil Resource Report

Picnic areas are natural or landscaped tracts used primarily for preparing meals and eating outdoors. These areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas.

The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, saturated hydraulic conductivity (Ksat), and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, saturated hydraulic conductivity (Ksat), and toxic substances in the soil.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report

Tables—Picnic Areas

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Depth to saturated zone (1.00)	18.8	21.3%
				Slow water movement (1.00)		
				Sodium content (1.00)		
				Salinity (1.00)		
				Flooding (0.60)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Goldsboro (95%)	Dusty (0.01)	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Too sandy (0.79)		
				Depth to saturated zone (0.19)		
			Rains (8%)	Depth to saturated zone (1.00)		
				Dusty (0.05)		
				Too sandy (0.00)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
				Dusty (0.14)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Tetotum (85%)	Depth to saturated zone (0.19)	1.2	1.3%
				Dusty (0.08)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Somewhat limited	32.5	36.7%
Very limited	32.7	37.0%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Picnic Areas

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Playgrounds

URB/REC - Urban and Recreational Land Uses

Playgrounds are areas used intensively for games, such as baseball and football, and similar activities. Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic.

The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, saturated hydraulic conductivity (Ksat), and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, saturated hydraulic conductivity (Ksat), and toxic substances in the soil.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition

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of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Playgrounds

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Slow water movement (1.00)	18.8	21.3%
				Depth to saturated zone (1.00)		
				Sodium content (1.00)		
				Flooding (1.00)		
				Salinity (1.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Goldsboro (95%)	Dusty (0.01)	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Too sandy (0.79)		
				Depth to saturated zone (0.39)		
			Rains (8%)	Depth to saturated zone (1.00)		
				Dusty (0.05)		
				Too sandy (0.00)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
Dusty (0.14)						
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Tetotum (85%)	Depth to saturated zone (0.39)	1.2	1.3%
				Dusty (0.08)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Somewhat limited	32.5	36.7%
Very limited	32.7	37.0%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Playgrounds

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Sanitary Facilities

Sanitary Facilities interpretations are tools designed to guide the user in site selection for the safe disposal of sewage and solid waste. Example interpretations include septic tank absorption fields, sewage lagoons, and sanitary landfills.

Daily Cover for Landfill

ENG - Engineering

Daily cover for landfill is the soil material that is used to cover compacted solid waste in a sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid. After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. Some damage to the borrow area is expected, however, and plant growth may not be optimum.

This information is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

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The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the ratings. Local ordinances and regulations should be considered in planning, in site selection, and in design.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report

Tables—Daily Cover for Landfill

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Depth to saturated zone (1.00)	18.8	21.3%
				Sodium content (1.00)		
				Hard to compact (1.00)		
				Too clayey (1.00)		
				Salinity (1.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Goldsboro (95%)	Depth to saturated zone (0.47)	31.3	35.4%
				Dusty (0.01)		
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Seepage (1.00)		
				Depth to saturated zone (0.86)		
				Too sandy (0.50)		
			Rains (8%)	Depth to saturated zone (1.00)		
				Dusty (0.05)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
				Dusty (0.14)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Tetotum (85%)	Depth to saturated zone (0.86)	1.2	1.3%
				Dusty (0.08)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Somewhat limited	32.5	36.7%
Very limited	32.7	37.0%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Daily Cover for Landfill

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Sanitary Landfill (Area)

ENG - Engineering

In an "area sanitary landfill," solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. A landfill must be able to bear heavy vehicular traffic. It can result in the pollution of ground water. Ease of excavation and revegetation should be considered.

The ratings are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, saturated hydraulic conductivity (Ksat), depth to a water table, ponding, slope, and depth to bedrock or a cemented pan. Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If Ksat is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

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Tables—Sanitary Landfill (Area)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Flooding (1.00)	18.8	21.3%
				Depth to saturated zone (1.00)		
				Dusty (0.24)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Very limited	Goldsboro (95%)	Depth to saturated zone (1.00)	31.3	35.4%
				Dusty (0.01)		
			Rains (5%)	Depth to saturated zone (1.00)		
				Dusty (0.05)		
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Seepage (1.00)		
				Depth to saturated zone (1.00)		
			Rains (8%)	Depth to saturated zone (1.00)		
				Dusty (0.05)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
Dusty (0.14)						
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Very limited	Tetotum (85%)	Depth to saturated zone (1.00)	1.2	1.3%
				Dusty (0.08)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
				Dusty (0.14)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	65.1	73.7%
Null or Not Rated	23.3	26.3%

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Rating	Acres in AOI	Percent of AOI
Totals for Area of Interest	88.4	100.0%

Rating Options—Sanitary Landfill (Area)

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Sanitary Landfill (Trench)

ENG - Engineering

A "trench sanitary landfill" is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. A landfill must be able to bear heavy vehicular traffic. It can result in the pollution of ground water. Ease of excavation and revegetation should be considered.

The ratings are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include saturated hydraulic conductivity (Ksat), depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata at or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

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The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Sanitary Landfill (Trench)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Flooding (1.00)	18.8	21.3%
				Excess sodium (1.00)		
				Depth to saturated zone (1.00)		
				Too clayey (1.00)		
				Excess salt (1.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Very limited	Goldsboro (95%)	Depth to saturated zone (1.00)	31.3	35.4%
				Dusty (0.01)		
			Rains (5%)	Depth to saturated zone (1.00)		
			Dusty (0.05)			
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Seepage, bottom layer (1.00)		
				Depth to saturated zone (1.00)		
				Too sandy (0.50)		
			Rains (8%)	Depth to saturated zone (1.00)		
				Dusty (0.05)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
				Dusty (0.14)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Very limited	Tetotum (85%)	Depth to saturated zone (1.00)	1.2	1.3%
				Seepage, bottom layer (1.00)		
				Dusty (0.08)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
Dusty (0.14)						
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%

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Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	65.1	73.7%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Sanitary Landfill (Trench)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Septic Tank Absorption Fields

ENG - Engineering

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot

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be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Septic Tank Absorption Fields

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Flooding (1.00)	18.8	21.3%
				Depth to saturated zone (1.00)		
				Slow water movement (1.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Very limited	Goldsboro (95%)	Depth to saturated zone (1.00)	31.3	35.4%
				Slow water movement (0.50)		
			Rains (5%)	Depth to saturated zone (1.00)		
				Slow water movement (0.50)		
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Depth to saturated zone (1.00)	13.9	15.7%
				Slope (1.00)		
				Seepage, bottom layer (1.00)		
			Rains (8%)	Depth to saturated zone (1.00)		
				Slow water movement (0.50)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
				Slow water movement (0.50)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Very limited	Tetotum (85%)	Depth to saturated zone (1.00)	1.2	1.3%
				Seepage, bottom layer (1.00)		
				Slow water movement (0.50)		

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Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Tomotley (7%)	Depth to saturated zone (1.00) Slow water movement (0.50)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	65.1	73.7%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Septic Tank Absorption Fields

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Sewage Lagoons

ENG - Engineering

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Ksat is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a Ksat rate of more than 14 micrometers per second are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

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A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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Tables—Sewage Lagoons

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Flooding (1.00)	18.8	21.3%
				Depth to saturated zone (1.00)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Very limited	Goldsboro (95%)	Seepage (1.00)	31.3	35.4%
				Depth to saturated zone (1.00)		
			Rains (5%)	Depth to saturated zone (1.00)		
			Seepage (0.50)			
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Slope (1.00)	13.9	15.7%
				Seepage (1.00)		
				Depth to saturated zone (1.00)		
			Rains (8%)	Depth to saturated zone (1.00)		
				Seepage (0.50)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
Seepage (0.50)						
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Very limited	Tetotum (85%)	Depth to saturated zone (1.00)	1.2	1.3%
				Seepage (0.50)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
				Seepage (0.50)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	65.1	73.7%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Sewage Lagoons

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Vegetative Productivity

Vegetative productivity includes estimates of potential vegetative production for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture and rangeland. In the underlying database, some states maintain crop yield data by individual map unit component. Other states maintain the data at the map unit level. Attributes are included for both, although only one or the other is likely to contain data for any given geographic area. For other land uses, productivity data is shown only at the map unit component level. Examples include potential crop yields under irrigated and nonirrigated conditions, forest productivity, forest site index, and total rangeland production under of normal, favorable and unfavorable conditions.

Forest Productivity (Cubic Feet per Acre per Year): loblolly pine (Coile, Schumacher 1953 (690))

This forest productivity measurement is the maximum wood volume annual growth rate for unmanaged, even-aged stands. Units are cubic feet per acre per year. This is called the "culmination of mean annual increment" (CMAI).

Mean annual increment (MAI) is the average yearly wood volume growth per acre of a stand. This is computed by dividing the total wood volume by the stand age. As the stand increases in age, the MAI also increases until tree-to-tree competition and physiological maturity reduce the rate of increase. The point when a stand reaches its maximum MAI is called the "culmination of mean annual increment" (CMAI).

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this attribute, only the representative value is used.

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**Table—Forest Productivity (Cubic Feet per Acre per Year):
loblolly pine (Coile, Schumacher 1953 (690))**

Map unit symbol	Map unit name	Rating (cubic feet per acre per year)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam		18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	129.00	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	129.00	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	129.00	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Forest Productivity (Cubic Feet per Acre per Year): loblolly pine (Coile, Schumacher 1953 (690))

Units of Measure: cubic feet per acre per year

Tree: loblolly pine

Site Index Base: Coile, Schumacher 1953 (690)

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

**Forest Productivity (Cubic Feet per Acre per Year):
longleaf pine (USDA 1929 (580))**

This forest productivity measurement is the maximum wood volume annual growth rate for unmanaged, even-aged stands. Units are cubic feet per acre per year. This is called the "culmination of mean annual increment" (CMAI).

Mean annual increment (MAI) is the average yearly wood volume growth per acre of a stand. This is computed by dividing the total wood volume by the stand age. As the stand increases in age, the MAI also increases until tree-to-tree competition and physiological maturity reduce the rate of increase. The point when a stand reaches its maximum MAI is called the "culmination of mean annual increment" (CMAI).

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**Table—Forest Productivity (Cubic Feet per Acre per Year):
longleaf pine (USDA 1929 (580))**

Map unit symbol	Map unit name	Rating (cubic feet per acre per year)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam		18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	86.00	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes		13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes		1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Forest Productivity (Cubic Feet per Acre per Year): longleaf pine (USDA 1929 (580))

Units of Measure: cubic feet per acre per year

Tree: longleaf pine

Site Index Base: USDA 1929 (580)

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

**Forest Productivity (Cubic Feet per Acre per Year):
shortleaf pine (Coile, Schumacher 1953 (530))**

This forest productivity measurement is the maximum wood volume annual growth rate for unmanaged, even-aged stands. Units are cubic feet per acre per year. This is called the "culmination of mean annual increment" (CMAI).

Mean annual increment (MAI) is the average yearly wood volume growth per acre of a stand. This is computed by dividing the total wood volume by the stand age. As the stand increases in age, the MAI also increases until tree-to-tree competition and physiological maturity reduce the rate of increase. The point when a stand reaches its maximum MAI is called the "culmination of mean annual increment" (CMAI).

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**Table—Forest Productivity (Cubic Feet per Acre per Year):
shortleaf pine (Coile, Schumacher 1953 (530))**

Map unit symbol	Map unit name	Rating (cubic feet per acre per year)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam		18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes		31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	129.00	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes		1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Forest Productivity (Cubic Feet per Acre per Year): shortleaf pine (Coile, Schumacher 1953 (530))

Units of Measure: cubic feet per acre per year

Tree: shortleaf pine

Site Index Base: Coile, Schumacher 1953 (530)

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

**Forest Productivity (Cubic Feet per Acre per Year):
southern red oak (Olson 1959 (810))**

This forest productivity measurement is the maximum wood volume annual growth rate for unmanaged, even-aged stands. Units are cubic feet per acre per year. This is called the "culmination of mean annual increment" (CMAI).

Mean annual increment (MAI) is the average yearly wood volume growth per acre of a stand. This is computed by dividing the total wood volume by the stand age. As the stand increases in age, the MAI also increases until tree-to-tree competition and physiological maturity reduce the rate of increase. The point when a stand reaches its maximum MAI is called the "culmination of mean annual increment" (CMAI).

Custom Soil Resource Report

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Table—Forest Productivity (Cubic Feet per Acre per Year): southern red oak (Olson 1959 (810))

Map unit symbol	Map unit name	Rating (cubic feet per acre per year)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam		18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes		31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes		13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	57.00	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Forest Productivity (Cubic Feet per Acre per Year): southern red oak (Olson 1959 (810))

Units of Measure: cubic feet per acre per year

Tree: southern red oak

Site Index Base: Olson 1959 (810)

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Forest Productivity (Cubic Feet per Acre per Year): sweetgum (Trenk 1929 (340))

This forest productivity measurement is the maximum wood volume annual growth rate for unmanaged, even-aged stands. Units are cubic feet per acre per year. This is called the "culmination of mean annual increment" (CMAI).

Mean annual increment (MAI) is the average yearly wood volume growth per acre of a stand. This is computed by dividing the total wood volume by the stand age. As the stand increases in age, the MAI also increases until tree-to-tree competition and physiological maturity reduce the rate of increase. The point when a stand reaches its maximum MAI is called the "culmination of mean annual increment" (CMAI).

Custom Soil Resource Report

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**Table—Forest Productivity (Cubic Feet per Acre per Year):
sweetgum (Trenk 1929 (340))**

Map unit symbol	Map unit name	Rating (cubic feet per acre per year)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam		18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes		31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	100.00	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	86.00	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

**Rating Options—Forest Productivity (Cubic Feet per Acre per Year):
sweetgum (Trenk 1929 (340))**

Units of Measure: cubic feet per acre per year

Tree: sweetgum

Site Index Base: Trenk 1929 (340)

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

**Forest Productivity (Cubic Feet per Acre per Year):
yellow-poplar (Beck 1962 (350))**

This forest productivity measurement is the maximum wood volume annual growth rate for unmanaged, even-aged stands. Units are cubic feet per acre per year. This is called the "culmination of mean annual increment" (CMAI).

Mean annual increment (MAI) is the average yearly wood volume growth per acre of a stand. This is computed by dividing the total wood volume by the stand age. As the stand increases in age, the MAI also increases until tree-to-tree competition and physiological maturity reduce the rate of increase. The point when a stand reaches its maximum MAI is called the "culmination of mean annual increment" (CMAI).

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**Table—Forest Productivity (Cubic Feet per Acre per Year):
yellow-poplar (Beck 1962 (350))**

Map unit symbol	Map unit name	Rating (cubic feet per acre per year)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam		18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes		31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	86.00	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes		1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Forest Productivity (Cubic Feet per Acre per Year): yellow-poplar (Beck 1962 (350))

Units of Measure: cubic feet per acre per year

Tree: yellow-poplar

Site Index Base: Beck 1962 (350)

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Water Management

Water Management interpretations are tools for evaluating the potential of the soil in the application of various water management practices. Example interpretations include pond reservoir area, embankments, dikes, levees, and excavated ponds.

Embankments, Dikes, and Levees

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. The soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It

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is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the suitability of the undisturbed soil for supporting the embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Embankments, Dikes, and Levees

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Depth to saturated zone (1.00)	18.8	21.3%
				Salinity (1.00)		
				Piping (1.00)		
				Dusty (0.24)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Goldsboro (95%)	Depth to saturated zone (0.86)	31.3	35.4%
				Dusty (0.01)		
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Piping (1.00)	13.9	15.7%
				Depth to saturated zone (1.00)		
			Rains (8%)	Depth to saturated zone (1.00)		
				Dusty (0.05)		
			Tomotley (7%)	Depth to saturated zone (1.00)		
				Piping (0.50)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Tetotum (85%)	Depth to saturated zone (1.00)	1.2	1.3%
				Piping (0.50)		
				Dusty (0.08)		
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Somewhat limited	32.5	36.7%
Very limited	32.7	37.0%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Embankments, Dikes, and Levees

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Excavated Ponds (Aquifer-Fed)

Excavated ponds (aquifer-fed) are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, saturated hydraulic conductivity (Ksat) of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Excavated Ponds (Aquifer-Fed)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very limited	Bohicket (90%)	Slow refill (1.00)	18.8	21.3%
				Salinity and saturated zone (1.00)		
				Unstable excavation walls (0.10)		
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Goldsboro (95%)	Slow refill (0.30)	31.3	35.4%
				Unstable excavation walls (0.10)		
				Depth to saturated zone (0.06)		
			Rains (5%)	Slow refill (0.30)		
			Unstable excavation walls (0.10)			
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Unstable excavation walls (1.00)	13.9	15.7%
			Tomotley (7%)	Unstable excavation walls (1.00)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Tetotum (85%)	Unstable excavation walls (0.10)	1.2	1.3%
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Somewhat limited	32.5	36.7%
Very limited	32.7	37.0%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Excavated Ponds (Aquifer-Fed)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Pond Reservoir Areas

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the saturated hydraulic conductivity (Ksat) of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

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Tables—Pond Reservoir Areas

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Not limited	Bohicket (90%)		18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	Somewhat limited	Goldsboro (95%)	Seepage (0.70)	31.3	35.4%
			Rains (5%)	Seepage (0.70)		
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	Very limited	Nansemond (80%)	Seepage (1.00)	13.9	15.7%
				Slope (1.00)		
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	Very limited	Tetotum (85%)	Seepage (1.00)	1.2	1.3%
26	Udorthents, loamy	Not rated	Udorthents (70%)		21.4	24.2%
W	Water	Not rated	Water (100%)		1.8	2.1%
Totals for Area of Interest					88.4	100.0%

Rating	Acres in AOI	Percent of AOI
Somewhat limited	31.3	35.4%
Not limited	18.8	21.3%
Very limited	15.1	17.0%
Null or Not Rated	23.3	26.3%
Totals for Area of Interest	88.4	100.0%

Rating Options—Pond Reservoir Areas

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Chemical Properties

Soil Chemical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil chemical properties include pH, cation exchange capacity, calcium carbonate, gypsum, and electrical conductivity.

pH (1 to 1 Water)

Soil reaction is a measure of acidity or alkalinity. It is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion. In general, soils that are either highly alkaline or highly acid are likely to be very corrosive to steel. The most common soil laboratory measurement of pH is the 1:1 water method. A crushed soil sample is mixed with an equal amount of water, and a measurement is made of the suspension.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Table—pH (1 to 1 Water)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	7.2	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	5.1	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	4.7	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	4.5	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—pH (1 to 1 Water)

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Soil Erosion Factors

Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Rock Free

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

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"Erosion factor Kf (rock free)" indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Factor K does not apply to organic horizons and is not reported for those layers.

Table—K Factor, Rock Free

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	.32	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	.24	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	.28	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	.32	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—K Factor, Rock Free

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

K Factor, Whole Soil

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Factor K does not apply to organic horizons and is not reported for those layers.

Table—K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	.32	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	.24	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	.28	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	.32	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—K Factor, Whole Soil

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

T Factor

The T factor is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Table—T Factor

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	5	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	5	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	5	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	5	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—T Factor

Units of Measure: tons per acre per year

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Percent Clay

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. The estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

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Most of the material is in one of three groups of clay minerals or a mixture of these clay minerals. The groups are kaolinite, smectite, and hydrous mica, the best known member of which is illite.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Table—Percent Clay

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	44.8	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	20.4	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	8.1	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	23.2	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Percent Clay

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Bulk Density, One-Third Bar

Bulk density, one-third bar, is the oven-dry weight of the soil material less than 2 millimeters in size per unit volume of soil at water tension of 1/3 bar, expressed in grams per cubic centimeter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Table—Bulk Density, One-Third Bar

Map unit symbol	Map unit name	Rating (grams per cubic centimeter)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	1.42	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	1.43	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	1.40	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	1.34	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Bulk Density, One-Third Bar

Units of Measure: grams per cubic centimeter

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Available Water Capacity

Available water capacity (AWC) refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in centimeters of water per centimeter of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure, with corrections for salinity and rock fragments. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. It is not an estimate of the quantity of water actually available to plants at any given time.

Available water supply (AWS) is computed as AWC times the thickness of the soil. For example, if AWC is 0.15 cm/cm, the available water supply for 25 centimeters of soil would be 0.15 x 25, or 3.75 centimeters of water.

For each soil layer, AWC is recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil

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component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Table—Available Water Capacity

Map unit symbol	Map unit name	Rating (centimeters per centimeter)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	0.14	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	0.13	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	0.08	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	0.15	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Available Water Capacity

Units of Measure: centimeters per centimeter

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Saturated Hydraulic Conductivity (Ksat)

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Table—Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	0.3737	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	13.9101	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	78.3146	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	26.5741	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Saturated Hydraulic Conductivity (Ksat)

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Organic Matter

Organic matter is the plant and animal residue in the soil at various stages of decomposition. The estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms. An irregular distribution of organic carbon with depth may indicate different episodes of soil deposition or soil formation. Soils that are very high in organic matter have poor engineering properties and subside upon drying.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this

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attribute for the component. For this soil property, only the representative value is used.

Table—Organic Matter

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	1.87	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	0.32	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	0.19	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	0.16	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Organic Matter

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Linear Extensibility

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Table—Linear Extensibility

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	7.5	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	1.5	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	1.5	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	1.5	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Linear Extensibility

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

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The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	D	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	C	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	B	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	C	1.2	1.3%
26	Udorthents, loamy		21.4	24.2%
W	Water		1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Depth to Any Soil Restrictive Layer

A "restrictive layer" is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers.

This theme presents the depth to any type of restrictive layer that is described for each map unit. If more than one type of restrictive layer is described for an individual soil type, the depth to the shallowest one is presented. If no restrictive layer is described in a map unit, it is represented by the "greater than 200" depth class.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Table—Depth to Any Soil Restrictive Layer

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	>200	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	>200	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	>200	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	>200	1.2	1.3%
26	Udorthents, loamy	>200	21.4	24.2%
W	Water	>200	1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Depth to Any Soil Restrictive Layer

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Water Features

Water Features include ponding frequency, flooding frequency, and depth to water table.

Flooding Frequency Class

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

"None" means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.

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"Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.

"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.

"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.

"Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.

"Very frequent" means that flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

Table—Flooding Frequency Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	Very frequent	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	None	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	None	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	None	1.2	1.3%
26	Udorthents, loamy	None	21.4	24.2%
W	Water	None	1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Flooding Frequency Class

- Aggregation Method:* Dominant Condition
- Component Percent Cutoff:* None Specified
- Tie-break Rule:* More Frequent
- Beginning Month:* January
- Ending Month:* December

Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

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Table—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	0	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	76	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	61	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	61	1.2	1.3%
26	Udorthents, loamy	>200	21.4	24.2%
W	Water	>200	1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

Ponding Frequency Class

Ponding is standing water in a closed depression. The water is removed only by deep percolation, transpiration, or evaporation or by a combination of these processes. Ponding frequency classes are based on the number of times that ponding occurs over a given period. Frequency is expressed as none, rare, occasional, and frequent.

"None" means that ponding is not probable. The chance of ponding is nearly 0 percent in any year.

"Rare" means that ponding is unlikely but possible under unusual weather conditions. The chance of ponding is nearly 0 percent to 5 percent in any year.

"Occasional" means that ponding occurs, on the average, once or less in 2 years. The chance of ponding is 5 to 50 percent in any year.

"Frequent" means that ponding occurs, on the average, more than once in 2 years. The chance of ponding is more than 50 percent in any year.

Table—Ponding Frequency Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Bohicket silty clay loam	None	18.8	21.3%
9A	Goldsboro fine sandy loam, 0 to 2 percent slopes	None	31.3	35.4%
15E	Nansemond loamy fine sand, 15 to 30 percent slopes	None	13.9	15.7%
23A	Tetotum fine sandy loam, 0 to 2 percent slopes	None	1.2	1.3%
26	Udorthents, loamy	None	21.4	24.2%
W	Water	None	1.8	2.1%
Totals for Area of Interest			88.4	100.0%

Rating Options—Ponding Frequency Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December

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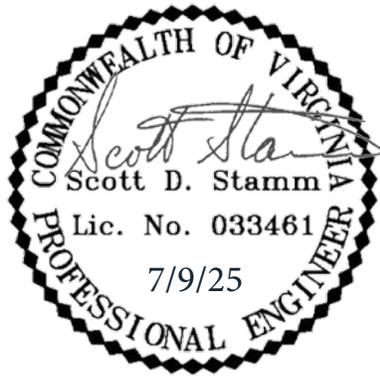
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VDOT PROPERTY

Suffolk, Virginia

Public Facilities Report

July 9, 2025

Project Description

NVR, Inc. plans to redevelop an ±87.46-acre site in the Suffolk Borough of Suffolk, Virginia, located at 1700 N. Main Street into a Residential Urban - 18 development. The site is located on Parcel Map No. 25*45A on the east side of N. Main Street between downtown and U.S. Rt. 58/460. The site is currently zoned B-2. It is proposed to rezone the parcel to RU-18 and construct approximately 329 residential townhouse units, 168 active adult condo units, and 38,000 s.f. of office space, as well as associated parking areas, a clubhouse with pool, and a waterfront park. Approximately 0.90 Acres of offsite area will be disturbed to realign Memorial Avenue to serve as an entrance to the site and to connect the adjacent property to the commercial portion of the proposed development. The property is currently owned by The Commonwealth of Virginia and was previously used by the Virginia Department of Transportation as a district office.

The site is bounded to the west by N. Main Street and commercial property, to the south by the Nansemond River and commercial property, to the east by the Nansemond River, and to the north by multifamily residential property. Due to the topography & control measures, no negative erosion & sediment control impacts are anticipated to affect adjacent properties.

Existing Conditions

The existing VDOT buildings on site are currently served by an 8" ductile iron water main located along the east edge of North Main Street. Suffolk Department of Public Utilities records indicate there is a 4-inch water meter near the connection to the 8-inch line with private water service extending from the meter to the buildings on site. The existing meter is located near the north entrance road to the site. Public utilities records indicate there is also a 16-inch water main under the east shoulder of N. Main Street that runs parallel to the 8-inch main. There is also a 10-inch water main in Memorial Avenue at the northeast corner of the site that loops to the 16-inch main in N. Main Street.

The site is also served by an 8" ductile iron gravity sewer main located on the west side of North Main Street. The existing on-site buildings are served by private sanitary sewer service, but it is unclear where the connection to the public main is located. It is likely the existing on-site sewer

ties to either of the two manholes located to the west of the site. The site is served by City Pump Station #12, which is located just to the north of the site along Memorial Avenue. There is a 10-inch ductile iron force main extending from Pump Station #12 that runs south along N. Main Street to a connection point to the HRSD force main near the Walmart entrance at 1200 N. Main Street.

Proposed Conditions

The 87.46± acre site is located east of N. Main Street and is currently zoned B-2. It is proposed to rezone the parcel as RU-18 to construct 497 residential units and 38,000 s.f. of office space located in the newly renovated VDOT district office building. The eastern portion of the site will be developed with 329 residential townhomes, 168 active adult condominium units, a clubhouse with pool, and a waterfront park. Off-street parking will be provided for the clubhouse, commercial areas, and for townhome units without garages and driveways. A total of 46 acres will be disturbed during construction, including approximately 0.90 acres of offsite area to realign Memorial Avenue to serve as an entrance to the site.

The proposed site will be served by city water and sewer. Details on these connections may be found in their relevant, following sections. The project's southern entrance will be located at the existing southern entrance to the site. The northern entrance to the site will be from Memorial Parkway, which will be realigned to provide access to the site and the existing development to the north of the site. The mature canopy trees along the existing roadways along the entrance roads will be preserved to the greatest extent possible.

City water will service the property and be looped throughout the site. The 10-inch main in Memorial Avenue could be tapped and it may be possible to utilize the existing private service connection from the 8-inch public main to the 4-inch meter on site for domestic water service to provide additional redundancy.

A public gravity sewer system will be installed throughout the site and will tie into the existing gravity sewer system to Pump Station #12. If the existing private sanitary sewer service line is in good condition, it may be possible to utilize this line to service the west side of the site. The proposed public gravity sewer from the eastern portion of the site can connect directly to Pump Station 12 along the proposed access road to Memorial Avenue at the northwest corner of the site. Connecting directly to the pump station will avoid excavation and traffic impacts on N. Main Street and will avoid adding additional flow to the existing 8-inch sewer main.

The project will be designed to comply with applicable Storm Water Management regulations. An underground storm sewer system will collect all practical storm runoff and divert it to the proposed BMPs for water quality treatment as well as detention for water quantity purposes. After treatment, the water will be released through several outfall structures into the various reaches to the Nansemond River to which much of the site currently drains.

Water Level of Service

The domestic and fire supply demands for the proposed development will be met with city water. It is expected that water service will be extended from the 10-inch main in Memorial Avenue since it will provide better capacity to meet the fire flow demands of the site. It is anticipated that at least

two connections will be made at the 10-inch water main in Memorial Avenue and possibly one connection to the 8-inch main in N. Main Street for redundancy. Public water service will be looped throughout the site in the proposed public rights-of-way and in public utility easements with meters installed at each building. The townhomes will be served by standard 3/4” residential meters. Meter sizes for the condominiums and office buildings will be determined during final design of the outparcels and buildings. Depending on the condition of the existing water service at the site, it may be possible to utilize the existing service connection as the second point of connection to City water. Detailed water system calculations and a water model will be performed during final site design.

Domestic water calculations are based on Virginia Department of Health (VDH) Waterworks Regulations of 310 gallons per day per residential unit, 0.1 GPD per square foot for the clubhouse, 10 GPD per person for the swimming pool, 0.2 GPD per square foot for the commercial space, and 0.1 GPD per square foot for the office space. Peak flow rates were determined using a peak factor of 2.5 and a duration of 24 hours for residential and a peak factor of 3.0 and a duration of 12 hours for the clubhouse, pool, and commercial. The water calculations are shown below.

WATER FLOW CALCULATIONS

Proposed Use / Node	Quantity	Unit	Average Flow per unit (GPD)	Average Day Demand (GPD)	Max Day Demand* (GPD)	Total Max Day Demand (gpm)
Townhomes/Condo	497	Units	310	154,070	385,175	267.5
Clubhouse	6,850	S.F.	0.1	685	2,055	2.9
Swimming Pool	50	Person	10.0	500	1,500	2.1
Office space	57,672	S.F.	0.1	5,767	17,302	24.0
Marina	12,000	S.F.	0.2	2,400	7,200	10.0
Fire Flow						1,500
Total Water Flow	77,069			163,422		1,806

* Peaking factor = 2.5 Residential; 3.0 Commercial

The fire flow requirements were calculated based on the 2021 International Fire Code. The type of construction for the townhomes is V-B (wood frame), and the largest floor area allowed before the needed fire flow exceeds the minimum 1,000 GPM is 3,600 S.F. The requirements for the Clubhouse are based on type V-B construction and 6,850 S.F. floor area. The requirements for the commercial and retail buildings are based on type III-A construction (Protected Combustible) with a floor area of 38,000 S.F. for the largest building. The public buildings will be equipped with a NFPA 13 sprinkler system so the needed fire flow may be reduced by 75% with a minimum flow of 1,500 GPM.

FIRE FLOW REQUIREMENTS

Fire flow calculations based on the 2021 International Fire Code

PROPOSED USE	TYPE OF CONSTRUCTION	TOTAL FLOOR AREA	FIRE FLOW REQUIRED (gpm)*	MINIMUM FIRE HYDRANTS REQUIRED**
TOWNHOUSE	V-B	3,600	1,000	1

*from Table B105.1 of the 2021 IFC

Minimum Required Fire Flow for 1- and 2- Family Dwellings not exceeding 3,600 SF is 1,000 GPM

**from Table C102.1 of the 2021

IFC

PROPOSED USE	TYPE OF CONSTRUCTION	TOTAL FLOOR AREA	FIRE FLOW REQUIRED (gpm)*	MINIMUM FIRE HYDRANTS REQUIRED**
CLUBHOUSE	V-B	6,850	1,500	1

PROPOSED USE	TYPE OF CONSTRUCTION	TOTAL FLOOR AREA	FIRE FLOW REQUIRED (gpm)*	MINIMUM FIRE HYDRANTS REQUIRED**
COMMERCIAL	IIIA	38,000	1,500	1

Sewer Level of Service

The site’s sewer needs will be met by installing a gravity sewer system which ties into the existing public gravity sewer system that flows to City Pump Station #12, which is located at the northwest corner of the site.

The sanitary sewer calculations are based on an average sewage demand of 100 GPD per person with an assumed 3.1 person per dwelling or 310 GPD per unit for the townhomes; 0.1 GPD per SF was used for the clubhouse, 10 GPD per person for the swimming pool, 0.1 GPD per SF for the office space and 0.2 GPD per SF for the retail space. Duration and peaking factors based on Hampton Roads Regional data were used. The townhomes have a peaking factor of 2.5 and a duration of 24 hours. The clubhouse, pool, office space, and retail have a peaking factor of 3.0 with a duration of 12 hours. The total peak project flows for the site were calculated to be 317.6 GPM. Please see calculations below.

SEWER FLOW CALCULATIONS

Project	Quantity	Unit	Average Flow* per unit (GPD)	Average Daily Flow (GPD)	Duration (GPM)	Duration (hours)	Sanitary PF*	Max. Daily Flow (GPM)	Max. Daily Flow (GPD)
Project Flows									
Townhomes	497	ERU	310	154,070	107.0	24	2.5	267.5	385,175
Clubhouse	6,850	S.F.	0.1	685	1.0	12	3.0	2.9	2,055
Swimming Pool	50	Person	10.0	500	0.7	12	3.0	2.1	1,500
Office Space	57,672	S.F.	0.1	5,767	8.0	12	3.0	24.0	17,302
Marina	12,000	S.F.	0.2	2,400	3.3	12	3.0	10.0	7,200
Total Project Flows								306.5	413,232
Total Sewage Flow				163,422				306.5	413,232

Stormwater Management

Preliminary Plans for Stormwater Management at the site are discussed in the Water Quality Impact Assessment. Please see the accompanying Major Water Quality Impact Assessment for The Retreat on the River by Land Planning Solutions, Inc. dated April 15, 2025.

Traffic Impact Study

A Traffic Impact Study has been performed by VHB and is being submitted as a separate report.

Fiscal Impact Analysis

A Fiscal Impact Analysis has been performed by Ted Figura Consulting and is being submitted as a separate document. Please see the accompanying fiscal impact letter addressed to Melissa Venable of Land Planning Solutions from Ted Figura, Jr. dated April 2, 2025.

VDOT Site Development

Suffolk, Virginia

PREPARED FOR



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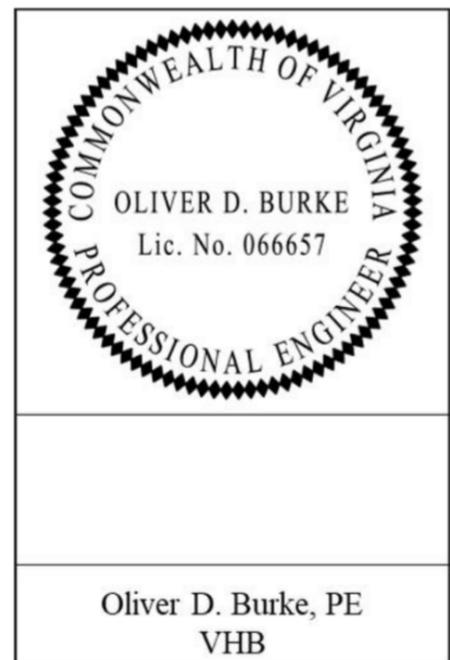


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Executive Summary

The proposed development is located in the City of Suffolk along N. Main Street, just south of Memorial Avenue. The parcel was previously utilized for a Virginia Department of Transportation (VDOT) operational facility. The VDOT Site developer is requesting a rezoning of approximately 73.5 acres from Business/Commercial land usage to Residential in order to support a mix of condominiums and townhomes. The remaining 15.3 acres of the total site is proposed to remain commercial, per the site plan completed by Land Planning Solutions (LPS), dated March 28, 2025. Detailed site plan is included in the **Appendix**.

The traffic study area includes the roadways and intersections along N. Main Street, Godwin Boulevard, and Pruden Boulevard in the vicinity of the proposed development. As currently proposed, the VDOT Site development will increase the volume of traffic on roadways and at intersections throughout the study area, adding 436 and 516 trips during the AM and PM peak hours, respectively.

To maintain traffic operations within the study area and mitigate impacts associated with the proposed development, the following are recommended:

N. Main Street / Site Entrance

Construct site driveway to provide right-in/right-out (RI/RO) only access.

- Provide a northbound right-turn lane (150' storage / 50' taper, within available property limits)

N. Main Street / Memorial Avenue / Edgewood Avenue

Reconstruct the intersection to include the following laneage:

- N. Main Street (northbound):
 - one exclusive left-turn lane (extend to include 200' storage / 100' taper)
 - two through lanes
 - one exclusive right-turn lane (200' storage / 80' taper to tie into proposed RI/RO driveway)
- N. Main Street (southbound):
 - one exclusive left-turn lane (180' storage / 100' taper)
 - one exclusive through lane
 - one shared through-right turn lane
- Memorial Avenue (eastbound):
 - one shared through-left lane
 - one exclusive right-turn lane
- Edgewood Avenue (westbound):
 - one full (left-through-right) movement lane

Construct a traffic signal.

The recommendations for this TIA have been limited to the proposed land uses listed in **Chapter 5**. Should the developer consider a fast-food restaurant with drive-thru or similar use that generates higher traffic volumes, an updated traffic impact study will be required.

In addition to site entrance improvements, optimized signal timings are recommended as summarized below:

N. Main Street Corridor

Maintain existing laneage and provide optimized signal timings at the following intersections:

- N. Main Street / Pruden Boulevard / Godwin Boulevard
- N. Main Street / Murphy's Mill Road
- N. Main Street / Louise Obici Lane / Northgate Lane
- N. Main Street / Lowe's entrance
- N. Main Street / Walmart entrance
- N. Main Street / Big Lots Entrance
- N. Main Street / Constance Road / US Route 58

Optimized timings should be provided within six months of project completion or with construction of the proposed signal at Memorial Avenue. It is assumed that the City operates the coordinated systems with up to four timing plans. Optimized timings should be developed using existing cycle lengths by time of day and include minor changes to existing corridor progression, limited to updated splits, offsets, and phasing sequences. Data collection for timings is assumed to be provided by the City via Grid Smart data, and the developer will provide updated timing plans and implementation of these timings by a licensed engineer.



1 Preface

1.1 Responsible Traffic Impact Study Certificate

The person identified below has had responsible charge of the attached study, its contents, and the methodologies employed in its creation. This person is a Licensed Professional Engineer in the Commonwealth of Virginia.

Virginia Licensed Professional Engineer

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(Signature): _____ Date: _____

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This report has been created utilizing nationally accepted methods, City of Suffolk, and Virginia Department of Transportation (VDOT) Standards and Requirements, and/or City approved alternate methodologies, and deviations from approved methodologies are summarized below.

2 Introduction

2.1 Project History and Background

The VDOT Site development is a planned mixed-use development located in the City of Suffolk along N. Main Street, just south of Memorial Avenue. The parcel was previously utilized for a Virginia Department of Transportation (VDOT) operational facility. The VDOT Site developer is requesting a rezoning of approximately 73.5 acres from Business/Commercial land usage to Residential in order to support a mix of condominiums and townhomes. The remaining 15.3 acres of the total site is proposed to remain commercial.

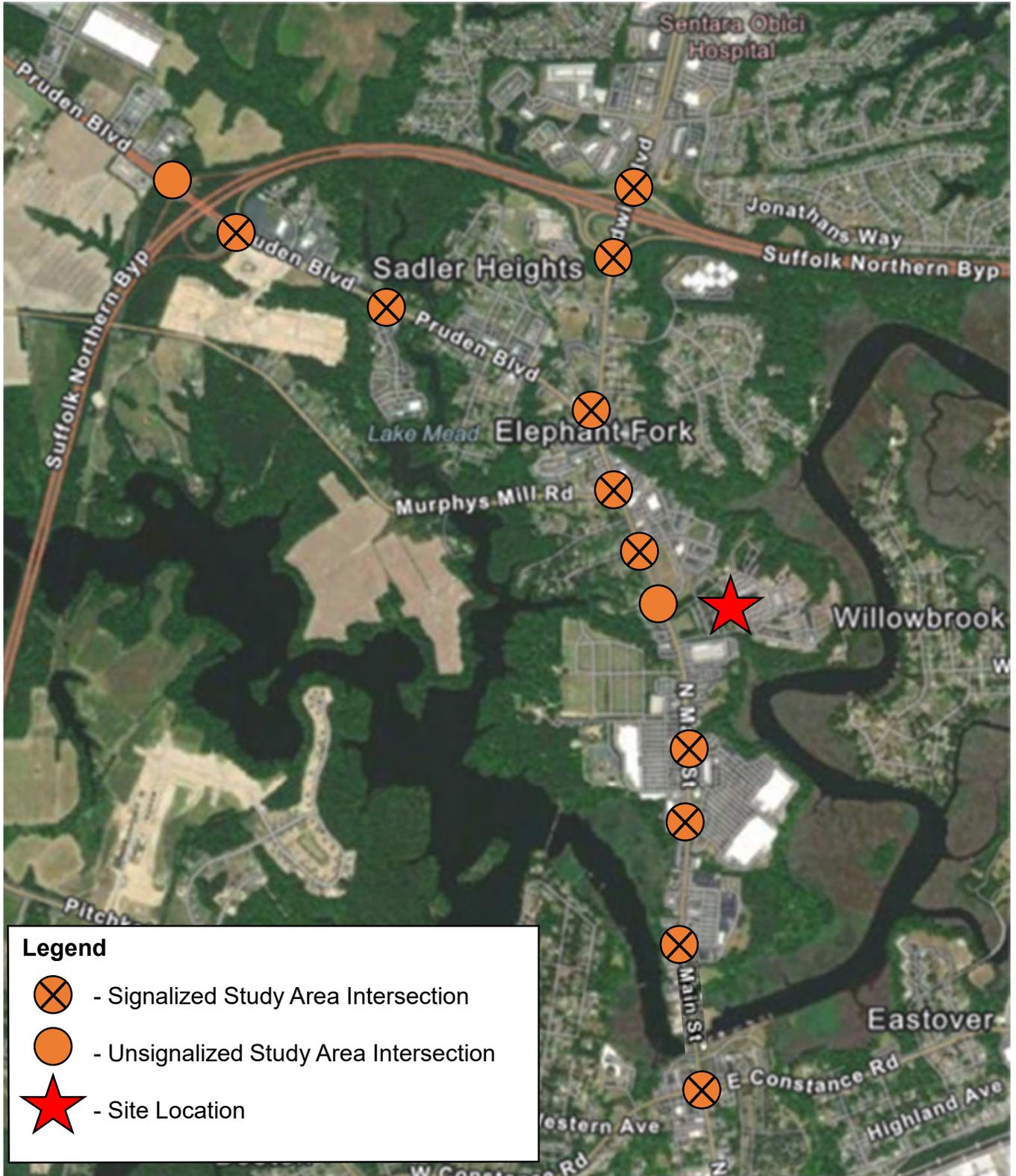
The developer is requesting a rezoning from B-2 to RU-12 to support 481 residential units as well as office and commercial uses. The development will have one driveway located on N. Main Street and a connection to the adjacent site with access provided via Memorial Avenue and Louise Obici Lane. The construction and occupancy timeline for the proposed development is approximately 5 years, with full build-out anticipated in 2030 and a 5-year horizon to 2035.

Figure 1 illustrates the site location and the study area intersections. As shown in Figure 1, N. Main Street runs in an approximate north/south direction with all the side streets oriented in an east/west direction. The site access is currently provided by two driveways, which were formally one way in and out. The proposed development will also have two access points with primary access provided via a signalized intersection at Memorial Avenue, and a secondary site entrance provided by a proposed right-in/right-out driveway, to be aligned with the existing full movement driveway to the west of N. Main Street approximately 335 feet south of the Edgewood Avenue and Memorial Avenue intersection.

Vanasse Hangen Brustlin, Inc (VHB) was retained to perform a traffic impact analysis for the proposed development. This report has been prepared for submittal to the City of Suffolk to evaluate existing and future traffic conditions. Assumptions regarding the study area, traffic generation, trip distribution, and traffic control were discussed with City of Suffolk staff prior to the completion of this analysis.

Study Area

North
Not to Scale



2.2 Site Location and Study Area

The study area for this analysis includes the following roadways and intersections, all existing intersections are signalized, unless otherwise noted.

Roadways

- › N. Main Street

Existing Intersections

- › Godwin Boulevard / US Route 58 westbound on/off ramps
- › Godwin Boulevard / US Route 58 eastbound on/off ramps
- › Pruden Boulevard / US Route 58 westbound on/off ramps
- › Pruden Boulevard / US Route 58 eastbound on/off ramps
- › Pruden Boulevard / Meade Parkway
- › N. Main Street / Pruden Boulevard / Godwin Boulevard
- › N. Main Street / Murphy's Mill Road
- › N. Main Street / Louise Obici Lane / Northgate Lane
- › N. Main Street / Edgewood Avenue (unsignalized)
- › N. Main Street / Lowe's entrance
- › N. Main Street / Walmart entrance
- › N. Main Street / Big Lots Entrance
- › N. Main Street / Constance Road / US Route 58

The study area roadway and intersections were identified during conversations with City of Suffolk staff.

Existing and Proposed Site Uses

The VDOT Site development is located on the former VDOT District Office site. The 88.8-acre development is requesting a portion of the site be rezoned from B-2 to RU-12 to support residential development with a portion of the site maintaining a B-2 to support commercial and office land uses.

Within the immediate vicinity of the site, there are a variety of land uses that include restaurants, retail businesses, hotels, car dealerships, and numerous residential neighborhoods.

3 Analysis of Existing Conditions

3.1 Capacity Analysis at Critical Points

Intersection turning movement counts (TMCs) were used in conjunction with the number of lanes and traffic operations at each study intersection to determine existing and future levels of service. Level of Service (LOS) describes traffic conditions—the amount of traffic congestion—at an intersection or on a roadway. Table 1 shows the LOS and delay range for signalized and unsignalized intersections.

Table 1: Levels of Service and Ranges of Delay

LOS	Delay per Vehicle (seconds per vehicle)	
	Signalized	Unsignalized
A	≤ 10	≤ 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

3.2 Existing Roadways

N. Main Street is the primary external roadway providing access to the VDOT Site Development, with connections to Godwin Boulevard and Pruden Boulevard to the north, and Constance Road to the south. The following provides a short description of the primary roadway.

- › N. Main Street is a north/south oriented four-lane principal arterial in the City of Suffolk, providing connectivity to numerous residential and commercial developments. Within the project vicinity, N. Main Street has a 2022 ADT volume of 28,250 vehicles per day (VPD) and a posted speed limit of 35-mph.

3.3 Turning Movement Counts (TMCs)

Turning movement counts (TMC) were collected by Data Collection Group during the AM (7:00-9:00) and PM (4:00-6:00) peak periods on March 29 and 31, 2022, archive at the following intersections:

- › Godwin Boulevard and US Route 58 westbound on/off ramps
- › Godwin Boulevard and US Route 58 eastbound on/off ramps
- › N. Main Street / Pruden Boulevard / Godwin Boulevard
- › N. Main Street / Murphy's Mill Road
- › N. Main Street / Louise Obici Lane
- › N. Main Street / Lowe's entrance
- › N. Main Street / Walmart entrance
- › N. Main Street / Big Lots entrance
- › N. Main Street / Constance Road / US Route 58
- › Pruden Boulevard and US Route 58 eastbound on/off ramps
- › Pruden Boulevard / Meade Parkway

TMCs were collected on May 3, 2022, for the following intersection:

- › Pruden Boulevard and US Route 58 westbound on/off ramps

All counts collected in 2022 were grown to 2025 using a growth rate of one percent (1%) to get the Existing (2025) scenario volumes. The growth rate was applied using the methodology outlined in Chapter 4 (Future Conditions without Development).

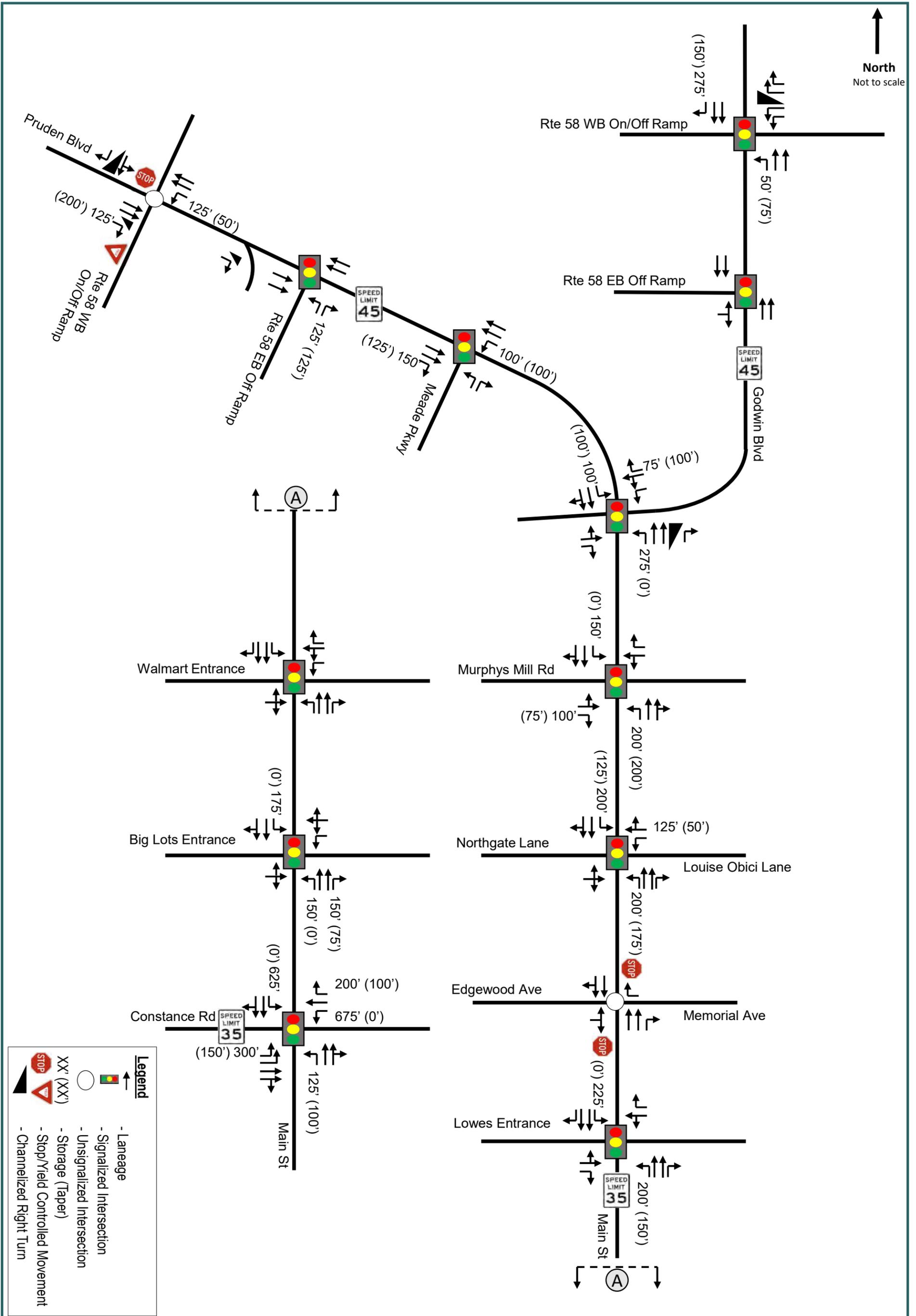
Figure 2 illustrates the existing roadway conditions, laneages, storage lengths, speed limits, and traffic control at the study area intersections.

3.4 Average Daily Traffic (ADT) Counts

ADT counts were collected by Data Collection Group along Main Street and Edgewood Drive.

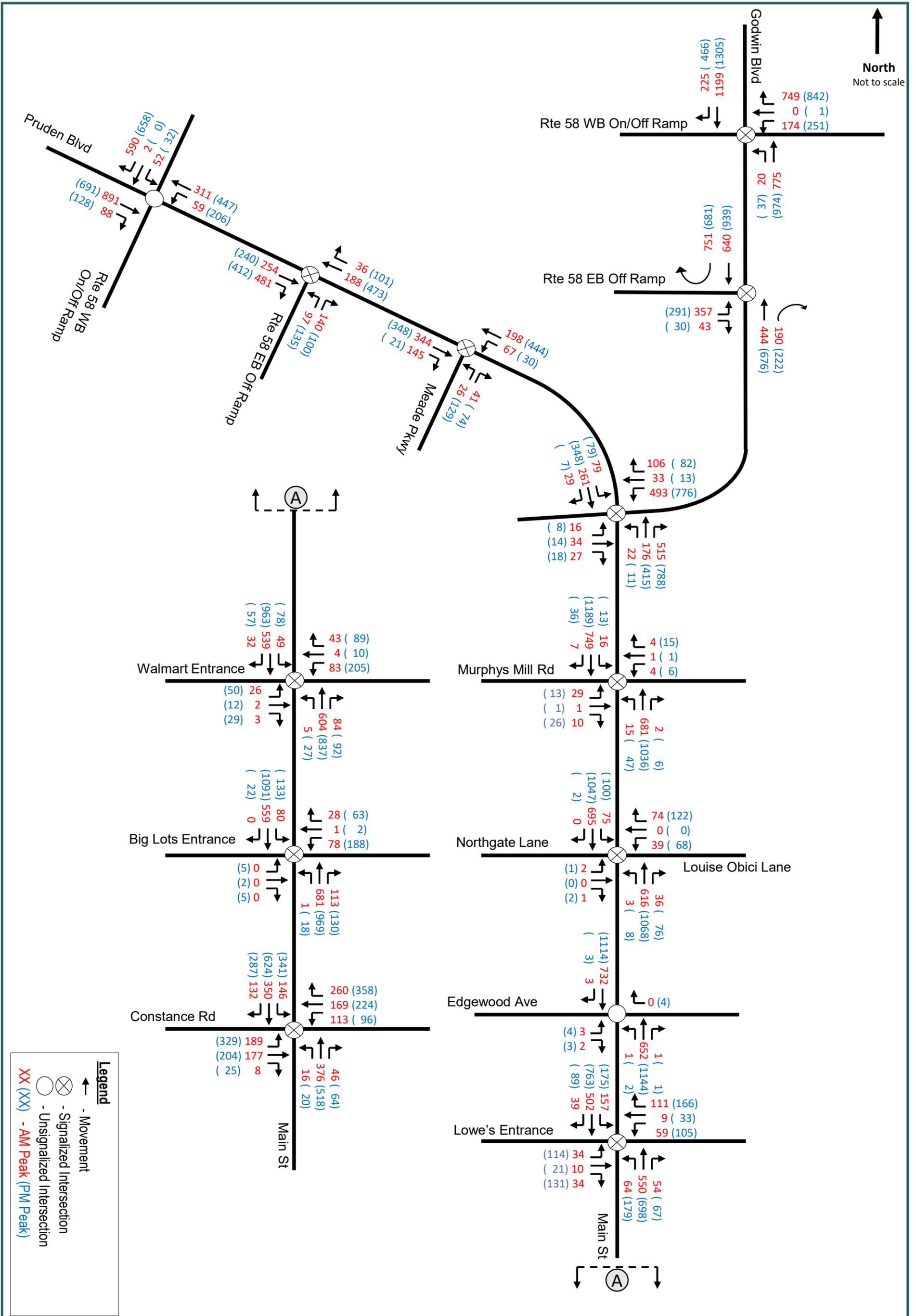
Historical 2022 TMC data is summarized in **Figure 3A**. Projected 2025 TMC and collected 2022 ADT data are illustrated in **Figure 3B**.

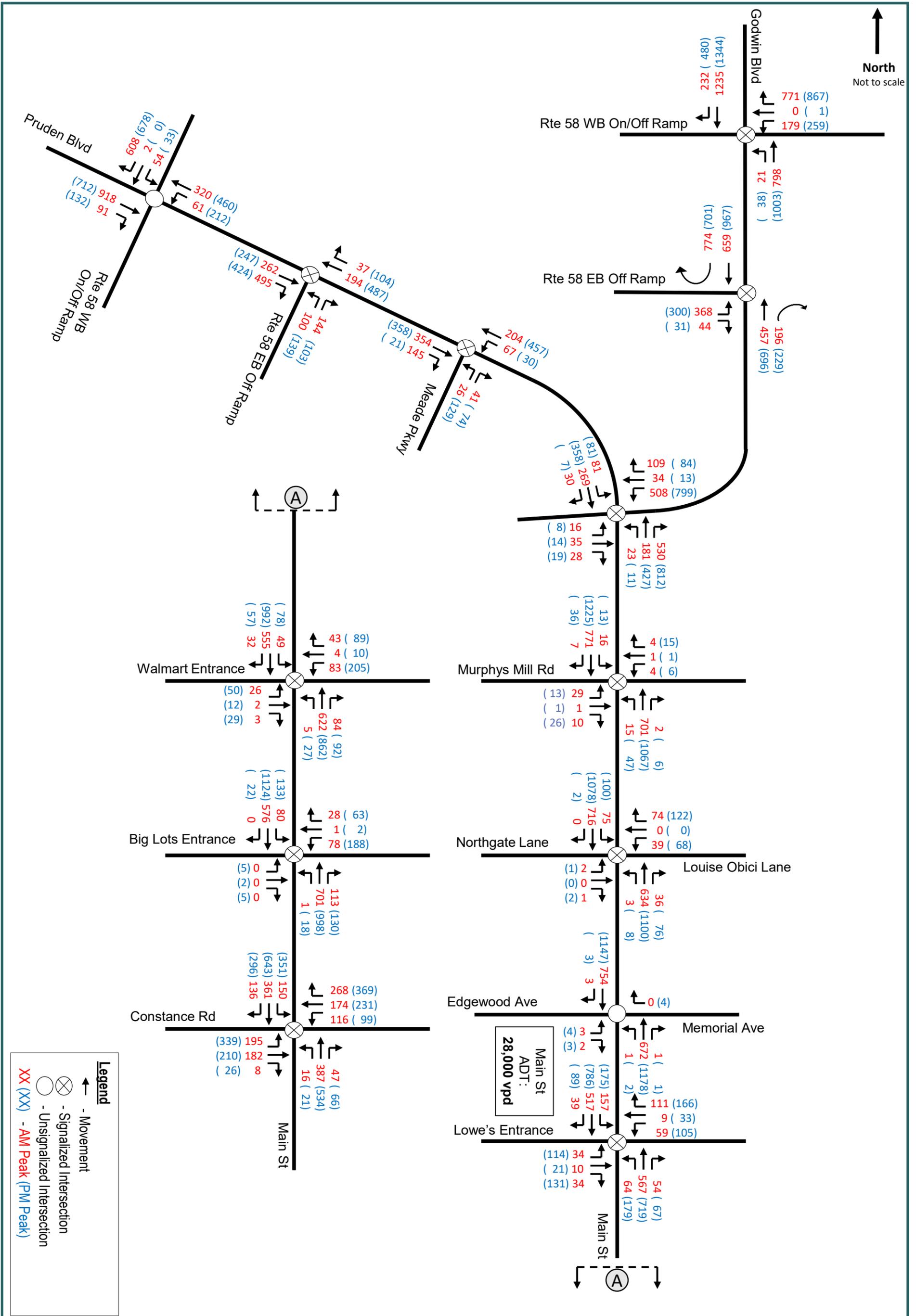
Detailed TMC and ADT data are included in the **Appendix**.



VDOT Site Development – Suffolk, VA
2025 Existing Roadway Conditions

Figure
2





3.5 Capacity and Levels of Service Analyses at Critical Points

Capacity analyses for all intersections during the AM and PM peak hours were performed for the existing study area intersections. Analyses were completed to determine the operating characteristics of study area intersections using Synchro Professional 11, which uses methodologies contained in the 2000 Highway Capacity Manual (HCM) and HCM 6th Edition.

Level of service analyses were performed using existing signal timings combined with the existing traffic volumes noted above. To compare operations among various scenarios, detailed analyses are illustrated in **Tables 3 – 11 & 14 – 18** in **Chapter 7** to provide a side-by-side comparison.

4 Future Conditions without Development

4.1 Background Traffic Volumes

Background traffic growth is the increase in traffic volumes due to usage increases and non-specific growth throughout an area. One method of determining reasonable growth rates for an area is to research past traffic counts for a roadway to identify historical growth rates. Additionally, approved developments are considered and then combined with annual growth to establish background conditions.

A 1% growth rate was used based on historical data and consistency with recently approved studies. This annual growth rate was applied to all movements for the following intersections as these intersections serve general commuter traffic from all approaches:

- › Godwin Boulevard and US Route 58 westbound on/off ramps
- › Godwin Boulevard and US Route 58 eastbound on/off ramps
- › Pruden Boulevard and US Route 58 eastbound on/off ramps
- › Pruden Boulevard and US Route 58 westbound on/off ramps
- › N. Main Street / Pruden Boulevard / Godwin Boulevard
- › N. Main Street / Constance Road / US Route 58

For the remaining intersections, an annual growth rate of 1% was applied to only the northbound/southbound mainline through movements as it is assumed the side street volumes will not experience annual usage growth or will be captured in existing or approved development volumes. A growth rate of 1% applied exponentially over 5 years and 10 years results in growth factors of 1.05 and 1.10, respectively.

4.2 Approved Developments

To evaluate future conditions, the study considered previously approved developments located within the project vicinity that have not reached full build-out. The City identified the following developments to be included in the background traffic:

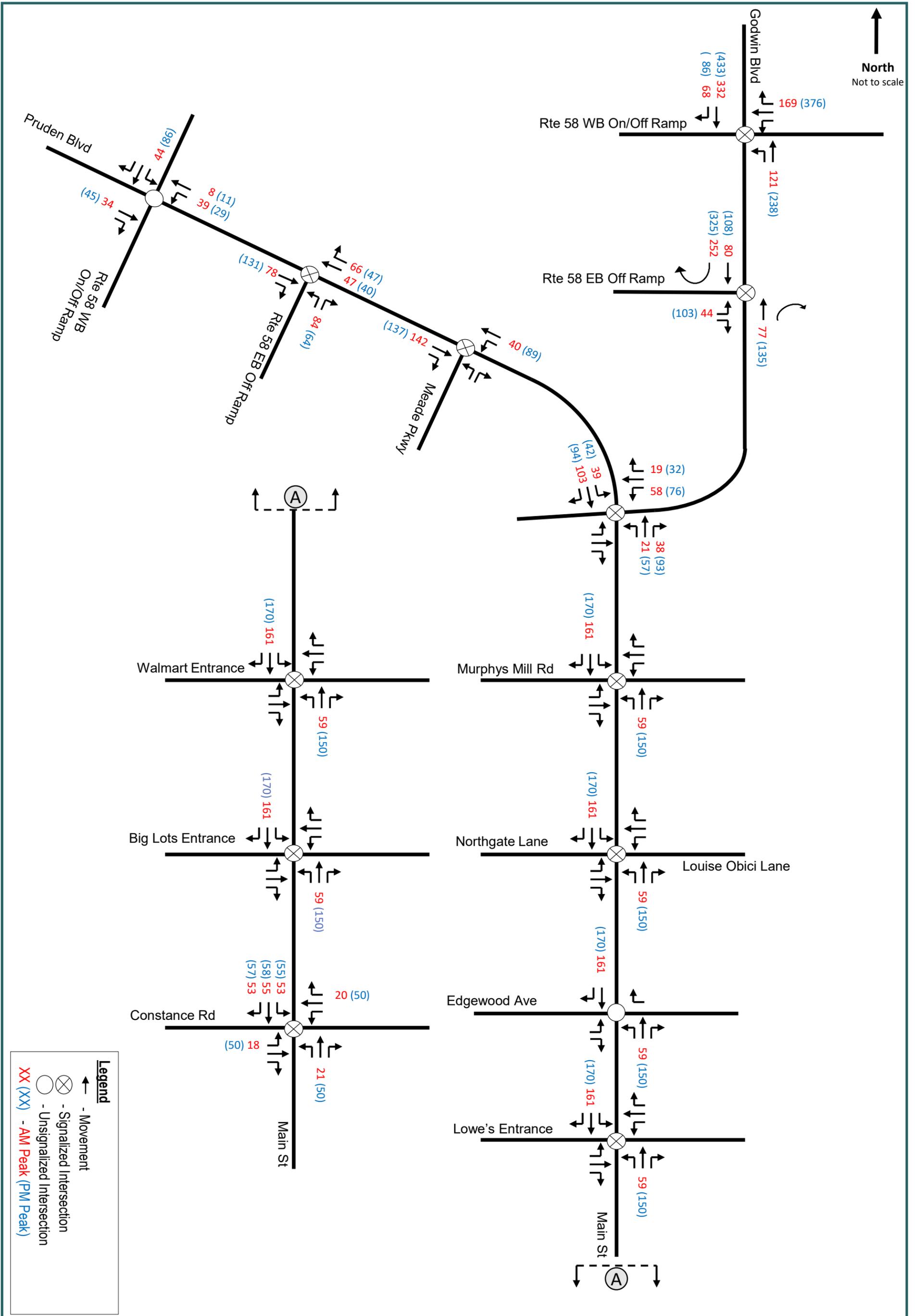
1. Hallstead Reserve (2019)
2. Godwin Park (2020)
3. Planters Station (2014)
4. The Shoppes at Planters Station (2021)
5. Port 58 Apartments (2019)
6. The Gallery at Godwin (2020)
7. Nansemond River Golf Course (NRGC, 2021)

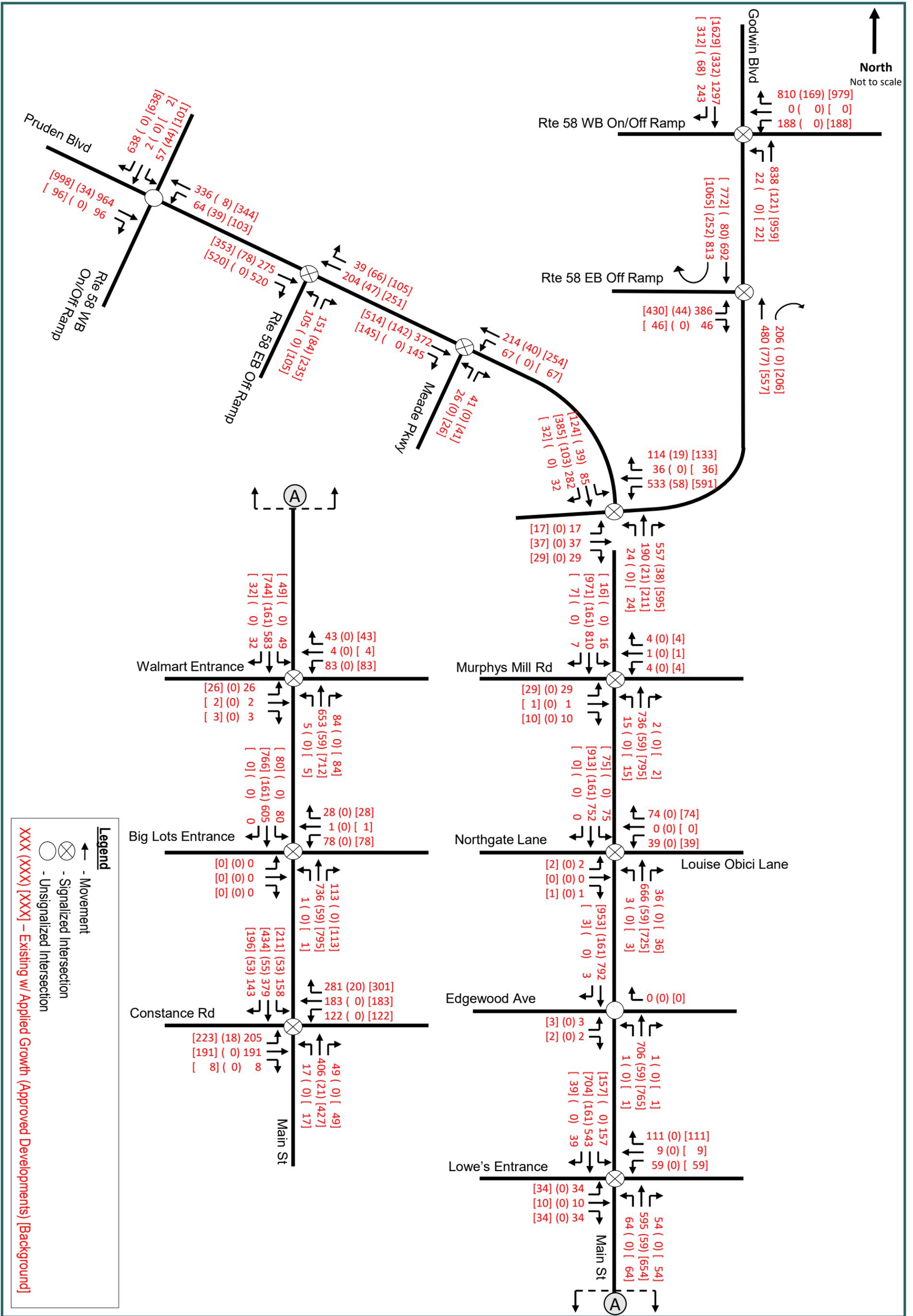
VDOT Site Traffic Impact Analysis

The location of these seven developments and the detailed trip assignments for these developments are included in the **Appendix**. Trips generated by these sites were obtained from the recently approved studies listed above. The total AM and PM peak hour approved development traffic volumes are illustrated in **Figure 4**.

The total Background traffic includes existing traffic volumes with applied annual growth and the additional approved development traffic. **Figures 5** and **6** illustrate the 2030 Background AM and PM peak volumes, respectively.

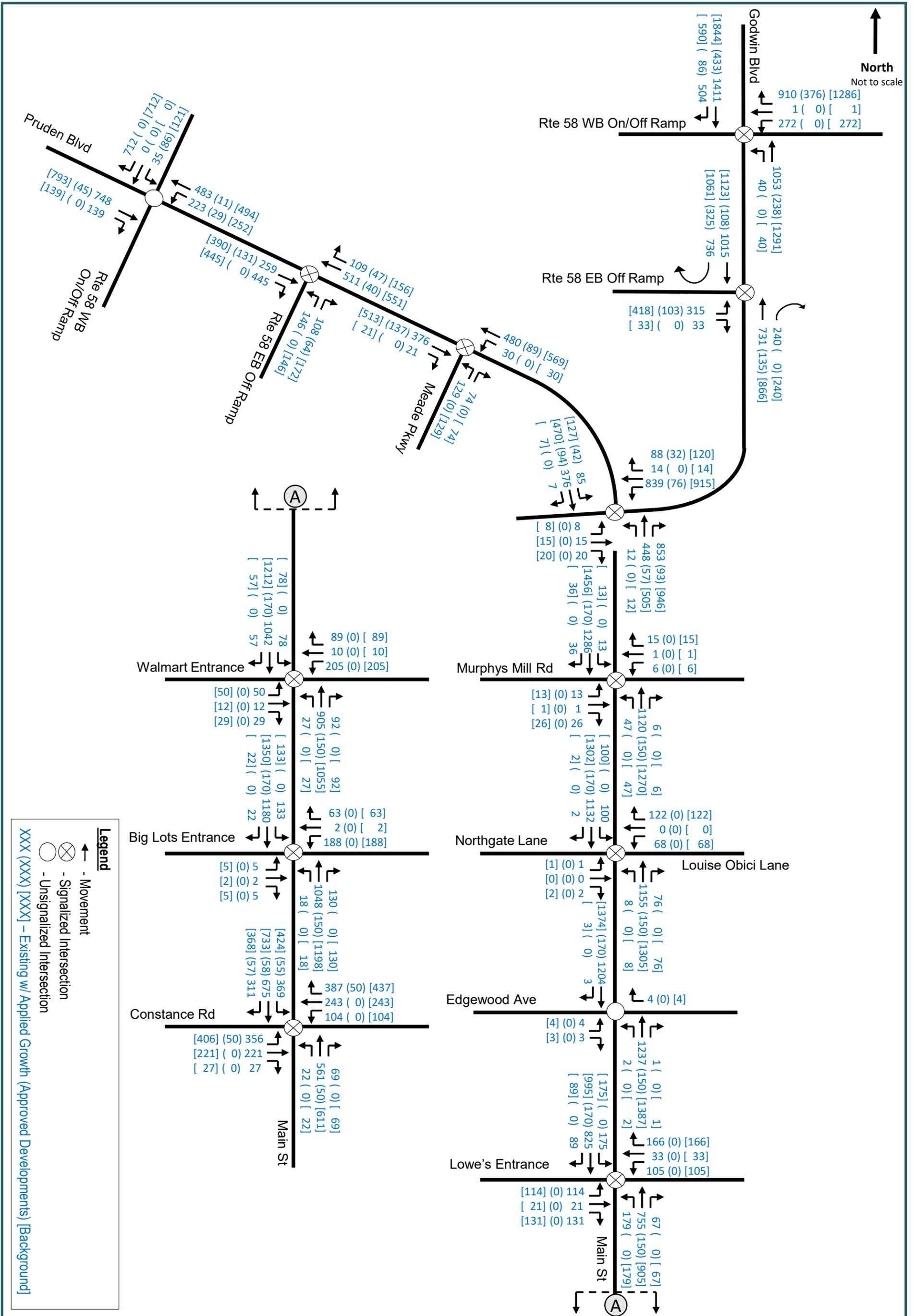
Figures 7 and **8** illustrate the 2035 Background AM and PM peak volumes, respectively, which includes an additional 5 years of annual growth applied to existing traffic volumes.





VDOT Site Development – Suffolk, VA
2030 Background Traffic: AM Peak

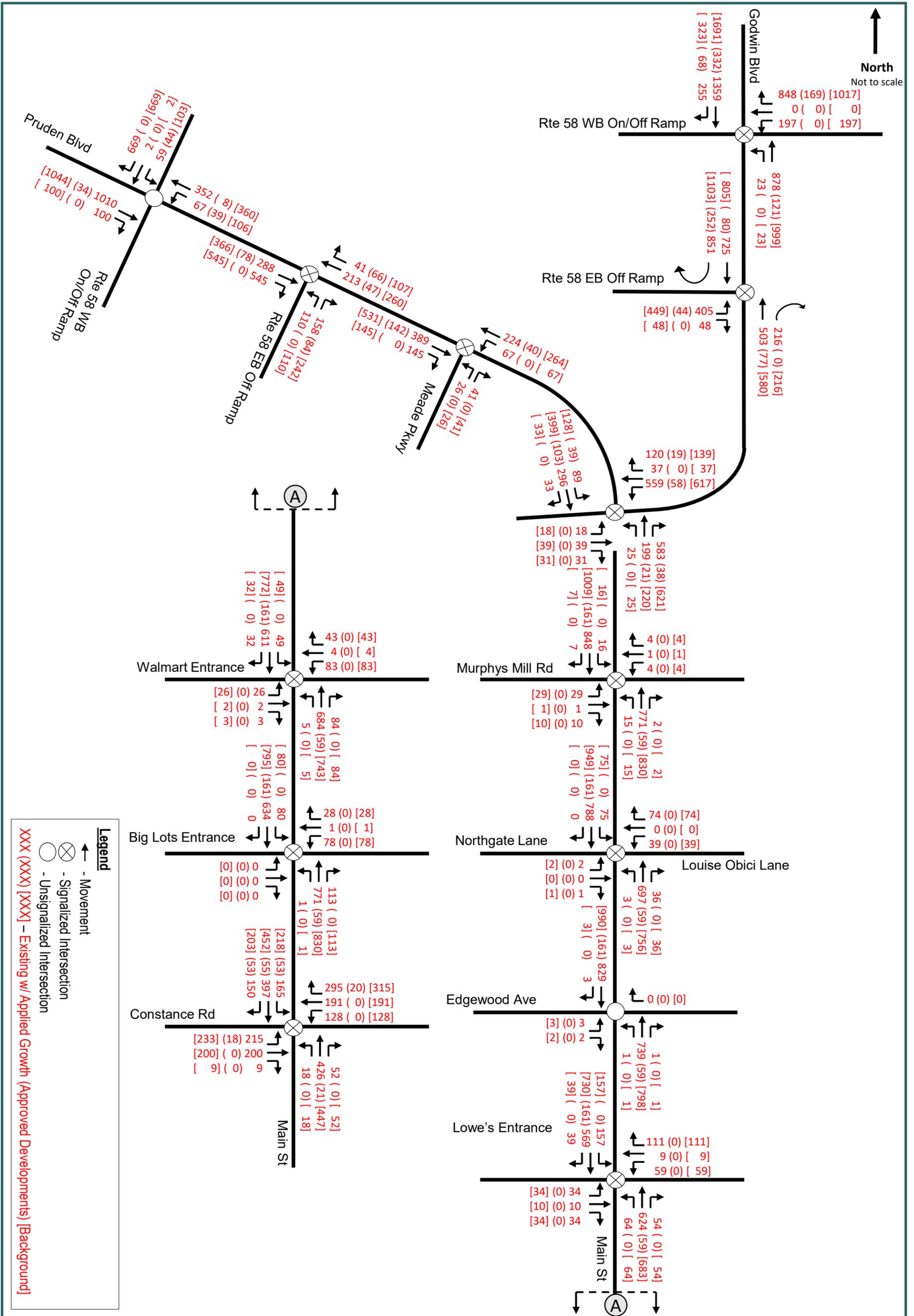
Figure 5



VDOT Site Development – Suffolk, VA
2030 Background Traffic: PM Peak

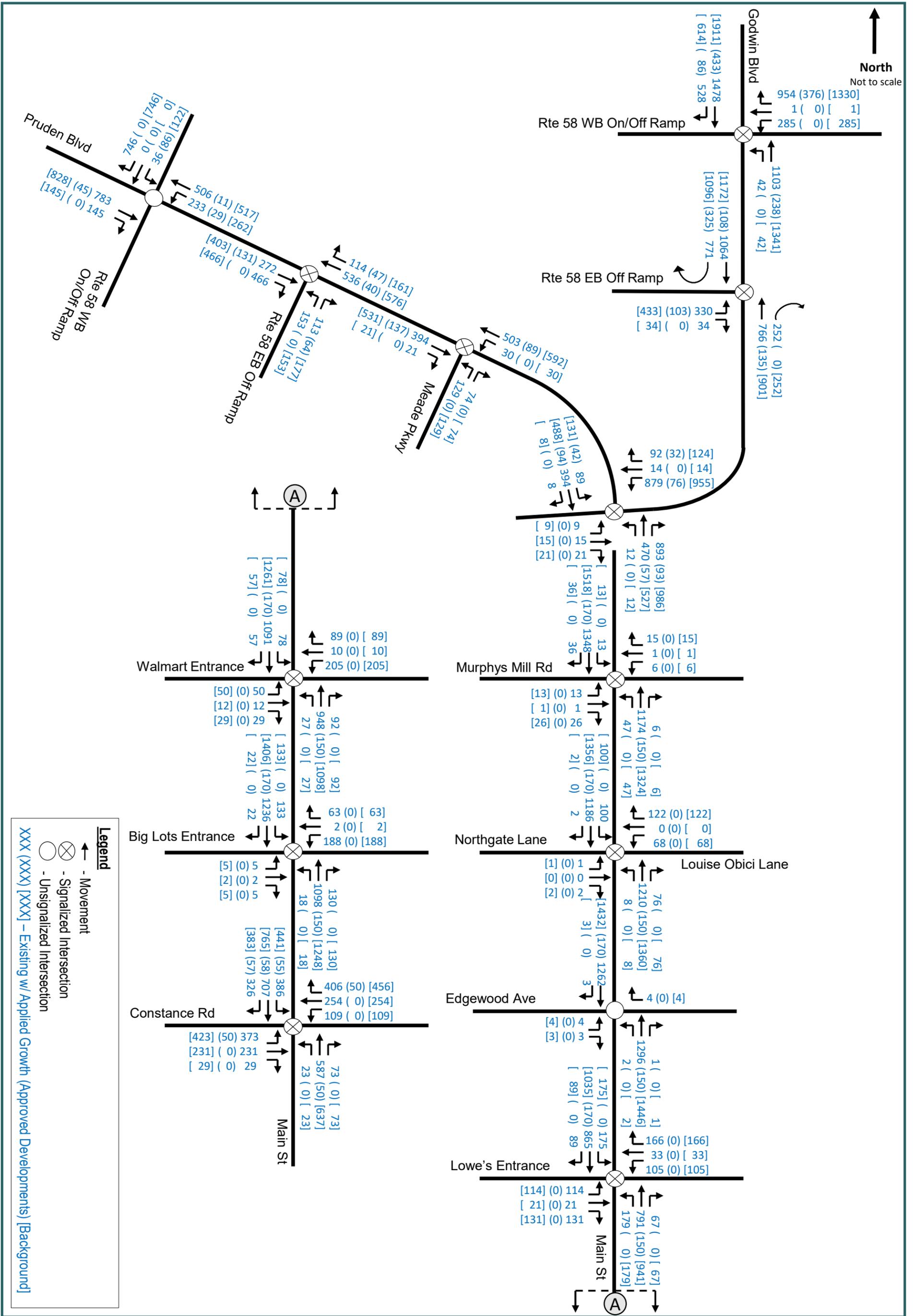
Figure
6





VDOT Site Development – Suffolk, VA
2035 Background Traffic: AM Peak

Figure
7



VDOT Site Development – Suffolk, VA
2035 Background Traffic: PM Peak

Figure 8

4.3 Capacity and Levels of Service Analyses at Critical Points

Analyses were completed to determine the operating characteristics of study area intersections and roadways using Synchro Professional 11, which uses methodologies contained in the 2000 Highway Capacity Manual (HCM) and HCM 6th Edition.

Level of service analyses for the Background scenarios were performed using existing signal timings.

To compare operations among various scenarios detailed analyses are illustrated in **Tables 3 – 11 & 14 – 18** in **Chapter 7** to provide a side-by-side comparison.

5 Trip Generation

Traffic generated by the proposed development was determined using trip generation methodology contained in the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, 2021*.

5.1 Trip Generation

Table 2 summarizes the proposed trip generation for the VDOT Site development being considered as part of this rezoning to support the residential uses in addition to by-right B-2 uses.

Table 2: Proposed Trip Generation

Land Use (ITE code)	Variable	Daily		AM Peak		PM Peak	
		In	Out	In	Out	In	Out
Residential Development							
Single Family Attached Housing (215)	313 units	1143	1141	37	115	106	74
Senior Adult Housing Multifamily (252)	168 units	272	272	12	22	24	18
Multifamily Housing (Low-Rise) Not Close to Rail Transit	36 units	153	153	8	26	23	13
Commercial Development							
High-Turnover (Sit-Down) Restaurant (932)	6 KSF	322	321	31	26	33	21
Office Development							
General Office Building (710)	152 employees	352	353	109	15	17	83
Total		5,299		436		516	

Trips generated by the office portion of the development were generated using average rates based on employee counts. Employee counts were estimated using a 38,000 square foot (SF) building size and an average ratio of 1 employee per 250 square feet.

While there are higher generators allowed under the B2 zoning, the development criteria will restrict the ability to construct a fast-food with drive-thru or similar use. If these uses are requested in the future, an updated traffic impact study will be required.

Table 2 indicates that the proposed development has the possibility to generate approximately 436 and 516 AM and PM peak periods, respectively. Additionally, the site has the potential to generate 5,299 daily trips.

6 Site Traffic Distributions and Traffic Assignments

6.1 Traffic Distribution

The directional distribution and assignment of trips generated by the proposed development is based on a review of existing intersections, roadway volumes, and an understanding of travel patterns within the study area. The following assumptions were discussed and agreed upon with the City of Suffolk prior to moving forward with trip assignments and analysis.

The overall external distribution for the VDOT Site development site are as follows and is within the **Appendix**:

Residential/General Office

- › 5% to/from the north/west via Pruden Boulevard
- › 10% to/from the north via Godwin Boulevard
- › 10% to/from the south via N. Main Street
- › 50% to/from the east via US Route 58 at Godwin Boulevard
- › 5% to/from the east via E. Constance Road
- › 15% to/from the west via US Route 58 at Pruden Boulevard
- › 5% to/from the west via W. Constance Road

Local Commercial

- › 20% to/from the north/west via Pruden Boulevard
- › 20% to/from the north via Godwin Boulevard
- › 20% to/from the south via N. Main Street
- › 20% to/from the east via E. Constance Road
- › 20% to/from the west via W. Constance Road

6.2 Internal Capture

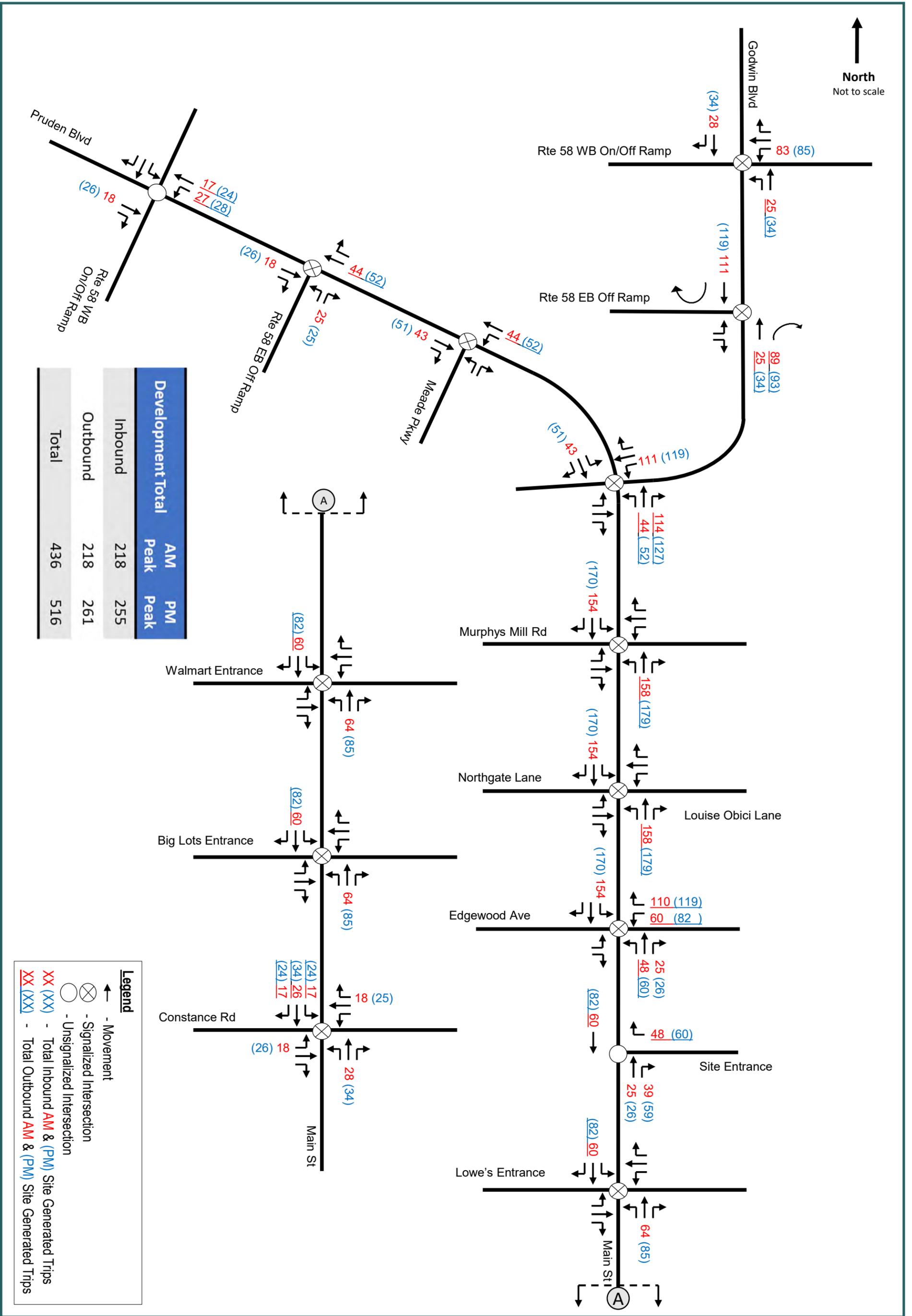
Internal capture accounts for those motorists who access multiple land uses during a single trip. While the proposed land uses may experience internal trips, internal capture was not applied in order to be conservative for analysis.

6.3 Pass-by

Pass-by trips are vehicles already on the roadway network generated from another primary origin and destination route that chose to make an intermediate stop without a route diversion. Given the proposed land uses for this development, pass-by reductions were not applied.

6.4 Traffic Assignments

The trip distribution percentages by land use listed above were applied to the proposed trip generation outlined in **Table 2**. The proposed AM and PM total site generated traffic is illustrated in **Figure 9**. Detailed trip assignments for each land use are located in the **Appendix**.



VDOT Site Development – Suffolk, VA
Trip Distribution and Assignment
Total

Figure 9



7 Future Conditions with Development

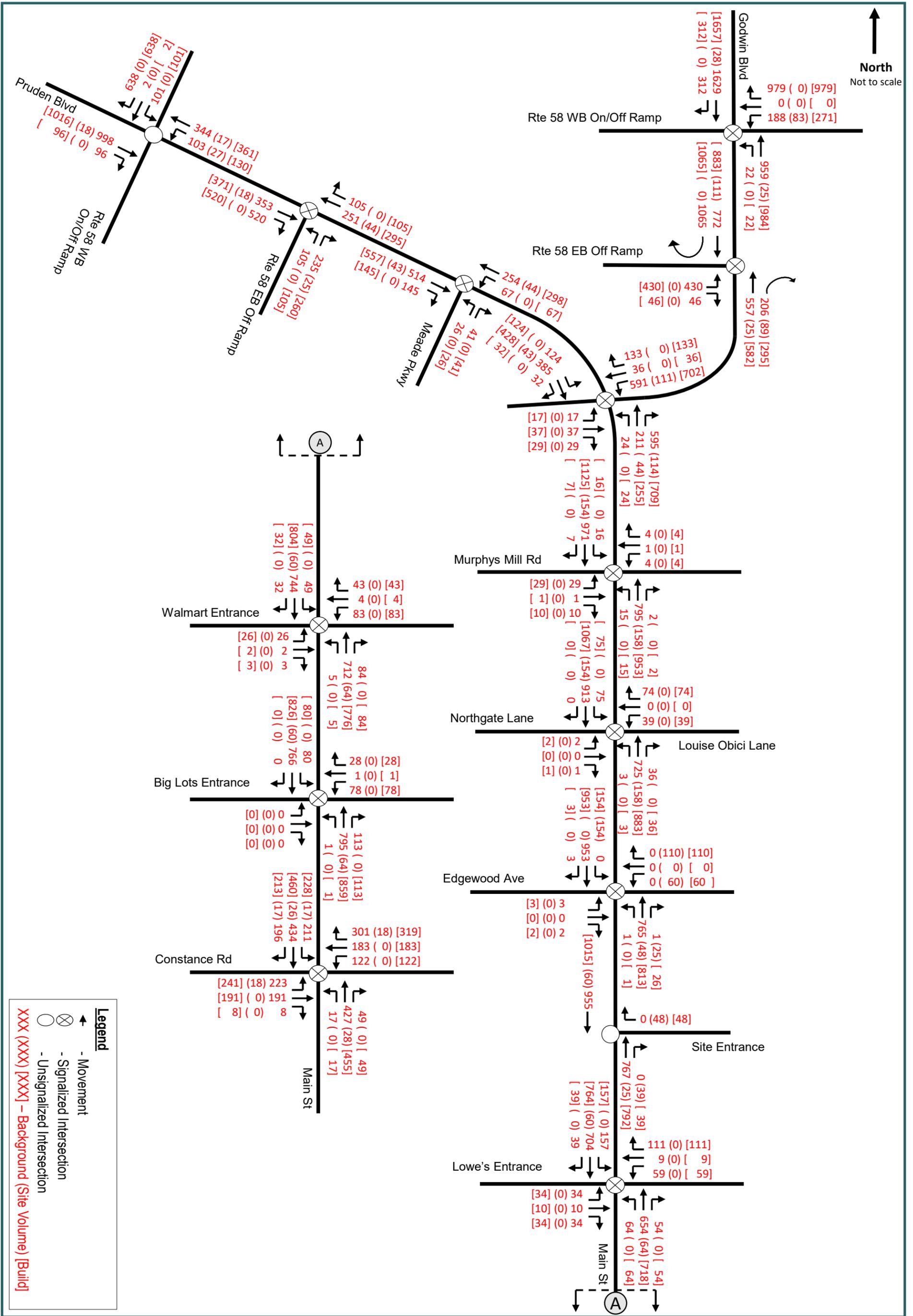
7.1 Daily and Peak Hour(s) Traffic Volumes

Total future traffic volumes represent the addition of new traffic generated by the proposed VDOT Site development in addition to the Background traffic volumes. These resulting volumes are also referred to as "Build" volumes. The initial 2030 Build volumes are illustrated as follows:

- › **Figure 10** – 2030 Build Traffic: AM Peak Hour
- › **Figure 11** – 2030 Build Traffic: PM Peak Hour

Future Build conditions for 2035 were generated similar to the 2030 volumes by adding site generated traffic to the 2035 Background volumes, and are illustrated as follows:

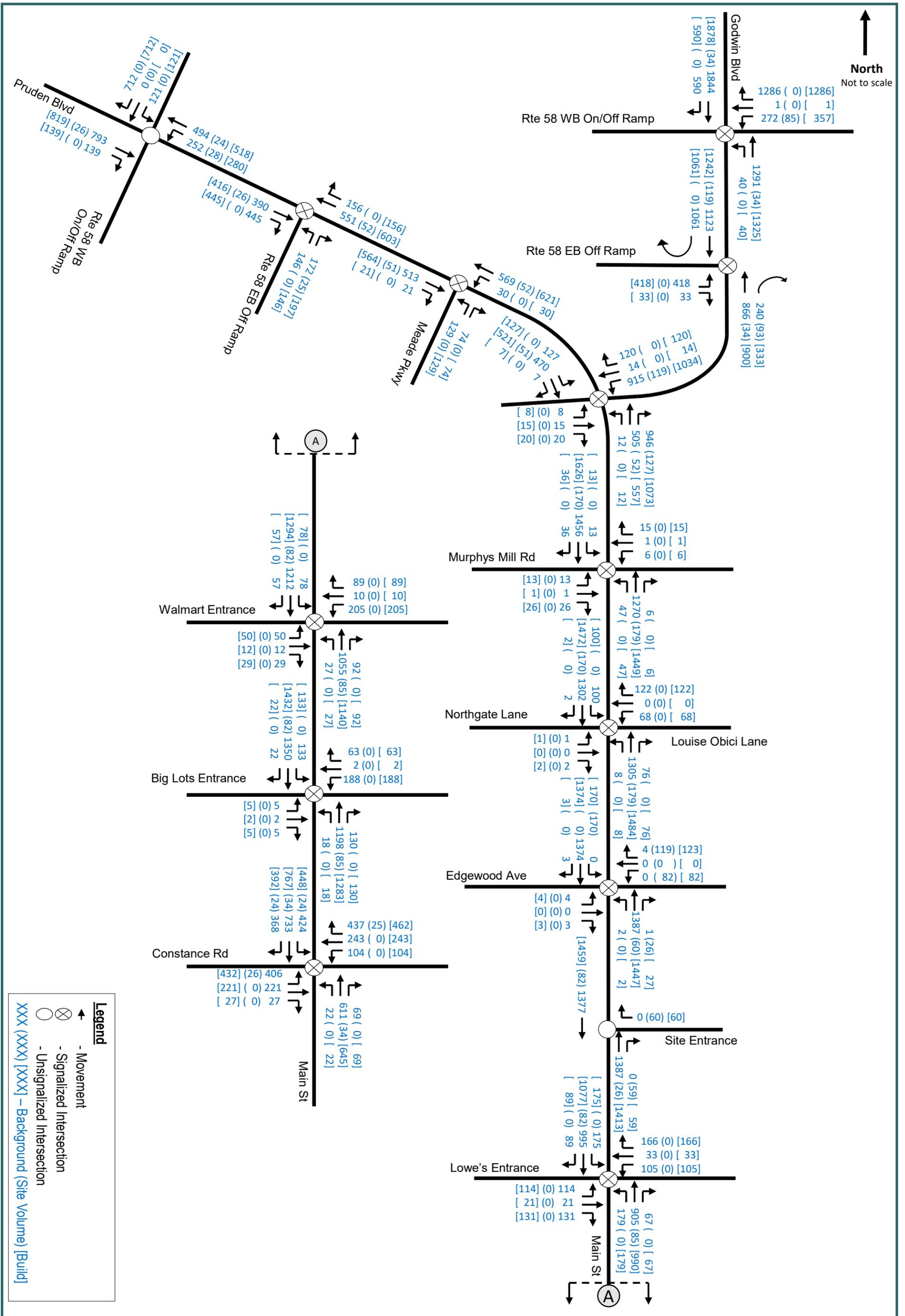
- › **Figure 12** – 2035 Build Traffic: AM Peak Hour
- › **Figure 13** – 2035 Build Traffic: PM Peak Hour



VDOT Site Development – Suffolk, VA
2030 Build Traffic: AM Peak

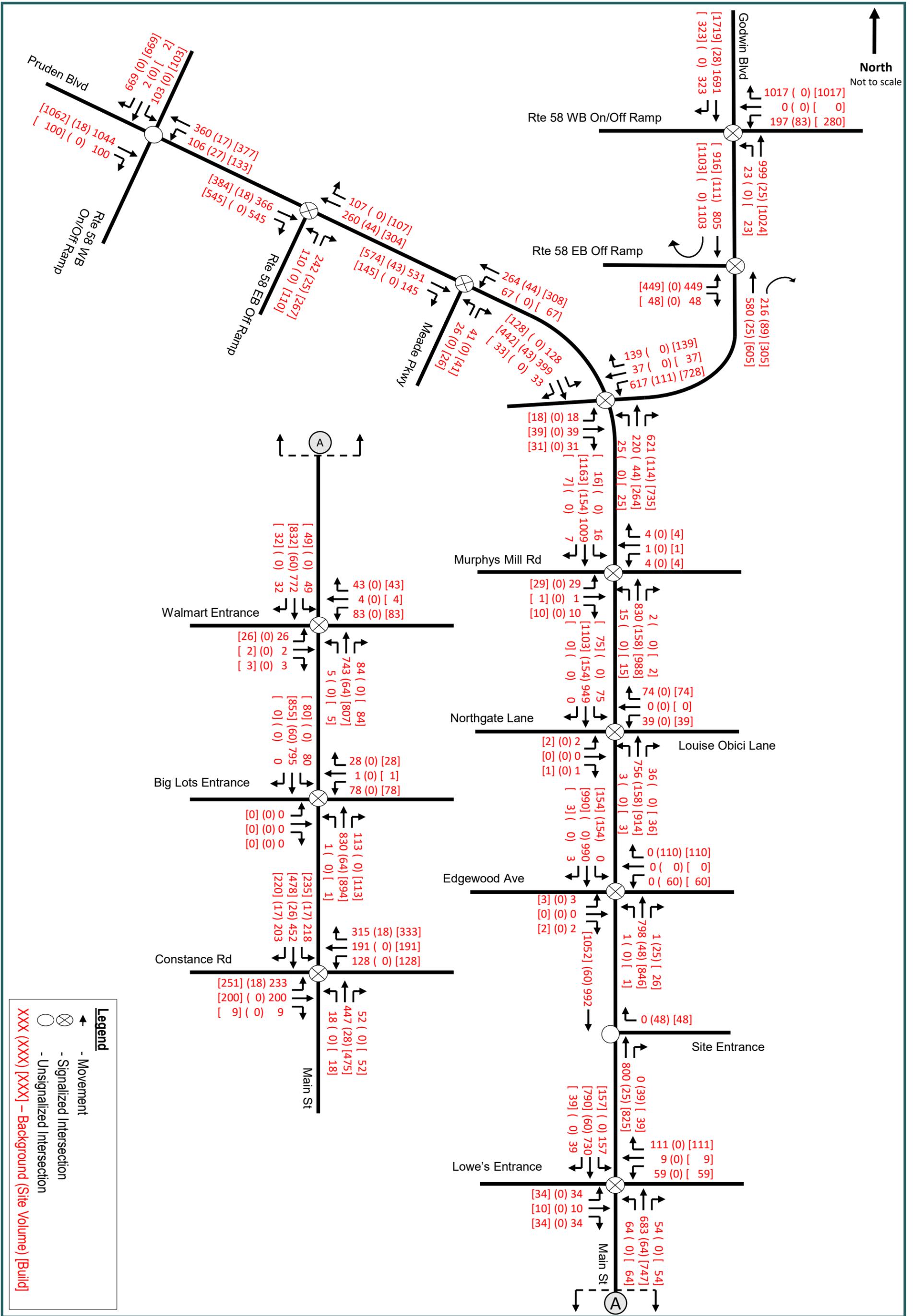
Figure
10





VDOT Site Development – Suffolk, VA
2030 Build Traffic: PM Peak

Figure
11



7.2 Capacity and Level of Service Analyses at Critical Points

Capacity analyses for signalized and unsignalized intersections in the AM and PM peak hours were performed for the 2030 and 2035 Build conditions for existing study area intersections as previously identified. Analyses were completed to determine the operating characteristics of the study area intersections and roadways using *Synchro Professional 11*, which uses methodologies contained in the *2010 Highway Capacity Manual (HCM)* and *HCM 6th Edition*.

To provide a comparison of development impacts, the operational analysis applies the existing signal timings to the Existing and Background condition scenarios and optimized signal timings for the future Build scenarios. Detailed analyses are illustrated in **Tables 3 – 11 & 14 – 18** below for the following scenarios:

- › Existing (2025) Conditions
- › 2030 Background Conditions
 - *1% growth rate applied for 5 years plus the approved development traffic.*
- › 2030 Build Conditions
 - *2030 Background volumes with optimized signal timing plus the site traffic.*
- › 2035 Horizon Background Conditions
 - *1% growth rate applied for 10 years plus the approved development traffic.*
- › 2035 Horizon Build Conditions
 - *2035 Background volumes with optimized signal timing plus site traffic.*

7.2.1 Godwin Boulevard / US Route 58 Westbound On/Off Ramps

This signalized intersection currently provides the following laneage.

- › Godwin Boulevard (northbound): one exclusive left-turn lane and two through lanes.
- › Godwin Boulevard (southbound): two through lanes and one exclusive right-turn lane.
- › US Route 58 off ramp (westbound): two left-turn lanes and two right-turn lanes (signal-controlled).

The results for the five scenarios are illustrated in **Table 3**. Detailed analyses are provided in the Appendix.

Table 3: Godwin Boulevard / US Route 58 Westbound Ramps Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)					
		Westbound		Northbound		Southbound	
		LT	RT	LT	TH	TH	RT
AM Peak Hour							
Existing	25.6 (C)	68.9 (E)	41.7 (D)	26.1 (C)	34.3 (C)	7.5 (A)	5.3 (A)
		46.8 (D)		34.1 (C)		7.2 (A)	
2030 Background	28.2 (C)	68.9 (E)	50.8 (D)	29.7 (C)	35.9 (D)	9.6 (A)	5.8 (A)
		53.7 (D)		35.8 (D)		9.0 (A)	
2030 Build	28.6 (C)	68.8 (E)	45.6 (D)	27.3 (C)	35.7 (D)	11.7 (B)	6.9 (A)
		50.6 (D)		35.5 (D)		10.9 (B)	
2035 Background	29.2 (C)	68.9 (E)	53.0 (D)	30.9 (C)	36.8 (D)	10.3 (B)	6.0 (A)
		55.6 (E)		36.7 (D)		9.6 (A)	
2035 Build	29.3 (C)	68.8 (E)	46.8 (D)	28.6 (C)	36.2 (D)	12.5 (B)	7.1 (A)
		51.6 (D)		36.0 (D)		11.7 (B)	
PM Peak Hour							
Existing	27.8 (C)	74.5 (E)	60.9 (E)	14.9 (B)	21.0 (C)	9.9 (A)	8.0 (A)
		64.1 (E)		20.8 (C)		9.4 (A)	
2030 Background	71.5 (E)	74.4 (E)	230.5 (F)	23.4 (C)	24.7 (C)	14 (B)	9.0 (A)
		203.2 (F)		24.6 (C)		12.7 (B)	
2030 Build	35.2 (D)	73.4 (E)	65.0 (E)	30.7 (C)	32.2 (C)	17.3 (B)	10.8 (B)
		66.8 (E)		32.1 (C)		15.7 (B)	
2035 Background	76.4 (E)	74.8 (E)	248.2 (F)	27.0 (C)	25.8 (C)	15.1 (B)	9.4 (A)
		217.6 (F)		25.8 (C)		13.7 (B)	
2035 Build	37.8 (D)	73.3 (E)	71.7 (E)	32.8 (C)	34.2 (C)	18.8 (B)	11.3 (B)
		72.1 (E)		34.1 (C)		17.0 (B)	

During the Existing scenario, this intersection currently operates at LOS C during both AM and PM peaks. With the application of annual growth rates and inclusion of approved development traffic, this intersection degrades to overall LOS E with increased delay experienced at the off ramp.

Under the Build scenario, signal timings were optimized to include split and offset adjustments and operates at overall LOS C and D during AM and PM peak periods, respectively. This intersection will operate adequately with existing laneage and optimized signal timing.

7.2.2 Godwin Boulevard / US Route 58 Westbound On/Off Ramps

This signalized intersection currently provides the following laneage.

- › Godwin Boulevard (northbound): two through lanes.
- › Godwin Boulevard (southbound): two through lanes.
- › US Route 58 off ramp (eastbound): one shared left-right-turn lane.

There are additional ramps/loops at this intersection; however, these are not included as part of the signalized operations of the intersection and are free flow movements. Because of this, the northbound right-turn on ramp and southbound on-loop are not included in level of service analysis at this intersection.

The results for the five scenarios are illustrated in **Table 4**. Detailed analyses are provided in the **Appendix**.

Table 4: Godwin Boulevard / US Route 58 Eastbound On/Off Ramps Signalized Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)		
		Eastbound	Northbound	Southbound
		LT - RT	TH	TH
AM Peak Hour				
Existing	29.5 (C)	85.4 (F)	9.3 (A)	8.6 (A)
2030 Background	38.2 (D)	116.9 (F)	10.1 (B)	10.0 (B)
2030 Build	27.1 (C)	69.0 (E)	13.2 (B)	13.6 (B)
2035 Background	42.7 (D)	132.7 (F)	10.2 (B)	10.5 (B)
2035 Build	28.1 (C)	68.7 (E)	14.0 (B)	15.2 (B)
PM Peak Hour				
Existing	20.6 (C)	84.8 (F)	8.3 (A)	7.5 (A)
2030 Background	33.4 (C)	137.4 (F)	10.3 (B)	9.5 (A)
2030 Build	23.7 (C)	77.7 (E)	13.9 (B)	11.2 (B)
2035 Background	36.1 (D)	151.4 (F)	10.5 (B)	9.9 (A)
2035 Build	24.7 (C)	79.5 (E)	14.5 (B)	12.2 (B)

This intersection operates at an overall LOS C for both AM and PM Existing scenarios. During the Background scenarios, vehicle delays are increased, particularly in the AM peak as the intersection operates at overall LOS D. With optimized signal timings, this intersection can operate at LOS C during all Build scenarios.

7.2.3 Pruden Boulevard / US Route 58 Westbound Bypass

This unsignalized intersection currently provides the following laneage.

- › US Route 58 (southbound): one shared through-left-turn lane and one channelized free flow right-turn lane.
- › Pruden Boulevard (eastbound): two through lanes and one exclusive free flow right-turn lane.
- › Pruden Boulevard (westbound): one exclusive left-turn lane and two exclusive through lanes.

Pruden Boulevard is an east/west oriented roadway, and therefore the US Route 58 Westbound Bypass leg of the intersection is considered oriented north/south.

The results for the five scenarios are illustrated in **Table 5**. Detailed analyses are provided in the **Appendix**.

Table 5: Pruden Boulevard / US Route 58 Westbound Bypass On/Off Ramps Unsignalized Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)					
		Southbound		Northbound		Westbound	
		TH	RT	LT	TH	LT - TH	RT
AM Peak Hour							
Existing	1.3 (A)	- (-)		10.3 (B)	- (-)	23.0 (C)	- (-)
				1.7 (A)		23.0 (C)	
2030 Background	3.5 (A)	- (-)		11.1 (B)	- (-)	44.4 (E)	- (-)
				2.6 (A)		44.4 (E)	
2030 Build	4.6 (A)	- (-)		11.6 (B)	- (-)	61.1 (F)	- (-)
				3.1 (A)		61.1 (F)	
2035 Background	3.9 (A)	- (-)		11.5 (B)	- (-)	52.4 (F)	- (-)
				2.6 (A)		52.4 (F)	
2035 Build	5.3 (A)	- (-)		11.9 (B)	- (-)	74.8 (F)	- (-)
				3.1 (A)		74.8 (F)	
PM Peak Hour							
Existing	2.3 (A)	- (-)		10.4 (B)	- (-)	43.0 (E)	- (-)
				3.3 (A)		43.0 (E)	
2030 Background	20.6 (C)	- (-)		11.3 (B)	- (-)	283.0 (F)	- (-)
				3.8 (A)		283.0 (F)	
2030 Build	29.1 (D)	- (-)		11.8 (B)	- (-)	423.1 (F)	- (-)
				4.2 (A)		423.1 (F)	
2035 Background	25.8 (D)	- (-)		11.7 (B)	- (-)	370.9 (F)	- (-)
				3.9 (A)		370.9 (F)	
2035 Build	34.7 (D)	- (-)		12.3 (B)	- (-)	523.0 (F)	- (-)
				4.3 (A)		523.0 (F)	
- (-) Indicates Free Movement / 0 Seconds of Delay							

This intersection currently operates at acceptable LOS during the AM and PM peak hours with unsignalized control. The unsignalized southbound left-turn movement currently operates at LOS C and LOS E during the AM and PM peak hours, respectively. With the addition of 2030 background traffic, it is expected to operate at LOS E and LOS F during the AM and PM peak hours, respectively.

Improvements have been recommended at this intersection as part of other studies and funding applications to consider signalized control or restricted access. Given the current uncertainty of these improvements, modifications to laneage or intersection control were not modeled in level of service determinations. However, these improvements are intended to address projected increased delays experienced in the Background scenarios and will support the additional site traffic.

7.2.4 Pruden Boulevard / US Route 58 Eastbound Bypass

This signalized intersection currently provides the following laneage.

- › US Route 58 (eastbound): one exclusive left-turn lane and one exclusive right-turn lane.
- › Pruden Boulevard (southbound): two through lanes.
- › Pruden Boulevard (northbound): two through lanes.

Pruden Boulevard is an east/west oriented roadway, and therefore the US Route 58 Eastbound Bypass leg of the intersection is considered oriented north/south.

The results for the five scenarios are illustrated in **Table 6**. Detailed analyses are provided in the **Appendix**.

Table 6: Pruden Boulevard / Route 58 Eastbound Bypass Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)			
		Southbound	Northbound	Eastbound	
		TH	TH	LT	RT
AM Peak Hour					
Existing	9.9 (A)	3.4 (A)	3.1 (A)	49.9 (D)	3.2 (A)
				22.4 (C)	
2030 Background	8.7 (A)	3.6 (A)	3.2 (A)	50.1 (D)	3.6 (A)
				17.9 (B)	
2030 Build	8.3 (A)	3.6 (A)	3.3 (A)	50.1 (D)	3.6 (A)
				17.0 (B)	
2035 Background	8.8 (A)	3.7 (A)	3.3 (A)	50.2 (D)	3.7 (A)
				18.2 (B)	
2035 Build	8.4 (A)	3.7 (A)	3.4 (A)	50.2 (D)	3.7 (A)
				17.3 (B)	
PM Peak Hour					
Existing	10.7 (B)	3.9 (A)	4.1 (A)	51.6 (D)	3.7 (A)
				31.2 (C)	
2030 Background	9.7 (A)	4.1 (A)	4.3 (A)	52.0 (D)	4.0 (A)
				26.0 (C)	
2030 Build	9.4 (A)	4.2 (A)	4.4 (A)	52.0 (D)	4.0 (A)
				24.4 (C)	
2035 Background	10.0 (A)	4.3 (A)	4.4 (A)	52.6 (D)	4.1 (A)
				26.6 (C)	
2035 Build	9.7 (A)	4.3 (A)	4.5 (A)	52.6 (D)	4.1 (A)
				25.0 (C)	

This intersection operates at an overall LOS A for all scenarios in the AM peak hour and a maximum LOS B in the PM peak. The intersection functions adequately with existing laneage and optimized signal timing.

7.2.5 Pruden Boulevard / Meade Parkway

This signalized intersection currently provides the following laneage.

- › Meade Parkway (northbound): one exclusive left-turn lane and one exclusive right-turn lane.
- › Pruden Boulevard (eastbound): two through lanes and one exclusive right-turn lane.
- › Pruden Boulevard (westbound): one exclusive left-turn lane and two through lanes.

The results for the five scenarios are illustrated in **Table 7**. Detailed analyses are provided in the **Appendix**.

Table 7: Pruden Boulevard / Meade Parkway Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)					
		Eastbound		Westbound		Northbound	
		TH	RT	LT	TH	LT	RT
AM Peak Hour							
Existing	4.7 (A)	4.6 (A)	4.5 (A)	1.7 (A)	1.5 (A)	44.8 (D)	1.4 (A)
		4.6 (A)		1.5 (A)		18.2 (B)	
2030 Background	4.7 (A)	4.9 (A)	4.5 (A)	1.7 (A)	1.5 (A)	44.8 (D)	1.4 (A)
		4.8 (A)		1.5 (A)		18.2 (B)	
2030 Build	4.6 (A)	5.0 (A)	4.5 (A)	1.7 (A)	1.5 (A)	44.8 (D)	1.4 (A)
		4.9 (A)		1.5 (A)		18.2 (B)	
2035 Background	4.7 (A)	4.9 (A)	4.5 (A)	1.7 (A)	1.5 (A)	44.8 (D)	1.4 (A)
		4.8 (A)		1.5 (A)		18.2 (B)	
2035 Build	4.6 (A)	5.0 (A)	4.5 (A)	1.7 (A)	1.5 (A)	44.8 (D)	1.4 (A)
		4.9 (A)		1.6 (A)		18.2 (B)	
PM Peak Hour							
Existing	9.3 (A)	6.4 (A)	5.7 (A)	3.3 (A)	3.6 (A)	42.7 (D)	3.2 (A)
		6.3 (A)		3.6 (A)		28.3 (C)	
2030 Background	8.7 (A)	6.8 (A)	5.7 (A)	3.3 (A)	3.8 (A)	42.7 (D)	3.2 (A)
		6.7 (A)		3.7 (A)		28.3 (C)	
2030 Build	8.5 (A)	6.9 (A)	5.7 (A)	3.3 (A)	3.9 (A)	42.7 (D)	3.2 (A)
		6.9 (A)		3.8 (A)		28.3 (C)	
2035 Background	8.6 (A)	6.8 (A)	5.7 (A)	3.3 (A)	3.8 (A)	42.7 (D)	3.2 (A)
		6.8 (A)		3.8 (A)		28.3 (C)	
2035 Build	8.5 (A)	6.9 (A)	5.7 (A)	3.3 (A)	3.9 (A)	42.7 (D)	3.2 (A)
		6.9 (A)		3.9 (A)		28.3 (C)	

This intersection operates at a LOS A for all peak periods. This intersection will operate at acceptable levels of service with existing laneage and optimized signal timing.

7.2.6 N. Main Street / Pruden Boulevard / Godwin Boulevard

This signalized intersection currently provides the following laneage:

- › N. Main Street / Pruden Boulevard (northbound): one exclusive left-turn lane, two through lanes, and one channelized free flow right-turn lane.
- › N. Main Street / Pruden Boulevard (southbound): one exclusive left-turn lane, one through lane, and one shared through-right-turn lane.
- › Godwin Boulevard (eastbound): one shared left-through lane and one exclusive right-turn lane.
- › Godwin Boulevard (westbound): one exclusive left-turn lane, one shared left-through lane, one exclusive right-turn lane.

The results for the five scenarios are illustrated in **Table 8**. Detailed analyses are provided in the **Appendix**.

Table 8: N. Main Street / Pruden Boulevard / Godwin Boulevard Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)									
		Eastbound		Westbound			Northbound			Southbound	
		LT - TH	RT	LT	TH	RT	LT	TH	RT	LT	TH - RT
AM Peak Hour											
Existing	19.8 (B)	41.4 (D)	38.7 (D)	38.7 (D)	39.0 (D)	27.7 (C)	5.4 (A)	7.5 (A)	0.6 (A)	15.3 (B)	20.6 (C)
		40.4 (D)		37.0 (D)			2.4 (A)			19.4 (B)	
2030 Background	20.6 (C)	41.5 (D)	38.6 (D)	39.3 (D)	39.0 (D)	26.2 (C)	5.9 (A)	9.6 (A)	0.7 (A)	16 (B)	23.3 (C)
		40.5 (D)		36.9 (D)			3.1 (A)			21.6 (C)	
2030 Build	22.2 (C)	41.5 (D)	38.6 (D)	42.0 (D)	43.5 (D)	24.9 (C)	10.6 (B)	12.9 (B)	0.9 (A)	17.1 (B)	25.3 (C)
		40.5 (D)		40.1 (D)			4.2 (A)			23.6 (C)	
2035 Background	21.0 (C)	41.5 (D)	38.5 (D)	40.3 (D)	39.9 (D)	26.0 (C)	6.7 (A)	9.8 (A)	0.7 (A)	16.4 (B)	23.8 (C)
		40.5 (D)		37.6 (D)			3.2 (A)			22.1 (C)	
2035 Build	22.9 (C)	41.5 (D)	38.5 (D)	43.9 (D)	44.9 (D)	24.7 (C)	10.6 (B)	13.1 (B)	0.9 (A)	17.5 (B)	25.8 (C)
		40.5 (D)		41.3 (D)			4.3 (A)			24.0 (C)	
PM Peak Hour											
Existing	24.1 (C)	58.6 (E)	55.5 (E)	47.5 (D)	46.9 (D)	29.8 (C)	12.8 (B)	21.9 (C)	1.1 (A)	17.8 (B)	23.3 (C)
		57.1 (E)		45.6 (D)			8.3 (A)			22.3 (C)	
2030 Background	25.6 (C)	58.5 (E)	55.4 (E)	47.8 (D)	46.6 (D)	27.6 (C)	14.2 (B)	27.3 (C)	1.6 (A)	20.6 (C)	28.0 (C)
		57.0 (E)		45.0 (D)			10.5 (B)			26.4 (C)	
2030 Build	26.7 (C)	58.5 (E)	55.4 (E)	49.8 (D)	48.1 (D)	25.5 (C)	13.8 (B)	27.1 (C)	2.1 (A)	23.0 (C)	31.1 (C)
		57.0 (E)		46.6 (D)			10.7 (B)			29.6 (C)	
2035 Background	26.2 (C)	58.7 (E)	55.4 (E)	48.4 (D)	46.8 (D)	26.8 (C)	14.8 (B)	28.4 (C)	1.7 (A)	21.5 (C)	29.1 (C)
		57.1 (E)		45.3 (D)			11.0 (B)			27.5 (C)	
2035 Build	27.6 (C)	58.7 (E)	55.4 (E)	52.0 (D)	49.0 (D)	25.1 (C)	13.6 (B)	27.3 (C)	2.4 (A)	23.8 (C)	32.0 (C)
		57.1 (E)		48.3 (D)			10.9 (B)			30.4 (C)	

This intersection operates at an overall LOS C or better during all scenarios. This intersection will operate at acceptable levels of service with existing laneage and optimized signal timing.

7.2.7 N. Main Street / Murphys Mill Road

This signalized intersection currently provides the following laneage:

- › N. Main Street (northbound): one exclusive left-turn lane, one through lane, and one shared through-right turn lane.
- › N. Main Street (southbound): one exclusive left-turn lane, one through lane, and one shared through-right turn lane.
- › Murphys Mill Road (eastbound): one shared left-through turn lane and one right-turn lane.
- › Murphys Mill Road (westbound): one shared left-through turn lane and one right-turn lane.

The results for the five scenarios are illustrated in **Table 9**. Detailed analyses are provided in the **Appendix**.

Table 9: N. Main Street / Murphy’s Mill Road Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)							
		Eastbound		Westbound		Northbound		Southbound	
		LT - TH	RT	LT - TH	RT	LT	TH - RT	LT	TH - RT
AM Peak Hour									
Existing	6.9 (A)	43.0 (D)	40.4 (D)	47.8 (D)	43.8 (D)	1.4 (A)	1.6 (A)	5.4 (A)	9.6 (A)
		42.3 (D)		46.0 (D)		1.6 (A)		9.5 (A)	
2030 Background	7.5 (A)	43.0 (D)	40.4 (D)	47.8 (D)	43.8 (D)	1.3 (A)	1.6 (A)	5.1 (A)	10.6 (B)
		42.3 (D)		46.0 (D)		1.6 (A)		10.5 (B)	
2030 Build	7.8 (A)	43.0 (D)	40.4 (D)	47.8 (D)	43.8 (D)	1.4 (A)	1.7 (A)	5.1 (A)	11.3 (B)
		42.3 (D)		46.0 (D)		1.6 (A)		11.2 (B)	
2035 Background	7.4 (A)	43.0 (D)	40.4 (D)	47.8 (D)	43.8 (D)	1.3 (A)	1.6 (A)	5.0 (A)	10.6 (B)
		42.3 (D)		46.0 (D)		1.6 (A)		10.5 (B)	
2035 Build	7.9 (A)	43.0 (D)	40.4 (D)	47.8 (D)	43.8 (D)	1.5 (A)	2.2 (A)	5.1 (A)	11.4 (B)
		42.3 (D)		46.0 (D)		2.2 (A)		11.4 (B)	
PM Peak Hour									
Existing	6.1 (A)	58.0 (E)	55.9 (E)	57.3 (E)	56.3 (E)	1.7 (A)	1.8 (A)	3.7 (A)	7.4 (A)
		56.7 (E)		56.6 (E)		1.8 (A)		7.3 (A)	
2030 Background	8.3 (A)	58.0 (E)	55.9 (E)	57.3 (E)	56.3 (E)	2.1 (A)	1.9 (A)	4.9 (A)	12.1 (B)
		56.7 (E)		56.6 (E)		1.9 (A)		12.0 (B)	
2030 Build	9.5 (A)	58.0 (E)	55.9 (E)	57.3 (E)	56.3 (E)	6.2 (A)	1.9 (A)	5.6 (A)	14.6 (B)
		56.7 (E)		56.6 (E)		2.1 (A)		14.5 (B)	
2035 Background	8.8 (A)	58.0 (E)	55.9 (E)	57.3 (E)	56.3 (E)	2.3 (A)	1.9 (A)	5.1 (A)	13.0 (B)
		56.7 (E)		56.6 (E)		1.9 (A)		12.9 (B)	
2035 Build	10.0 (B)	58.0 (E)	55.9 (E)	57.3 (E)	56.3 (E)	12.6 (B)	2.0 (A)	5.8 (A)	15.3 (B)
		56.7 (E)		56.6 (E)		2.4 (A)		15.2 (B)	

This intersection operates at an overall LOS B or better during all scenarios. This intersection will operate adequately with existing laneage and optimized signal timing.

7.2.8 N. Main Street / Louise Obici Lane / Northgate Lane

This signalized intersection currently provides the following laneage:

- › N. Main Street (northbound): one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- › N. Main Street (southbound): one exclusive left-turn lane, one through lane, and one shared through-right turn lane.
- › Northgate Lane (eastbound): one left-through-right turn lane.
- › Louise Obici Lane (westbound): one exclusive left-turn lane and one shared through-right turn lane.

The results for the five scenarios are illustrated in **Table 10**. Detailed analyses are provided in the **Appendix**.

Table 10: N. Main Street / Louise Obici Lane / Northgate Lane Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)								
		Eastbound		Westbound		Northbound			Southbound	
		LT - TH - RT	LT	TH - RT	LT	TH	RT	LT	TH - RT	
AM Peak Hour										
Existing	4.8 (A)	42.8 (D)	34.3 (C)	33.3 (C)	2.6 (A)	3.9 (A)	7.2 (A)	0.6 (A)	1.2 (A)	
			33.7 (C)		4.1 (A)			1.1 (A)		
2030 Background	4.8 (A)	42.8 (D)	34.3 (C)	33.3 (C)	2.4 (A)	3.7 (A)	7.2 (A)	1.2 (A)	2.1 (A)	
			33.7 (C)		3.9 (A)			2.1 (A)		
2030 Build	5.0 (A)	42.8 (D)	34.3 (C)	33.3 (C)	1.5 (A)	4.1 (A)	7.2 (A)	1.5 (A)	2.9 (A)	
			33.7 (C)		4.2 (A)			2.8 (A)		
2035 Background	4.8 (A)	42.8 (D)	34.3 (C)	33.3 (C)	2.4 (A)	3.7 (A)	7.2 (A)	1.3 (A)	2.3 (A)	
			33.7 (C)		3.9 (A)			2.2 (A)		
2035 Build	5.0 (A)	42.8 (D)	34.3 (C)	33.3 (C)	1.6 (A)	3.6 (A)	7.2 (A)	1.9 (A)	3.4 (A)	
			33.7 (C)		3.7 (A)			3.3 (A)		
PM Peak Hour										
Existing	7.3 (A)	57.8 (E)	47.7 (D)	45.4 (D)	4 (A)	5.9 (A)	1.3 (A)	3.2 (A)	2.7 (A)	
			46.2 (D)		5.6 (A)			2.7 (A)		
2030 Background	7.1 (A)	57.8 (E)	47.7 (D)	45.4 (D)	3.7 (A)	5.7 (A)	0.1 (A)	11 (B)	2.8 (A)	
			46.2 (D)		5.4 (A)			3.4 (A)		
2030 Build	6.8 (A)	57.8 (E)	47.7 (D)	45.4 (D)	1.1 (A)	2.9 (A)	0.1 (A)	34.7 (C)	4.1 (A)	
			46.2 (D)		2.7 (A)			6.1 (A)		
2035 Background	7.4 (A)	57.8 (E)	47.7 (D)	45.4 (D)	3.7 (A)	6.1 (A)	0.1 (A)	15.5 (B)	3.1 (A)	
			46.2 (D)		5.8 (A)			4 (A)		
2035 Build	7.4 (A)	57.8 (E)	47.7 (D)	45.4 (D)	1.2 (A)	2.9 (A)	0.1 (A)	45.2 (D)	4.9 (A)	
			46.2 (D)		7.2 (A)			7.4 (A)		

This intersection operates at an overall LOS A or better for all peak periods. This intersection will operate at acceptable levels of service with existing laneage and optimized signal timing.

7.2.9 N. Main Street / Edgewood Avenue / Memorial Avenue

This signalized intersection currently provides the following laneage:

- › N. Main Street (northbound): one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- › N. Main Street (southbound): one through lane, and one shared right-through lane.
- › Memorial Avenue (eastbound): one exclusive right-turn lane.
- › Edgewood Avenue (westbound): one shared full movement lane.

The results for the five scenarios are illustrated in **Table 11**. Detailed analyses are provided in the **Appendix**.

Table 11: Main Street / Edgewood Avenue / Memorial Avenue Unsignalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)								
		Eastbound	Westbound			Northbound			Southbound	
		LT - TH - RT	LT	TH	RT	LT	TH	RT	LT	TH - RT
AM Peak Hour										
Existing	0.1 (A)	20.5 (C)	-	-	0.0 (A)	9.2 (A)	- (-)	- (-)	-	- (-)
			0.0 (A)			0.0 (A)			- (-)	
2030 Background	0.1 (A)	27.9 (D)	-	-	0.0 (A)	10.0 (B)	- (-)	- (-)	-	- (-)
			0.0 (A)			0 (A)			- (-)	
2030 Build	8.0 (A)	60.3 (F)	229.3 (F)	12.4 (B)	10.0 (B)	- (-)	- (-)	10.6 (B)	- (-)	
			89.0 (F)			0.0 (A)			1.5 (A)	
2035 Background	0.1 (A)	30.0 (D)	-	-	0.0 (A)	10.2 (B)	- (-)	- (-)	-	- (-)
			0.0 (A)			0.0 (A)			0.0 (A)	
2035 Build	9.0 (A)	68.1 (F)	271.3 (F)	12.7 (B)	10.2 (B)	- (-)	- (-)	10.8 (B)	- (-)	
			104.0 (F)			0.0 (A)			1.5 (A)	
PM Peak Hour										
Existing	0.2 (A)	50.0 (F)	-	-	13.0 (B)	11.0 (B)	- (-)	- (-)	-	- (-)
			13.0 (B)			0.0 (A)			- (-)	
2030 Background	0.2 (A)	86.5 (F)	-	-	14.4 (B)	12.3 (B)	- (-)	- (-)	-	- (-)
			14.4 (B)			0.0 (A)			- (-)	
2030 Build	93.2 (F)	415.2 (F)	3,575.3 (F)	19.6 (C)	12.3 (B)	- (-)	- (-)	17.6 (C)	- (-)	
			1,441.9 (F)			0.0 (A)			1.9 (A)	
2035 Background	0.3 (A)	99.2 (F)	-	-	14.9 (B)	12.7 (B)	- (-)	- (-)	-	- (-)
			14.9 (B)			0.0 (A)			- (-)	
2035 Build	112.1 (F)	640.9 (F)	4,459.5 (F)	20.6 (C)	12.7 (B)	- (-)	- (-)	18.7 (C)	- (-)	
			1,796.2 (F)			0.0 (A)			2.0 (A)	

- Indicates Movement Does Not Exist

- (-) Indicates Free Movement / 0 Seconds of Delay

This intersection currently operates as a restricted right-in/right-out access. With the development of the VDOT site, this intersection is recommended to be modified to provide full-movement access and is modeled as such in all build scenarios.

VDOT Site Traffic Impact Analysis

During the build scenarios, the overall intersection level of service is worsened in large part due to increased delays along the westbound approach for vehicles making a left-turn to travel southbound along Main Street. Due to these increased delays, a signal warrant analysis was performed for this intersection as outlined below:

7.2.9.1 Traffic Signal Warrant Analysis

The analysis evaluated the proposed build-out conditions using the warrant analysis as outlined in the *Manual on Uniform Traffic Control Devices (MUTCD)* for the following three warrants:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour

To project daily build-out conditions for this intersection, actual ADT volumes were used along N. Main Street. To project daily volumes along the site driveway, ITE methodologies for hourly trip distributions of entering and exiting vehicles were selected using arrival patterns for the land uses shown in the trip generation outlined in **Chapter 5**. This methodology applied arrival patterns to estimate hourly side street volumes between 6:00 AM – 10:00 PM at this intersection.

Signal warrant analysis was performed for two scenarios:

1. N Main Street Mainline (NB and SB, 2 lane approach) vs. Side Street Traffic (2 lane approach, 50% right-turn reduction)
2. N Main Street Mainline (NB only) vs. Southbound Left-turn (1 lane approach)

The results of these signal warrant analyses are illustrated in **Tables 12** and **13** below. Under both approaches, a traffic signal is warranted under Warrant 1 – Condition B, Part 1. Detailed results of these analyses are contained in the **Appendix**.

Table 12: Main Street / Edgewood Avenue / Memorial Avenue Signal Warrant Analysis: Scenario 1

Warrant 1	Warrant 1: 8-hr Condition A	Warrant 1: 8-hr Condition B	Warrant 1: Condition A, Part 2	Warrant 1: Condition B, Part 2	Warrant 2: 4-hr
Conditions Met					
Major Street	Y – 16 hrs	Y – 14 hrs	Y – 16 hrs	Y – 14 hrs	
Minor Street	Y – 0 hrs	Y – 3 hrs	Y – 0 hrs	Y – 10 hrs	
Both	Y – 0 hrs	Y – 3 hrs	Y – 0 hrs	Y – 10 hrs	Y - 1 hrs
Warrant Satisfied?	NOT SATISFIED	NOT SATISFIED	NOT SATISFIED		NOT SATISFIED

Signal warrant analysis for Scenario 1 was performed with 2 approach lanes for northbound and westbound approaches with a 50% reduction for westbound right-turns. The results of this analysis conclude that a traffic signal is not warranted based on 8-hour traffic volume conditions.

Table 13: Main Street / Edgewood Avenue / Memorial Avenue Signal Warrant Analysis: Scenario 1

Warrant 1	Warrant 1: 8-hr Condition A	Warrant 1: 8-hr Condition B	Warrant 1: Condition A, Part 2	Warrant 1: Condition B, Part 2	Warrant 2: 4-hr
Conditions Met					
Major Street	Y – 16 hrs	Y – 14 hrs	Y – 16 hrs	Y – 16 hrs	
Minor Street	Y – 0 hrs	Y – 8 hrs	Y – 0 hrs	Y – 11 hrs	
Both	Y – 0 hrs	Y – 8 hrs	Y – 0 hrs	Y – 11 hrs	Y - 3 hrs
Warrant Satisfied?	NOT SATISFIED	SATISFIED	NOT SATISFIED		NOT SATISFIED

Signal warrant analysis for Scenario 2 was performed with the northbound approach accounting for the major street traffic volumes, and the opposing southbound left-turn accounting for the minor street vehicles. This approach is consistent with MUTCD guidance (MUTCD 11th edition, section 4C.01, note 14).

The results of this analysis conclude that a traffic signal is warranted based on 8-hour traffic volume conditions.

This is an extremely conservative approach as the project volumes do not capture the additional build-out traffic associated with commercial property to the immediate north of the site. With the addition of a full movement signalized entrance, traffic currently using the Northgate Lane signal will shift to this new signalized access. **Table 17** illustrates the delay and LOS for the AM and PM peak period Build scenarios under signalized operations. Detailed results of these analyses are contained in the **Appendix**.

Table 14: Main Street / Edgewood Avenue / Memorial Avenue Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)									
		Eastbound			Westbound		Northbound			Southbound	
		LT - TH - RT	LT - TH	RT	LT	TH	RT	LT	TH - RT		
AM Peak Hour											
2030 Build	6.3 (A)	37.3 (D)	41.8 (D)	37.7 (D)	2.2 (A)	3.3 (A)	8.2 (A)	5.3 (A)	3.0 (A)		
			39.1 (D)		3.5 (A)			3.3 (A)			
2035 Build	6.1 (A)	37.3 (D)	41.8 (D)	37.7 (D)	1.8 (A)	3.9 (A)	8.2 (A)	4.3 (A)	2.5 (A)		
			39.1 (D)		4.0 (A)			2.7 (A)			
PM Peak Hour											
2030 Build	8.4 (A)	48.4 (D)	56.8 (E)	48.9 (D)	4.3 (A)	7.9 (A)	7.9 (A)	11.3 (B)	1.8 (A)		
			52.1 (D)		7.9 (A)			2.8 (A)			
2035 Build	8.6 (A)	48.4 (D)	56.8 (E)	48.9 (D)	4.3 (A)	7.0 (A)	7.0 (A)	12.9 (B)	1.2 (A)		
			52.1 (D)		7.0 (A)			2.0 (A)			

7.2.10 N. Main Street / Lowe's Entrance

This signalized intersection currently provides the following laneage:

- › N. Main Street (northbound): one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- › N. Main Street (southbound): one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- › Lowe's entrance (eastbound): one shared left-through lane and one exclusive right-turn lane.
- › Lowe's entrance (westbound): one shared left-through lane and one exclusive right-turn lane.

The results for the five scenarios are illustrated in **Table 12**. Detailed analyses are provided in the **Appendix**.

Table 15: Main Street / Lowe’s Entrance Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)									
		Eastbound		Westbound		Northbound			Southbound		
		LT - TH	RT	LT - TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour											
Existing	20.6 (C)	41.1 (D)	38.8 (D)	41.2 (D)	38.1 (D)	51.8 (D)	9.1 (A)	14.8 (B)	48.6 (D)	12.8 (B)	11.6 (B)
		40.1 (D)		39.3 (D)		13.6 (B)			20.6 (C)		
2030 Background	19.8 (B)	41.1 (D)	38.8 (D)	41.2 (D)	38.1 (D)	53.7 (D)	9.4 (A)	14.8 (B)	49.4 (D)	13.4 (B)	11.6 (B)
		40.1 (D)		39.3 (D)		13.5 (B)			19.6 (B)		
2030 Build	19.7 (B)	41.1 (D)	38.8 (D)	41.2 (D)	38.1 (D)	54.4 (D)	9.7 (A)	14.8 (B)	44.9 (D)	12.3 (B)	11.6 (B)
		40.1 (D)		39.3 (D)		13.5 (B)			17.6 (B)		
2035 Background	19.7 (B)	41.1 (D)	38.8 (D)	41.2 (D)	38.1 (D)	54.0 (D)	9.5 (A)	14.8 (B)	49.5 (D)	13.6 (B)	11.6 (B)
		40.1 (D)		39.3 (D)		13.4 (B)			19.6 (B)		
2035 Build	19.6 (B)	41.1 (D)	38.8 (D)	41.2 (D)	38.1 (D)	55.1 (E)	9.9 (A)	14.8 (B)	45.8 (D)	12.7 (B)	11.6 (B)
		40.1 (D)		39.3 (D)		13.5 (B)			17.9 (B)		
PM Peak Hour											
Existing	33.0 (C)	56.5 (E)	47.2 (D)	62.2 (E)	48.3 (D)	81.3 (F)	14.7 (B)	19.6 (B)	76.9 (E)	16.2 (B)	25.6 (C)
		51.9 (D)		54.6 (D)		27.4 (C)			27.1 (C)		
2030 Background	30.5 (C)	56.5 (E)	47.2 (D)	62.2 (E)	48.3 (D)	82.2 (F)	15.8 (B)	19.6 (B)	76.9 (E)	15.2 (B)	17.2 (B)
		51.9 (D)		54.6 (D)		26.3 (C)			23.9 (C)		
2030 Build	29.3 (C)	56.5 (E)	47.2 (D)	62.2 (E)	48.3 (D)	76.8 (E)	11.2 (B)	19.6 (B)	73.0 (E)	19.4 (B)	19.9 (B)
		51.9 (D)		54.6 (D)		21.2 (C)			26.5 (C)		
2035 Background	30.0 (C)	56.5 (E)	47.2 (D)	62.2 (E)	48.3 (D)	82.4 (F)	15.7 (B)	19.6 (B)	76.4 (E)	15.1 (B)	16.5 (B)
		51.9 (D)		54.6 (D)		26.0 (C)			23.4 (C)		
2035 Build	28.9 (C)	56.5 (E)	47.2 (D)	62.2 (E)	48.3 (D)	76.7 (E)	11.7 (B)	19.6 (B)	72.3 (E)	18.8 (B)	21.8 (C)
		51.9 (D)		54.6 (D)		21.3 (C)			25.8 (C)		

This intersection operates at an overall LOS C or better during all peak periods. This intersection will operate adequately with existing laneage and optimized signal timing.

7.2.11 N. Main Street / Walmart Entrance

This signalized intersection currently provides the following laneage:

- › Main Street (northbound): one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- › Main Street (southbound): one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- › Walmart Entrance (eastbound): one shared left-through-right turn lane.
- › Walmart Entrance (westbound): one exclusive left-turn lane, one shared through-left turn lane, one exclusive right-turn lane.

The results for the five scenarios are illustrated in **Table 13**. Detailed analyses are provided in the **Appendix**.

Table 16: Main Street / Walmart Entrance Signalized Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)									
		Eastbound	Westbound			Northbound			Southbound		
		LT - TH -RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour											
Existing	15.5 (B)	43.0 (D)	41.2 (D)	41.3 (D)	38.7 (D)	7.8 (A)	8.2 (A)	9.3 (A)	13.7 (B)	17.8 (B)	7.7 (A)
			40.4 (D)			8.3 (A)			17 (B)		
2030 Background	16.0 (B)	43.0 (D)	41.2 (D)	41.3 (D)	38.7 (D)	7.8 (A)	8.3 (A)	9.3 (A)	14.3 (B)	19.3 (B)	7.7 (A)
			40.4 (D)			8.4 (A)			18.6 (B)		
2030 Build	16.3 (B)	43.0 (D)	41.2 (D)	41.3 (D)	38.7 (D)	8.0 (A)	8.4 (A)	9.3 (A)	15.5 (B)	20.1 (B)	7.7 (A)
			40.4 (D)			8.5 (A)			19.4 (B)		
2035 Background	16.0 (B)	43.0 (D)	41.2 (D)	41.3 (D)	38.7 (D)	7.8 (A)	8.4 (A)	9.3 (A)	14.3 (B)	19.4 (B)	7.7 (A)
			40.4 (D)			8.5 (A)			18.6 (B)		
2035 Build	16.4 (B)	43.0 (D)	41.2 (D)	41.3 (D)	38.7 (D)	7.8 (A)	8.5 (A)	9.3 (A)	15.8 (B)	20.4 (C)	7.7 (A)
			40.4 (D)			8.6 (A)			19.7 (B)		
PM Peak Hour											
Existing	17.4 (B)	55.8 (E)	55.6 (E)	55.6 (E)	48.0 (D)	6.1 (A)	8.3 (A)	12.8 (B)	10.9 (B)	12.4 (B)	11.4 (B)
			53.4 (D)			8.6 (A)			12.3 (B)		
2030 Background	18.4 (B)	55.8 (E)	55.6 (E)	55.6 (E)	48.0 (D)	6.3 (A)	8.4 (A)	12.8 (B)	15.5 (B)	16.8 (B)	11.4 (B)
			53.4 (D)			8.7 (A)			16.5 (B)		
2030 Build	22.3 (C)	55.8 (E)	55.6 (E)	55.6 (E)	48.0 (D)	20.9 (C)	17.8 (B)	12.9 (B)	18.3 (B)	18.0 (B)	11.4 (B)
			53.4 (D)			17.5 (B)			17.7 (B)		
2035 Background	18.5 (B)	55.8 (E)	55.6 (E)	55.6 (E)	48.0 (D)	6.3 (A)	8.3 (A)	12.8 (B)	16.4 (B)	17.5 (B)	11.4 (B)
			53.4 (D)			8.6 (A)			17.2 (B)		
2035 Build	22.8 (C)	55.8 (E)	55.6 (E)	55.6 (E)	48.0 (D)	21.6 (C)	18.1 (B)	12.9 (B)	20.2 (C)	19.0 (B)	11.4 (B)
			53.4 (D)			17.8 (B)			18.8 (B)		

This intersection operates at an overall LOS A during the AM peak period scenarios and an overall LOS C or better during the PM peak period scenarios. This intersection will operate acceptably with existing laneages and optimized signal timing.

7.2.12 N. Main Street / Big Lots Entrance

This signalized intersection currently provides the following laneage:

- › N. Main Street (northbound): one exclusive left-turn lane, two exclusive through lanes, and one exclusive right-turn lane.
- › N. Main Street (southbound): one exclusive left-turn lane, one through lane, and one through-right turn lane.
- › Big Lots (eastbound): one left-through-right turn lane.
- › Big Lots (westbound): one exclusive left-turn lane and one left-through-right turn lane.

The results for the five scenarios are illustrated in **Table 14**. Detailed analyses are provided in the **Appendix**.

Table 17: Main Street / Big Lots Entrance Signalized Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)							
		Eastbound	Westbound		Northbound			Southbound	
		LT - TH - RT	LT	TH - RT	LT	TH	RT	LT	TH - RT
AM Peak Hour									
Existing	7.6 (A)	- (-)	41.2 (D)	39.4 (D)	5.0 (A)	7.0 (A)	5.7 (A)	1.9 (A)	3.5 (A)
			40.4 (D)		6.8 (A)			3.3 (A)	
2030 Background	8.2 (A)	- (-)	41.2 (D)	39.4 (D)	5.0 (A)	7.3 (A)	5.7 (A)	3.2 (A)	5.6 (A)
			40.4 (D)		7.1 (A)			5.4 (A)	
2030 Build	8.4 (A)	- (-)	41.2 (D)	39.4 (D)	5.0 (A)	7.5 (A)	5.7 (A)	3.6 (A)	6.1 (A)
			40.4 (D)		7.3 (A)			5.9 (A)	
2035 Background	8.3 (A)	- (-)	41.2 (D)	39.4 (D)	5.0 (A)	7.4 (A)	5.7 (A)	3.4 (A)	5.8 (A)
			40.4 (D)		7.2 (A)			5.6 (A)	
2035 Build	8.5 (A)	- (-)	41.2 (D)	39.4 (D)	5.0 (A)	7.6 (A)	5.7 (A)	3.8 (A)	6.3 (A)
			40.4 (D)		7.4 (A)			6.1 (A)	
PM Peak Hour									
Existing	26.7 (C)	59.6 (E)	57.3 (E)	51.1 (D)	16.5 (B)	21.8 (C)	103.2 (F)	11.6 (B)	17.7 (B)
			54.3 (D)		31.0 (C)			17.1 (B)	
2030 Background	29.0 (C)	59.6 (E)	57.3 (E)	51.1 (D)	17.9 (B)	26.0 (C)	93.5 (F)	19.2 (B)	21.8 (C)
			54.3 (D)		32.4 (C)			21.5 (C)	
2030 Build	20.7 (C)	59.6 (E)	57.3 (E)	51.1 (D)	20.7 (C)	28.6 (C)	32.9 (C)	14.4 (B)	7.0 (A)
			54.3 (D)		28.9 (C)			7.6 (A)	
2035 Background	29.5 (C)	59.6 (E)	57.3 (E)	51.1 (D)	18.5 (B)	26.6 (C)	92.2 (F)	21.4 (C)	22.5 (C)
			54.3 (D)		32.6 (C)			22.4 (C)	
2035 Build	20.8 (C)	59.6 (E)	57.3 (E)	51.1 (D)	21.5 (C)	29.2 (C)	32.5 (C)	15.0 (B)	7.0 (A)
			54.3 (D)		29.4 (C)			7.7 (A)	
- (-) Indicates 0 Seconds of Delay									

This intersection operates at an overall LOS A during the AM peak period scenarios and an overall LOS C or better during the PM peak period scenarios. This intersection will operate adequately with existing laneage and optimized signal timing.

7.2.13 Main Street / Constance Road / US Route 58

This signalized intersection currently provides the following laneage:

- › N. Main Street (northbound): one exclusive left-turn lane, one through lane, and one shared through-right-turn lane.
- › N. Main Street (southbound): one exclusive left-turn lane, one through lane, and one through-right-turn lane.
- › Constance Road (eastbound): two exclusive left-turn lanes and one through lane, and one through-right-turn lane.
- › Constance Road (westbound): one exclusive left-turn lane, one through lane, and an exclusive right-turn lane.

The results for the five scenarios are illustrated in **Table 15**. Detailed analyses are provided in the **Appendix**.

Table 18: N Main Street / Constance Road / US 58 Signalized Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)									
		Eastbound		Westbound			Northbound		Southbound		
		LT	TH - RT	LT	TH	RT	LT	TH - RT	LT	TH - RT	
AM Peak Hour											
Existing	35.3 (D)	53.5 (D)	48.4 (D)	55.8 (E)	55.1 (E)	30.4 (C)	62.2 (E)	24.1 (C)	56.8 (E)	16.5 (B)	
		51.0 (D)		43.4 (D)			25.4 (C)		25.8 (C)		
2030 Background	36.0 (D)	53.5 (D)	47.3 (D)	55.9 (E)	55.1 (E)	28.3 (C)	62.1 (E)	28.8 (C)	56.8 (E)	18.4 (B)	
		50.6 (D)		41.9 (D)			29.9 (C)		28.1 (C)		
2030 Build	37.3 (D)	69.0 (E)	42.2 (D)	61.7 (E)	53.2 (D)	24.2 (C)	58.7 (E)	30.8 (C)	56.6 (E)	19.6 (B)	
		56.9 (E)		40.1 (D)			31.7 (C)		28.9 (C)		
2035 Background	36.5 (D)	53.5 (D)	47.0 (D)	56.2 (E)	54.6 (D)	28.1 (C)	62.6 (E)	30.1 (C)	56.8 (E)	19.2 (B)	
		50.5 (D)		41.7 (D)			31.3 (C)		28.6 (C)		
2035 Build	37.7 (D)	69.3 (E)	41.4 (D)	62.6 (E)	52.2 (D)	23.8 (C)	59.1 (E)	32.1 (C)	56.8 (E)	20.4 (C)	
		56.6 (E)		39.7 (D)			33.0 (C)		29.6 (C)		
PM Peak Hour											
Existing	42.6 (D)	53.2 (D)	40.1 (D)	55.3 (E)	55.6 (E)	22 (C)	63.7 (E)	48.8 (D)	56.7 (E)	33.2 (C)	
		47.8 (D)		37.8 (D)			49.3 (D)		39.6 (D)		
2030 Background	53.0 (D)	53.2 (D)	37.4 (D)	55.6 (E)	52.9 (D)	22 (C)	58.6 (E)	79.4 (E)	84.6 (F)	40.1 (D)	
		47.2 (D)		36.0 (D)			78.8 (E)		52.5 (D)		
2030 Build	45.0 (D)	69.6 (E)	36.0 (D)	75.2 (E)	77.7 (E)	20.8 (C)	54.7 (D)	75.4 (E)	42.9 (D)	19.7 (B)	
		57.3 (E)		44.9 (D)			74.8 (E)		26.2 (C)		
2035 Background	58.6 (E)	53.7 (D)	37.0 (D)	55.7 (E)	53.1 (D)	22.8 (C)	58.8 (E)	90.7 (F)	106.7 (F)	42.8 (D)	
		47.3 (D)		36.5 (D)			89.7 (F)		60.5 (E)		
2035 Build	50.1 (D)	76.8 (E)	36.3 (D)	76.5 (E)	84.3 (F)	21.3 (C)	55.0 (D)	91.5 (F)	46.1 (D)	21.1 (C)	
		61.9 (E)		47.4 (D)			90.4 (F)		28.0 (C)		

This intersection currently operates at an overall LOS D during AM and PM Existing scenarios. With the addition of general growth and approved developments, this intersection will operate at LOS E during the 2035 Background PM scenario. To achieve acceptable levels of service, this intersection is recommended to be coordinated with upstream and downstream traffic signals along Constance Road. These optimized timings are modeled in the Build scenario analysis and the intersection will operate at overall LOS D during both AM and PM peak Build scenarios.

7.2.14 VDOT Site Development Driveway

Primary access to the site is provided via a signalized intersection at Memorial Avenue. However, a secondary site entrance providing right-in/right-out access is proposed approximately 335' south of Memorial Avenue, see site plan included in the **Appendix**.

Based on the volumes of traffic, the site driveway will require a full length right-turn lane with 150' of storage and 50' of taper.

The site driveway should be configured to allow right-out only movements and restrict inbound left-turns.

7.3 Site Access Management

The site access is currently provided by two driveways, which were formally one way in (southern entrance) and one way out (northern entrance). The location and operations of these driveways do not meet the needs of the proposed site layout and furthermore do not meet access management criteria. The City of Suffolk Public Works Facilities Manual (PFM) states that the minimum crossover spacing requirement for a 45-mph design speed (35-mph posted speed plus 10mph) is 650 feet, with a desired spacing of 800 feet.

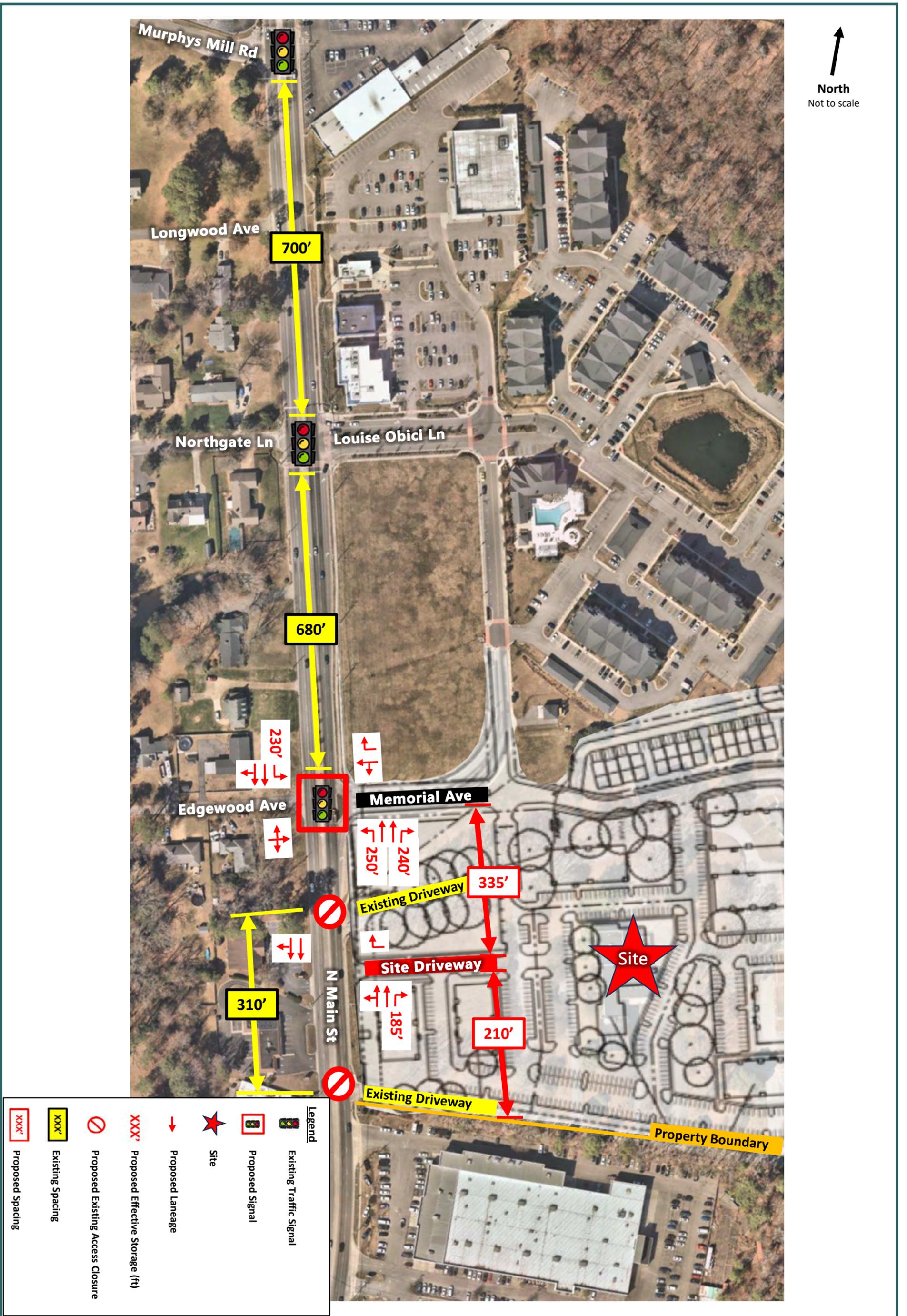
N. Main Street is a key corridor in the City that supports both residential commuters as well as various retail establishments. Some of the more recent developments generate higher traffic demands and have warranted signalized access, however there are a number of commercial and office sites with a single tenant/office that have full movement driveways.

Figure 14 illustrates the existing signal spacing along N. Main Street.

Access for the VDOT Site development requires a minimum of two points, with at least one full movement access and a secondary right-in/right-out (RI/RO) driveway. With limited frontage along N. Main Street, the ability to provide two access points within the property limits that meet City standards is not feasible.

Various options for site access were developed and shared with City staff and are included in the **Appendix**. It was determined that connection via Memorial Avenue was the preferred option for full movement access and also allows for the secondary RI/RO to be provided within the development property limits. This option does not negatively impact the adjacent properties, maintains the existing center turn to support a northbound left-turn for the properties west of N. Main Streets, and meets the access management requirements.

With proposed shared access to the N. Main Street and Memorial Avenue intersection, this existing RI/RO access can be converted to full movement signalized. Signalized control operations at the intersection of N Main Street and Memorial Avenue meet minimum city standards for access management spacing, allow the construction of turn lanes within the site's frontage, and cause minimal impact to adjacent parcels. A traffic signal adequately supports the traffic generated by the VDOT site development.



North
Not to scale

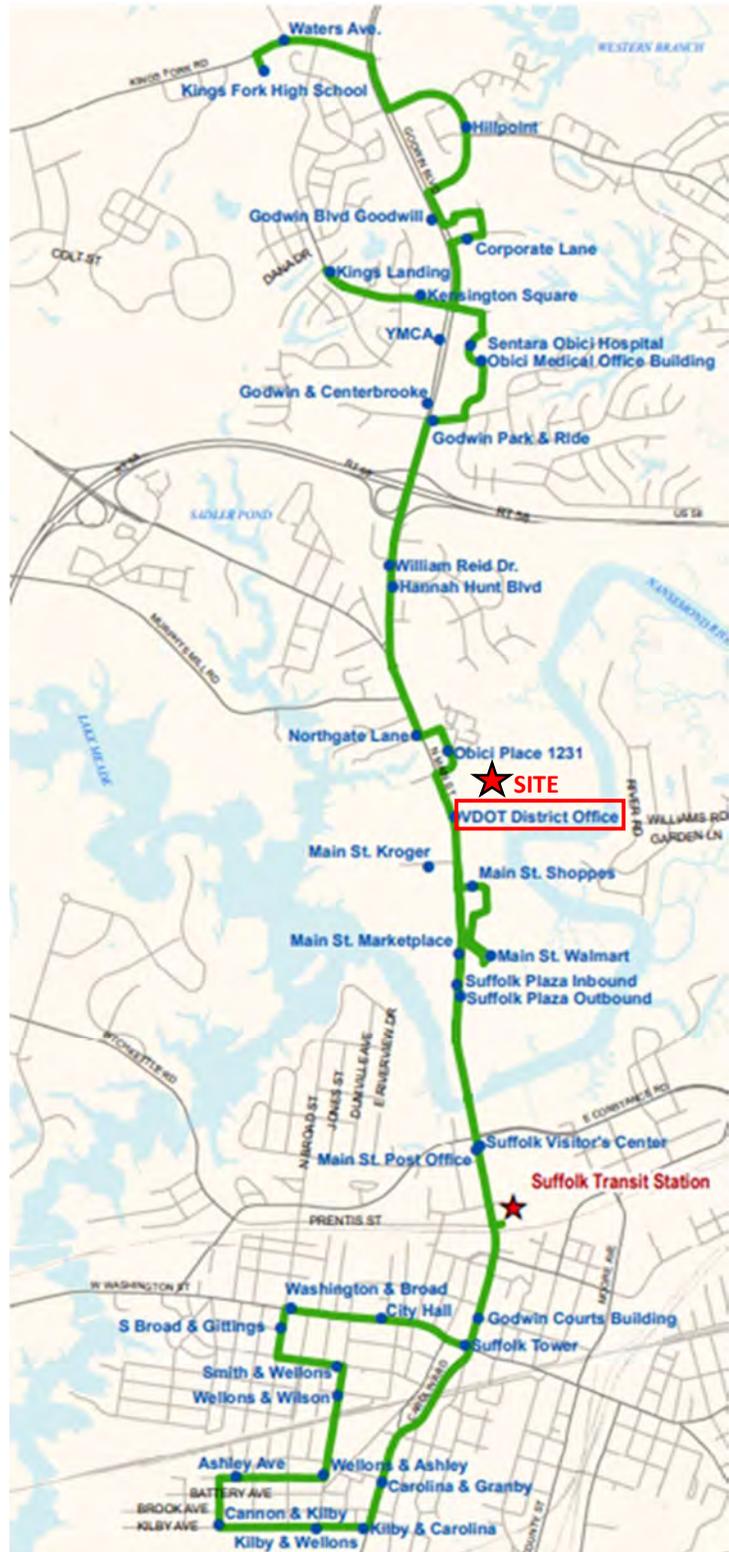
VDOT Site Development – Suffolk, VA
Main Street Access Management

Figure
14



8 Multimodal Opportunity

Transit service is provided throughout the City via Suffolk Transit. Within the study area limits, the Green Route travels along N. Main Street and Godwin Boulevard and heads north to Kings Fork Road. This route provides thirteen stops within the study area, located at various locations as shown below. The route provides a stop right where the VDOT Site development is to be located (former VDOT District Office).



9 Conclusions and Recommendations

The proposed development is located in the City of Suffolk along N. Main Street, just south of Memorial Avenue. The parcel was previously utilized for a Virginia Department of Transportation (VDOT) operational facility. The VDOT Site developer is requesting a rezoning of approximately 73.5 acres from Business/Commercial land usage to Residential in order to support a mix of condominiums and townhomes. The remaining 15.3 acres of the total site is proposed to remain commercial, per the site plan completed by Land Planning Solutions (LPS), dated March 28, 2025. Detailed site plan is included in the **Appendix**.

The traffic study area includes the roadways and intersections along N. Main Street, Godwin Boulevard, and Pruden Boulevard in the vicinity of the proposed development. As currently proposed, the VDOT Site development will increase the volume of traffic on roadways and at intersections throughout the study area, adding 436 and 516 trips during the AM and PM peak hours, respectively.

To maintain traffic operations within the study area and mitigate impacts associated with the proposed development, the following are recommended:

N. Main Street / Site Entrance

Construct site driveway to provide right-in/right-out (RI/RO) only access.

- Provide a northbound right-turn lane (150' storage / 50' taper, within available property limits).

N. Main Street / Memorial Avenue / Edgewood Avenue

Reconstruct the intersection to include the following laneage:

- N. Main Street (northbound):
 - one exclusive left-turn lane (extend to include 200' storage / 100' taper)
 - two through lanes
 - one exclusive right-turn lane (200' storage / 80' taper to tie into proposed RI/RO driveway)
- N. Main Street (southbound):
 - one exclusive left-turn lane (180' storage / 100' taper)
 - one exclusive through lane
 - one shared through-right turn lane
- Memorial Avenue (eastbound):
 - one shared through-left lane
 - one exclusive right-turn lane
- Edgewood Avenue (westbound):
 - one full (left-through-right) movement lane

Construct a traffic signal.

The recommendations for this TIA have been limited to the proposed land uses listed in **Chapter 5**. Should the developer consider a fast-food restaurant with drive-thru or similar use that generates higher traffic volumes, an updated traffic impact study will be required.

In addition to site entrance improvements, optimized signal timings are recommended as summarized below:

N. Main Street Corridor

Maintain existing laneage and provide optimized signal timings at the following intersections:

- N. Main Street / Pruden Boulevard / Godwin Boulevard
- N. Main Street / Murphy's Mill Road
- N. Main Street / Louise Obici Lane / Northgate Lane
- N. Main Street / Lowe's entrance
- N. Main Street / Walmart entrance
- N. Main Street / Big Lots Entrance
- N. Main Street / Constance Road / US Route 58

Optimized timings should be provided within six months of project completion or with construction of the proposed signal at Memorial Avenue. It is assumed that the City operates the coordinated systems with up to four timing plans. Optimized timings should be developed using existing cycle lengths by time of day and include minor changes to existing corridor progression, limited to updated splits, offsets, and phasing sequences. Data collection for timings is assumed to be provided by the City via Grid Smart data, and the developer will provide updated timing plans and implementation of these timings by a licensed engineer.

APPRAISAL OF REAL PROPERTY

Office Building
1700 N Main Street
Suffolk, Virginia 23434
Account Number 2530-66200

PREPARED FOR

Mr. Adam Edbauer
Market Manager of Land
4525 South Boulevard Suite 100
Virginia Beach, Va 23452

PREPARED BY

Michael Fine
Fine Valuations
Certified General Appraiser
1113 Ditchley Road
Virginia Beach, Va 23451

DATE OF VALUE ESTIMATE

August 01, 2026

DATE OF APPRAISAL

June 10, 2025

June 10, 2025

Mr. Adam Edbauer
Ryan Homes
4525 South Boulevard Suite 100
Virginia Beach, Va 23452

Re: Appraisal of Office Building
Acct. No. 52225
1700 N Main Street
Norfolk, Virginia 23513
Account Number 2530-66200

Dear Mr. Edbauer:

In regard to your request and for the purpose of estimating the market value, as completed, of the leased fee interest in the above referenced property, I have viewed the property and analyzed all data pertinent to the establishment of value.

The subject property consists of a hypothetical 2.5 acre site improved with a 32,266 SF office building and associated site improvements. The property has a street address of 1700 N Main Street, Suffolk, Virginia 23434. This narrative report summarizes my approach to value.

The analyses, opinions, and conclusions were developed, and this appraisal report has been prepared in conformity with the requirements of the Uniform Standards of Professional Appraisal Practice of the Appraisal Foundation's Appraisal Standards Board, the Code of Professional Ethics and the Standards of Professional Practice.

Mr. Adam Edbauer
Ryan Homes
June 10, 2025

Based on my analysis, and subject to the limiting conditions and definitions in this report, it is my opinion that the market value, as completed, of the leased fee interest in the subject property, as of August 1, 2026, will be:

**SIX MILLION TWO HUNDRED SEVENTY THOUSAND DOLLARS
(\$6,270,000)**

Thank you for this opportunity to be of service to you.

Respectfully submitted,

A handwritten signature in blue ink that reads "Michael Garrett Fine". The signature is written in a cursive style with a small "Fine" written at the end.

Michael Garrett Fine
VA Certified General Real
Estate Appraiser #4001018664

EXECUTIVE SUMMARY

Property	Office Building	
Location	1700 N Main Street, Norfolk, Virginia 23513	
Account Number	2530-66200	
Land Size	<u>Acres</u> 2.5	<u>SF</u> 108,900
Building Area (SF)	32,266 SF	
Year Built	1949	
Effective Age	10 years	
Remaining Economic Life	30 years	
Highest and Best Use		
As if Vacant	Commercial Development	
As If Improved	Existing Improvements	
Zoning	B-2, General Commercial	
Flood Zone	The Flood Insurance Rate Map Community Panel Number 5101560114E, revised August 3, 2015, indicates that the parcel is located in Flood Zone X.	
Property Rights Appraised	Leased Fee Estate	
Value Indications		
Land Value	Not Developed	
Cost Approach	Not Developed	
Income Approach	\$6,270,000	
Sales Comparison Approach	\$6,290,000	
Market Value	\$6,270,000	
Date of Value	August 1, 2026	
Date of Appraisal	June 10, 2025	
Exposure Time	6 months or less	

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Subject Photographs

Deed

Task Order

Qualifications of Michael Fine Certified General Appraiser/License

APPRAISAL PROBLEM

The subject property consists of a hypothetical 108,900 SF site improved with a 32,266 SF office building and associated site improvements. There is an extraordinary assumption that market conditions will continue to be similar to today's conditions. The property has a street address of 1700 N Main Street, Suffolk, Virginia 23434. This appraisal will estimate the market value, as completed, of the leased fee interest in the subject property.

PURPOSE OF THE APPRAISAL

The purpose of this appraisal is to estimate the market value, as completed, of the leased fee estate in the land and improvements located at 1700 N Main Street, Suffolk, Virginia 23462. This is to help with NVR to make an acquisition decision.

PROPERTY RIGHTS APPRAISED

The Economic Development Authority of The City of Suffolk owns the fee simple interest in the subject property. The value estimate set forth in this appraisal report is the market value of the leased fee estate in the hypothetically subdivided and leased subject property that will be renovated to contemporary standards and code.

The leased fee estate is defined as:

“A leased fee estate is the ownership interest that a landlord or lessor retains in a property while it is leased to a tenant or lessee. The leased fee owner retains the right to receive rent and eventually the right to reoccupy the property upon the lease's expiration, while the tenant has the right to use and occupy the property.¹”

FUNCTION OF THE APPRAISAL

The function of this appraisal is to estimate the leased fee estate in the subject property for asset valuation purposes.

DATE OF THE VALUE ESTIMATE

The date to which the value estimate applies is August,1 2026.

DATE OF APPRAISAL

This appraisal was prepared on June 10, 2025.

COMPETENCY

Michael G Fine has significant experience in the valuation of income producing properties. These properties include but are not limited to large and small apartment complexes, central

¹ Appraisal Institute, The Dictionary of Real Estate Appraisal, Sixth Edition (Chicago, 2015), pg. 90.

business district and suburban office buildings, neighborhood shopping centers, industrial buildings, office/warehouse buildings, vacant land, and residential subdivisions.

Mr. Fine is licensed by the Commonwealth of Virginia as a Certified General Real Estate Appraiser.

DEFINITION OF MARKET VALUE

Market value, as used herein, is defined by OCC Rule 12 CFR 34.44 (f), and FDIC Rules and Regulations, Vol. 1, Part 323.2 as:

“The most probable price in terms of money which a property should bring in an open and competitive market under all conditions requisite to a fair sale, the buyer and seller, each acting prudently, knowledgeably, and assuming the price is not affected by undue stimulus.

Implicit in this definition are the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

1. Buyer and seller are typically motivated
1. Both parties are well informed or well advised, and acting in what they consider their own self-interests
1. A reasonable time is allowed for exposure in the open market,
1. Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto
1. The price represents normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.”

COVID-19 PANDEMIC

The local and regional economy has and will be significantly impacted by COVID-19 pandemic. Therefore, the effects of COVID-19 can have varying effects on real estate each day depending on current events. Demand for certain types of retail and office properties has decreased from prospective tenants to prospective buyers. In contrast, demand for industrial properties has remained strong and may even benefit from the pandemic. The long-term impact on all property types is currently unknown.

EXPOSURE TIME

Exposure time, as used herein, is defined by the Appraisal Institute, The Dictionary of Real Estate Appraisal, Sixth Edition (Chicago, 2015), pg. 83, as:

“The time a property remains on the market; The estimated length of time the property interest being appraised would have been offered on the market prior to the hypothetical consummation of a sale at market value on the effective date of the appraisal; a retrospective estimate based on an analysis of past events assuming a competitive and open market.”

In reviewing the comparables used for this report, and considering the interviews held with lawyers, investors, and agents, there is a continued demand for the subject office property within Southside Hampton Roads, due to its lease and market conditions. If the subject property were to be offered on the market, I estimate an exposure time of 6 months or less.

EXTRAORDINARY ASSUMPTIONS

Extraordinary Assumption, as used herein, is defined by the Appraisal Institute, The Dictionary of Real Estate Appraisal, Sixth Edition (Chicago, 2015), pg. 83-84, as:

“An assumption, directly related to a specific assignment, which, if found to be false, could alter the appraiser’s opinions or conclusions. Extraordinary assumptions presume as fact otherwise uncertain information about physical, legal, or economic characteristics of the subject property; or about conditions external to the property such as market conditions or trends; or about the integrity of the data used in an analysis.”

This appraisal is based on the extraordinary assumption that market conditions will remain similar on August 1, 2026 (the time of lease commencement and improvement completion) as the current (as of the date of this report’s) overall market conditions.

HYPOTHETICAL CONDITIONS

Hypothetical condition is defined as follows:

“That which is contrary to what exists but is supposed for the purpose of analysis. Hypothetical conditions assume conditions contrary to known facts about physical, legal, or economic characteristics of the subject property; or about conditions external to the property, such as market conditions or trends; or about the integrity of data used in an analysis².”

The valuation of the subject property is based on these hypothetical conditions:

- That the VDOT office building and its surrounding 2.5 acres of parking have been subdivided from the larger 86.84-acre parcel at 1700 N Main Street.
- The remaining acreage is assumed to have been developed into a residential community featuring modern amenities such as a park, signalized intersection, newly constructed streets, and signage.
- The improvements to the building will have been significantly renovated to a finish that is equivalent or better than contemporary office space. The landscaping and parking surfaces will be maintained and replaced if need be.
- The building will be leased to the City of Suffolk Department of Education for a 10 year term with rent paid at \$500,000 annually on a triple net lease with 3% annual escalations.

COMPLIANCE

² Appraisal Institute, The Dictionary of Real Estate Appraisal, Sixth Edition (Chicago, 2015), pg. 113.

This appraisal report conforms to the minimum standards set forth on 12 C.F.R. Part 1608, Standards 1 and 2 of the Uniform Standards of Professional Appraisal Practice promulgated by the Appraisal Standards Board of the Appraisal Foundation.

PROPERTY IDENTIFICATION

The subject property has a street address of 1700 N Main Street, Suffolk, Virginia. The Real Estate Assessor for the City of Suffolk identifies the subject property as Account number 253066200. The subject's legal description is presented below.

SCHEDULE A

All that certain lot, piece or parcel of land with all improvements thereon and appurtenances thereunto belonging, lying and being in the City of Suffolk, Virginia, containing 1.004 acres, more or less, being identified as a portion of Tax Map Parcel 25*45A, Account No. 253066200, and being more particularly shown on the plat of survey entitled "BOUNDARY LINE AGREEMENT BETWEEN PROPERTY OF COMMONWEALTH OF VIRGINIA, DEPARTMENT OF TRANSPORTATION (D.B. 156, PG. 501) (D.B. 296, PG. 663) AND ECONOMIC DEVELOPMENT AUTHORITY OF THE CITY OF SUFFOLK, VIRGINIA (INSTRUMENT #150067435, PG 1-8)" made by MSA, P.C., dated March 21, 2022.

Being further described by metes and bounds on the MSA Plat as follows: beginning at a found pin along the easterly boundary of North Main Street (State Routes 460, 10 and 32) where the southwest corner of the parcel of land now or formerly belonging to the Economic Development Authority of the City of Suffolk meets the southwest corner of the parcel of land now or formerly belonging to the Commonwealth of Virginia, Department of Transportation, said pin being located at coordinates N 3439547.33, E 12044208.99; thence from said point of beginning N 32° 49' 46" E a distance of 248.95 feet to a found pin; thence continuing N 32° 49' 46" E a distance of 255.16 feet to a point; thence S 23° 35' 30" E a distance of 78.88 feet to a point; thence along a curve to the left having a radius of 92.00 feet, an arc length of 77.80 feet, and a bearing of S 3° 43' 11" W along a chord length of 75.50 feet; thence S 20° 30' 24" E a distance of 44.79 feet to a point; thence along a curve to the right having a radius of 39.00 feet, an arc length of 51.23 feet, and a bearing of S 17° 07' 28" W along a chord length of 47.62 feet; thence S 54° 45' 20" W a distance of 268.96 feet to a point; thence S 67° 53' 35" a distance of 88.48 feet to the point and place of beginning.

PROPERTY OWNERSHIP AND SALES HISTORY

The fee simple interest in the subject property is vested in the name of The Economic Development Authority of The City of Suffolk, which acquired the subject property by Deed from The Commonwealth of Virginia Department of Transportation, for \$800,000, recorded July 14th, 2023 as Instrument Number 230007994, on file in the Clerk's Office of the Circuit Court of Suffolk. A copy of the deed is included in the addendum of this report. The subject property is currently under contract.

TYPE OF APPRAISAL REPORT

This Appraisal Report was prepared in accordance with Standards Rule 2-2 (a) of the *Uniform Standards of Professional Appraisal Practice (2024)*. As such, it presents sufficient information to enable the client and other intended users, as identified, to understand it properly.

INTENDED USER

Ryan Homes is the intended user of this report. No other person or entity may use this report without the written consent of Ryan Homes and Fine Valuations.

INTENDED USE AND SCOPE OF THE APPRAISAL

This appraisal is intended to be used by Ryan Homes to aid in a purchase decision. The scope of this assignment included the following:

- Mr. Adam Edbauer, Market Manager of Land for Ryan Homes, engaged Fine Valuations on May 23, 2025 to estimate the market value, as is, of the subject property.
- Michael Fine viewed and photographed the subject property on June 2, 2025.
- The neighborhood and surrounding sections of Suffolk were also viewed on June 2, 2025.
- City records have been researched for information on ownership, real estate assessment, taxes, utility availability and zoning regulations. City departments and agencies have been consulted to determine compliance with applicable regulations, anticipated land use changes and proposed projects potentially impacting the subject and its neighborhood.
- New and proposed developments in the neighborhood were researched to determine the impact to the subject property.
- Rental rates for office, and flex, space within the subject's submarket and nearby submarkets were researched to determine a reasonable market rent for the subject property.
- Recent sales and listings of similar quality buildings within the neighborhood and beyond the immediate market were researched to determine the existing and proposed inventory, marketability and feasibility of uses within the subject's classification.
- Recent sales of office buildings with high credit tenants and long term leases were researched on the east coast to provide comparable sales of office buildings to investors.
- During the course of the research every effort was made to verify information through public records and personal interviews.

- The most pertinent data was assembled and analyzed in relation to the subject property.
- This information and analysis were then processed into an indication of value for the subject property using generally accepted appraisal principles and practices.

PRIVACY REQUIREMENTS

Collection and Use of Personal Information

In the course of providing appraisal services, we collect and utilize personal information that we determine to be reasonably necessary to perform such services. The categories of personal information collected may include, but are not limited to, information furnished by clients through engagement letters, written communications, electronic correspondence, and oral discussions, such as names, addresses, telephone numbers, income and expense data, financing information, and sales price details pertaining to the subject property.

Disclosure of Nonpublic Personal Information

Except as otherwise set forth herein, we do not disclose nonpublic personal information regarding our clients or former clients to any nonaffiliated third parties. We do not sell, rent, trade, or otherwise disseminate personal information to any party for marketing purposes, including telemarketing or direct mail solicitations.

We may disclose nonpublic personal information solely under the following circumstances:

- (i) As necessary to facilitate or complete a transaction or service authorized by the client, including but not limited to the processing of a loan or other financial transaction;
- (ii) As required or permitted by applicable law, regulation, or legal process, including but not limited to disclosures necessary to protect against fraud, unauthorized transactions, claims, or other liabilities, or in response to judicial process, regulatory inquiry, or law enforcement requests;
- (iii) To other financial institutions with whom we have joint marketing agreements, but only to the extent necessary to offer, endorse, or sponsor a financial product or service.

Safeguarding Information

We maintain appropriate physical, electronic, and procedural safeguards to protect the confidentiality and security of nonpublic personal information in accordance with applicable laws and regulations.

STATEMENT OF LIMITING CONDITIONS

The appraiser assumes no responsibility for matters pertaining to the legal status or title of the subject property, nor does the appraiser render any opinion regarding the condition of title. Title is presumed to be good, marketable, and free of encumbrances unless otherwise stated herein.

The subject property is appraised under the assumption that it is owned under responsible ownership and managed competently, and that it is free and clear of all liens and encumbrances, unless otherwise noted.

No survey of the subject property has been conducted by the appraiser, and no responsibility is assumed with respect to such matters. Any photographs, drawings, or sketches included in the report are provided solely for the purpose of assisting the reader in visualizing the subject property. The Site Summary section of this report is based upon a visual inspection conducted on June 2 2025, and data obtained from the Real Estate Assessor's Office of the City of Suffolk, VDOT officials, as well as an interior inspection from a prior appraisal of the subject. The Improvement Summary section is based upon the site inspections and information from the aforementioned source.

The information utilized in preparing this appraisal was obtained from sources customarily considered reliable within the industry, including, but not limited to, public records and third-party sources. However, such information is not guaranteed to be accurate or complete, and no warranty or representation as to its accuracy is made.

The appraiser shall not be obligated to provide testimony or appear in any legal proceedings with reference to this appraisal, unless prior contractual arrangements have been made. The fee for this appraisal does not include compensation for court testimony or additional consultation services.

No testing or engineering studies have been conducted by the appraiser to determine the load-bearing capacity of the site, percolation rates, subsoil conditions, or drainage characteristics. No analysis or consideration has been given to the necessity for flood insurance coverage related to the property, nor to the impact of any flood zone designation on the property value.

Further, no evaluation has been made regarding the existence of any environmental restrictions, pollutants, or nuisances imposed by federal, state, or local government authorities or agencies. The appraiser assumes no responsibility for the detection of, or the effect on value caused by, the presence of hazardous materials, toxic wastes, urea formaldehyde foam insulation, asbestos, or any other potentially hazardous substances. In the event that such materials are subsequently discovered by a qualified expert, the appraised value stated herein may require revision.

Fine Valuations expressly reserves the right to amend, alter, or withdraw any opinion of value based upon information that was withheld, misrepresented, or otherwise not disclosed during the ordinary course of a diligent investigation.

Disclosure of the contents of this report is subject to the Bylaws, Regulations, and Code of Professional Ethics of the professional organizations with which the appraiser is affiliated.

The appraiser has not conducted a specific compliance survey or analysis of the subject property to determine whether it meets the requirements of the Americans with Disabilities Act ("ADA"), which became effective on January 26, 1992. It is possible that a detailed compliance survey and analysis would reveal deficiencies under the ADA that could adversely affect the value of the subject property. As the appraiser possesses no direct evidence concerning ADA compliance, no consideration has been given to potential ADA non-compliance in the valuation conclusions stated herein.

Restrictions on Disclosure and Use

Neither all nor any part of the contents of this report—including conclusions as to property

value, the identity of the appraiser, or Fine Valuations—shall be disseminated to the public through advertising media, news media, sales media, or any other public means of communication without the prior written consent and approval of Fine Valuations.

Acceptance of, and/or reliance upon, this report constitutes acknowledgment and agreement to all terms, conditions, and limitations set forth herein.

CERTIFICATION

I certify that, to the best of my knowledge and belief:

- The statements of fact contained in this report are true and correct.
- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.
- I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved.
- I have performed services, as an appraiser, regarding the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment. The last appraisal made on this property was performed on May 14th, 2025 for 'as is' conditions.
- I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
- My engagement in this assignment was not contingent upon developing or reporting predetermined results.
- My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
- The reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics & Standards of Professional Appraisal Practice of the Appraisal Institute, which include the *Uniform Standards of Professional Appraisal Practice*.
- The use of this report is subject to the requirements of the Commonwealth of Virginia relating to review by its duly authorized representatives.
- I have made a personal viewing of the property that is the subject of this report.
- No other person provided real property appraisal assistance to the person signing this certification.
- As of the date of this report, Michael Garrett Fine has completed the continuing education program to be up to date with state certification requirements.
- The market value, as is, of the leased fee interest in the subject property, as of August 1, 2026 (the date upon completion), is \$6,270,000.



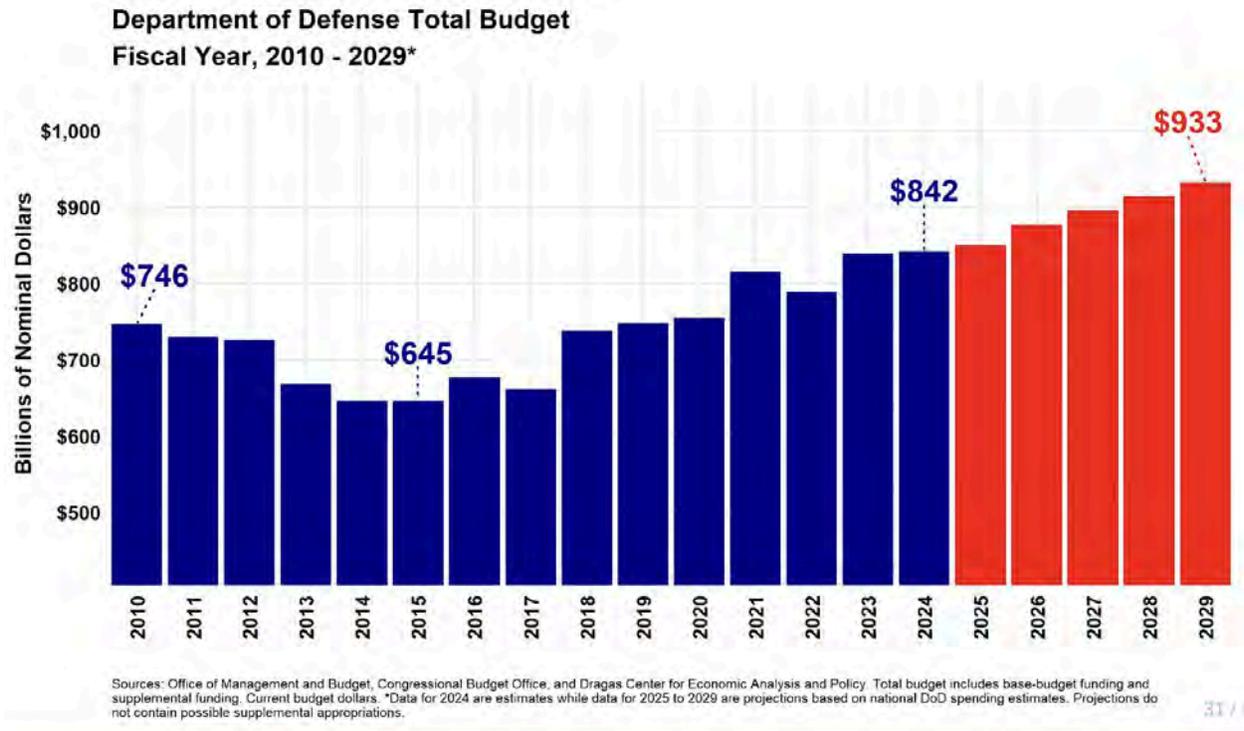
Michael Garrett Fine
VA Certified General
Real Estate Appraiser #4001018664

June 10, 2025

Date

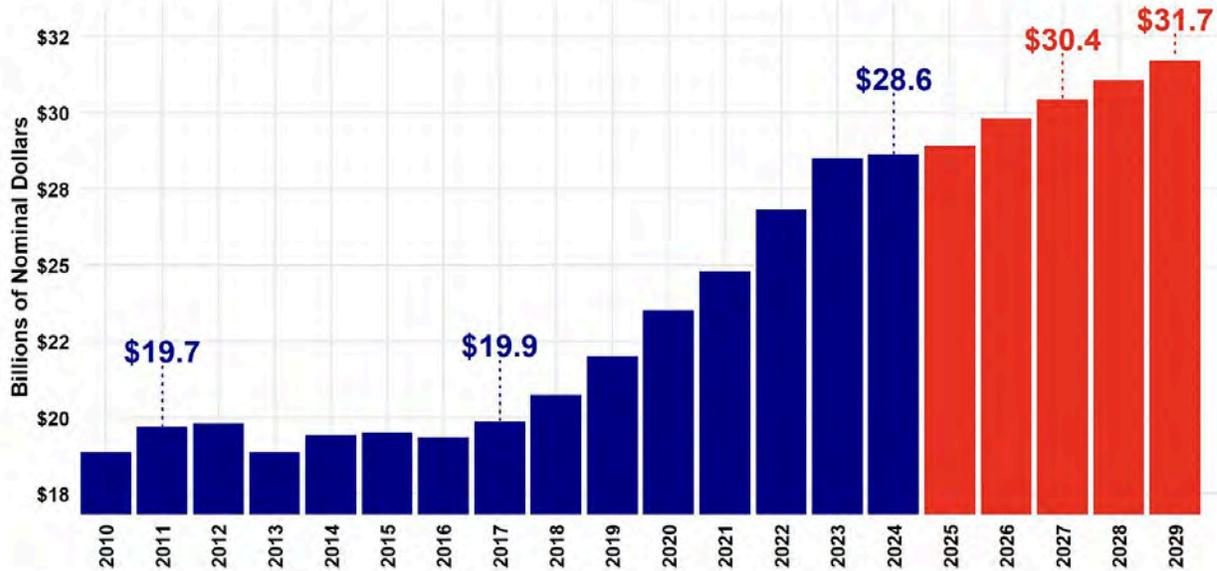
MARKET OVERVIEW

The Hampton Roads economy has long relied on three main pillars: the military, the Port of Virginia, and tourism. Among these, defense spending has historically been the most significant driver of economic activity. The region holds a unique and strategic position in the national security framework of the United States. As Department of Defense (DoD) budgets increase, so too does defense spending in Hampton Roads.



In 2022 alone, the DoD spent nearly \$26 billion in the region, generating close to \$40 billion in total economic activity. With the passage of the Fiscal Year 2024 National Defense Authorization Act (NDAA) and the omnibus appropriations bill, the base DoD budget rose to \$883.7 billion. Barring any major shifts in defense policy, direct defense spending in Hampton Roads is expected to surpass \$30 billion by the end of the decade.

**Estimated Department of Defense Direct Spending
Hampton Roads, 2010 - 2029***

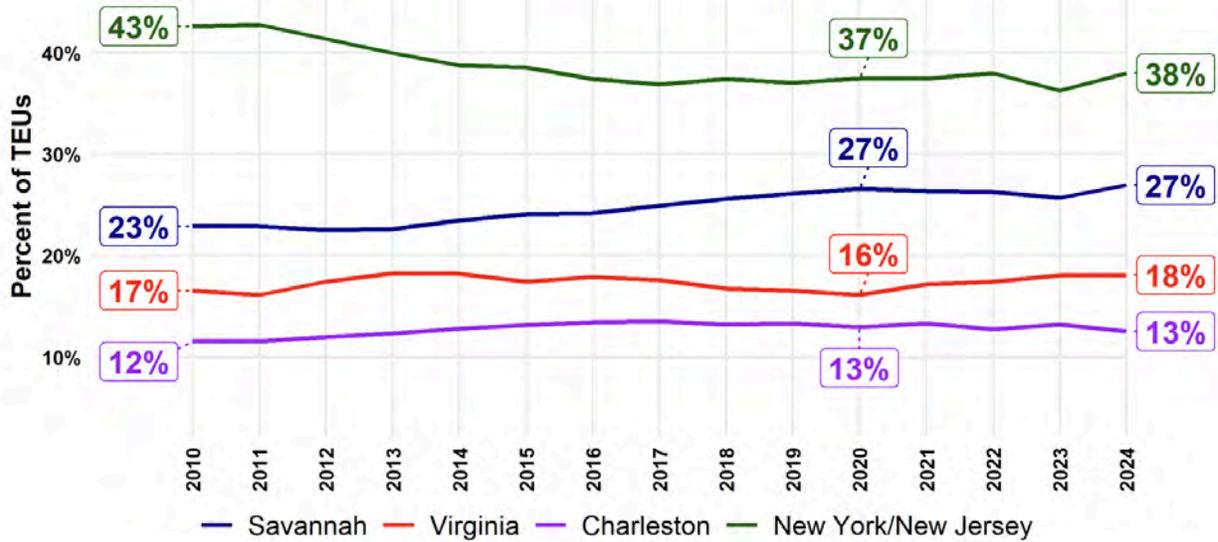


Sources: Department of Defense and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Includes federal civilian and military personnel and procurement.
*FY 2010 – 2023 are actual expenditures, 2024 is our estimate, and 2025 – 2029 are our forecasts.

The Department of Defense (DoD) has a profound impact on the Hampton Roads economy, with approximately \$28.6 billion in direct spending in 2024, emphasizing the region’s strong economic dependence on military operations. DoD activities account for 22.8% of all regional economic activity, encompassing federal civilian payroll, contract awards, and other defense-related expenditures. Employment is heavily influenced by the military, with about 20% of the workforce made up of active-duty personnel, DoD civilian employees, and defense contractors, while another 15% of jobs are indirectly supported by defense-related activity. Although Hampton Roads captures a smaller portion of total DoD contract spending, it still receives 29% of Virginia’s share. Nationally, Hampton Roads represents 3.5% of all U.S. defense spending, including 5.1% of personnel costs and 2.9% of contract spending, highlighting its strategic importance to the country’s defense infrastructure.

Over the past decade, the Port of Virginia has proven to be a vital asset to the Hampton Roads economy. Unlike many other ports that faced challenges handling cargo in the past year, the Port of Virginia successfully increased traffic with minimal delays. The rise in cargo volume and return to profitability reflect stronger, more efficient management. Despite these gains, concerns about market share persist—likely tied to the region's economic performance.

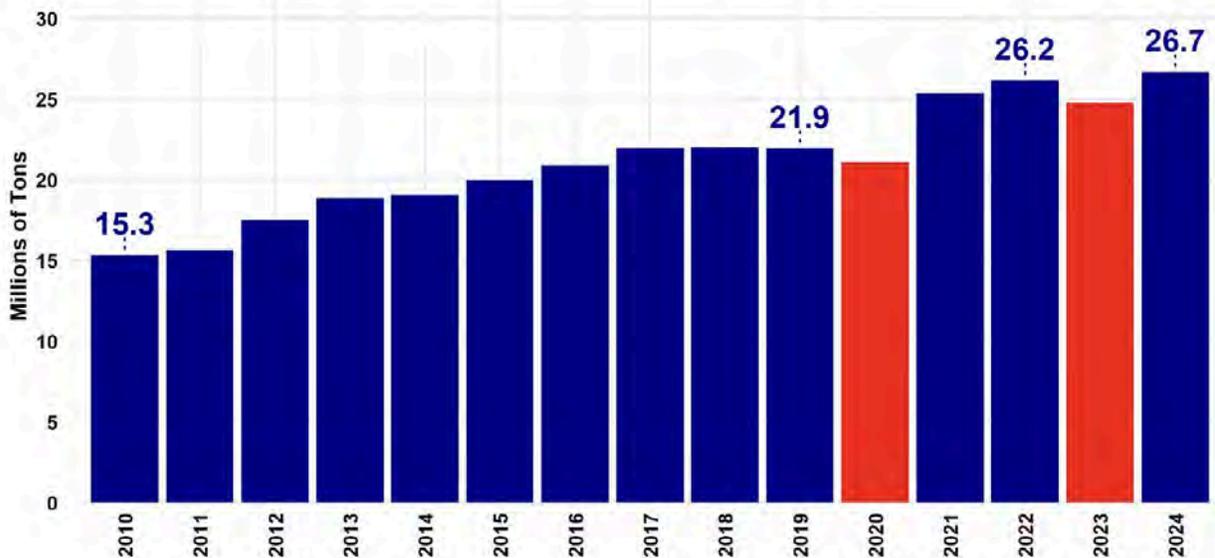
**Shares of Total Loaded TEUs
Selected East Coast Ports, 2010 - 2024***



Sources: American Association of Port Authorities, websites of ports and the Old Dominion University Economic Forecasting Project. Market shares are based on TEUs for Baltimore, Boston, Charleston, Virginia, New York/New Jersey, and Savannah. *Data for 2024 are through November 2024.

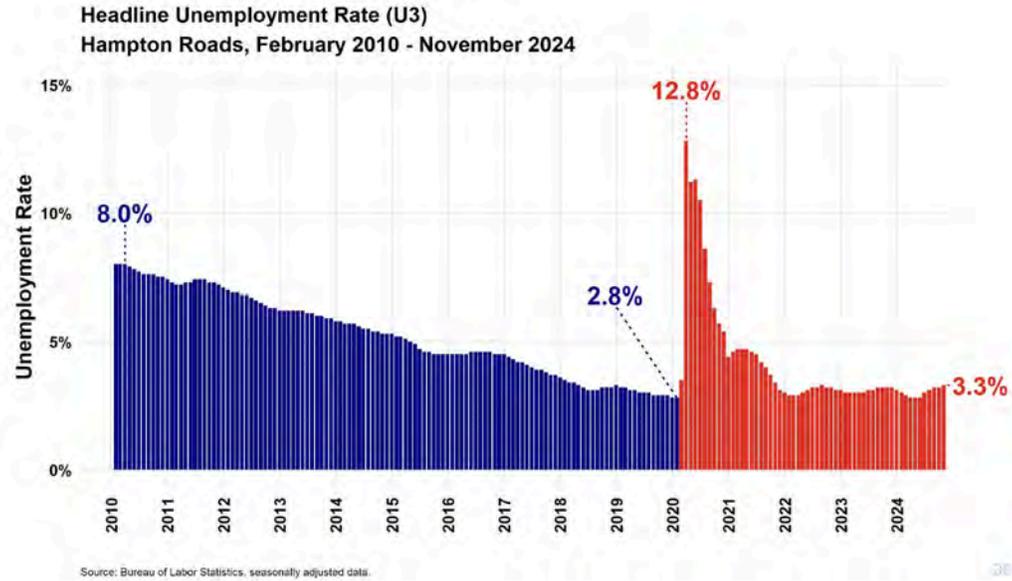
Cargo at the Port of Virginia saw a modest increase in 2024. Looking ahead, the port expects a rise in traffic in 2025, driven by the completion of a dredging project that will deepen and widen its shipping channels. This upgrade will allow the port to handle larger container ships and enhance the overall efficiency of cargo movement.

**General Cargo Tonnage
Port of Virginia, 2010 - 2024**

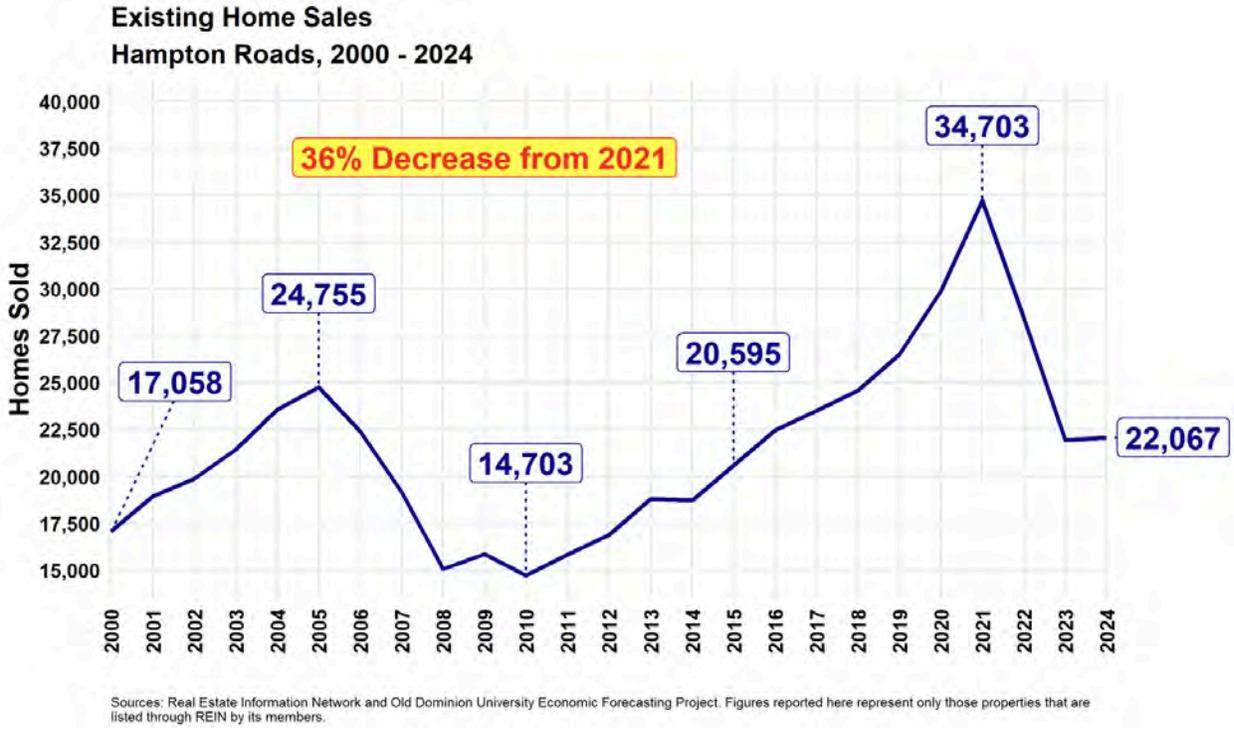


Sources: Virginia Port Authority and Dragas Center for Economic Analysis and Policy.

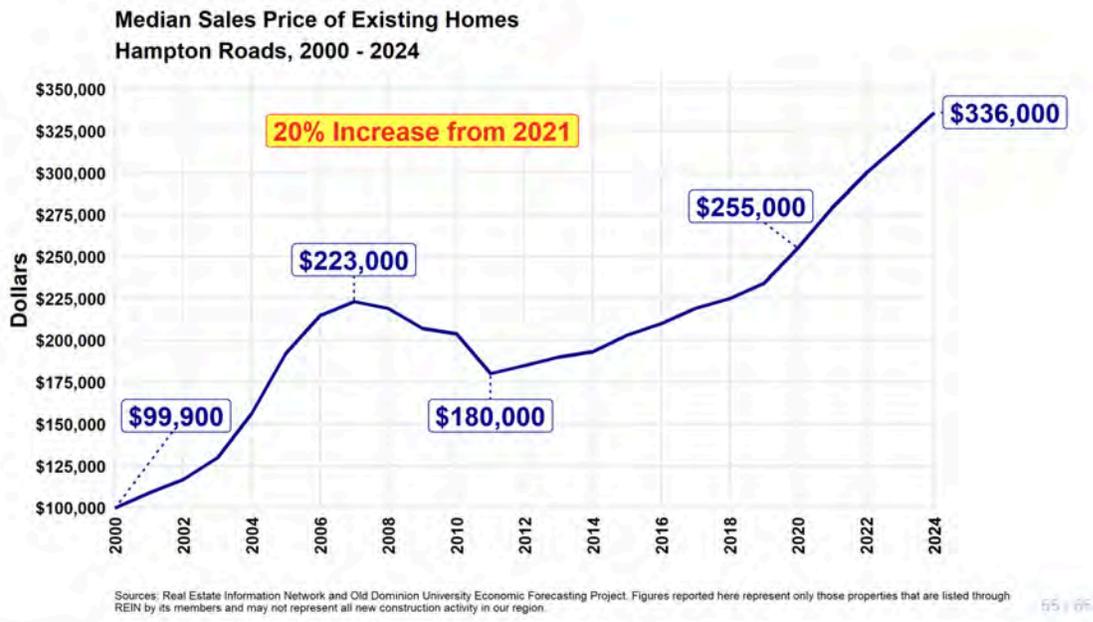
Before the pandemic, Hampton Roads trailed both Virginia and the nation in job growth, gaining only 9.4% from 2010 to early 2020. In February 2020, the region hit a record 803,300 jobs, but lost over 100,000 jobs within two months due to the pandemic. By the end of 2020, it was still down 40,200 jobs from its peak. Recovery was slow, with 29,800 fewer jobs by the end of 2021 and about 25,000 still missing by mid-2022. At the current pace, full recovery may take another 18–24 months. Between May 2019 and May 2022, job growth was limited to transportation, warehousing, utilities, and construction, while local government, manufacturing, and financial activities saw the largest declines. Unemployment has remained low over the last few years, hovering around 3.3%.



The unemployment rate in Hampton Roads has been on a downward trend, reaching a low of 3.1% in December 2023, but has recently shown signs of rising, climbing to 3.3% in the fourth quarter of 2024. Economic experts predict a potential slowdown in mid-2025, which could lead to higher unemployment. Factors such as economic growth, inflation, and interest rates continue to influence these trends. While job growth has been solid, a decrease in job openings suggests the previously tight labor market may be beginning to loosen.



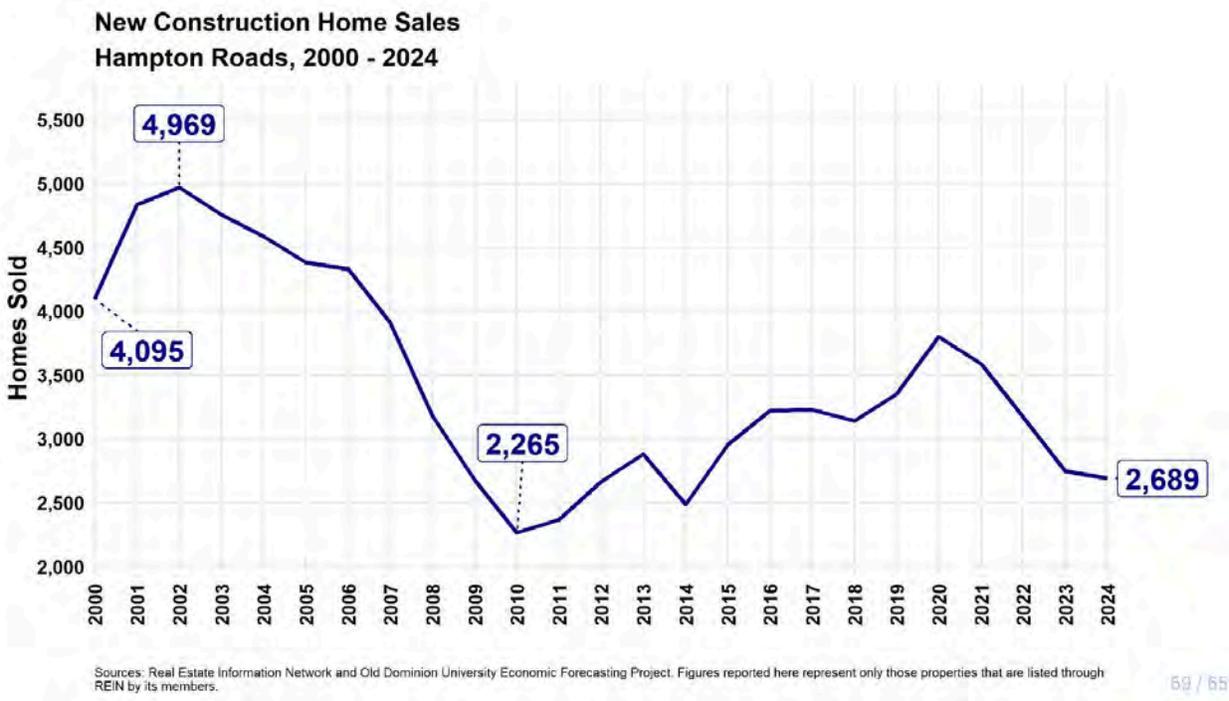
Hampton Roads is experiencing a housing shortage, with demand outpacing the supply of available homes. Although there has been a slight uptick in inventory in recent months, the number of active listings remains below historical levels. This shortfall is driving up both home prices and rental costs, with affordable housing being especially hard to find.



Hampton Roads Housing Factors:

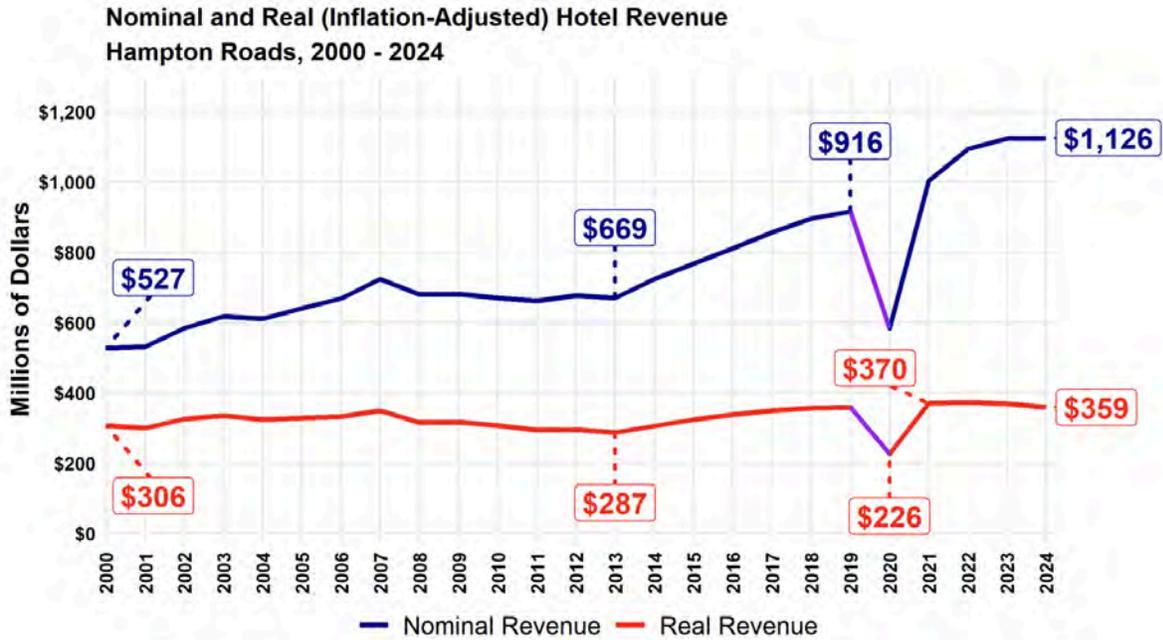
- Ongoing Shortage: Demand for housing continues to exceed supply across the region.
- Limited Inventory: Recent increases in listings have not been enough to offset historically low supply levels.
- Affordable Housing Strain: The shortage is most severe in the affordable housing segment, affecting low- and moderate-income households.
- Rising Prices: The tight supply is fueling higher home prices and rents.
- Economic Impact: The housing shortage is seen as a significant barrier to economic growth in Hampton Roads.

The Months' Supply of Inventory (MSI)—which shows how long the current supply of homes would last if no new homes were added—rose to 2.12 months from 1.72 months in January 2024. This means homes are still selling fairly quickly, but there's a bit more breathing room than before. Meanwhile, new construction home sales dropped, with only 170 newly built homes sold in January 2025 compared to 215 in January 2024.



The Hampton Roads hospitality sector is expected to continue limited growth in 2025. The region has largely recovered from the pandemic’s impact on the hotel industry, with some areas even surpassing pre-pandemic performance levels. A rise in leisure travel, along with a rebound

in group travel, is projected to further strengthen hotel performance across the region. Specific areas such as the Virginia Beach oceanfront are seeing particularly strong growth in hotel revenues, highlighting the overall positive momentum in the hospitality sector.

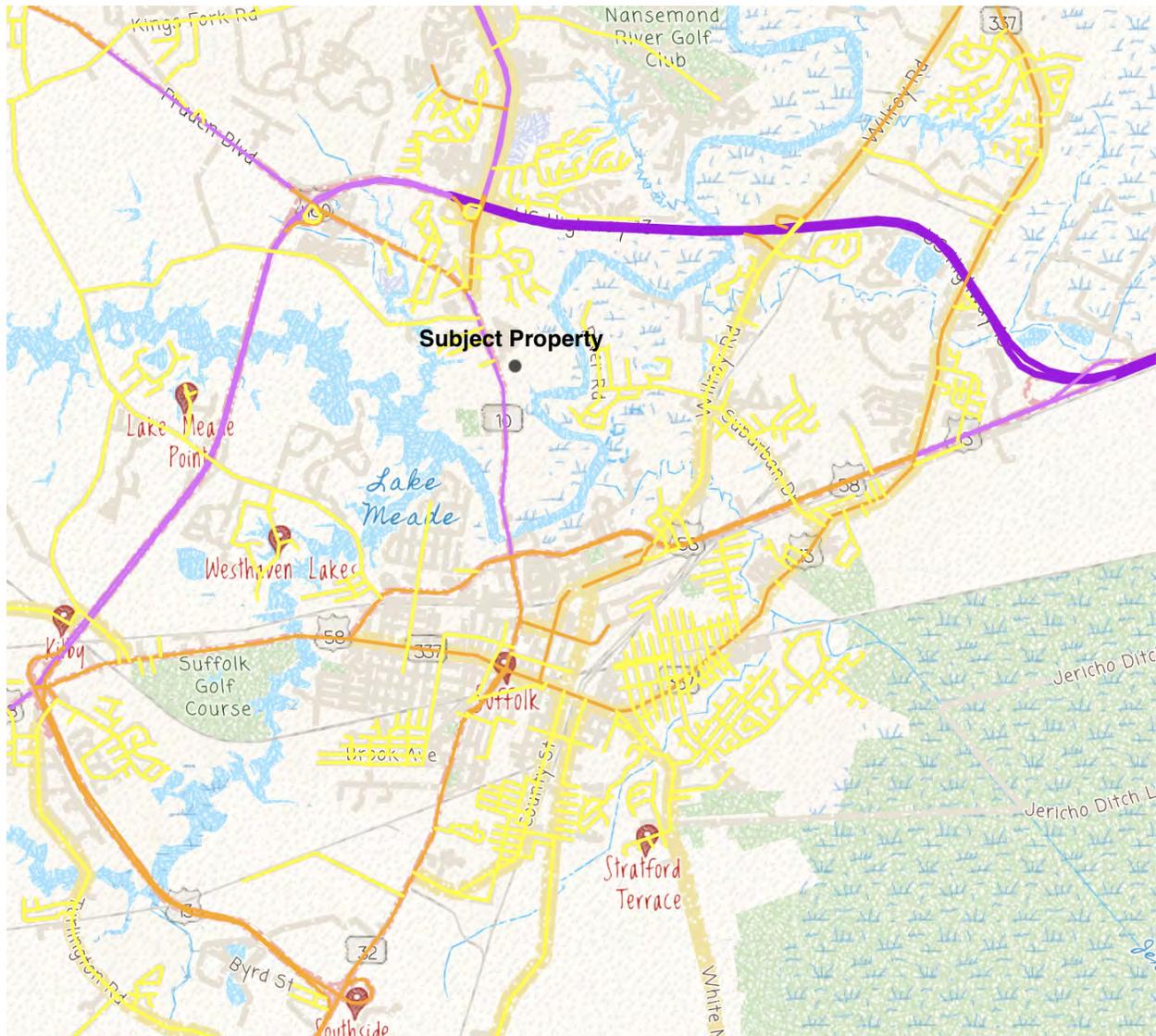


Sources: STR Trend Report January 2024, STR Monthly Report January 2025, Bureau of Labor Statistics (1982-84=100), and the Dragas Center for Economic Analysis and Policy.

In Summary, 2025 defense spending will continue to support the Hampton Roads economy. Home sales are expected to stabilize, while median home prices will likely keep rising. Going forward, uncertainty in Washington, especially on size and type of reduction in federal workforce, and increases in tariffs either by country, or by ownership or by commodities, will remain to be a major concern for the health and growth of the regional economy.

NEIGHBORHOOD SUMMARY

The subject is located within the South Suffolk/Downtown neighborhood in Suffolk Virginia. The immediate subject neighborhood is generally bounded by Route 58 on the east, north, and west, and Washington Street on the South. Research conducted for this section was obtained through REIN MLS, CoStar, ODU Economic Forecasts, and discussions with real estate agents who are familiar with this market.



Access to the neighborhood is generally convenient from route 58 and route 460. 58 connects the subject to all points in Hampton Roads via Interstate 64. North Main Street provides a retail corridor with ample traffic estimated at 26,000 vehicles per day in either direction. This immediate area on North Main Street is characterized by newer retail development, new multi-family development, car dealerships, second generation retail, and smaller office buildings.

Contiguous with the property toward the north, Meridian Obici is an apartment complex that was built in 2016, has 224 units, and was sold in 2018 for a reported \$32,000,000. On the southern side of the property, Barton Ford is a local car dealership selling Ford vehicles.

The surrounding retail within two miles includes Applebee's Grill + Bar, Chick-fil-A, Dunkin Donuts, Jersey Mike's Subs, Panera Bread, Papa Johns Pizza, Wawa, 7 Eleven, ALDI Grocery Store, Kroger, LOWE'S, Walmart Supercenter, and Planet Fitness. Lake Meade Park as well as other small parks give plenty of recreational opportunities for residents in the area.

Sentara Obici Hospital, located less than 1.5 miles north of the subject, is a modern, 175-bed, full-service medical facility located on Godwin Boulevard in Suffolk, Virginia. The hospital serves the Western Tidewater region designed with advanced healthcare technology. The facility provides a wide range of comprehensive medical services to meet the needs of the surrounding communities. Sentara Obici Hospital remains a healthcare resource for individuals and families across the region.

Less than two miles south of the subject is the Suffolk Court House and Downtown area. This area is characterized by office buildings built before 1975 and is populated mostly by government services from the aforementioned court to the Suffolk Educational department and other city services.

As of Q2 2025, the South Suffolk office submarket has a low vacancy rate of 2.6%, slightly below its five- and ten-year average of 3.8%. The vacancy rate has held relatively steady over the past year with a minor 0.1% decrease, due to no new deliveries and net absorption of -1,300 SF.

Currently, about 30,000 SF is listed as available, and there is no office space under construction, despite a historical average of 2,600 SF under development annually.

The submarket has a total inventory of 1.2 million SF, much smaller than the 56.6 million SF in the overall Hampton Roads area. Average asking rents in South Suffolk are \$21.00/SF (full service), slightly below the market average of \$22.00/SF. Rent growth over the past year was 0.5%, trailing both the market-wide growth of 1.2% and the submarket's own five-year average (3.3%) and ten-year average (2.8%).

A total of 636 single-family homes were sold within a 3 mile radius of the subject in the last year. The average home had 4 bedrooms, 2 bathrooms, 1,927 square feet of living space, and sat on 0.425 acres. List prices averaged \$353,209 (\$185.85/SF), and sale prices closely followed at an average of \$352,395 (\$185.07/SF), reflecting a strong average sale-to-list ratio of 99%. The median home featured 3 bedrooms, 2 bathrooms, 1,800 square feet, and sold for \$334,950, which was 100% of the \$330,000 list price. Homes were typically built around 1988 on average, with the median build year being 2000. Properties sold quickly, with a median of 25 days on market and an average of 35 days.

In summary, the subject property benefits from convenient access to major transportation routes, including Interstate 64 and Route 460. The surrounding area is well-supported by retail services and medical facilities, offering a full range of amenities suitable for both residential and office use. The City of Suffolk has continued to gentrify over the last 10-15 years and looks to

continue that trend with a lower cost of living and is attractive for those who desire a suburban lifestyle.

SITE SUMMARY

Location

The subject property is located on the east side of North Main Street.

Size/Shape/Frontage

The subject site is currently irregularly shaped and will hypothetically be subdivided into a rectangular 2.5 acre site(with improvements). The subject will sit behind a multifamily development fronting North Main Street.

Access/Visibility

The subject site will be provided with two curb cuts along an access road that connects to North Main Street. There will be a third curb cut on the north side of the site. Cross access is given to a shared parking lot as well that will also be used by proposed multi family. The visibility of the site is hindered from North Main Street by the proposed multi family development.

Easements

The subject site is not encumbered by any recorded easements.

Topography

The subject site is generally level, above street grade and appears to have adequate off-site drainage.

Flood Zone

According to The Flood Insurance Rate Map Community Panel Number 5101560114E, revised August 3, 2015, the parcel is located in Flood Zone X.

AICUZ

The subject property is not encumbered by AICUZ restrictions.

Transportation Linkages

Access to the neighborhood is generally convenient to most of Hampton Roads due to the proximity to Interstate 64. Route 460 provides access to the neighborhood from the western part of the state.

Utilities

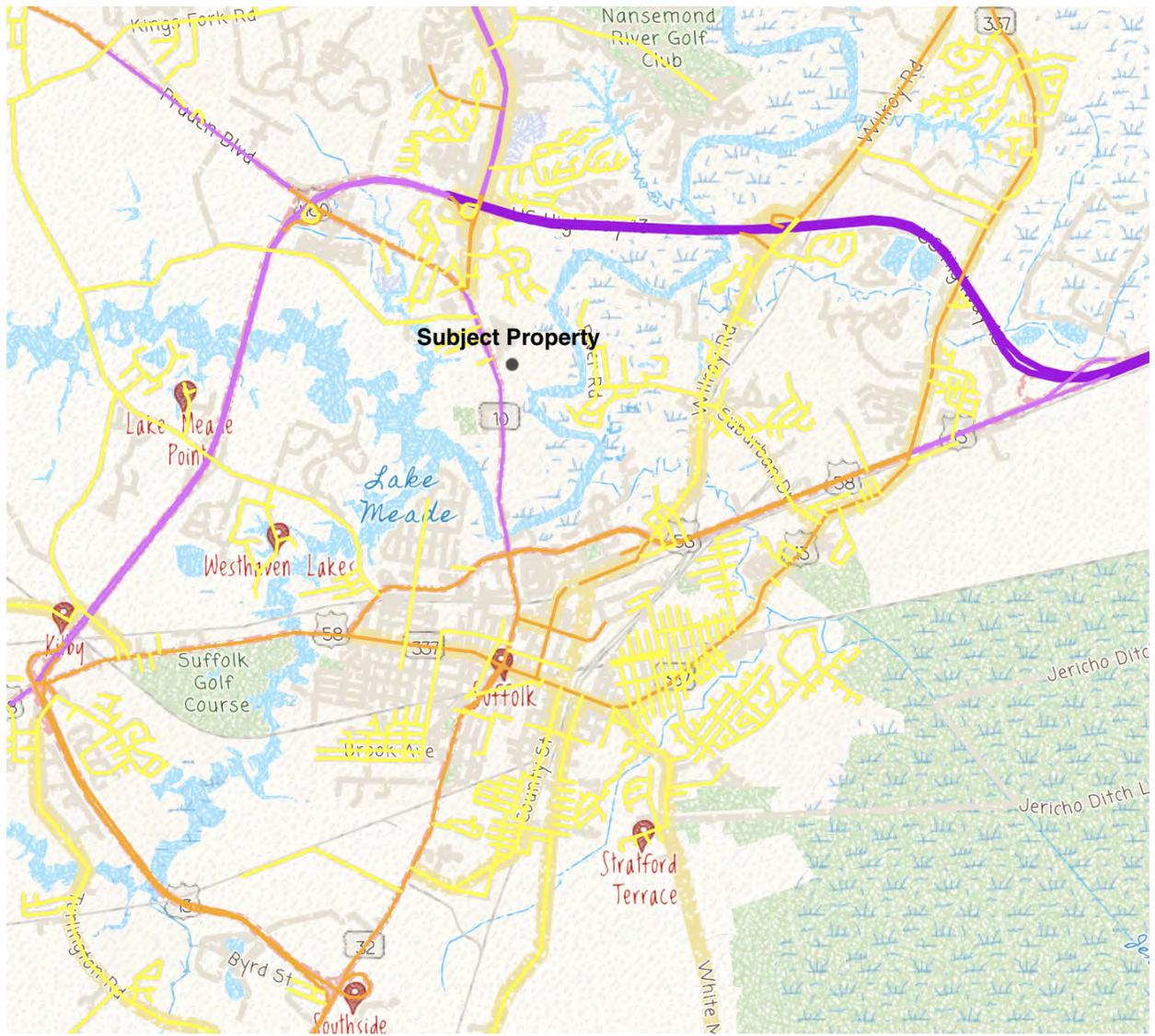
Utilities available to the property are water, sewer, electricity, natural gas, cable and telephone service.

Environmental Hazards

The existence of hazardous materials, which may or may not be present on or in the subject property, was not observed by the appraiser. The value estimate stated herein is subject to modification in the event that a qualified expert detects on or in the property any such potentially hazardous material. The value estimate stated in this appraisal report is predicated on the assumption that there is no such material on or in the property that would cause a loss in value.

Conclusion

The parcel is well situated within South Suffolk, between route 58 and downtown Suffolk. The site will contain 108,900 SF and benefits from its proximity to the interstate, Obici Hospital, retail services, housing, and Suffolk government offices. The site is provided with adequate curb cuts feeding to North Main Street. Considering the subject's size, location, and access, the parcel could appeal to a variety of users.



SUBJECT LOCATION MAP



AERIAL VIEW



TAX MAP

National Flood Hazard Layer FIRMette



76°35'15"W 36°45'28"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

76°34'38"W 36°44'59"N

FLOOD ZONE MAP

IMPROVEMENT SUMMARY

The subject site is improved with a two story plus basement office building constructed in 1949 and contains 32,266 SF. Site improvements will consist of an asphalt paved parking lot, overhead lighting, and attractive landscaping. The surrounding development will be improved in phases which will be a benefit to the subject.

The following is a description of the subject building based on the interior viewing on May 7th, 2025, a second exterior viewing on June 2nd, 2025, and hypothetical conditions proposed by the client.

Foundation

Concrete Basement

Frame

Steel and Brick

Roof

Ballasted Flat Roof- areas of the building suffered from leaks and will require either a new roof or

Exterior Walls

Red Brick

Windows

The building is provided with fixed, insulated glass in anodized frames, as well as single hung windows in some offices.

Access

The building has a double-door entrance facing North Main Street. Numerous access points surround the building's rear.

Floor Plan

The building will have a more contemporary floor plan that accommodates the proposed tenant.

Interior Finishes

The interior will have contemporary finishes including LED lighting, LVT flooring, painted drywall, and similar bathroom finishes.

HVAC

The building is served with multiple HVAC units. The new buildout will likely include new systems. It is assumed that this will be in good working order.

Sprinkler System

The building was not designed with a sprinkler system.

Plumbing

Each floor is served with both men's and women's restrooms. Hypothetically these restrooms will be renovated in some fashion to be brought up to today's standards. Each floor also has janitorial closets allowing for a mop and bucket as well as a floor sink.

Electrical System

The building is provided with ample power for office use. In the interior inspection there were numerous electrical rooms and an abnormal amount of breaker boxes. The renovation should address this with consolidation.

Site Improvements

The site will include a resurfaced and modified parking lot with LED pole lighting. The landscaping will be maintained.

Parking

The subject currently has adequate parking. The proposed re-development will use some of the existing parking as well as share parking for other mixed use buildings.

Effective Age

The building was constructed in 1949 with multiple additions in the decades following its initial build. The building will be renovated with a new floor plan, contemporary interior finishes, new roofing, and a new resurfaced parking lot. The building will have an estimated effective age of approximately 10 years with a remaining economic life (as-is) of 30 years.

Conclusion:

The subject building was constructed in 1949 with good quality materials and designed for the VDOT. The building has curable functional design flaws for general use, but will be renovated for contemporary office use. The building could accommodate a variety of businesses that desire a location within this section of Suffolk.

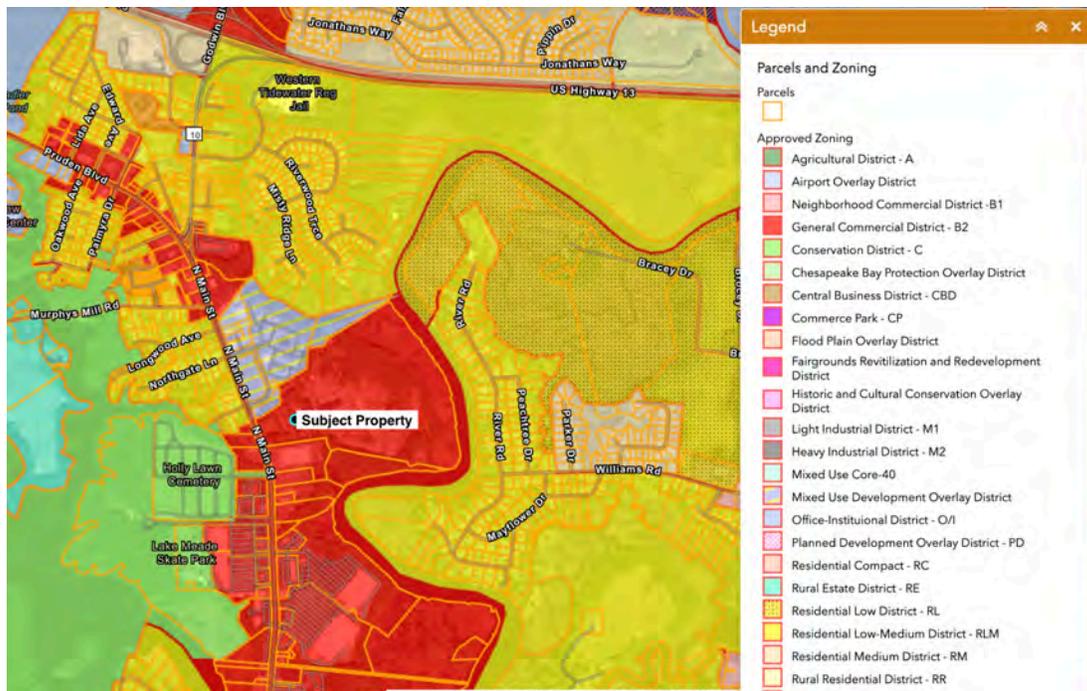
ZONING

The property is zoned **B-2, General Commercial**. The city of Suffolk’s description of this zoning is as follows: “B-2 (GENERAL COMMERCIAL). General commercial activities designed to serve the community such as repair shops, wholesale businesses, warehousing and general commercial sales with some outdoor display of goods but with limited outdoor operations. The redevelopment of existing shopping centers to eliminate large expanses of surface parking and to promote a "Main Street" appearance is encouraged. This district promotes a broad range of commercial operations and services necessary for large regions of the City, providing community balance. Applicable Place Types: Downtown/Town Center, Traditional Neighborhood Center, Suburban Center, Corridor, and Special District.”

Dimensional requirements for the B-2 zoning district including minimum lot size and lot width are shown in the chart below, along with the subject’s actual lot dimensions.

DIMENSIONAL REQUIREMENTS FOR B-2 ZONING DISTRICT			
	B-2	Subject	Complies (Yes or No)
Minimum Lot Size	5,000 SF	108,900 SF	Yes
Minimum Front Yard Setback	10 FT	>10 FT	Yes
Minimum Side Yard Setback	20 FT	>20 FT	Yes
Minimum Rear Yard Setback	30 FT	>30 FT	Yes

The subject site and building improvements conforming with the B-2 zoning regulations.



ZONING MAP

REAL ESTATE ASSESSMENT AND TAX LIABILITY

Property in Suffolk is assessed annually at a purported 100% of market value; with annual reassessments made to keep valuations current. The tax year is a fiscal year from July 1 through June 30. The tax rate for the 2024/25 tax year is \$1.07/\$100 of assessed value.

The subject property is identified by the City of Suffolk Real Estate Assessor as Account Number 2530-66-200. The subject's real estate assessment and tax liability for the current and previous two years is presented below.

Real Estate Assessment and Tax Liability			
Tax Year	2022/2023	2023/2024	2024/2025
Land	\$12,305,300	\$12,305,300	\$12,305,300
Improvements	<u>\$3,772,300</u>	<u>\$3,772,300</u>	<u>\$3,772,300</u>
Total	\$16,077,600	\$16,077,600	\$16,077,600
Tax Rate	<u>\$0.0107</u>	<u>\$0.0107</u>	<u>\$0.0107</u>
Liability	\$172,030.32	\$172,030.32	\$172,030.32
% Change		0.0%	0.0%

HIGHEST AND BEST USE

In the process of determining the highest and best use of a property, the highest and best use of the land *as though vacant* and available for development to its highest and best use must be considered first. Then the highest and best use of the property *as improved* is considered.

Highest and Best Use is defined by the Appraisal Institute, The Dictionary of Real Estate Appraisal, Sixth Edition (Chicago, 2015), pg. 108, as:

“The reasonably probable and legal use of vacant land or an improved property that is physically possible, appropriately supported, financially feasible and that results in the highest value.”

HIGHEST AND BEST USE-AS THOUGH VACANT

Legally Permissible: The property is zoned **B-2, General Commercial**. B-2 (General Commercial) zoning allows a broad mix of commercial uses, including retail, repair shops, warehousing, and wholesale businesses, with limited outdoor operations and displays. It encourages redevelopment of shopping centers into walkable, "Main Street"-style environments and supports commercial activity that serves larger areas of the city. Suitable locations include Downtowns, Neighborhood Centers, Corridors, and Special Districts.

The minimum lot size is 5,000 square feet. The subject site contains 108,900 SF. The subject will be subdivided into a legal conforming use.

Physically Possible: The size, shape, terrain and accessibility of the land and the risk of natural disasters such as floods or earthquakes affect the uses under which the property may be developed. The utility of the property may also depend on its frontage and depth. Irregularly shaped parcels may cost more to develop and, after development, may have less utility than regularly shaped (e.g., rectangular) parcels of the same size. Ease of access enhances the utility of the site.

The subject site will be mostly rectangularly shaped, containing 108,900 SF, and in close proximity to North Main Street. While the size of the subject is adequate for general commercial development, the utility would increase(if vacant) if assembled with the surrounding adjacent land.

Financially Feasible and Maximally Productive: The uses which are physically possible and legally permissible are examined to determine if they are financially feasible. All uses which generate sufficient income to meet or exceed operating expenses and provide an adequate return on investment are considered financially feasible.

Vacant commercial land varies greatly in Suffolk depending on proximity to neighborhoods, business districts, and use. The general range of ‘commercially’ zoned land in Suffolk ranges from \$200,000-\$400,000 per acre. The range of multi-family land has a higher value toward \$800,000 per acre. Considering the proposed development of the surrounding parcel into

multi-family and mixed use, the subject property would be best utilized - as vacant- as assembled with the surrounding parcels for multi-family development.

Conclusion to Highest and Best Use –As Vacant: Therefore, after considering the legally permissible, physically possible, financially feasible and maximally productive uses, the highest and best use of the subject site as though vacant is for assemblage with the adjacent land for further multifamily development. The likely buyer of the subject would be a local or regional developer.

HIGHEST AND BEST USE-AS IMPROVED

The same tests apply to the analysis as improved as were examined in the as if vacant analysis.

Legally Permissible: The subject improvements are conforming within the B-2 zoning regulations.

Physically Possible: The building was constructed in 1949 and designed for VDOT office use. The building contains 32,266 SF, and has a floor plan that reflects that era. The hypothetical condition of this appraisal is that the building is renovated to reflect contemporary office standards. The building will have a functional design, adequate on-site parking, and good access from its connections to North Main Street.

Financially Feasible and Maximally Productive: The research indicated that there is good demand for office space in the immediate and adjacent sub-markets. There were few available units for lease. The subject is owner occupied.

As of Q2 2025, the South Suffolk office submarket has a low vacancy rate of 2.6%, slightly below its five- and ten-year average of 3.8%. The vacancy rate has held relatively steady over the past year with a minor 0.1% decrease, due to no new deliveries and net absorption of -1,300 SF.

Currently, about 30,000 SF is listed as available, and there is no office space under construction, despite a historical average of 2,600 SF under development annually.

The submarket has a total inventory of 1.2 million SF, much smaller than the 56.6 million SF in the overall Hampton Roads area. Average asking rents in South Suffolk are \$21.00/SF (full service), slightly below the market average of \$22.00/SF. Rent growth over the past year was 0.5%, trailing both the market-wide growth of 1.2% and the submarket's own five-year average (3.3%) and ten-year average (2.8%).

In the hypothetical condition of this report, the subject will be subject to a 10 year lease with annual rents starting at \$15.50/SF (NNN) and escalating at 3% annually. This rent is deemed to be market considering the hypothetical conditions of the improvements for the tenant. Whereas the above paragraph states that the Full Service rent is \$21/SF in South Suffolk, a triple net (NNN) lease typically cuts out \$7-8 dollars of expense to the landlord. The new condition of the space more than makes up for the difference in rent (\$15.50-\$14).

Conclusion: There is currently no alternate use that could financially justify a removal of the existing improvements and a re-use of the site. The current proposed use is considered the highest and best use as improved. The likely buyer of the subject property would be a regional or national investor.

APPROACH TO VALUE

Typically, property is valued by application of the three standard approaches to value: Cost Approach, Income Capitalization Approach and Sales Comparison Approach.

1. The principle of the **Cost Approach** embodies the concept of substitution. By principle, no one will pay more for a property than the amount for which he could acquire a comparable site and construct a building with similar utility. The technique of this approach, therefore, is to value the land as if vacant and available for immediate development to its highest and best use and to add the replacement cost new less accrued depreciation of the improvements. The Cost Approach is generally a good indicator of value for newly constructed properties. Its reliability is severely reduced when valuing older buildings. This is primarily due to the difficulty in estimating accrued depreciation.
2. The **Income Approach** to value is applied to properties, which are attractive to investors. These properties are bought and sold on the basis of their income producing potential. This approach is the basic tool for the valuation of income producing real estate because it is related to investor thinking and motivation. The principle of the Income Approach is anticipation: an investor in real estate is trading a sum of money for the right to future income streams. In the Income Approach, the sources of revenue and expenses have been analyzed to arrive at a net operating income for the property. This net operating income has then been capitalized into a value estimate indicative of the market value of the subject.
3. The **Sales Comparison or Market Data Approach** is a systematic process of comparing the properties, which have sold to the property being appraised. This approach involves accumulating information on sales of properties judged to be comparable to the property under analysis. The data is reduced to a common denominator, or in appraisal terminology, units of comparison which, when applied to the subject, give an indication of market value.

The approaches are interrelated as well as tied to underlying and emerging trends identified in the area neighborhood and competitive market analysis considerations of this appraisal report. Judgments are made regarding the reliability and quality of the data, with each approach weighted and analyzed in light of the property being appraised. The final step involves a reconciliation of the value indications into one final value estimate.

The purpose of the appraisal is to estimate the market value, as is, of the leased fee estate in the subject property. The Income and Sales Comparison Approaches have been developed for estimating the market value, as is. The approaches to value are presented on the following pages.

INCOME CAPITALIZATION APPROACH

The Income Approach is based on the theory that the value of a property is the present worth of the net income it will produce during the remainder of its productive life.

The Income Approach is a method of estimating value by capitalization of the net income produced by a given property. The procedure includes: (1) estimation of economic rent predicated on rental data, giving consideration to the rental rates being achieved for similar properties in the subject market area; (2) estimation of vacancy and credit losses; (3) estimation of expenses, including a reserve for replacement; (4) selection of applicable interest and capitalization rates; and (5) translation of the estimated net income into a value indication by the use of capitalization techniques.

Economic or market rent may be defined as what the space would bring in the open market at the time of appraisal. It is best estimated in this report by an analysis of rental data on similar properties. Vacancy and credit loss, as well as expenses, can best be estimated in the same manner. Care is necessary in analyzing this data because most owners tend to overlook the necessity to provide reserves, which are a legitimate expense.

Income producing real estate derives value from its ability to pay expenses and generate income. The income generated is valued by converting or capitalizing the projected net income into value. This procedure is known as the Income Capitalization Approach. There are two different types of capitalization - direct and yield - which can be applied to the net income to arrive at an estimate of value via the Income Approach. For this report that there was enough available data to use direct capitalization which gives the best market derived estimate of a capitalization rate. Yield Capitalization was not used.

Direct capitalization is a method used to convert a single year's estimate of income into a value indication. This is accomplished in one step by either dividing the income estimate by an appropriate income rate or by multiplying the income estimate by an appropriate income factor. The income rates and factors express the relationship of income and value and are derived from market data. It is essential that the market comparables reflect risk, income, expenses and physical and locational characteristics similar to those of the property being appraised.

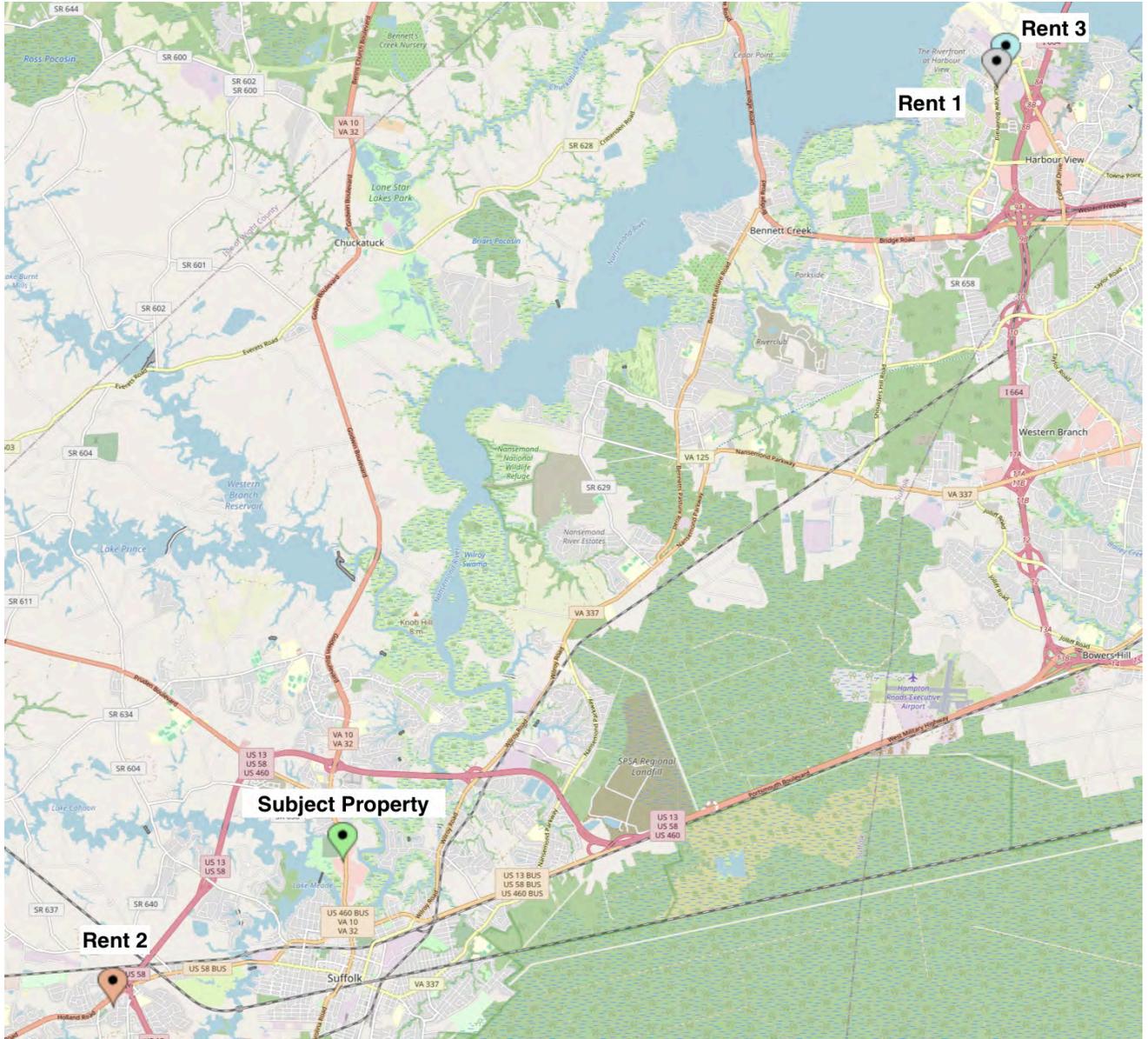
In *yield capitalization*, future benefits are converted to present value by applying an appropriate yield rate. In yield capitalization, an appraiser (1) selects a holding period, (2) identifies all future cash flows or patterns and relationships between present and future cash flows, (3) selects an appropriate yield (discount) rate, and (4) converts the future benefits to value by discounting each annual future benefit or by developing an overall rate that reflects the income pattern, value change, and the yield rate. Yield capitalization procedures consist of the application of capitalization rates that reflect an appropriate yield rate and use of present value factors such as in discounted cash flow analysis. Mortgage-equity formulas and yield rate/value change formulas may be used to derive overall capitalization rates.

Direct capitalization will be used to value the property.

Leasing Structure

The leasing structure for single tenant office space in this section of Suffolk is commonly triple net. A triple net lease will require the tenant to be responsible for paying the real estate tax liability, insurance premium, storm water management fee, utilities and maintenance expense. The landlord would be responsible for paying the management/leasing fee and maintaining a reserve for replacement account. In some instances, the landlord will provide free rent while the tenant completes the interior build-out or pay the upfront expense for the build-out and amortize the expense of the lease term.

For this analysis, and as is typical of the lease information researched for this assignment, a triple net rental rate will be estimated for the 32,266 SF of building. The rent comparables are presented on the following pages.



RENT COMPARABLES MAP

Office Building Rent

Comparable #1

Location/Address: 7025 Harbour View Blvd
Neighborhood Harbour View
City: Suffolk
Date: 6/19/22
Lessor: Bridgeway 7025 LLC
Lessee: Confirmed
Terms: \$14.00 NNN
Building Size 122,936
Leased Area 6,471
Year Built: 2001
Rent (SF): \$14.00
Rent (Monthly): \$7,550
Expenses Paid By...
Taxes: T **Insurance:** T **W/S:** T **Electricity:** T **Janitorial:** T
Maintenance (int): T **Maintenance (ext):** O

Building Remark: This is a single story multi tenant office building with ample parking. Tenants include contractors and service businesses.

Lease Remark: The agent indicated the commencement rent is \$14/SF, NNN. The landlord would be responsible for the roof and other exterior maintenance.



Office Building Rent

Comparable #2

Location/Address: 1514 Holland Road
Neighborhood South Suffolk
City: Suffolk
Date: 1/1/2024
Lessor: 1514 Holland Road LLC
Lessee: Confirmed
Terms: \$16/SF NN
Building Size 11,782
Leased Area 4,480
Year Built: 2000
Rent (SF): \$16.00
Rent (Monthly): \$5,973

Expenses Paid By...

Taxes: **Insurance:** **W/S:** **Electricity:** **Janitorial:**
Maintenance (int): **Maintenance (ext):**

Building Remark: This is a single story office building. The 1-story building is located in Southwest Suffolk. There is ample parking with retail contiguous to the site.

Lease Remark: The agent confirmed that the tenant signed a multi year lease starting at \$16/SF NN.



Office Building Rent

Comparable #3

Location/Address: 7007 Harbour View Blvd
Neighborhood Harbour View
City: Suffolk
Date: 2/22/2024
Lessor: Continental Technology Associates LP
Lessee: Confirmed
Terms: 5 years, \$15/SF NNN
Building Size 71,306
Leased Area 9,448
Year Built: 2006
Rent (SF): \$15.00
Rent (Monthly): \$11,810
Expenses Paid By...
Taxes: T **Insurance:** T **W/S:** T **Electricity:** T **Janitorial:** T
Maintenance (int): T **Maintenance (ext):** O

Building Remark: This is a single story office building in Suffolk. The building is occupied by multiple tenants.

Lease Remark: The tenant signed a 5 year lease. The owner has minimal responsibilities including the roof and other exterior maintenance.



MARKET RENT ANALYSIS

The surrounding Suffolk sub-markets were researched to provide a general rental rate range for the subject property. The comparables have been adjusted, if necessary, to reflect a triple net rental rate.

Rent Comparable #	Subject	1	2	3
Location	1700 N Main St	7025 Harbour View Blvd	Holland Rd	7007 Harbour view Blvd
Neighborhood	South Suffolk	North Suffolk	South Suffolk	North Suffolk
City	Suffolk	Suffolk	Suffolk	Suffolk
Date	NA	6/19/2022	1/1/2024	2/22/2024
Rental Rate	NA	\$14.00	\$16.00	\$15.00
Year Built/Renovated	1949/2025	2001	2000	2006
Building Area (SF)	32,266	122,936	11,782	71,306
Leased Area	32,266	6,471	4,480	9,448
Lease Type	NNN	NNN	NN	NNN
Rent Adjustments				
Real Estate Taxes		\$0.00	\$1.20	\$0.00
Building Insurance		\$0.00	\$0.25	\$0.00
Water/Sewer		\$0.00	\$0.00	\$0.00
Electricity		\$0.00	\$0.00	\$0.00
Janitorial		\$0.00	\$0.00	\$0.00
Maintenance (Ext.)		\$0.00	\$0.25	\$0.00
Maintenance (Int.)		\$0.00	\$0.00	\$0.00
Condition		\$1.00	\$1.00	\$1.00
Total Adjustment		\$1.00	\$0.70	\$1.00
Adjusted Rent	NNN	\$15.00	\$15.30	\$16.00

Rent #1 is the rent for office space in a large single story office building. The asking rent was \$14.00/SF, NNN for 6,476 SF with ample on-site parking. Comparable #2 is the lease information for a smaller office building. The building includes adequate parking and is adjacent to a retail shopping center. Comparable #3 is for 9,446 SF of space in a similar single story office building in an office park near Comparable #1. The space rented for \$15 NNN with tenant buildout.

The subject property will be rented at \$15.50/SF NNN. This rent is within market standards, especially considering the level of tenant buildout expected and the surrounding amenities to the building.



The subject property benefits from its proximity to 64, surrounding amenities, and buildout. Based on the rent comparables used for this analysis, coupled with the design and size of the subject building, a market rent of **\$15.50/SF, NNN**, is estimated for the 32,266 SF subject.

Vacancy and Credit Loss

As of Q2 2025, the South Suffolk office submarket has a low vacancy rate of 2.6%, slightly below its five- and ten-year average of 3.8%. The vacancy rate has held relatively steady over the past year with a minor 0.1% decrease, due to no new deliveries and net absorption of -1,300 SF.

Currently, about 30,000 SF is listed as available, and there is no office space under construction, despite a historical average of 2,600 SF under development annually.

The submarket has a total inventory of 1.2 million SF, much smaller than the 56.6 million SF in the overall Hampton Roads area. Average asking rents in South Suffolk are \$21.00/SF(full service), slightly below the market average of \$22.00/SF. Rent growth over the past year was 0.5%, trailing both the market-wide growth of 1.2% and the submarket’s own five-year average (3.3%) and ten-year average (2.8%).

This information- the clear lack of high quality office space in the subject’s submarket- coupled with the hypothetical lease in place to a government entity would give any investor a high level of confidence in the subject.

Based on the market information researched for this report and considering the subject's location, the subject is estimated to have no vacancy or credit loss. The subject's effective gross income is presented below.

Gross Annual Income:						
Building Area						
32,266	SF	@	\$15.50	/SF	=	\$500,000
<i>Less Vacancy/Credit Loss; est.</i>		@	0%		=	<u>\$0</u>
Effective Gross Income						\$500,000

Operating Expenses

A triple net lease assigns the tenant to be responsible for paying the real estate tax liability, insurance premium, storm water management fee, utilities, trash removal, and interior maintenance. The landlord is responsible for a reserve for replacement fund on major capital items, paying a management/leasing fee (typically), and the roof and structure. The landlord expenses are discussed below.

Reserves

A reserve for replacement fund of **3%** of effective gross income has been estimated for this analysis.

Management & Professional Fees

Management and leasing charges are proper expenses of operation where property managers and services are contracted or provided by the property owner. Typical commercial management and leasing fees for Office Buildings are in the 3% to 6% range. A management/professional fees expense of **3%** is considered reasonable and has been used for this expense analysis.

NET OPERATING INCOME

The projected net operating income for the subject building is estimated to be \$470,000. The income and expense pro-forma are presented below.

**Office Building
1700 N Main Street
Suffolk Va**

Gross Annual Income:						
Office Building						
	32,266	SF	@	\$15.50 /SF	=	\$500,000
<i>Less Vacancy/Credit Loss; est.</i>			@	0.0%	=	<u>\$0</u>
Effective Gross Income						\$500,000
Less Expenses:						
				<u>\$/SF</u>		
Real Estate Taxes		(Tenant)		\$0.00		\$0
Insurance		(Tenant)		\$0.00		\$0
Storm Water Mgmt. Fee		(Tenant)		\$0.00		\$0
Utilities		(Tenant)		\$0.00		\$0
Janitorial		(Tenant)		\$0.00		\$0
Trash Removal		(Tenant)		\$0.00		\$0
Landscaping/Grounds		(Tenant)		\$0.00		\$0
Repairs & Maint.		(Tenant)		\$0.00		\$0
Reserves		(Owner)		3% of EGI		\$15,000
Management/Leasing		(Owner)	@	<u>3%</u> of EGI		<u>\$15,000</u>
Total Expenses				\$0.93		<u>\$30,000</u>
Net Operating Income						\$470,000
<i>(Before Deprec., Inc Taxes or Debt Service)</i>						

CAPITALIZATION

Capitalization is the process of converting income into value. There are two commonly accepted types of capitalization: Direct Capitalization is defined as *a method used to convert an estimate of a single year's income expectancy into an indication of value in one direct step -either by dividing the income estimate by an appropriate income rate or by multiplying the income estimate by an appropriate factor.* (The Dictionary of Real Estate Appraisal, Sixth Edition, Chicago: Appraisal Institute, 2015.)

Direct capitalization will be used to value the subject property.

Market Derived Capitalization Rates

Buildings like the subject are typically owner occupied. Sales of similar government leased commercial properties purchased by regional or national investors have been researched to provide an indication of market derived capitalization rates. The indicated rates are summarized in the following table.

Address	Column1	State	Sale Date	Sale Price	Cap Rate	Rent	NOI	Term	Lease	Rent Increases	Tenant
219 Arch Ave	Waynesboro	VA	Feb-25	\$ 1,000,000	6.27%	\$ 65,000	\$ 62,700	5	NN	10% in Options	VA ABC
201 Chowan Dr	Portsmouth	VA	Aug-24	\$ 725,000	7.07%	\$ 56,870	\$ 51,290	3.5	NN	5% in Options	USPS
3281 Peoples Dr	Harrisonburg	VA	Jun-24	\$ 2,000,000	7.20%	\$ 180,367	\$ 144,054	10	NN	2% Annual	DMV
1121 Mall Dr	Richmond	VA	May-24	\$ 2,025,000	6.51%	\$ 147,291	\$ 131,868	5	NN	10% in Options	USPS
155 Ponce DeLeon Blvd	De Leon Springs	FL	Jun-24	\$ 1,540,000	6.99%	\$ 114,150	\$ 107,645	4	NN	10% in Options	USPS

The sales occurred between February 2024 and August 2024 and suggest a capitalization rate range from 6.27% to 7.2%. The sales were encumbered by long-term leases, which provided an attractive return to the buyers. The subject is a general office building which will be encumbered by a 10 year lease.

The Boulder Group provides ranges of capitalization rates for institutional sales throughout the country and indicates overall rates ranging from **6.5% to 7.8%** for retail and office properties during the 1st quarter of 2025. Trying to correlate these national surveys to the subject property may be misleading. That being said, the trend can be telling.

NET LEASE CAP RATE TRENDS



Conclusion

An Overall Capitalization rate of **7.50%** is estimated for the subject property via the market derived rates with considering the Boulder Group capitalization rate study. Applying the capitalization rate (Ro) of **7.50%** derived above, to the previously estimated net operating income for the property, will calculate a value estimate.

Capitalized Value of Property	\$470,000	Capitalized	@	7.50%	=	\$6,266,667
TOTAL INDICATED VALUE - INCOME					(rounded)	\$6,270,000

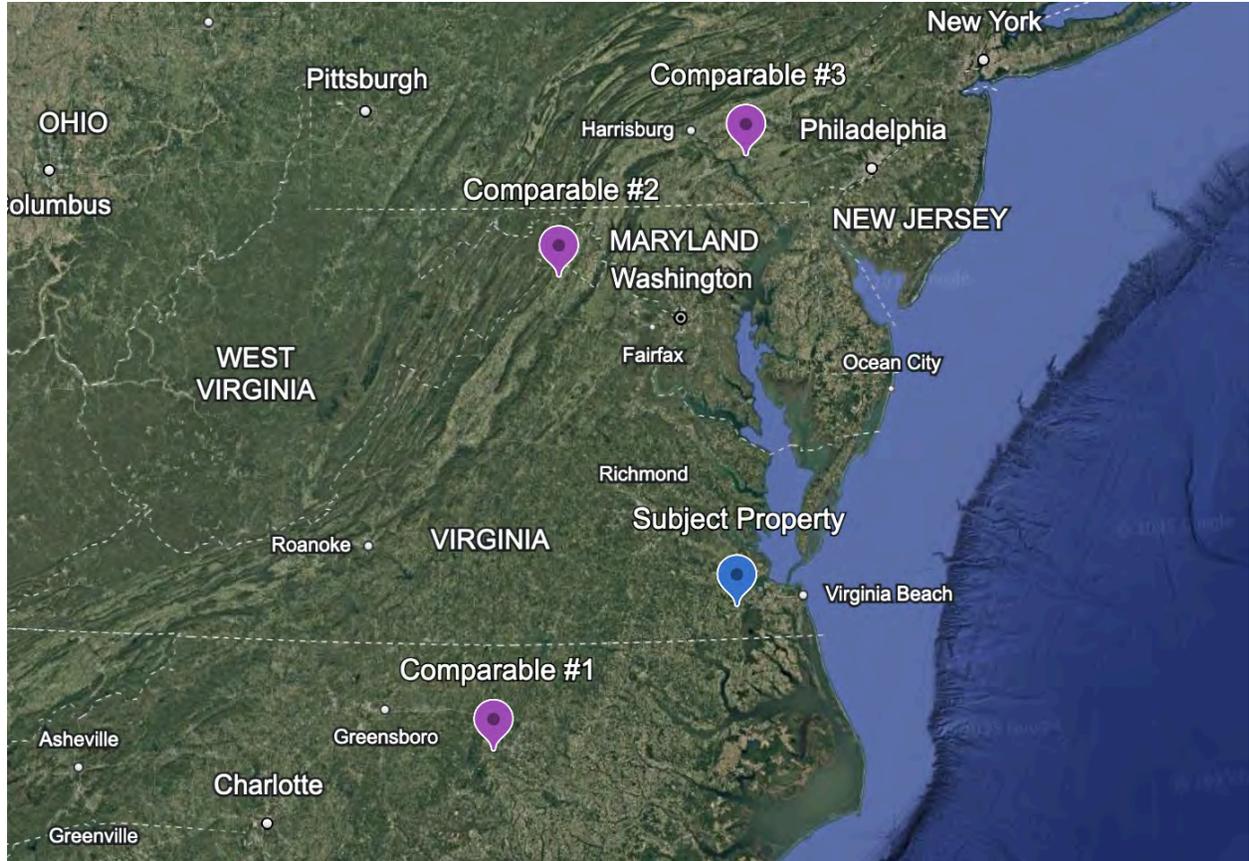
Therefore, based on the Direct Capitalization analysis, the market value, as is, of the leased fee interest in the subject property, via the Income Approach, as of August 1, 2026, was (rounded) **\$6,270,000**.

SALES COMPARISON APPROACH

The Sales Comparison Approach, also known as the Market Data Approach, is an application of the principle of substitution. This method of estimating value is accomplished by comparing the prices paid for similar properties, with adjustments made for dissimilarities which a typical purchaser would recognize. Generally speaking, many buyers and sellers arrive at their opinion of value by this method. Before purchasing a property, they usually acquaint themselves with various properties that are available or have recently been sold and compare the different features of each along with the sales prices.

Caution must be exercised in evaluating the market from a comparable sales approach. Even if a physically identical property sells, the comparison would at best be a rough indication of value unless every factor influencing the sale can be verified. These factors include buyer/seller motivation, complete income and expense information, physical differences etc. It is frequently difficult to obtain accurate insights into all these factors.

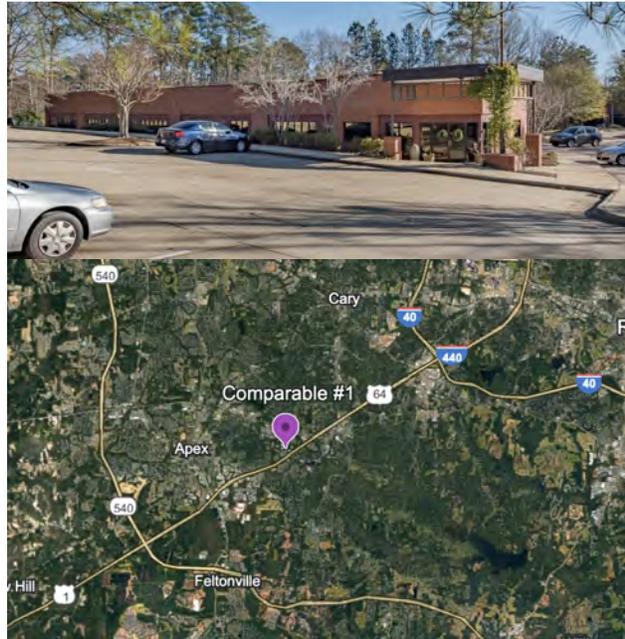
The three office building sales presented on the following pages have been selected as being the most comparable to the subject property.



IMPROVED SALES MAP

Comparable Sale # 1

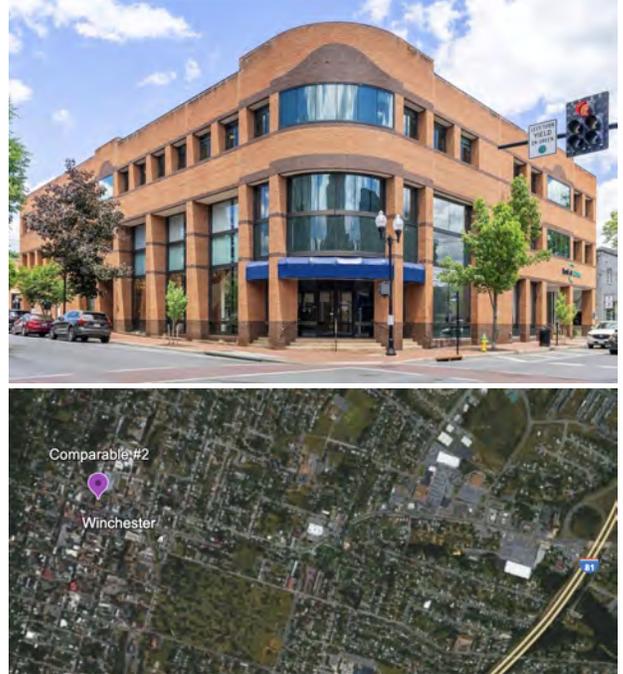
Property: Mackenan
Location/Address: 201 Mackenan Dr
Neighborhood: MacGregor Park
City/County: Cary, NC
Zoning: ORD
Tax Reference: 0193-191
Grantor: Hamilton Mackenan LLC
Grantee: ITAC 551 LLC
Deed Date: 6/11/2024
Document Number: 019646-00821
Rights Conveyed: Leased fee
Condition of Sale: Arm's Length
Sale Price: \$3,250,000
Cap Rate: 7.59%
Land Size (AC): 1.93 Acres
Building Size: 13,283
Year Built: 1992
Price per square foot: \$244.67



This is a single story brick building. It is built into a hillside. The building is inside Interstate 540 adjacent to Hwy 64 on the border between Cary and Apex. The building is occupied by a single tenant with a long term triple net lease.

Comparable Sale # 2

Property: Bank of Clarke
Location/Address: 202 N Loudoun Street
Neighborhood: Winchester
City/County: Winchester City, Va
Zoning: CBD
Tax Reference: 173-01-N1
Grantor: Bank of Clarke
Grantee: Dave Holland Rentals LLC
Deed Date: 12/18/2024
Document Number: 24000507
Rights Conveyed: Leased fee
Condition of Sale: Arm's Length
Sale Price: \$8,000,000
Cap Rate: 6.50%
Land Size (AC): .69
Building Size: 43,780
Year Built: 1986
Price per square foot: \$182.73



This is a multi story brick building on the corner of East Piccadilly Street and N Loudoun Street. The bank building square footage includes finished basement space. The Bank of Clarke occupies the entire building and the lease that encumbers the building is triple net. That, coupled with the 10 year term made this building attractive to investors.

Comparable Sale # 3

Location/Address: 2124 Ambassador Circle
Neighborhood: Lancaster
City/County: Lancaster County, Pa
Zoning: C-O
Tax Reference: 290-37763-0-0000
Grantor: RRA Manheim, LLC
Grantee: Ambassador Circle Partners LLC
Deed Date: 2/14/2025
Document Number: 20250005593
Rights Conveyed: Leased fee
Condition of Sale: Arm's Length
Sale Price: \$3,250,000
Cap Rate: 6.23%
Land Size (AC): 3.2
Building Size: 15,277
Year Built: 1994
Price per square foot: \$212.74



This is a single story split face block building. It is surrounded by high credit worthy retail buildings as well as residential. The property was encumbered by a private Elementary and Secondary school. It was founded in 2005. The property had 5 years remaining on the lease with a 5 year option.

Improved Sales Analysis

The following discussion references the chart below. The three buildings are all on the east coast, all have triple net leases, and were all investment grade. Prior to adjustments, the three comparables ranged in unit value from \$182.73/SF to \$244.67/SF.

Improved Sale #	Subject	1	2	3
Location	1700 N Main St	Mackenan Dr	Loudoun St	Ambassador Cir
Neighborhood	Downtown Suffolk	MacGregor Park	Winchester City	Lancaster
City, State	Suffolk	Cary, NC	Winchester, Va	Lancaster, Pa
Date	NA	6/11/2024	12/18/2024	2/14/2025
Consideration	NA	\$3,250,000	\$8,000,000	\$3,250,000
Zoning	B-2	ORD	CBD	CO
Year Built/Renovated	1949	1992	1986	1994
Land Size (AC)	2.50	1.93	0.69	3.20
Building Area (SF)	32,266	13,283	43,780	15,277
Price/SF	NA	\$244.67	\$182.73	\$212.74
Cap Rate		7.59%	6.50%	6.23%
Property Rights Appraised		Leased Fee	Leased Fee	Leased Fee
Adjustment		0%	0%	0%
Adjusted Price/SF		\$244.67	\$182.73	\$212.74
Financing		Market	Market	Market
Adjustment		0%	0%	0%
Adjusted Price/SF		\$244.67	\$182.73	\$212.74
Condition of Sale		Arm's Length	Arm's Length	Arm's Length
Adjustment		0%	0%	0%
Adjusted Price/SF		\$244.67	\$182.73	\$212.74
Market Conditions				
Adjustment	0% /year	0.00%	0.00%	0.00%
Adjusted Price/SF		\$244.67	\$182.73	\$212.74
Other Adjustments				
Location		-5%	0%	0%
Building Size - SF		0%	0%	0%
Age/Condition		0%	0%	0%
Net Adjustment		-5%	0%	0%
Adjusted Unit Value Range - \$/SF		\$232.44	\$182.73	\$212.74
Adjusted Sale Price		\$3,087,500	\$8,000,000	\$3,250,000

EXPLANATION OF ADJUSTMENTS

Property Rights Conveyed

The transaction price of a property is generally based on the type of real property interest being transferred. Buyer motivations can vary depending on whether a leased fee interest or a leased fee interest is being acquired, which can in turn affect the property's price. In the case of the three comparable sales, all interests conveyed were leased fee. Therefore, no adjustment was necessary for differences in property rights.

Financing Terms

The transaction price of one property may differ from that of an identical property due to different financing arrangements. The research did not reveal unusual financing terms for the comparable sales, therefore, no other adjustment was necessary.

Conditions of Sale

Adjustments for conditions of sale must be made to accurately reflect the motivations of the seller and the buyer if it is determined that the sale was not truly an arm's length transaction. An arm's length transaction is defined as a transaction between unrelated parties under no duress. (The Dictionary of Real Estate Appraisal, Fifth Edition, Chicago: Appraisal Institute 2010). The Comparables were arm's length transfers and required no adjustment.

Market Conditions

Market conditions change over time due to inflation, deflation, changes in supply and demand, etc. This adjustment, often referred to as an adjustment for "time", takes these changes into consideration. In the past 2 years there is no evidence that office building sales have increased. Therefore no market condition adjustments have been applied.

Physical & Other Attributes

Location

Sale #1 was downward adjusted due to its superior location in Cary, North Carolina. Sales #2 and #3 did not warrant a location adjustment, as they have similar market dynamics.

Building Size

As buildings get larger, construction economies can often be realized because typically there are only small or no increases in building costs or site costs. The size differences between the comparable buildings and subject property were not large enough to warrant a size adjustment.

Age/Condition

As newer and higher-quality buildings will have potentially less maintenance expense, prospective purchasers will most likely be willing to pay a premium for them (or less for older or lower-quality buildings). All of the comparable buildings are within the market norms for contemporary building conditions and therefore do not need to be adjusted.

Reconciliation



After adjustments, the three comparables range in unit price from \$182.73/SF to \$232.44/SF and provide a general range of unit prices for single tenant triple net buildings on the east coast. The greatest weight was given to comparable sale #2 based on the similarities in square footage, basement square footage, lease term, and submarket dynamics. Based on the buildings analyzed for the Sales Comparison Approach, a unit value of \$195/SF has been estimated for the subject building.

Therefore, based on the Sales Comparison Approach the market value, as is, of the leased fee interest in the subject, as of August 1, 2026, was:

<u>Size (SF)</u>	x	<u>Unit Value (\$/SF)</u>	=	<u>MV</u>
32,266	x	\$195	=	\$6,291,870
			Rounded	\$6,290,000

RECONCILIATION AND FINAL VALUE ESTIMATE

Each of the approaches to value described herein has been allowed to draw its own logical conclusion without conscious bias or manipulation on the part of the appraiser.

With regard to reconciling the value indications of each of the approaches, each indication has been analyzed and weighed in light of its dependability as an indication of the probable actions of buyers and sellers on the open market.

These indications are summarized as follows:

Cost Approach	Not Developed
Income Approach	\$6,270,000
Sales Comparison Approach	\$6,290,000

The appraiser did not develop the Cost Approach to value for this property due to the age and construction quality of the building. The appraiser believes the primary approaches to value are the Sales Comparison and Income Approaches.

The Income Approach is an accurate method of estimating value of income producing properties. The Income Approach was developed to estimate the market value, to be completed, of the 32,266 SF building. The building is being appraised as renovated, with a 10 year lease, renting for \$500,000 annually with 3% annual increases. The tenant will be the City of Suffolk, giving high credibility. A market rent of **\$15.50/SF, triple net** was estimated based on asking and actual rental rate for nearby space. A stabilized occupancy of 100% was estimated for the building based on tenant credit and market vacancy rate. Operating expenses reflected the modified gross lease arrangement and totaled \$.93/SF. A capitalization rate of 7.50% was estimated for the building and was based on recent transfers of buildings. The Income Approach is well-supported, but has been supported by the Sales Comparison Approach.

When properly developed, the Sales Comparison Approach is an excellent indicator of value since it represents the actions of buyers and sellers in the market place. This approach is largely based upon the principle of substitution as a prudent investor will not pay more for a property than it will cost to buy a comparable substitute property. In this analysis price comparisons were based on price per square foot of building area. The sales occurred between June 11, 2024 and February 2025 and provided a good range of unit prices for similar utility buildings. For these reasons, the Sales Comparison Approach is considered a good indication of value for the subject property.

There is a small difference in value between the Sale Comparison Approach and the Income Approach. The biggest reason for this is that buyer motivations for the Sales Comparison Approach and Income Approach were similar. The subject building- as proposed in the hypothetical condition- matches what investors in the marketplace are looking for, and therefore a similar price would be expected.

After considering the factors pertinent to the valuation of the subject, it is my opinion that the best indication of the market value, as is, of the leased fee interest in the subject property, is the **Income Capitalization Approach**, with support from the **Sales Comparison Approach**.

Based on my analysis, and subject to the limiting conditions and definitions in this report, it is my opinion that the market value, as is, of the leased fee interest in the subject property, as of August 1, 2026, was:

SIX MILLION TWO HUNDRED SEVENTY THOUSAND DOLLARS
(\$6,270,000)

ADDENDUM

COMMONWEALTH of VIRGINIA
Department of Professional and Occupational Regulation
9960 Mayland Drive, Suite 400, Richmond, VA 23233
Telephone: (804) 367-8500

EXPIRES ON
09-30-2026

NUMBER
4001018664

REAL ESTATE APPRAISER BOARD
CERTIFIED GENERAL REAL ESTATE APPRAISER

 **MICHAEL GARRETT FINE**
1113 DITCHLEY RD
VIRGINIA BEACH, VA 23451



Barbara
Barbara P. Wolford, Director

Status can be verified at <http://www.dpor.virginia.gov>

(SEE REVERSE SIDE FOR PRIVILEGES AND INSTRUCTIONS)

DPOR-LIC (02/2017)



















VIRGINIA LAND RECORD COVER SHEET
Commonwealth of Virginia VA CODE § 57-1-53, 53.1-99
FORM A - COVER SHEET CONTENT

AUG-1 '21 @10:28

Instrument Date: 7/14/2021

Instrument Type: 000

Number of Parcels: 1 Number of Pages: 1

City County: SUFFOLK COUNTY
(COURT/JURIS)

Tax Exempt: VIRGINIA FEDERAL CODE SECTION

Grantor: FR 1-811(A) (1) SR 1-811(C) (4)

Grantee: FR 1-811(B) (1) SR 1-811(C) (4)

Business/Name

X Grantor: COMMONWEALTH OF VIRGINIA, DEPARTMENT OF TRANSPORTATION

Grantee:

X Grantee: ECONOMIC DEVELOPMENT AUTHORITY OF THE CITY OF SUFFOLK

Grantee:

Grantee Address

Name: ECONOMIC DEVELOPMENT AUTHORITY OF THE CITY OF SUFFOLK

Address: 440 HAZARD STREET

City: SUFFOLK State: VA Zip Code: 23434

Consideration: \$400,000.00 Existing Debt: \$0.00 Actual Value/Assessed: 3901,000.00

VECM INSTRUMENT UNDER PARAGRAPH

Original Protocol: \$0.00

Fee Method Value Service: \$5.00

Original Book No.:

Original Page No.:

Original Instrument No.:

Prior Recording At: City County

Percentage In This Jurisdiction: 100%

Book Number: Page Number: Instrument Number:

Parcel Identification Number/Tax Map Number: 453064220

Short Property Description: PT 440, SRFCO, ONCE HOSPITAL

Current Property Address: 1750 N WALK STREET

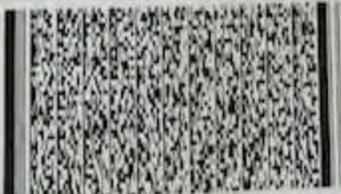
City: SUFFOLK State: VA Zip Code: 23434

Instrument Prepared By: OFFICE OF THE ATTORNEY GENERAL Recording Paid By: EXEMPT

Recording Released To: FACT FINDER TITLE & SETTLEMENT

Address: 181 STONES HILL ROAD

City: ORANGE State: VA Zip Code: 22962



This document prepared by: OFFICE OF THE ATTORNEY GENERAL
 Consideration: \$800,000.00
 Actual Value: \$450,000.00
 Tax Map Parcel: Part of 25*45A
 Title Company: N/A
 Tax ID No: Portion of 253066200

THIS DEED IS EXEMPT FROM RECORDING TAXES PURSUANT TO §§ 58.1-811(A)(3) and 58.1-811(C)(4) OF THE CODE OF VIRGINIA (1950), AS AMENDED, AND (II) FROM THE PAYMENT OF CLERK'S FEES PURSUANT TO §§ 17.1-266 AND 17.1-279.E OF SAID CODE.

DEED

This DEED, dated the 14th day of July, 2023, by and between the **COMMONWEALTH OF VIRGINIA, DEPARTMENT OF TRANSPORTATION** (the "Grantor,"), and the **ECONOMIC DEVELOPMENT AUTHORITY OF THE CITY OF SUFFOLK**, a political subdivision of the Commonwealth of Virginia (the "Grantee"), recites and provides as follows:

WITNESSETH

WHEREAS, the Commonwealth of Virginia (the "Commonwealth") owns certain real property, with improvements thereon, in the City of Suffolk, Virginia, being more particularly described in Schedule A, attached hereto and incorporated herein (the "Property"), which Property has been in the possession of the Commonwealth of Virginia, Department of Transportation; and

WHEREAS, 2017 Session Virginia Acts of Assembly, Chapter 836 (House Bill 1506) provides in Item C-41.10 that Grantor is "authorized to market, sell and convey all or a portion of the Hampton Roads District Headquarters in Suffolk, Virginia, containing 88,463 acres, more or less" of which the Property forms a part;

NOW, THEREFORE, FURTHER WITNESSETH:

That for and in consideration of the sum of Ten Dollars (\$10.00), paid by Grantee to Grantor, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and with authority of Virginia Code § 2.2-1150 and other applicable laws, the Grantor does hereby grant and convey to the Grantee, without warranty of title, the Property more particularly described as follows:

All that certain lot, piece or parcel of land with all improvements thereon and appurtenances thereunto belonging, lying and being in the City of Suffolk, Virginia, containing 1.004 acres, more or less, being identified as a portion of Tax Map Parcel 25*45A, Account No. 253066200, and being more particularly shown on the plat of survey entitled "BOUNDARY LINE AGREEMENT

TRANSPORTATION (D.B. 156, PG. 501) (D.B. 296, PG. 661) AND ECONOMIC DEVELOPMENT AUTHORITY OF THE CITY OF SUFFOLK, VIRGINIA (INSTRUMENT #150067435, PG 1-8)" made by MSA, P.C., dated March 21, 2022, a copy of which is attached hereto and to be recorded herewith in the Clerk's Office of the Circuit Court of the City of Suffolk in Plat Book _____, at page _____. *Recorded Simultaneously immediately prior to this deed.*

The Property is conveyed in its "AS IS WHERE IS, WITH ALL FAULTS" condition, without warranty or representation as to its acreage, boundary lines, condition, value, or permitted use, and without any warranty or representation with regard to the presence of any toxic or hazardous substances or materials of any nature (including but not limited to petroleum, lead, radon, asbestos or asbestos-containing materials).

This conveyance is made expressly subject to the exceptions set forth on the attached "EXHIBIT A"

This transaction has been approved by the Governor of Virginia, acting through the Secretary of Administration, pursuant to 2017 Session Virginia Acts of Assembly, Chapter 836 (House Bill 1500) and other applicable law, as evidenced by the following or attached approval, which is incorporated herein by reference.

(Signatures begin on next page.)

WITNESS the following signatures and seals

GRANTOR:

COMMONWEALTH OF VIRGINIA,
DEPARTMENT OF TRANSPORTATION

By: *William C. Ferguson, P.E.*
William C. Ferguson, P.E., Director
Division of Capital Outlay and Facility Management

COMMONWEALTH OF VIRGINIA
CITY OF RICHMOND, to-wit:

The foregoing Deed was acknowledged before me this 14 day of July, 2023 by
William C. Ferguson, acting in his capacity as Director of Capital Outlay and Facility Management,
Commonwealth of Virginia, Department of Transportation, on behalf of the Department.

My commission expires: 11/30/2026

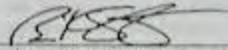
My commission number: 7794538

Nguyễn Diễm Kiều
Notary Public



GRANTEE'S ADDRESS:
City of Suffolk
c/o Kevin Hughes
442 West Washington St.
Suite 2017
Suffolk, VA 23434

OFFICE OF THE ATTORNEY GENERAL
Approved as to Form:

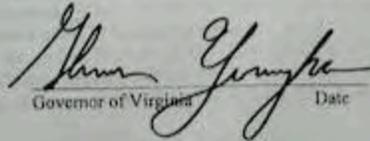
By: 
Senior Assistant Attorney General

RECOMMEND APPROVAL:
DEPARTMENT OF GENERAL SERVICES

By: 
Director

APPROVAL BY THE GOVERNOR:

Pursuant to 2017 Session Virginia Acts of Assembly, Chapter 836 (House Bill 1500), I hereby approve the conveyance of the Property described in the attached or foregoing Deed, and the execution of this instrument.


Governor of Virginia

7-14-23

Date

SCHEDULE A

All that certain lot, piece or parcel of land with all improvements thereon and appurtenances therunto belonging, lying and being in the City of Suffolk, Virginia, containing 1.003 acres, more or less, being identified as a portion of Tax Map Parcel 25*45A, Account No. 253066200, and being more particularly shown on the plat of survey entitled "BOUNDARY LINE AGREEMENT BETWEEN PROPERTY OF COMMONWEALTH OF VIRGINIA, DEPARTMENT OF TRANSPORTATION (D.B. 156, PG. 501) (D.B. 296, PG. 663) AND ECONOMIC DEVELOPMENT AUTHORITY OF THE CITY OF SUFFOLK, VIRGINIA (INSTRUMENT #150067435, PG 1-8)" made by MSA, P.C., dated March 21, 2022.

Being further described by metes and bounds on the MSA Plat as follows: beginning at a found pin along the easterly boundary of North Main Street (State Routes 460, 10 and 32) where the southwest corner of the parcel of land now or formerly belonging to the Economic Development Authority of the City of Suffolk meets the southwest corner of the parcel of land now or formerly belonging to the Commonwealth of Virginia, Department of Transportation, said pin being located at coordinates N 3439547.33, E 12044208.99; thence from said point of beginning N 32° 49' 46" E a distance of 248.95 feet to a found pin; thence continuing N 32° 49' 46" E a distance of 255.16 feet to a point; thence S 23° 35' 30" E a distance of 78.88 feet to a point; thence along a curve to the left having a radius of 92.00 feet, an arc length of 77.80 feet, and a bearing of S 3° 43' 11" W along a chord length of 75.50 feet; thence S 20° 30' 24" E a distance of 44.79 feet to a point; thence along a curve to the right having a radius of 39.00 feet, an arc length of 51.23 feet, and a bearing of S 17° 07' 28" W along a chord length of 47.62 feet; thence S 54° 45' 20" W a distance of 268.96 feet to a point; thence S 67° 53' 35" a distance of 88.48 feet to the point and place of beginning.

EXHIBIT A

This conveyance is made expressly subject to the following exceptions: (i) any and all rights, privileges, covenants, easements, conditions, restrictions and agreements as are of record, insofar as they may be lawfully applicable to the Property; (ii) any unrecorded utility easements, including any relocated easements for utilities and any relocated utility lines and related facilities, located upon, under, above or across the Property; and (iii) any and all prior grants, conveyances and/or reservations of the coal, oil, gas, including coal methane gas, stone, sand, minerals, and/or other subsurface rights or interest, as are of record, insofar as they may be lawfully applicable to the Property; and, to the extent of any such prior grants, conveyances and/or reservations of coal, oil, gas, including coal methane gas, stone, sand, minerals and/or other subsurface rights and interests therein, the same shall not be included with the Property.

VIRGINIA STATE BUDGET

2017 Session
Budget Bill - HB1500 (Chapter 836)
Bill Order & Office of Transportation - Item C-41.10
Department of Transportation

Item C-41.10

Notwithstanding any provisions of Chapter 11 of Title 22 of the Code of Virginia to the contrary, the Virginia Department of Transportation (VDOT) is hereby authorized to market, sell and convey all or a portion of the Hampton Roads District Headquarters in Suffolk, Virginia, containing 88.463 acres, more or less, as shown on a plat of survey entitled, "Boundary Survey Of Tax Parcels 25-45A & 26B-F-G-PT-1 Property Of Commonwealth Of Virginia," by Andrew T. Brady, L. S., dated September 22, 2014. In addition, VDOT is authorized to lease from the successful purchaser all or part of the Hampton Roads District Headquarters property, following its conveyance, in order to continue operations until all necessary facilities are available, in the judgment of VDOT, to begin full-time operations at the chosen replacement site. Any proceeds from the sale not needed for the acquisition, construction and other expenses related to the relocation shall be deposited in the Transportation Trust Fund.

INSTRUMENT # 230007994
RECORDED IN CLERK'S OFFICE OF SUFFOLK ON
Aug 01, 2023 AT 10:32:02 am
W. RANDOLPH CARTER, JR. by NDB



Ted Figura Consulting, Inc.
118 Logan Avenue – Asheville, NC 28806
Phone: 757-879-3124
Email: tfigura@verizon.net
Fax: 828-575-2159
www.tedfiguraconsulting.com

August 20, 2025

Melissa Venable
Land Planning Solutions
5857 Harbour View Drive, Suite 202
Suffolk VA 23435-2657

Dear Ms. Venable:

This letter is written to address the fiscal impact and general benefit of a proposed townhouse and condominium community (“Riversbend” or “the proposed development”) to be developed by NVR, the parent company or Ryan Homes. The proposed development will be located on an 88.8 acre parcel (“the Site”) located at 1700 North Main Street in the City of Suffolk (“the City”). The Site is composed of three parcels totaling 101.53 acres according to City records. The Site is currently zoned B-2 and was formerly used by the Virginia Department of Transportation (VDOT). The applicant is requesting a rezoning of a portion of the Site to Residential Urban (RU-18) for the purpose of constructing the proposed development as described herein.

The proposed development, as currently planned, would consist of 497 townhouse and condominium units in four products as shown on the Conceptual Master Plan submitted by the applicant. All units will be for sale, with prices ranging from the low \$300,000s to the high \$400,000s. The product offering includes 168 age-restricted units that will generate no students attending the Suffolk public schools. The proposed development would include a pocket park, periphery open space, a small marina and boardwalk, a 2-story clubhouse that will also host event space and marina offices, and a trail circumnavigating a stormwater management pond. Although commercial buildings are planned on the parcels composing the Site, these would be constructed by-right under the current B-2 zoning and are, therefore, not part of this fiscal impact assessment.

Site work for the proposed development can be expected to begin around May, 2027, assuming a timely approval of the rezoning request, with construction beginning a year later. Sales should proceed at twelve to thirteen units per month. Thus, Riversbend would be completely developed by the spring of 2032 (FY 2033).

Over the past decade, I have conducted a number of fiscal impact analyses for developments proposed in the City of Suffolk, as well as fiscal impact analyses in other Hampton Roads communities including several multi-use developments. Uniformly, I have found that market rate residential developments have a positive fiscal impact on the localities in which they are located. This means that the locality can expect to receive tax and other revenues from a new residential community that will more than pay for the cost of providing local government services to that community. I have also found that fiscal impact metrics are even more positive when the residential product is for sale rather than for rent.

Since Riversbend will be market rate, it will place no demands on the City's social services and public health agencies. A recent analysis of the City's FY 2024 operating budget estimated that a new residential development consisting of households of average size for the City of Suffolk would increase the City's operating costs by about \$1,500 per household. Since household size at Riversbend can be expected to be smaller than the average Suffolk household, this per unit cost increase would also be smaller.

The proposed development will generate students attending the Suffolk public schools. Using the City's current student generation metrics, it is estimated that 60 students from the proposed development would attend Hillpoint Elementary School, 33 students would attend King's Fork Middle School, and 43 students would attend King's Fork High School, for a total addition of 136 new students. A recent analysis of the Suffolk School Board's FY 2024 operating budget concluded that the County's share of increased school operating expenditures from new residential development would be about \$3,007 per student. Per household revenues can be expected to more than cover the per household costs to the City for both schools and general government operation.

Using Fall 2024 school enrollment data from the Virginia Department of Education (the latest available) and school capacity data from the Suffolk Public Schools, and calculating remaining school capacity using the methodology prescribed under Virginia law governing the offer of cash proffers, only King's Fork High School—which currently has no excess facility capacity—meets the first state's criteria for a "reasonable" offer of cash proffers associated with the generation of students from Riversbend. Both Hillpoint Elementary School and King's Fork Middle School would have remaining facility capacities after students from Riversbend are added to their enrollments. This remaining capacity is calculated to be 29 students at Hillpoint Elementary School and 131 students at King's Fork Middle School. In accordance with state law, these calculations do not include students to be generated by committed development.

The second test that must be met in order for a cash proffer to be considered “reasonable” under Virginia law is that the proffer must only be used to remedy the facility deficit caused by the proposed development. The City’s FY 2025-2034 *Capital Improvements Program (CIP)* shows no planned expansion of King’s Fork High School. Adding students who would attend King’s Fork High School resulting from committed development, King’s Fork High School would be 144 students beyond its instructional capacity, or almost 9% over its rated capacity. Adding students from the proposed development would raise this to 187 students over instructional capacity, which is about 11.5% over the school’s rated capacity. It is not anticipated that this marginal increase in facility deficit would cause the City to add an expansion of King’s Fork High School to its *CIP*, particularly in light of the current *CIP*.

Lakeland High School, however, currently has the ability to absorb 450 students before reaching its instructional capacity. Lakeland and King’s Fork high schools share a school attendance zone boundary and, therefore, it would be feasible to make a school attendance zone adjustment in order to shift students currently attending King’s Fork High School to Lakeland High School and, thus, remedying both the facility deficit resulting from the development of Riversbend. Since there is a facility deficit remedy for the impact resulting from the development of Riversbend that does not involve a capital expenditure, Riversbend fails the second test under Virginia state law for reasonableness of an offer and acceptance of cash proffers. Thus, under Virginia law, there is no warrant for the offer of a cash proffer to the City by the applicant and there should be no expectation by the City that the applicant will voluntarily do so.

Although not a basis for the offer of cash proffers, the degree to which a school would be impacted by the combination of students generated by a proposed development and committed development can determine whether a capital fiscal impact related to schools is likely to occur. This analysis was undertaken for Hillpoint Elementary School and King’s Fork Middle School. The latest *Residential Pipeline Development* report available to the consultant from the City (October 2024) was consulted and the number of students generated from committed development were calculated using the City’s student generation formula applied to the remaining committed development units to be built.

An April 2023 presentation to the Suffolk City Council, "Smart Growth, Diverse City," concluded that only committed development and not pipeline development (which includes stalled developments that are unlikely to be completed) should be used to calculate likely future student enrollment. This advice was taken by the consultant. In addition to units classified as not committed and developments identified in the April 2023 presentation as stalled, developments for which there has been no change in the number of remaining committed units between June 2021 and October 2024 were considered to be stalled and unlikely to be completed. Using this approach, 77 students were estimated to be added to Hillpoint Elementary School resulting from committed development and 67 students were estimated to be added to King's Fork Middle School.

Adding students from Riversbend to these students, Hillpoint Elementary School would exceed its facility capacity by 43 students but King's Fork Middle School would not exceed its facility capacity and would retain a capacity to absorb an additional 64 students. The students exceeding the instructional capacity at Hillpoint Elementary School would be distributed across existing classrooms, resulting in those classrooms exceeding classroom standards by one or possibly two students. A prudent administrator would not recommend expending any capital funds to remedy such levels of facility deficit and, therefore, no capital fiscal impact is indicated attributable to Hillpoint Elementary School (a fiscal impact only occurring if there will be a change in a locality's fiscal position due to a proposed development). Additionally, Lakeland High School, which would receive only 17 new students from committed development, would retain sufficient capacity to allow a school attendance zone adjustment to provide a remedy for the facility deficit at King's Fork High School.

A potential exists for students from the proposed development to cause the Suffolk public schools to purchase school buses. A standard school bus has a capacity of 64 students, although larger and smaller models are available. According to school officials in nearby Hampton Roads communities, 11-15% of students may require special needs transportation. Students generated by the proposed development attending Hillpoint Elementary School would, therefore, generate 51 standard school bus riders, filling a smaller size standard school bus. Thus, the student rider demand from the proposed development would require the purchase of its own independent school bus at a cost of about \$150,000 or less. Since school buses used for middle and high school transportation are the same ones used for elementary school transportation, the bus used to transport Riversbend elementary school students would be reused to transport middle and high school students from the proposed development.

The proposed development can be expected to generate 15-20 special needs students, including middle school and high school students. Special needs buses are smaller than standard school buses, with 25 passengers being typical but smaller options available. Thus, a special needs bus would likely be purchased to accommodate special needs students from Riversbend, also at a cost of \$150,000 or less. Past full fiscal impact analyses indicate that one-time revenues generated by the proposed development will exceed the cost of purchasing school buses.

Other fiscal capital impacts created by the proposed development would be minimal and “funded” by the surplus revenue to be generated by this development. These capital impacts include the likely purchase of two police patrol vehicles (along with one-time training and equipment costs for an additional patrol officer). This cost, estimated at about \$200,000, is also easily paid for with one-time revenues from the proposed development. Riversbend would not cause the City to build or expand any public buildings, park or recreation infrastructure, stormwater infrastructure, roads or utilities.

The area around the Site along North Main Street is a maturely developed commercial corridor with three nearby shopping centers anchored by a Kroger grocery store, Walmart and Lowes, and Big Lots. The corridor also contains a number of fast food and other restaurants, as well as stand-alone convenience retail stores. A significant portion of the shopping and dining conducted by Riversbend residents can be expected to occur at those establishments, as well as those located in downtown Suffolk.

Riversbend residents can be expected to patronize Chesapeake Square for most shopping goods, however. Nevertheless, most retail and consumer service spending by Riversbend residents can be expected to occur in Suffolk, generating local option sales, meals and business license tax revenues for the City.

As with most new development, the City’s enterprise funds can be expected to benefit fiscally. Enterprise funds carry a considerable amount of fixed cost from sunk investment. Additionally, incremental increases in through-put typically do not require increases in personnel at centralized processing facilities. Thus, revenues generated by new development result in a significant surplus after costs generated by the development (which are mostly billing and water treatment costs) are subtracted. New development benefits rate-payers amortizing fixed costs over a larger base and allowing these to be paid off more quickly.

Another factor to consider with regard to the requested rezoning for the proposed development is a realistic assessment of a by-right development of the Site. This is a large parcel with limited frontage along North Main Street relative to parcel size. In order to successfully develop the Site in a commercial use, the destination value of the commercial development would need to be sufficiently strong to attract consumers or users into the Site, since “curb appeal” visibility is limited. Furthermore, in order to maximize the carrying capacity (and, thus, the economic value) of the Site, between 800,000 and one million square feet of commercial space would need to be developed.

Three other options that meet the development requirements of the Site can be conceived. The first is development of a mini-warehouse facility. This would be a massive self-storage facility and it is unclear whether there would be sufficient demand to support such a facility. Secondly, a large self-storage facility is not likely to be viewed by City staff and elected officials as a desirable use for this corridor, let alone the highest and best use of the property. This option also would require a conditional use permit.

The second option would be an office park. With 800,000 to one million square feet of space, this would be a major employment center. However, the office market is not expected to be able to support the absorption of this much new office space in the foreseeable future. With office employment currently trending towards more remote and at-home work, the current office inventory is likely to struggle to maintain tenant occupancy. Furthermore, an office park on a busy commercial corridor would need to compete with existing office parks that have much better interstate access. For these reasons, it is unlikely that a developer would invest in the infrastructure and buildings necessary to develop an office park on the Site.

The third option for a by-right use would be a major retail center. To fully utilize the Site, this would need to be a retail complex on the scale of Chesapeake Square, Harbourview, or Greenbriar Mall. As with office parks, current trends argue against the development of large brick-and-mortar retail centers. Enclosed malls are struggling to survive nationwide as they face intense competition from online retailers (Greenbriar Mall recently went into default). A developer would need to attract multiple big-box anchors which would then compete with nearby anchors that are already serving the Suffolk market. In short, the development of the Site for a major retail use is highly unlikely.

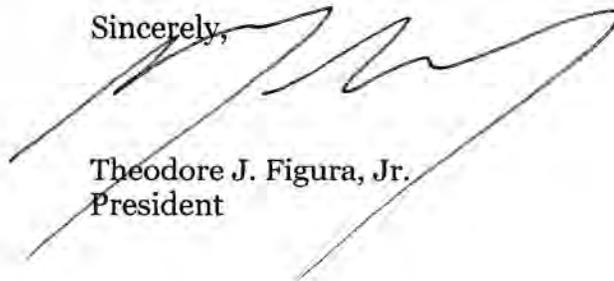
The most successful model currently being employed for commercial development is to combine limited commercial development with substantial residential development (which provides market back-up to support the commercial component). This is the model followed by the proposed development, with the residential development of the Site generating a market supporting the by-right commercial development of the remainder of the parcels that would remain in B-2 zoning.

In summary, revenues to be received by the City of Suffolk due to the construction of the Riversbend community will include:

- real estate property taxes, which can be expected to increase by around \$2 million annually—more than enough to “fund” expected increases in costs borne by the City due to the proposed development;
- personal property taxes and motor vehicle registration fees on vehicles owned by residents of the proposed development;
- taxes paid by local businesses as a result of spending on goods, services and meals by Riversbend residents;
- sewer charges, water fees and utility taxes paid by Riversbend residents;
- various other user charges and fees paid by Riversbend residents; and
- one-time revenues in development fees, building permit fees and utility connection fees paid to the developer of Riversbend, as well as any cash proffers that may be voluntarily offered by the applicant.

In summary, the City can confidently expect the construction of Riversbend to have a net fiscal positive effect on both its general fund and enterprise funds.

Sincerely,



Theodore J. Figura, Jr.
President

Riversbend Development

Suffolk, Virginia

PREPARED FOR



Land Planning Solutions (LPS)
5857 Harbour View Boulevard, Suite
202 Suffolk, VA 23435
757.935.9014

PREPARED BY



Vanasse Hangen Brustlin (VHB), Inc.
4500 Main Street, Suite 400
Virginia Beach, VA 23462

8/13/25

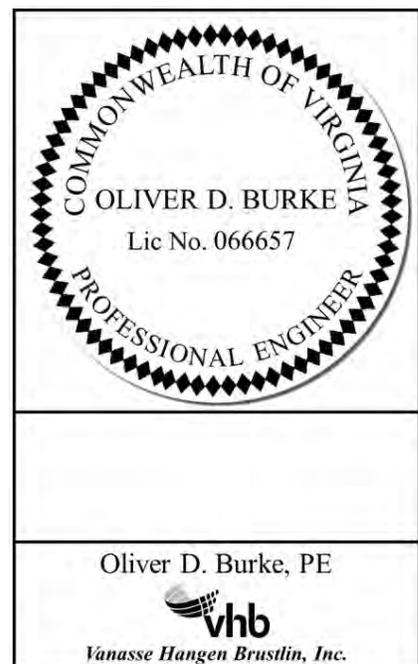


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Executive Summary

The proposed development is located in the City of Suffolk along N. Main Street, just south of Memorial Avenue. The parcel was previously utilized for a Virginia Department of Transportation (VDOT) operational facility. The Riversbend development is requesting a rezoning of approximately 73.5 acres from Business/Commercial land usage to Residential in order to support a mix of condominiums and townhomes. The remaining 15.3 acres of the total site is proposed to remain commercial, per the site plan completed by Land Planning Solutions (LPS), dated March 31, 2025. Detailed site plan is included in the **Appendix**.

The traffic study area includes the roadways and intersections along N. Main Street, Godwin Boulevard, and Pruden Boulevard in the vicinity of the proposed development. As currently proposed, the Riversbend development will increase the volume of traffic on roadways and at intersections throughout the study area, adding 515 and 535 trips during the AM and PM peak hours, respectively.

To maintain traffic operations within the study area and mitigate impacts associated with the proposed development, the following are recommended:

N. Main Street / Site Entrance

Construct site driveway to provide right-in only access.

- Provide a northbound right-turn lane (150' storage / 50' taper, within available property limits) prior to the issuance of the first certificate of occupancy.

N. Main Street / Memorial Avenue / Edgewood Avenue

Reconstruct the intersection to include the following laneage prior to the issuance of the first certificate of occupancy:

- N. Main Street (northbound):
 - one exclusive left-turn lane (extend to include 200' storage / 100' taper)
 - two through lanes
 - one exclusive right-turn lane (200' storage / 80' taper to tie into proposed RI/RO driveway)
- N. Main Street (southbound):
 - one exclusive left-turn lane (180' storage / 100' taper)
 - one exclusive through lane
 - one shared through-right turn lane
- Memorial Avenue (eastbound):
 - one shared through-left lane
 - one exclusive right-turn lane
- Edgewood Avenue (westbound):
 - one full (left-through-right) movement lane

Construct a traffic signal. The signal shall be constructed and operational prior to the issuance of the first certificate of occupancy. Permits for model homes are acceptable prior to the completion of the Main Street / Memorial Avenue improvements.

Riversbend Development Traffic Impact Analysis

The recommendations for this TIA have been limited to the proposed land uses listed in **Chapter 5**. Should the developer consider a fast-food restaurant with drive-thru or similar use that generates higher traffic volumes, an updated traffic impact study will be required.

In addition to site entrance improvements, optimized signal timings are recommended as summarized below:

N. Main Street Corridor

Maintain existing laneage and provide optimized signal timings at the following intersections:

- N. Main Street / Pruden Boulevard / Godwin Boulevard
- N. Main Street / Murphy's Mill Road
- N. Main Street / Louise Obici Lane / Northgate Lane
- N. Main Street / Lowe's entrance
- N. Main Street / Walmart entrance
- N. Main Street / Big Lots Entrance
- N. Main Street / Constance Road / US Route 58

Optimized timings should be provided within six months of project completion or with construction of the proposed signal at Memorial Avenue. It is assumed that the City operates the coordinated systems with up to four timing plans. Optimized timings should be developed using existing cycle lengths by time of day and include minor changes to existing corridor progression, limited to updated splits, offsets, and phasing sequences. Data collection for timings is assumed to be provided by the City via Grid Smart data, and the developer will provide updated timing plans and implementation of these timings by a licensed engineer.



1 Preface

1.1 Responsible Traffic Impact Study Certificate

The person identified below has had responsible charge of the attached study, its contents, and the methodologies employed in its creation. This person is a Licensed Professional Engineer in the Commonwealth of Virginia.

 ✓ Virginia Licensed Professional Engineer

Name
(Signature): _____ Date: _____

Name (Print): Oliver Burke

License Number: 0402066657

Company: VHB

Address: 4500 Main Street, Suite 400
 Virginia Beach, VA 23462

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This report has been created utilizing nationally accepted methods, City of Suffolk, and Virginia Department of Transportation (VDOT) Standards and Requirements, and/or City approved alternate methodologies, and deviations from approved methodologies are summarized below.

2 Introduction

2.1 Project History and Background

The Riversbend development is a planned mixed-use development located in the City of Suffolk along N. Main Street, just south of Memorial Avenue. The parcel was previously utilized for a Virginia Department of Transportation (VDOT) operational facility. The Riversbend developer is requesting a rezoning of approximately 73.5 acres from Business/Commercial land usage to Residential in order to support a mix of condominiums and townhomes. The remaining 15.3 acres of the total site is proposed to remain commercial.

The developer is requesting a rezoning from B-2 to RU-12 to support 497 residential units as well as office and commercial uses. The development will have one driveway located on N. Main Street and a connection to the adjacent site with access provided via Memorial Avenue and Louise Obici Lane. The construction and occupancy timeline for the proposed development is approximately 5 years, with full build-out anticipated in 2030 and a 5-year horizon to 2035.

Figure 1 illustrates the site location and the study area intersections. As shown in Figure 1, N. Main Street runs in an approximate north/south direction with all the side streets oriented in an east/west direction. The site access is currently provided by two driveways, which were formally one way in and out. The proposed development will also have two access points with primary access provided via a signalized intersection at Memorial Avenue, and a secondary site entrance provided by a proposed right-in driveway, to be aligned with the existing full movement driveway to the west of N. Main Street approximately 335 feet south of the Edgewood Avenue and Memorial Avenue intersection.

Vanasse Hangen Brustlin, Inc (VHB) was retained to perform a traffic impact analysis for the proposed development. This report has been prepared for submittal to the City of Suffolk to evaluate existing and future traffic conditions. Assumptions regarding the study area, traffic generation, trip distribution, and traffic control were discussed with City of Suffolk staff prior to the completion of this analysis.

Study Area

North
Not to Scale



2.2 Site Location and Study Area

The study area for this analysis includes the following roadways and intersections, all existing intersections are signalized, unless otherwise noted.

Roadways

- › N. Main Street

Existing Intersections

- › Godwin Boulevard / US Route 58 westbound on/off ramps
- › Godwin Boulevard / US Route 58 eastbound on/off ramps
- › Pruden Boulevard / US Route 58 westbound on/off ramps
- › Pruden Boulevard / US Route 58 eastbound on/off ramps
- › Pruden Boulevard / Meade Parkway
- › N. Main Street / Pruden Boulevard / Godwin Boulevard
- › N. Main Street / Murphy's Mill Road
- › N. Main Street / Louise Obici Lane / Northgate Lane
- › N. Main Street / Edgewood Avenue (unsignalized)
- › N. Main Street / Lowe's entrance
- › N. Main Street / Walmart entrance
- › N. Main Street / Big Lots Entrance
- › N. Main Street / Constance Road / US Route 58

The study area roadway and intersections were identified during conversations with City of Suffolk staff.

Existing and Proposed Site Uses

The Riversbend development is located on the former VDOT District Office site. The 88.8-acre development is requesting a portion of the site be rezoned from B-2 to RU-12 to support residential development with a portion of the site maintaining a B-2 to support commercial and office land uses.

Within the immediate vicinity of the site, there are a variety of land uses that include restaurants, retail businesses, hotels, car dealerships, and numerous residential neighborhoods.

3 Analysis of Existing Conditions

3.1 Capacity Analysis at Critical Points

Intersection turning movement counts (TMCs) were used in conjunction with the number of lanes and traffic operations at each study intersection to determine existing and future levels of service. Level of Service (LOS) describes traffic conditions—the amount of traffic congestion—at an intersection or on a roadway. Table 1 shows the LOS and delay range for signalized and unsignalized intersections.

Table 1: Levels of Service and Ranges of Delay

LOS	Delay per Vehicle (seconds per vehicle)	
	Signalized	Unsignalized
A	≤ 10	≤ 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

3.2 Existing Roadways

N. Main Street is the primary external roadway providing access to the Riversbend Development, with connections to Godwin Boulevard and Pruden Boulevard to the north, and Constance Road to the south. The following provides a short description of the primary roadway.

- › N. Main Street is a north/south oriented four-lane principal arterial in the City of Suffolk, providing connectivity to numerous residential and commercial developments. Within the project vicinity, N. Main Street has a 2022 ADT volume of 28,250 vehicles per day (VPD) and a posted speed limit of 35-mph.

3.3 Turning Movement Counts (TMCs)

Turning movement counts (TMC) were collected by Data Collection Group during the AM (7:00-9:00) and PM (4:00-6:00) peak periods on March 29 and 31, 2022, archive at the following intersections:

- › Godwin Boulevard and US Route 58 westbound on/off ramps
- › Godwin Boulevard and US Route 58 eastbound on/off ramps
- › N. Main Street / Pruden Boulevard / Godwin Boulevard
- › N. Main Street / Murphy's Mill Road
- › N. Main Street / Louise Obici Lane
- › N. Main Street / Lowe's entrance
- › N. Main Street / Walmart entrance
- › N. Main Street / Big Lots entrance
- › N. Main Street / Constance Road / US Route 58
- › Pruden Boulevard and US Route 58 eastbound on/off ramps
- › Pruden Boulevard / Meade Parkway

TMCs were collected on May 3, 2022, for the following intersection:

- › Pruden Boulevard and US Route 58 westbound on/off ramps

All counts collected in 2022 were grown to 2025 using a growth rate of one percent (1%) to get the Existing (2025) scenario volumes. The growth rate was applied using the methodology outlined in Chapter 4 (Future Conditions without Development).

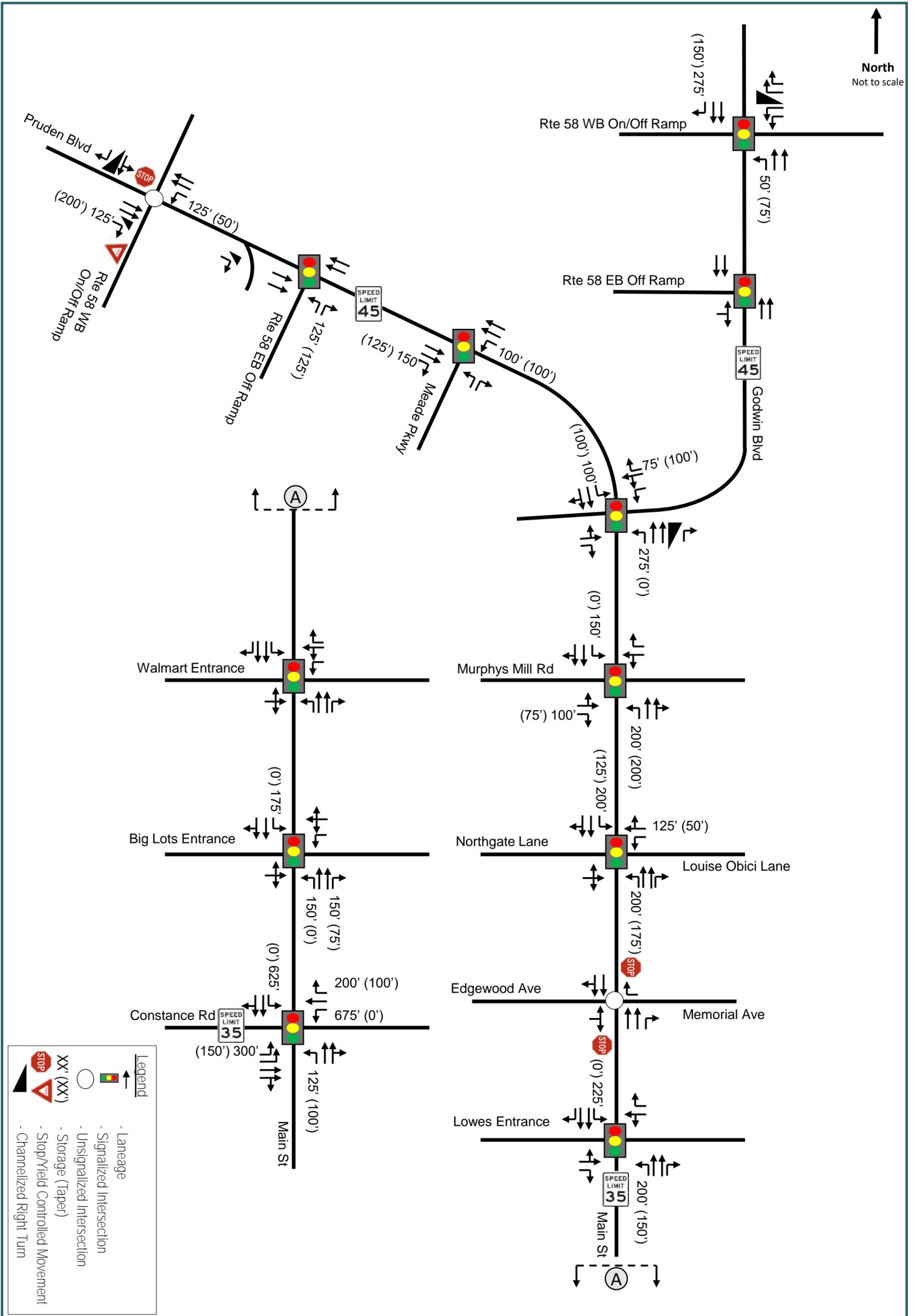
Figure 2 illustrates the existing roadway conditions, laneages, storage lengths, speed limits, and traffic control at the study area intersections.

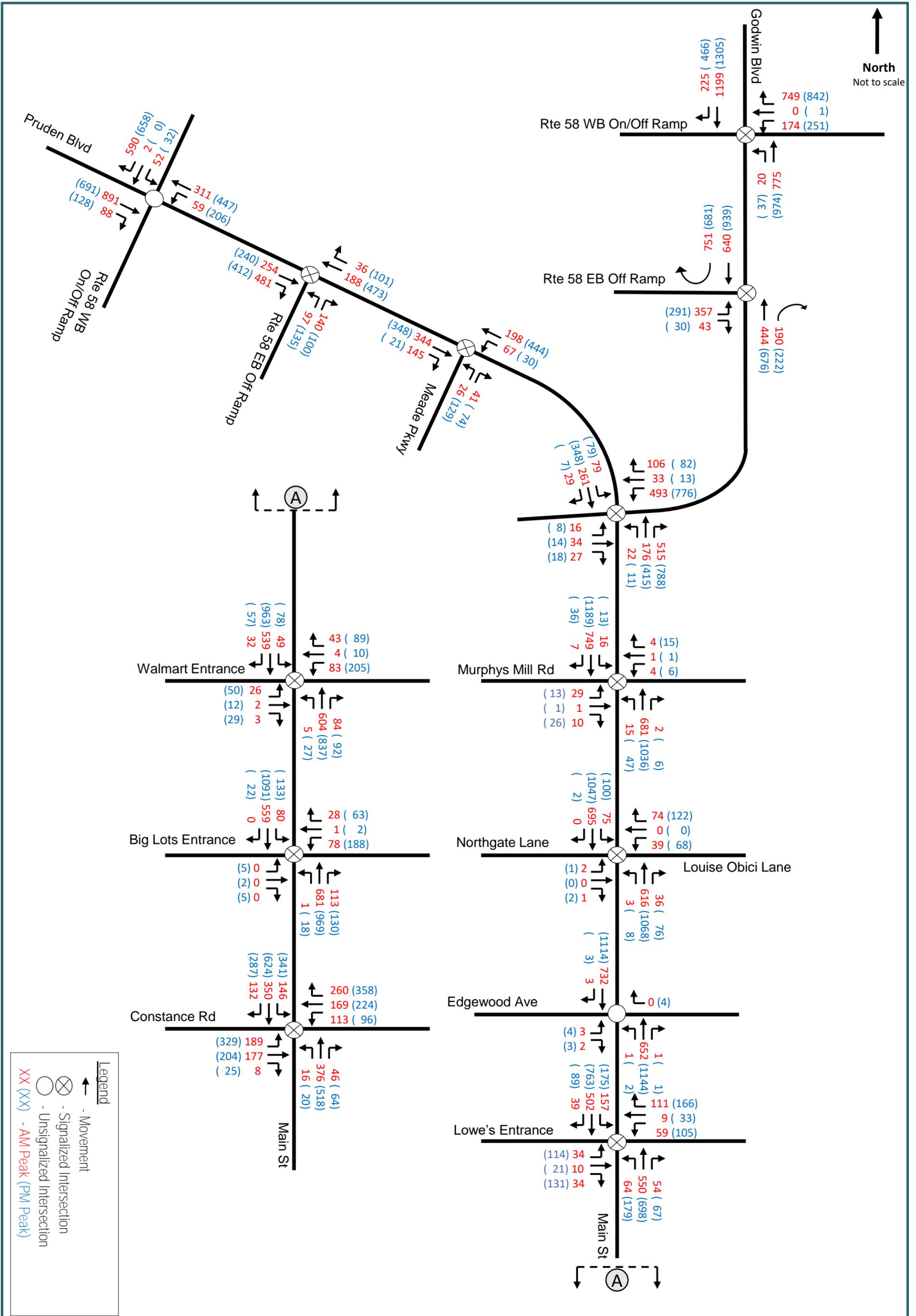
3.4 Average Daily Traffic (ADT) Counts

ADT counts were collected by Data Collection Group along Main Street and Edgewood Drive.

Historical 2022 TMC data is summarized in **Figure 3**. Projected 2025 TMC and collected 2022 ADT data are illustrated in **Figure 4**.

Detailed TMC and ADT data are included in the **Appendix**.





3.5 Capacity and Levels of Service Analyses at Critical Points

Capacity analyses for all intersections during the AM and PM peak hours were performed for the existing study area intersections. Analyses were completed to determine the operating characteristics of study area intersections using Synchro Professional 11, which uses methodologies contained in the 2000 Highway Capacity Manual (HCM) and HCM 6th Edition.

Level of service analyses were performed using existing signal timings combined with the existing traffic volumes noted above. To compare operations among various scenarios, detailed analyses are illustrated in **Tables 3 – 11 & 14 – 18** in **Chapter 7** to provide a side-by-side comparison.

4 Future Conditions without Development

4.1 Background Traffic Volumes

Background traffic growth is the increase in traffic volumes due to usage increases and non-specific growth throughout an area. One method of determining reasonable growth rates for an area is to research past traffic counts for a roadway to identify historical growth rates. Additionally, approved developments are considered and then combined with annual growth to establish background conditions.

A 1% growth rate was used based on historical data and consistency with recently approved studies. This annual growth rate was applied to all movements for the following intersections as these intersections serve general commuter traffic from all approaches:

- › Godwin Boulevard and US Route 58 westbound on/off ramps
- › Godwin Boulevard and US Route 58 eastbound on/off ramps
- › Pruden Boulevard and US Route 58 eastbound on/off ramps
- › Pruden Boulevard and US Route 58 westbound on/off ramps
- › N. Main Street / Pruden Boulevard / Godwin Boulevard
- › N. Main Street / Constance Road / US Route 58

For the remaining intersections, an annual growth rate of 1% was applied to only the northbound/southbound mainline through movements as it is assumed the side street volumes will not experience annual usage growth or will be captured in existing or approved development volumes. A growth rate of 1% applied exponentially over 5 years and 10 years results in growth factors of 1.05 and 1.10, respectively.

4.2 Approved Developments

To evaluate future conditions, the study considered previously approved developments located within the project vicinity that have not reached full build-out. The City identified the following developments to be included in the background traffic:

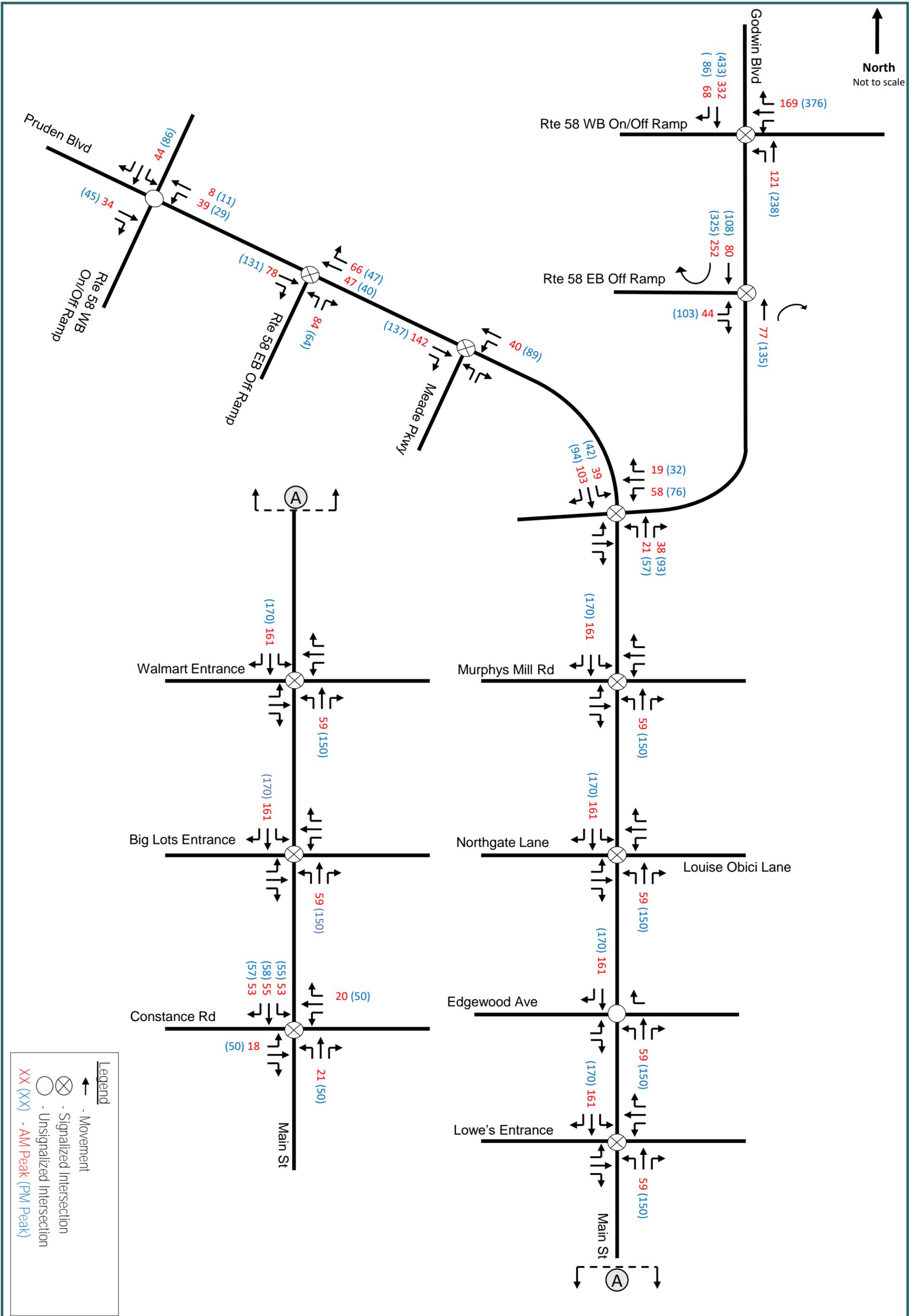
1. Hallstead Reserve (2019)
2. Godwin Park (2020)
3. Planters Station (2014)
4. The Shoppes at Planters Station (2021)
5. Port 58 Apartments (2019)
6. The Gallery at Godwin (2020)
7. Nansmond River Golf Course (NRGC, 2021)

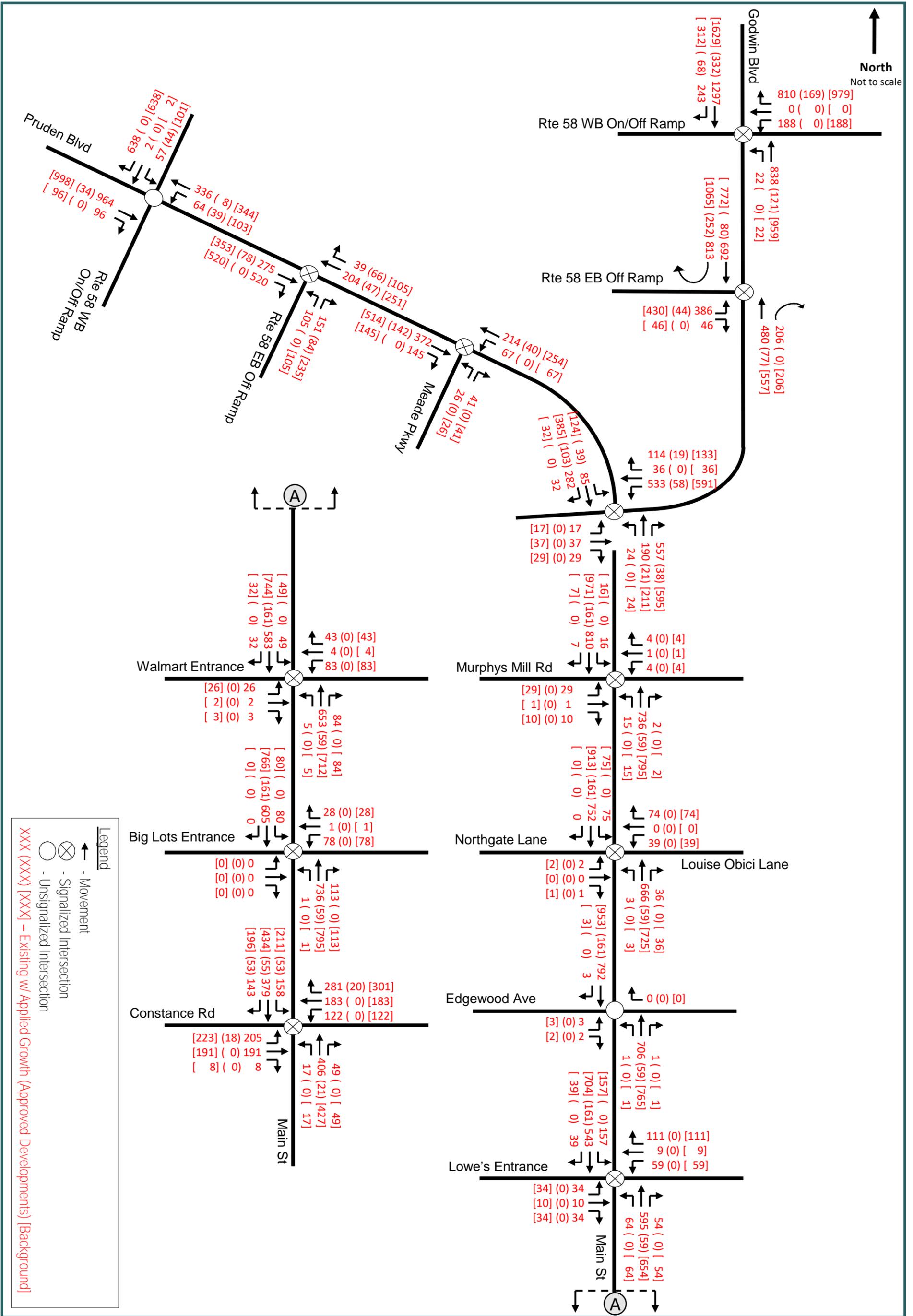
Riversbend Development Traffic Impact Analysis

The location of these seven developments and the detailed trip assignments for these developments are included in the **Appendix**. Trips generated by these sites were obtained from the recently approved studies listed above. The total AM and PM peak hour approved development traffic volumes are illustrated in **Figure 5**.

The total Background traffic includes existing traffic volumes with applied annual growth and the additional approved development traffic. **Figures 6** and **7** illustrate the 2030 Background AM and PM peak volumes, respectively.

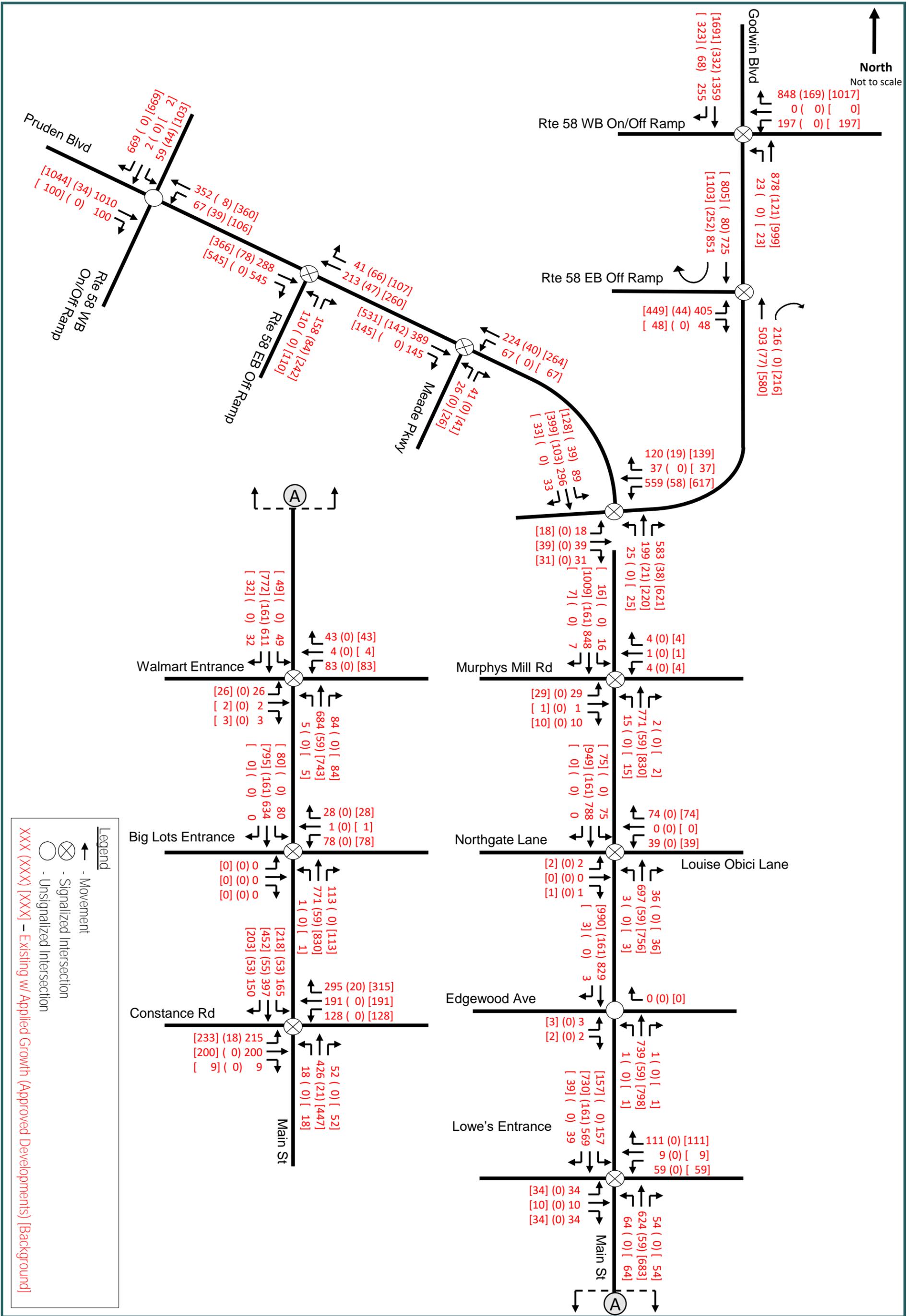
Figures 8 and **9** illustrate the 2035 Background AM and PM peak volumes, respectively, which includes an additional 5 years of annual growth applied to existing traffic volumes.





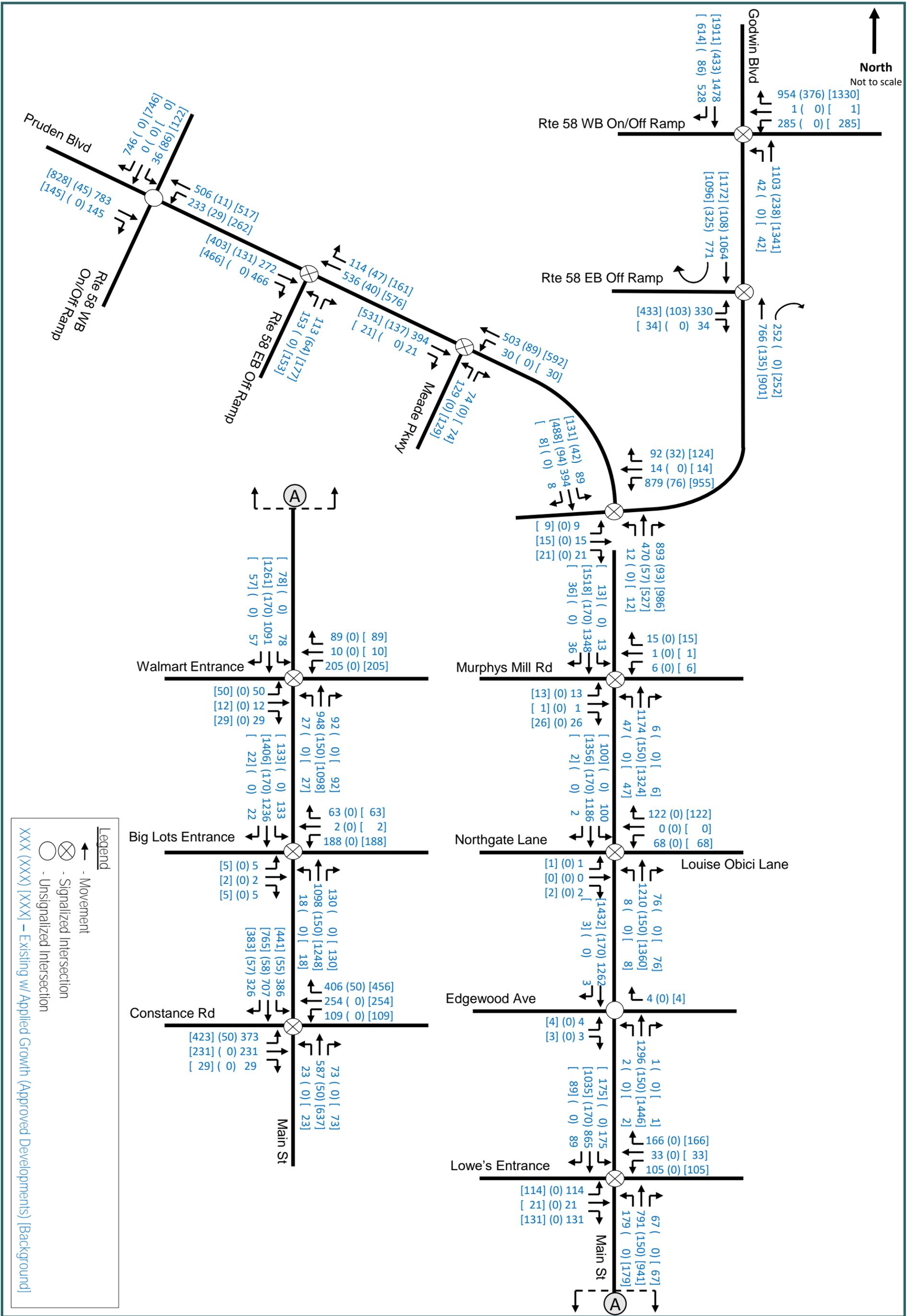
Riversbend Development – Suffolk, VA
2030 Background Traffic: AM Peak

Figure 6



Riversbend Development – Suffolk, VA
2035 Background Traffic: AM Peak

Figure 8



Riversbend Development – Suffolk, VA
2035 Background Traffic: PM Peak

Figure 9

4.3 Capacity and Levels of Service Analyses at Critical Points

Analyses were completed to determine the operating characteristics of study area intersections and roadways using Synchro Professional 11, which uses methodologies contained in the 2000 Highway Capacity Manual (HCM) and HCM 6th Edition.

Level of service analyses for the Background scenarios were performed using existing signal timings.

To compare operations among various scenarios detailed analyses are illustrated in **Tables 3 – 11 & 14 – 18** in **Chapter 7** to provide a side-by-side comparison.

5 Trip Generation

Traffic generated by the proposed development was determined using trip generation methodology contained in the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, 2021*.

5.1 Trip Generation

Table 2 summarizes the proposed trip generation for the Riversbend development being considered as part of this rezoning to support the residential uses in addition to by-right B-2 uses.

Table 2: Proposed Trip Generation

Land Use (ITE code)	Variable	Daily		AM Peak		PM Peak	
		In	Out	In	Out	In	Out
Residential Development							
Single Family Attached Housing (215)	329 units	1204	1203	39	120	111	78
Senior Adult Housing Multifamily (252)	168 units	272	272	12	22	24	18
Commercial Development							
High-Turnover (Sit-Down) Restaurant (932)	6 KSF	322	321	31	26	33	21
Office Development							
General Office Building (710)	232 employees	568	570	193	26	28	134
Medical Dental Office (720)	82 employees	263	262	34	12	33	55
Total		5,257		515		535	

Trips generated by the office portion of the development were generated using average rates based on employee counts. Employee counts were estimated using one 38,000 square foot (SF) building size, and one 20,400 SF building size for General Office (710), and one 20,000 SF building size for Medical Dental Office (720), with an applied average ratio of 1 employee per 250 square feet.

While there are higher generators allowed under the B2 zoning, the development criteria will restrict the ability to construct a fast-food with drive-thru or similar use. If these uses are requested in the future, an updated traffic impact study will be required.

Table 2 indicates that the proposed development has the possibility to generate approximately 515 and 535 trips in the AM and PM peak periods, respectively. Additionally, the site has the potential to generate 5,257 daily trips.

6 Site Traffic Distributions and Traffic Assignments

6.1 Traffic Distribution

The directional distribution and assignment of trips generated by the proposed development is based on a review of existing intersections, roadway volumes, and an understanding of travel patterns within the study area. The following assumptions were discussed and agreed upon with the City of Suffolk prior to moving forward with trip assignments and analysis.

The overall external distribution for the Riversbend development site are as follows and is within the **Appendix**:

Residential/General Office

- › 5% to/from the north/west via Pruden Boulevard
- › 10% to/from the north via Godwin Boulevard
- › 10% to/from the south via N. Main Street
- › 50% to/from the east via US Route 58 at Godwin Boulevard
- › 5% to/from the east via E. Constance Road
- › 15% to/from the west via US Route 58 at Pruden Boulevard
- › 5% to/from the west via W. Constance Road

Local Commercial

- › 20% to/from the north/west via Pruden Boulevard
- › 20% to/from the north via Godwin Boulevard
- › 20% to/from the south via N. Main Street
- › 20% to/from the east via E. Constance Road
- › 20% to/from the west via W. Constance Road

6.2 Internal Capture

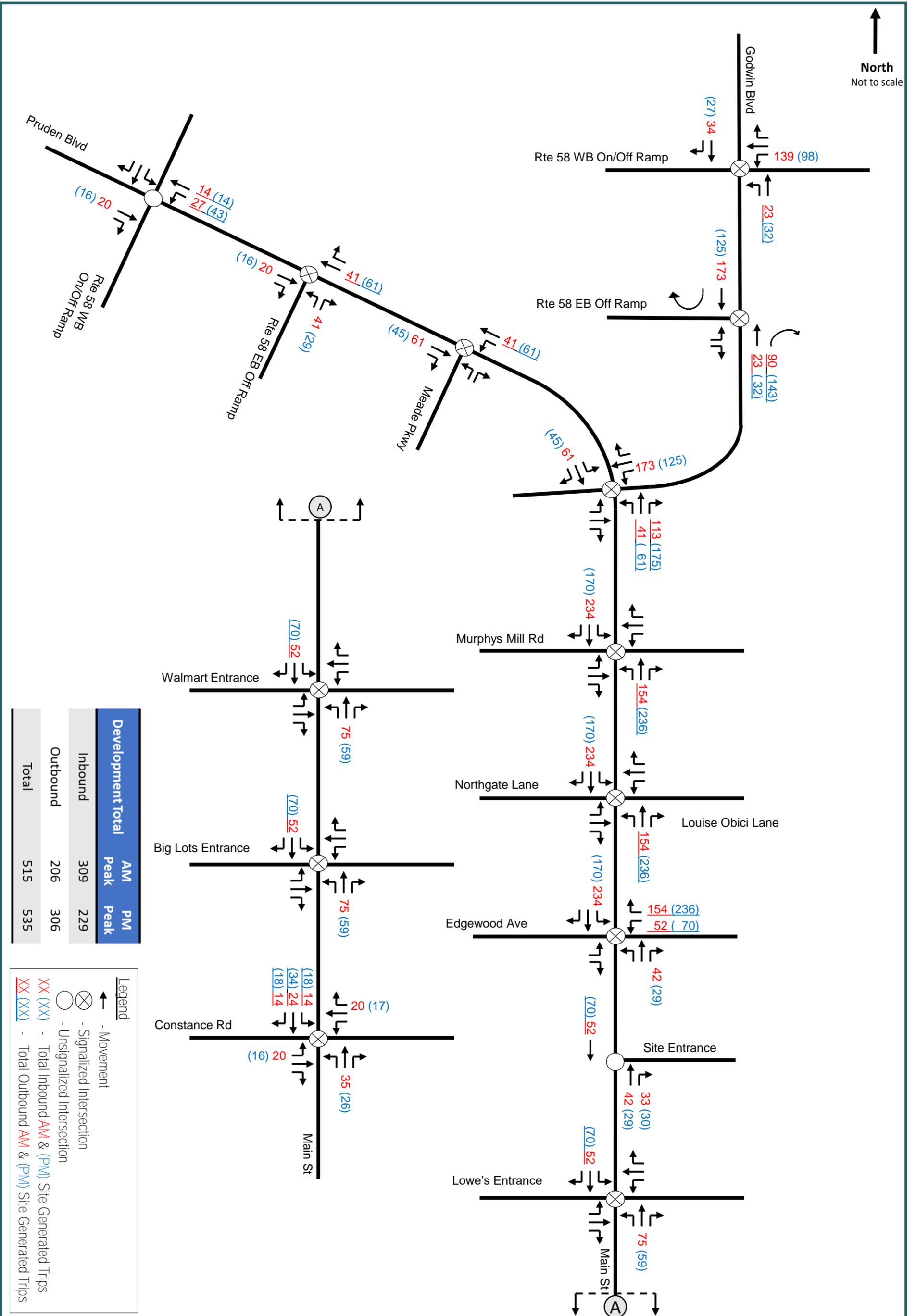
Internal capture accounts for those motorists who access multiple land uses during a single trip. While the proposed land uses may experience internal trips, internal capture was not applied in order to be conservative for analysis.

6.3 Pass-by

Pass-by trips are vehicles already on the roadway network generated from another primary origin and destination route that chose to make an intermediate stop without a route diversion. Given the proposed land uses for this development, pass-by reductions were not applied.

6.4 Traffic Assignments

The trip distribution percentages by land use listed above were applied to the proposed trip generation outlined in **Table 2**. The proposed AM and PM total site generated traffic is illustrated in **Figure 10**. Detailed trip assignments for each land use are located in the **Appendix**.



7 Future Conditions with Development

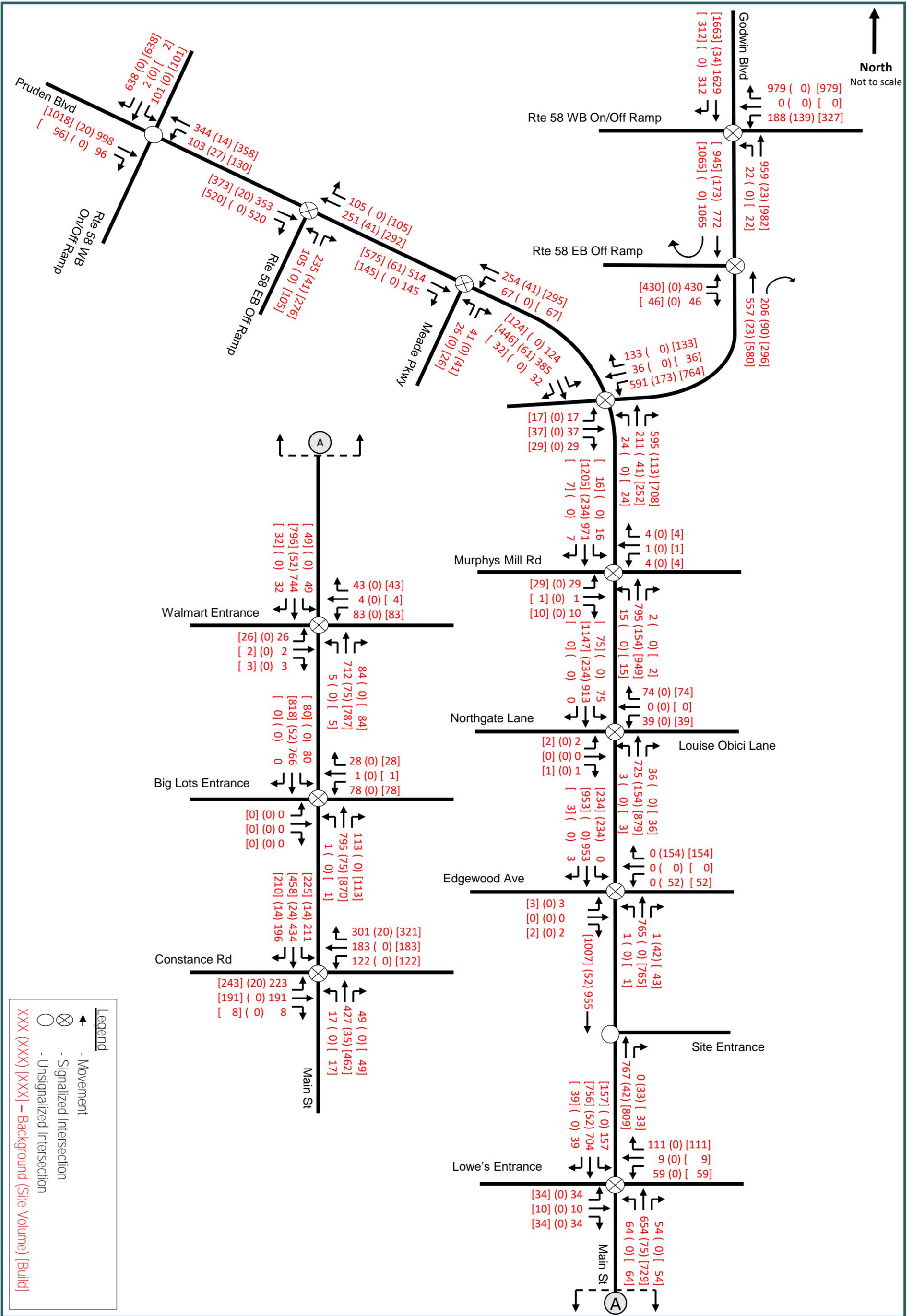
7.1 Daily and Peak Hour(s) Traffic Volumes

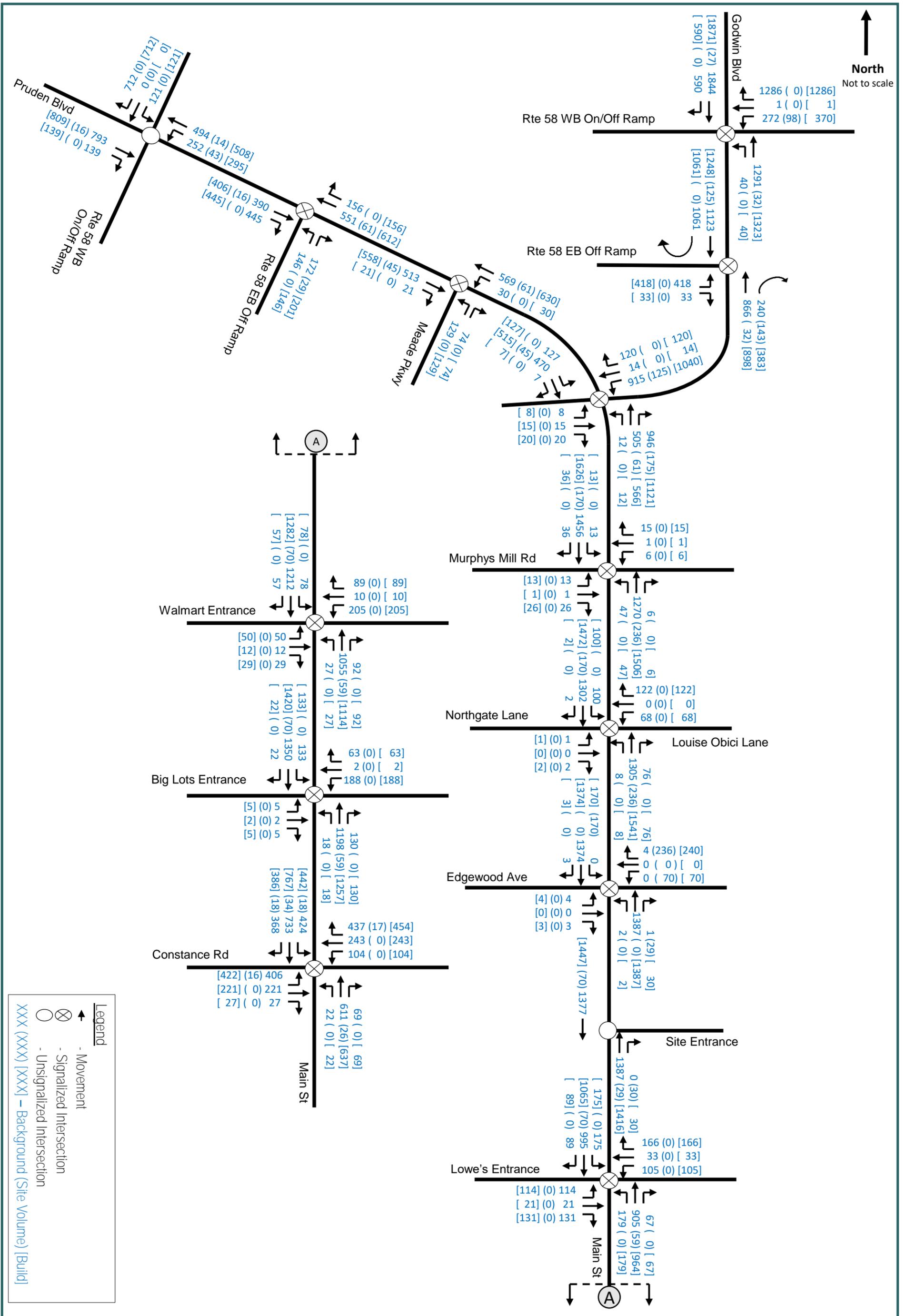
Total future traffic volumes represent the addition of new traffic generated by the proposed Riversbend development in addition to the Background traffic volumes. These resulting volumes are also referred to as "Build" volumes. The initial 2030 Build volumes are illustrated as follows:

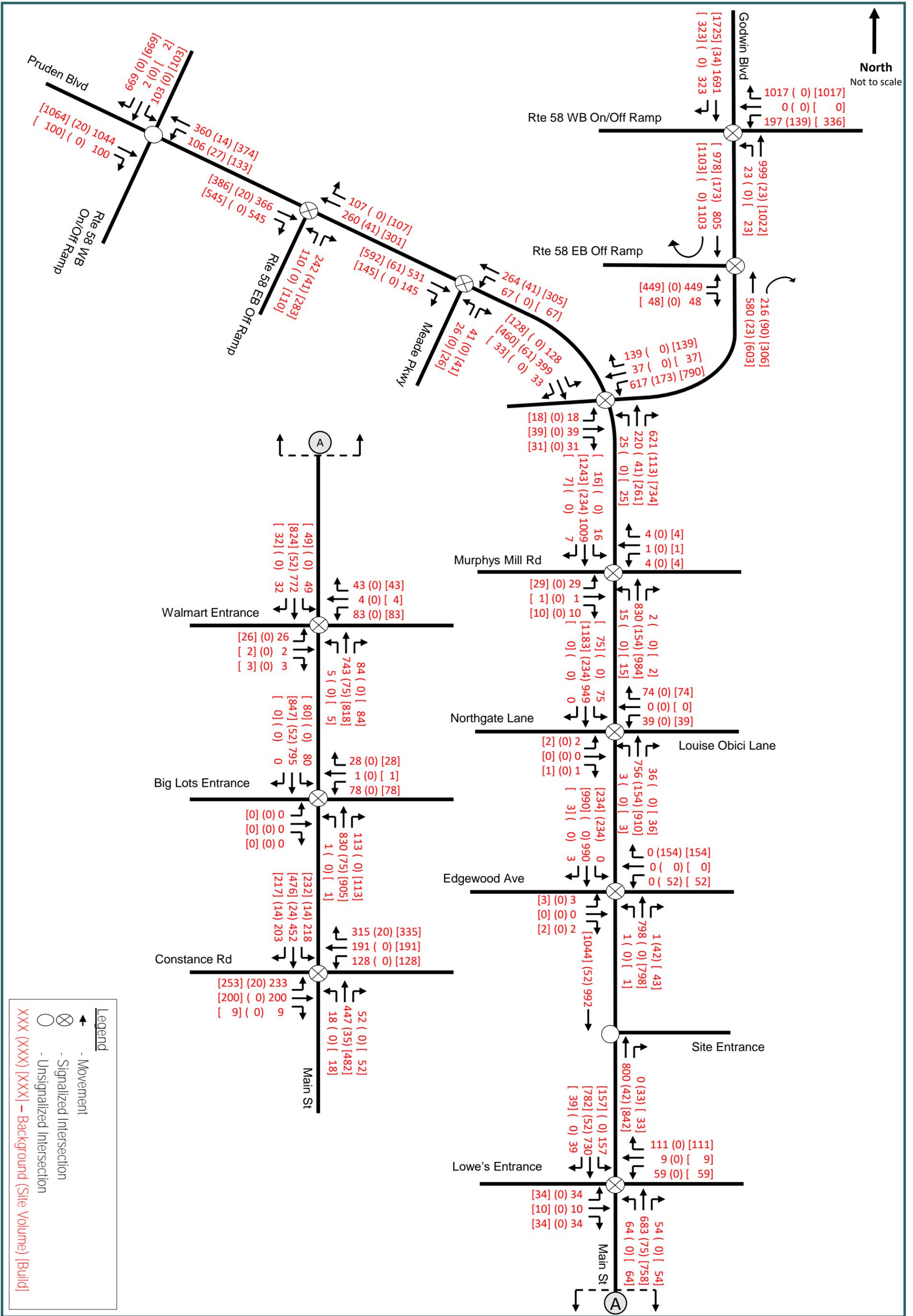
- › **Figure 11** – 2030 Build Traffic: AM Peak Hour
- › **Figure 12** – 2030 Build Traffic: PM Peak Hour

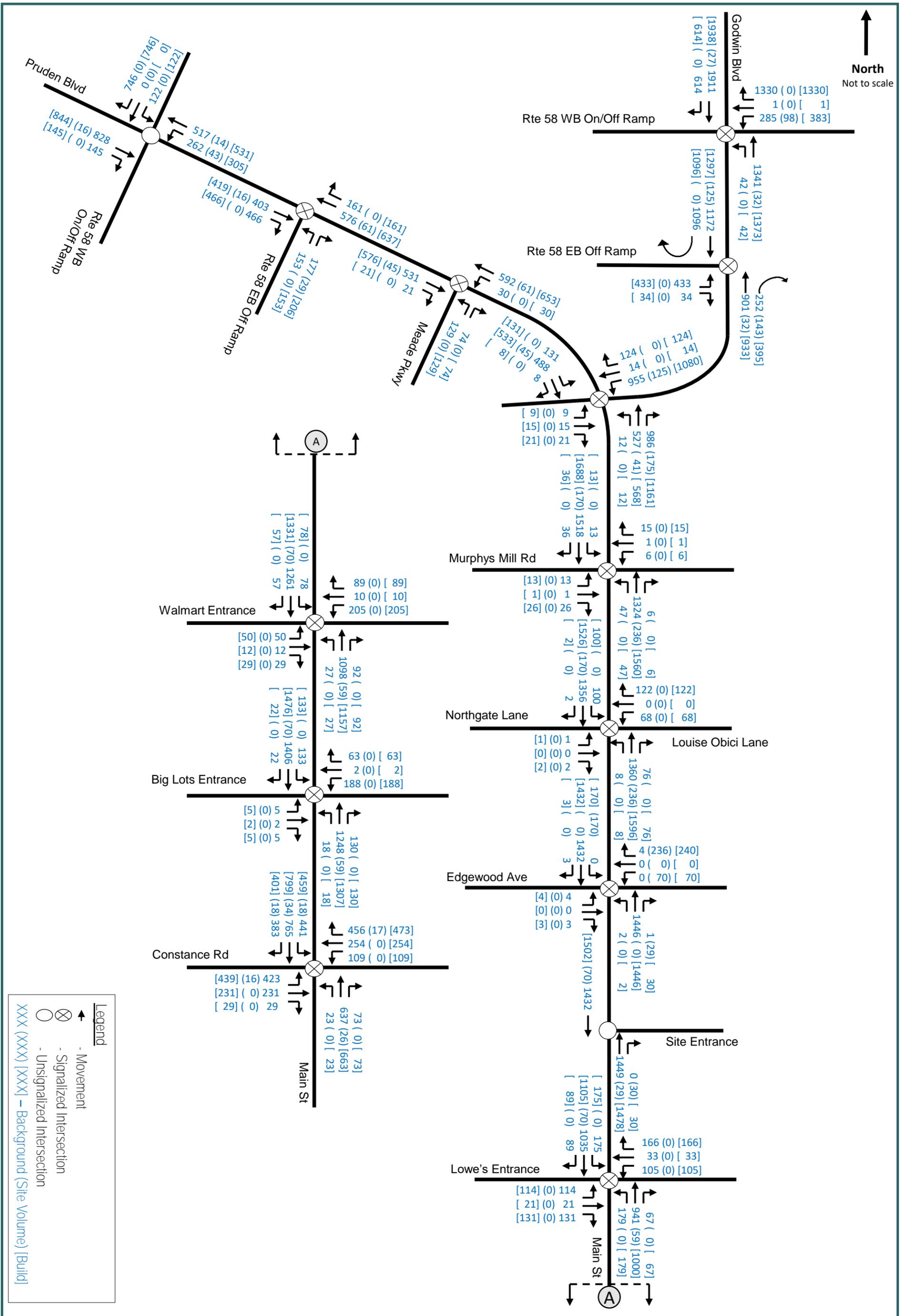
Future Build conditions for 2035 were generated similar to the 2030 volumes by adding site generated traffic to the 2035 Background volumes, and are illustrated as follows:

- › **Figure 13** – 2035 Build Traffic: AM Peak Hour
- › **Figure 14** – 2035 Build Traffic: PM Peak Hour









7.2 Capacity and Level of Service Analyses at Critical Points

Capacity analyses for signalized and unsignalized intersections in the AM and PM peak hours were performed for the 2030 and 2035 Build conditions for existing study area intersections as previously identified. Analyses were completed to determine the operating characteristics of the study area intersections and roadways using *Synchro Professional 11*, which uses methodologies contained in the *2010 Highway Capacity Manual (HCM)* and *HCM 6th Edition*.

To provide a comparison of development impacts, the operational analysis applies the existing signal timings to the Existing and Background condition scenarios and optimized signal timings for the future Build scenarios. Detailed analyses are illustrated in **Tables 3 – 11 & 14 – 18** below for the following scenarios:

- › Existing (2025) Conditions
- › 2030 Background Conditions
 - *1% growth rate applied for 5 years plus the approved development traffic.*
- › 2030 Build Conditions
 - *2030 Background volumes with optimized signal timing plus the site traffic.*
- › 2035 Horizon Background Conditions
 - *1% growth rate applied for 10 years plus the approved development traffic.*
- › 2035 Horizon Build Conditions
 - *2035 Background volumes with optimized signal timing plus site traffic.*

7.2.1 Godwin Boulevard / US Route 58 Westbound On/Off Ramps

This signalized intersection currently provides the following laneage.

- › Godwin Boulevard (northbound): one exclusive left-turn lane and two through lanes.
- › Godwin Boulevard (southbound): two through lanes and one exclusive right-turn lane.
- › US Route 58 off ramp (westbound): two left-turn lanes and two right-turn lanes (signal-controlled).

The results for the five scenarios are illustrated in **Table 3**. Detailed analyses are provided in the Appendix.

Table 3: Godwin Boulevard / US Route 58 Westbound Ramps Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)					
		Westbound		Northbound		Southbound	
		LT	RT	LT	TH	TH	RT
AM Peak Hour							
Existing	25.6 (C)	68.9 (E)	41.7 (D)	26.1 (C)	34.3 (C)	7.5 (A)	5.3 (A)
		46.8 (D)		34.1 (C)		7.2 (A)	
2030 Background	28.2 (C)	68.9 (E)	50.8 (D)	29.7 (C)	35.9 (D)	9.6 (A)	5.8 (A)
		53.7 (D)		35.8 (D)		9.0 (A)	
2030 Build	29.5 (C)	68.5 (E)	42.7 (D)	30.0 (C)	37.9 (D)	13.2 (B)	7.7 (A)
		49.2 (D)		37.7 (D)		12.3 (B)	
2035 Background	29.2 (C)	68.9 (E)	53.0 (D)	30.9 (C)	36.8 (D)	10.3 (B)	6.0 (A)
		55.6 (E)		36.7 (D)		9.6 (A)	
2035 Build	30.2 (C)	68.5 (E)	43.7 (D)	31.3 (C)	38.5 (D)	14.1 (B)	7.9 (A)
		49.8 (D)		38.3 (D)		13.1 (B)	
PM Peak Hour							
Existing	27.8 (C)	74.5 (E)	60.9 (E)	14.9 (B)	21.0 (C)	9.9 (A)	8.0 (A)
		64.1 (E)		20.8 (C)		9.4 (A)	
2030 Background	71.5 (E)	74.4 (E)	230.5 (F)	23.4 (C)	24.7 (C)	14 (B)	9.0 (A)
		203.2 (F)		24.6 (C)		12.7 (B)	
2030 Build	35.2 (D)	73.4 (E)	62.8 (E)	30.8 (C)	33.2 (C)	17.8 (B)	11 (B)
		65.2 (E)		33.1 (C)		16.2 (B)	
2035 Background	76.4 (E)	74.8 (E)	248.2 (F)	27.0 (C)	25.8 (C)	15.1 (B)	9.4 (A)
		217.6 (F)		25.8 (C)		13.7 (B)	
2035 Build	37.8 (D)	73.3 (E)	69.2 (E)	32.8 (C)	35.4 (D)	19.4 (B)	11.6 (B)
		70.1 (E)		35.3 (D)		17.5 (B)	

During the Existing scenario, this intersection currently operates at LOS C during both AM and PM peaks. With the application of annual growth rates and inclusion of approved development traffic, this intersection degrades to overall LOS E with increased delay experienced at the off ramp.

Under the Build scenario, signal timings were optimized to include split and offset adjustments and operates at overall LOS C and D during AM and PM peak periods, respectively. This intersection will operate adequately with existing laneage and optimized signal timing.

7.2.2 Godwin Boulevard / US Route 58 Eastbound On/Off Ramps

This signalized intersection currently provides the following laneage.

- › Godwin Boulevard (northbound): two through lanes.
- › Godwin Boulevard (southbound): two through lanes.
- › US Route 58 off ramp (eastbound): one shared left-right-turn lane.

There are additional ramps/loops at this intersection; however, these are not included as part of the signalized operations of the intersection and are free flow movements. Because of this, the northbound right-turn on ramp and southbound on-loop are not included in level of service analysis at this intersection.

The results for the five scenarios are illustrated in **Table 4**. Detailed analyses are provided in the **Appendix**.

Table 4: Godwin Boulevard / US Route 58 Eastbound On/Off Ramps Signalized Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)		
		Eastbound	Northbound	Southbound
		LT - RT	TH	TH
AM Peak Hour				
Existing	29.5 (C)	85.4 (F)	9.3 (A)	8.6 (A)
2030 Background	38.2 (D)	116.9 (F)	10.1 (B)	10.0 (B)
2030 Build	32.5 (C)	69.0 (E)	13.2 (B)	29.4 (C)
2035 Background	42.7 (D)	132.7 (F)	10.2 (B)	10.5 (B)
2035 Build	28.1 (C)	68.7 (E)	14.0 (B)	16.1 (B)
PM Peak Hour				
Existing	20.6 (C)	84.8 (F)	8.3 (A)	7.5 (A)
2030 Background	33.4 (C)	137.4 (F)	10.3 (B)	9.5 (A)
2030 Build	23.7 (C)	77.7 (E)	13.9 (B)	11.4 (B)
2035 Background	36.1 (D)	151.4 (F)	10.5 (B)	9.9 (A)
2035 Build	24.7 (C)	79.5 (E)	14.5 (B)	12.3 (B)

This intersection operates at an overall LOS C for both AM and PM Existing scenarios. During the Background scenarios, vehicle delays are increased, particularly in the AM peak as the intersection operates at overall LOS D. With optimized signal timings, this intersection can operate at LOS C during all Build scenarios.

7.2.3 Pruden Boulevard / US Route 58 Westbound Bypass

This unsignalized intersection currently provides the following laneage.

- › US Route 58 (southbound): one shared through-left-turn lane and one channelized free flow right-turn lane.
- › Pruden Boulevard (eastbound): two through lanes and one exclusive free flow right-turn lane.
- › Pruden Boulevard (westbound): one exclusive left-turn lane and two exclusive through lanes.

Pruden Boulevard is an east/west oriented roadway, and therefore the US Route 58 Westbound Bypass leg of the intersection is considered oriented north/south.

The results for the five scenarios are illustrated in **Table 5**. Detailed analyses are provided in the **Appendix**.

Table 5: Pruden Boulevard / US Route 58 Westbound Bypass On/Off Ramps Unsignalized Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)					
		Eastbound		Westbound		Southbound	
		TH	RT	LT	TH	LT - TH	RT
AM Peak Hour							
Existing	1.3 (A)	- (-)		10.3 (B)	- (-)	23.0 (C)	- (-)
				1.7 (A)		23.0 (C)	
2030 Background	3.5 (A)	- (-)		11.1 (B)	- (-)	44.4 (E)	- (-)
				2.6 (A)		44.4 (E)	
2030 Build	4.6 (A)	- (-)		11.6 (B)	- (-)	61.1 (F)	- (-)
				3.1 (A)		61.1 (F)	
2035 Background	3.9 (A)	- (-)		11.5 (B)	- (-)	52.4 (F)	- (-)
				2.6 (A)		52.4 (F)	
2035 Build	5.3 (A)	- (-)		11.9 (B)	- (-)	74.8 (F)	- (-)
				3.1 (A)		74.8 (F)	
PM Peak Hour							
Existing	2.3 (A)	- (-)		10.4 (B)	- (-)	43.0 (E)	- (-)
				3.3 (A)		43.0 (E)	
2030 Background	20.6 (C)	- (-)		11.3 (B)	- (-)	283.0 (F)	- (-)
				3.8 (A)		283.0 (F)	
2030 Build	32.1 (D)	- (-)		11.9 (B)	- (-)	467.1 (F)	- (-)
				4.4 (A)		467.1 (F)	
2035 Background	25.8 (D)	- (-)		11.7 (B)	- (-)	370.9 (F)	- (-)
				3.9 (A)		370.9 (F)	
2035 Build	38.3 (E)	- (-)		12.4 (B)	- (-)	579.8 (F)	- (-)
				4.5 (A)		579.8 (F)	
- (-) Indicates Free Movement / 0 Seconds of Delay							

This intersection currently operates at acceptable LOS during the AM and PM peak hours with unsignalized control. The unsignalized southbound left-turn movement currently operates at LOS C and LOS E during the AM and PM peak hours, respectively. With the addition of 2030 background traffic, it is expected to operate at a LOS F during both the AM and PM peak hours.

Improvements have been recommended at this intersection as part of other studies and funding applications to consider signalized control or restricted access. Given the current uncertainty of these improvements, modifications to laneage or intersection control were not modeled in level of service determinations. However, these improvements are intended to address projected increased delays experienced in the Background scenarios and additional site traffic.

7.2.4 Pruden Boulevard / US Route 58 Eastbound Bypass

This signalized intersection currently provides the following laneage.

- › US Route 58 (eastbound): one exclusive left-turn lane and one exclusive right-turn lane.
- › Pruden Boulevard (southbound): two through lanes.
- › Pruden Boulevard (northbound): two through lanes.

Pruden Boulevard is an east/west oriented roadway, and therefore the US Route 58 Eastbound Bypass leg of the intersection is considered oriented north/south.

The results for the five scenarios are illustrated in **Table 6**. Detailed analyses are provided in the **Appendix**.

Table 6: Pruden Boulevard / Route 58 Eastbound Bypass Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)			
		Eastbound	Westbound	Northbound	
		TH	TH	LT	RT
AM Peak Hour					
Existing	9.9 (A)	3.4 (A)	3.1 (A)	49.9 (D)	3.2 (A)
				22.4 (C)	
2030 Background	8.7 (A)	3.6 (A)	3.2 (A)	50.1 (D)	3.6 (A)
				17.9 (B)	
2030 Build	7.1 (A)	4.4 (A)	3.3 (A)	50.1 (D)	3.7 (A)
				16.5 (B)	
2035 Background	8.8 (A)	3.7 (A)	3.3 (A)	50.2 (D)	3.7 (A)
				18.2 (B)	
2035 Build	8.4 (A)	3.7 (A)	3.4 (A)	50.2 (D)	3.8 (A)
				16.8 (B)	
PM Peak Hour					
Existing	10.7 (B)	3.9 (A)	4.1 (A)	51.6 (D)	3.7 (A)
				31.2 (C)	
2030 Background	9.7 (A)	4.1 (A)	4.3 (A)	52.0 (D)	4.0 (A)
				26.0 (C)	
2030 Build	8.4 (A)	4.8 (A)	4.4 (A)	52.0 (D)	4.0 (A)
				24.2 (C)	
2035 Background	10 (A)	4.3 (A)	4.4 (A)	52.6 (D)	4.1 (A)
				26.6 (C)	
2035 Build	9.6 (A)	4.3 (A)	4.5 (A)	52.6 (D)	4.1 (A)
				24.8 (C)	

This intersection operates at an overall LOS A for all scenarios in the AM peak hour and a maximum LOS B in the PM peak. The intersection functions adequately with existing laneage and optimized signal timing.

7.2.5 Pruden Boulevard / Meade Parkway

This signalized intersection currently provides the following laneage.

- › Meade Parkway (northbound): one exclusive left-turn lane and one exclusive right-turn lane.
- › Pruden Boulevard (eastbound): two through lanes and one exclusive right-turn lane.
- › Pruden Boulevard (westbound): one exclusive left-turn lane and two through lanes.

The results for the five scenarios are illustrated in **Table 7**. Detailed analyses are provided in the **Appendix**.

Table 7: Pruden Boulevard / Meade Parkway Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)					
		Eastbound		Westbound		Northbound	
		TH	RT	LT	TH	LT	RT
AM Peak Hour							
Existing	4.7 (A)	4.6 (A)	4.5 (A)	1.7 (A)	1.5 (A)	44.8 (D)	1.4 (A)
		4.6 (A)		1.5 (A)		18.2 (B)	
2030 Background	4.7 (A)	4.9 (A)	4.5 (A)	1.7 (A)	1.5 (A)	44.8 (D)	1.4 (A)
		4.8 (A)		1.5 (A)		18.2 (B)	
2030 Build	4.6 (A)	5 (A)	4.5 (A)	1.7 (A)	1.5 (A)	44.8 (D)	1.4 (A)
		4.9 (A)		1.5 (A)		18.2 (B)	
2035 Background	4.7 (A)	4.9 (A)	4.5 (A)	1.7 (A)	1.5 (A)	44.8 (D)	1.4 (A)
		4.8 (A)		1.5 (A)		18.2 (B)	
2035 Build	4.6 (A)	5.1 (A)	4.5 (A)	1.7 (A)	1.5 (A)	44.8 (D)	1.4 (A)
		5.0 (A)		1.6 (A)		18.2 (B)	
PM Peak Hour							
Existing	9.3 (A)	6.4 (A)	5.7 (A)	3.3 (A)	3.6 (A)	42.7 (D)	3.2 (A)
		6.3 (A)		3.6 (A)		28.3 (C)	
2030 Background	8.7 (A)	6.8 (A)	5.7 (A)	3.3 (A)	3.8 (A)	42.7 (D)	3.2 (A)
		6.7 (A)		3.7 (A)		28.3 (C)	
2030 Build	8.5 (A)	6.9 (A)	5.7 (A)	3.3 (A)	3.9 (A)	42.7 (D)	3.2 (A)
		6.9 (A)		3.8 (A)		28.3 (C)	
2035 Background	8.6 (A)	6.8 (A)	5.7 (A)	3.3 (A)	3.8 (A)	42.7 (D)	3.2 (A)
		6.8 (A)		3.8 (A)		28.3 (C)	
2035 Build	8.5 (A)	7.0 (A)	5.7 (A)	3.3 (A)	3.9 (A)	42.7 (D)	3.2 (A)
		6.9 (A)		3.9 (A)		28.3 (C)	

This intersection operates at a LOS A for all peak periods. This intersection will operate at acceptable levels of service with existing laneage and optimized signal timing.

7.2.6 N. Main Street / Pruden Boulevard / Godwin Boulevard

This signalized intersection currently provides the following laneage:

- › N. Main Street / Pruden Boulevard (northbound): one exclusive left-turn lane, two through lanes, and one channelized free flow right-turn lane.
- › N. Main Street / Pruden Boulevard (southbound): one exclusive left-turn lane, one through lane, and one shared through-right-turn lane.
- › Godwin Boulevard (eastbound): one shared left-through lane and one exclusive right-turn lane.
- › Godwin Boulevard (westbound): one exclusive left-turn lane, one shared left-through lane, one exclusive right-turn lane.

The results for the five scenarios are illustrated in **Table 8**. Detailed analyses are provided in the **Appendix**.

Table 8: N. Main Street / Pruden Boulevard / Godwin Boulevard Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)									
		Eastbound		Westbound			Northbound			Southbound	
		LT - TH	RT	LT	TH	RT	LT	TH	RT	LT	TH - RT
AM Peak Hour											
Existing	19.8 (B)	41.4 (D)	38.7 (D)	38.7 (D)	39.0 (D)	27.7 (C)	5.4 (A)	7.5 (A)	0.6 (A)	15.3 (B)	20.6 (C)
		40.4 (D)		37.0 (D)			2.4 (A)			19.4 (B)	
2030 Background	20.6 (C)	41.5 (D)	38.6 (D)	39.3 (D)	39.0 (D)	26.2 (C)	5.9 (A)	9.6 (A)	0.7 (A)	16 (B)	23.3 (C)
		40.5 (D)		36.9 (D)			3.1 (A)			21.6 (C)	
2030 Build	24.1 (C)	41.5 (D)	38.6 (D)	46.2 (D)	46.8 (D)	24.3 (C)	10.7 (B)	13.1 (B)	0.9 (A)	17.7 (B)	26.2 (C)
		40.5 (D)		43.3 (D)			4.3 (A)			24.5 (C)	
2035 Background	21.0 (C)	41.5 (D)	38.5 (D)	40.3 (D)	39.9 (D)	26.0 (C)	6.7 (A)	9.8 (A)	0.7 (A)	16.4 (B)	23.8 (C)
		40.5 (D)		37.6 (D)			3.2 (A)			22.1 (C)	
2035 Build	24.8 (C)	41.5 (D)	38.5 (D)	47.8 (D)	48.3 (D)	24.1 (C)	11 (B)	13.6 (B)	0.9 (A)	18.1 (B)	26.9 (C)
		40.5 (D)		44.6 (D)			4.4 (A)			25.1 (C)	
PM Peak Hour											
Existing	24.1 (C)	58.6 (E)	55.5 (E)	47.5 (D)	46.9 (D)	29.8 (C)	12.8 (B)	21.9 (C)	1.1 (A)	17.8 (B)	23.3 (C)
		57.1 (E)		45.6 (D)			8.3 (A)			22.3 (C)	
2030 Background	25.6 (C)	58.5 (E)	55.4 (E)	47.8 (D)	46.6 (D)	27.6 (C)	14.2 (B)	27.3 (C)	1.6 (A)	20.6 (C)	28.0 (C)
		57.0 (E)		45.0 (D)			10.5 (B)			26.4 (C)	
2030 Build	26.8 (C)	58.5 (E)	55.4 (E)	50.2 (D)	48.4 (D)	25.5 (C)	14.1 (B)	28.4 (C)	2.4 (A)	23.1 (C)	31.1 (C)
		57 (E)		46.8 (D)			11.1 (B)			29.6 (C)	
2035 Background	26.2 (C)	58.7 (E)	55.4 (E)	48.4 (D)	46.8 (D)	26.8 (C)	14.8 (B)	28.4 (C)	1.7 (A)	21.5 (C)	29.1 (C)
		57.1 (E)		45.3 (D)			11.0 (B)			27.5 (C)	
2035 Build	27.6 (C)	58.7 (E)	55.4 (E)	52.4 (D)	50 (D)	25 (C)	14.6 (B)	28.5 (C)	2.7 (A)	23.8 (C)	32.0 (C)
		57.1 (E)		48.6 (D)			11.2 (B)			30.4 (C)	

This intersection operates at an overall LOS C or better during all scenarios. This intersection will operate at acceptable levels of service with existing laneage and optimized signal timing.

7.2.7 N. Main Street / Murphys Mill Road

This signalized intersection currently provides the following laneage:

- › N. Main Street (northbound): one exclusive left-turn lane, one through lane, and one shared through-right turn lane.
- › N. Main Street (southbound): one exclusive left-turn lane, one through lane, and one shared through-right turn lane.
- › Murphys Mill Road (eastbound): one shared left-through turn lane and one right-turn lane.
- › Murphys Mill Road (westbound): one shared left-through turn lane and one right-turn lane.

The results for the five scenarios are illustrated in **Table 9**. Detailed analyses are provided in the **Appendix**.

Table 9: N. Main Street / Murphy’s Mill Road Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)							
				Westbound		Northbound		Southbound	
		LT - TH	RT	LT - TH	RT	LT	TH - RT	LT	TH - RT
AM Peak Hour									
Existing	6.9 (A)	43.0 (D)	40.4 (D)	47.8 (D)	43.8 (D)	1.4 (A)	1.6 (A)	5.4 (A)	9.6 (A)
		42.3 (D)		46.0 (D)		1.6 (A)		9.5 (A)	
2030 Background	7.5 (A)	43.0 (D)	40.4 (D)	47.8 (D)	43.8 (D)	1.3 (A)	1.6 (A)	5.1 (A)	10.6 (B)
		42.3 (D)		46.0 (D)		1.6 (A)		10.5 (B)	
2030 Build	7.9 (A)	43.0 (D)	40.4 (D)	47.8 (D)	43.8 (D)	1.5 (A)	1.7 (A)	5.0 (A)	11.5 (B)
		42.3 (D)		46.0 (D)		1.7 (A)		11.4 (B)	
2035 Background	7.4 (A)	43.0 (D)	40.4 (D)	47.8 (D)	43.8 (D)	1.3 (A)	1.6 (A)	5.0 (A)	10.6 (B)
		42.3 (D)		46.0 (D)		1.6 (A)		10.5 (B)	
2035 Build	8.2 (A)	43.0 (D)	40.4 (D)	47.8 (D)	43.8 (D)	1.5 (A)	2.1 (A)	4.9 (A)	11.7 (B)
		42.3 (D)		46.0 (D)		2.1 (A)		11.6 (B)	
PM Peak Hour									
Existing	6.1 (A)	58.0 (E)	55.9 (E)	57.3 (E)	56.3 (E)	1.7 (A)	1.8 (A)	3.7 (A)	7.4 (A)
		56.7 (E)		56.6 (E)		1.8 (A)		7.3 (A)	
2030 Background	8.3 (A)	58.0 (E)	55.9 (E)	57.3 (E)	56.3 (E)	2.1 (A)	1.9 (A)	4.9 (A)	12.1 (B)
		56.7 (E)		56.6 (E)		1.9 (A)		12.0 (B)	
2030 Build	9.4 (A)	58.0 (E)	55.9 (E)	57.3 (E)	56.3 (E)	5.5 (A)	2.1 (A)	5.9 (A)	14.5 (B)
		56.7 (E)		56.6 (E)		2.2 (A)		14.4 (B)	
2035 Background	8.8 (A)	58.0 (E)	55.9 (E)	57.3 (E)	56.3 (E)	2.3 (A)	1.9 (A)	5.1 (A)	13.0 (B)
		56.7 (E)		56.6 (E)		1.9 (A)		12.9 (B)	
2035 Build	10.0 (B)	58.0 (E)	55.9 (E)	57.3 (E)	56.3 (E)	11.6 (B)	2.5 (A)	6.0 (A)	15.2 (B)
		56.7 (E)		56.6 (E)		2.7 (A)		15.1 (B)	

This intersection operates at an overall LOS B or better during all scenarios. This intersection will operate adequately with existing laneage and optimized signal timing.

7.2.8 N. Main Street / Louise Obici Lane / Northgate Lane

This signalized intersection currently provides the following laneage:

- › N. Main Street (northbound): one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- › N. Main Street (southbound): one exclusive left-turn lane, one through lane, and one shared through-right turn lane.
- › Northgate Lane (eastbound): one left-through-right turn lane.
- › Louise Obici Lane (westbound): one exclusive left-turn lane and one shared through-right turn lane.

The results for the five scenarios are illustrated in **Table 10**. Detailed analyses are provided in the **Appendix**.

Table 10: N. Main Street / Louise Obici Lane / Northgate Lane Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)										
		Eastbound			Westbound			Northbound			Southbound	
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH - RT
AM Peak Hour												
Existing	4.8 (A)	42.8 (D)	34.3 (C)	33.3 (C)		2.6 (A)	3.9 (A)	7.2 (A)	0.6 (A)	1.2 (A)		
			33.7 (C)			4.1 (A)			1.1 (A)			
2030 Background	4.8 (A)	42.8 (D)	34.3 (C)	33.3 (C)		2.4 (A)	3.7 (A)	7.2 (A)	1.2 (A)	2.1 (A)		
			33.7 (C)			3.9 (A)			2.1 (A)			
2030 Build	5.6 (A)	42.8 (D)	34.3 (C)	33.3 (C)		2.2 (A)	4.4 (A)	7.2 (A)	2.5 (A)	3.9 (A)		
			33.7 (C)			4.5 (A)			3.8 (A)			
2035 Background	4.8 (A)	42.8 (D)	34.3 (C)	33.3 (C)		2.4 (A)	3.7 (A)	7.2 (A)	1.3 (A)	2.3 (A)		
			33.7 (C)			3.9 (A)			2.2 (A)			
2035 Build	5.6 (A)	42.8 (D)	34.3 (C)	33.3 (C)		1.7 (A)	3.9 (A)	7.2 (A)	2.8 (A)	4.2 (A)		
			33.7 (C)			4.0 (A)			4.1 (A)			
PM Peak Hour												
Existing	7.3 (A)	57.8 (E)	47.7 (D)	45.4 (D)		4 (A)	5.9 (A)	1.3 (A)	3.2 (A)	2.7 (A)		
			46.2 (D)			5.6 (A)			2.7 (A)			
2030 Background	7.1 (A)	57.8 (E)	47.7 (D)	45.4 (D)		3.7 (A)	5.7 (A)	0.1 (A)	11 (B)	2.8 (A)		
			46.2 (D)			5.4 (A)			3.4 (A)			
2030 Build	7.7 (A)	57.8 (E)	47.7 (D)	45.4 (D)		1.4 (A)	4.1 (A)	0.1 (A)	47.9 (D)	4.1 (A)		
			46.2 (D)			3.9 (A)			6.9 (A)			
2035 Background	7.4 (A)	57.8 (E)	47.7 (D)	45.4 (D)		3.7 (A)	6.1 (A)	0.1 (A)	15.5 (B)	3.1 (A)		
			46.2 (D)			5.8 (A)			4 (A)			
2035 Build	8.2 (A)	57.8 (E)	47.7 (D)	45.4 (D)		1.6 (A)	4.0 (A)	0.1 (A)	55.8 (E)	4.9 (A)		
			46.2 (D)			3.8 (A)			8.1 (A)			

This intersection operates at an overall LOS A or better for all peak periods. This intersection will operate at acceptable levels of service with existing laneage and optimized signal timing.

7.2.9 N. Main Street / Edgewood Avenue / Memorial Avenue

This signalized intersection currently provides the following laneage:

- › N. Main Street (northbound): one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- › N. Main Street (southbound): one through lane, and one shared right-through lane.
- › Memorial Avenue (eastbound): one exclusive right-turn lane.
- › Edgewood Avenue (westbound): one shared full movement lane.

The results for the five scenarios are illustrated in **Table 11**. Detailed analyses are provided in the **Appendix**.

Table 11: Main Street / Edgewood Avenue / Memorial Avenue Unsignalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour													
Existing	0.1 (A)	20.5 (C)			-	-	0.0 (A)	9.2 (A)	0.0 (A)	0.0 (A)	-	0.0 (A)	
		0.0 (A)			0.0 (A)			0.0 (A)			0.0 (A)		
2030 Background	0.1 (A)	27.9 (D)			-	-	0.0 (A)	10.0 (A)	0.0 (A)	0.0 (A)	-	0.0 (A)	
		0.0 (A)			0 (A)			0.0 (A)			0.0 (A)		
2030 Build	10.0 (A)	90.5 (F)			326.9 (F)	12.8 (B)	10.0 (A)	0.0 (A)	0.0 (A)	11.2 (B)	0.0 (A)		
		92.1 (F)			0.0 (A)			2.2 (A)					
2035 Background	0.1 (A)	30.0 (D)			-	-	0.0 (A)	10.2 (B)	0.0 (A)	0.0 (A)	-	0.0 (A)	
		0.0 (A)			0.0 (A)			0.0 (A)			0.0 (A)		
2035 Build	11.1 (B)	102.0 (F)			385.0 (F)	13.0 (B)	10.2 (B)	0.0 (A)	0.0 (A)	11.5 (B)	0.0 (A)		
		106.9 (F)			0.0 (A)			2.2 (A)					
PM Peak Hour													
Existing	0.2 (A)	50.0 (F)			-	-	13.0 (B)	11.0 (B)	0.0 (A)	0.0 (A)	-	0.0 (A)	
		13.0 (B)			0.0 (A)			0.0 (A)			0.0 (A)		
2030 Background	0.2 (A)	86.5 (F)			-	-	14.4 (B)	12.3 (B)	0.0 (A)	0.0 (A)	-	0.0 (A)	
		14.4 (B)			0.0 (A)			0.0 (A)			0.0 (A)		
2030 Build	64.1 (F)	732.5 (F)			2,796.1 (F)	28.6 (D)	12.3 (B)	0.0 (A)	0.0 (A)	16.7 (C)	0.0 (A)		
		653.5 (F)			0.0 (A)			1.8 (A)					
2035 Background	0.3 (A)	99.2 (F)			-	-	14.9 (B)	12.7 (B)	0.0 (A)	0.0 (A)	-	0.0 (A)	
		14.9 (B)			0.0 (A)			0.0 (A)			0.0 (A)		
2035 Build	75.9 (F)	1,000.4 (F)			3,434.4 (F)	31.2 (D)	12.7 (B)	0.0 (A)	0.0 (A)	17.7 (C)	0.0 (A)		
		799.7 (F)			0.0 (A)			1.9 (A)					

- Indicates Movement Does Not Exist

This intersection currently operates as a restricted right-in/right-out access. With the development of the Riversbend, this intersection is recommended to be modified to provide full-movement access and is modeled as such in all build scenarios.

Riversbend Development Traffic Impact Analysis

During the build scenarios, the overall intersection level of service is worsened in large part due to increased delays along the westbound approach for vehicles making a left-turn to travel southbound along Main Street. Due to these increased delays, a signal warrant analysis was performed for this intersection as outlined below:

7.2.9.1 Traffic Signal Warrant Analysis

The analysis evaluated the proposed build-out conditions using the warrant analysis as outlined in the *Manual on Uniform Traffic Control Devices (MUTCD)* for the following three warrants:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour

To project daily build-out conditions for this intersection, actual ADT volumes were used along N. Main Street. To project daily volumes along the site driveway, ITE methodologies for hourly trip distributions of entering and exiting vehicles were selected using arrival patterns for the land uses shown in the trip generation outlined in **Chapter 5**. This methodology applied arrival patterns to estimate hourly side street volumes between 6:00 AM – 10:00 PM at this intersection.

Signal warrant analysis was performed for two scenarios:

1. N Main Street Mainline (NB and SB, 2 lane approach) vs. Side Street Traffic (2 lane approach, 50% right-turn reduction)
2. N Main Street Mainline (NB only) vs. Southbound Left-turn (1 lane approach)

The results of these signal warrant analyses are illustrated in **Tables 12** and **13** below. Under both approaches, a traffic signal is warranted under Warrant 1 – Condition B, Part 1. Detailed results of these analyses are contained in the **Appendix**.

Table 12: Main Street / Edgewood Avenue / Memorial Avenue Signal Warrant Analysis: Scenario 1

Warrant 1	Warrant 1: 8-hr Condition A	Warrant 1: 8-hr Condition B	Warrant 1: Condition A, Part 2	Warrant 1: Condition B, Part 2	Warrant 2: 4-hr
Conditions Met					
Major Street	Y – 16 hrs	Y – 14 hrs	Y – 16 hrs	Y – 14 hrs	
Minor Street	Y – 0 hrs	Y – 10 hrs	Y – 0 hrs	Y – 12 hrs	
Both	Y – 0 hrs	Y – 10 hrs	Y – 0 hrs	Y – 12 hrs	Y - 4 hrs
Warrant Satisfied?	NOT SATISFIED	SATISFIED	NOT SATISFIED		SATISFIED

Signal warrant analysis for Scenario 1 was performed with 2 approach lanes for northbound and westbound approaches with a 50% reduction for westbound right-turns. The results of this analysis conclude that a traffic signal is warranted based on 8-hour and 4-hour traffic volume conditions.

Table 13: Main Street / Edgewood Avenue / Memorial Avenue Signal Warrant Analysis: Scenario 2

Warrant 1	Warrant 1: 8-hr Condition A	Warrant 1: 8-hr Condition B	Warrant 1: Condition A, Part 2	Warrant 1: Condition B, Part 2	Warrant 2: 4-hr
Conditions Met					
Major Street	Y – 12 hrs	Y – 8 hrs	Y – 14 hrs	Y – 11 hrs	
Minor Street	Y – 3 hrs	Y – 14 hrs	Y – 9 hrs	Y – 14 hrs	
Both	Y – 3 hrs	Y – 8 hrs	Y – 9 hrs	Y – 11 hrs	Y – 6 hrs
Warrant Satisfied?	NOT SATISFIED	SATISFIED	SATISFIED		SATISFIED

Signal warrant analysis for Scenario 2 was performed with the northbound approach accounting for the major street traffic volumes, and the opposing southbound left-turn accounting for the minor street vehicles. This approach is consistent with MUTCD guidance (MUTCD 11th edition, section 4C.01, note 14).

The results of this analysis conclude that a traffic signal is warranted based on 8-hour traffic volume conditions.

This is an extremely conservative approach as the project volumes do not capture the additional build-out traffic associated with commercial property to the immediate north of the site. With the addition of a full movement signalized entrance, traffic currently using the Northgate Lane signal will shift to this new signalized access. **Table 17** illustrates the delay and LOS for the AM and PM peak period Build scenarios under signalized operations. Detailed results of these analyses are contained in the **Appendix**.

Table 14: Main Street / Edgewood Avenue / Memorial Avenue Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)											
		Eastbound			Westbound			Northbound			Southbound		
		LT - TH - RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
AM Peak Hour													
2030 Build	6.9 (A)	36.7 (D)	39.8 (D)	37.3 (D)	2.2 (A)	3.6 (A)	8.5 (A)	5.3 (A)	3.1 (A)				
			37.9 (D)			3.8 (A)			3.5 (A)				
2035 Build	6.6 (A)	36.7 (D)	39.8 (D)	37.3 (D)	1.9 (A)	4.1 (A)	8.5 (A)	4.3 (A)	2.4 (A)				
			37.9 (D)			4.4 (A)			2.8 (A)				
PM Peak Hour													
2030 Build	9.3 (A)	48.9 (D)	54.7 (D)	51.8 (D)	4.4 (A)	7.1 (A)	7.7 (A)	9.1 (A)	1.7 (A)				
			52.5 (D)			7.1 (A)			2.5 (A)				
2035 Build	9.5 (A)	48.8 (D)	54.6 (D)	52.1 (D)	4.5 (A)	7.9 (A)	7.8 (A)	10.8 (B)	1.4 (A)				
			52.6 (D)			7.9 (A)			2.4 (A)				

7.2.10 N. Main Street / Lowe's Entrance

This signalized intersection currently provides the following laneage:

- › N. Main Street (northbound): one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- › N. Main Street (southbound): one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- › Lowe's entrance (eastbound): one shared left-through lane and one exclusive right-turn lane.
- › Lowe's entrance (westbound): one shared left-through lane and one exclusive right-turn lane.

The results for the five scenarios are illustrated in **Table 12**. Detailed analyses are provided in the **Appendix**.

Table 15: Main Street / Lowe’s Entrance Signalized Intersection Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)									
		Eastbound		Westbound		Northbound			Southbound		
		LT - TH	RT	LT - TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour											
Existing	20.6 (C)	41.1 (D)	38.8 (D)	41.2 (D)	38.1 (D)	51.8 (D)	9.1 (A)	14.8 (B)	48.6 (D)	12.8 (B)	11.6 (B)
		40.1 (D)		39.3 (D)		13.6 (B)			20.6 (C)		
2030 Background	19.8 (B)	41.1 (D)	38.8 (D)	41.2 (D)	38.1 (D)	53.7 (D)	9.4 (A)	14.8 (B)	49.4 (D)	13.4 (B)	11.6 (B)
		40.1 (D)		39.3 (D)		13.5 (B)			19.6 (B)		
2030 Build	18.8 (B)	41.1 (D)	38.8 (D)	41.2 (D)	38.1 (D)	54.8 (D)	9.8 (A)	14.8 (B)	46.3 (D)	12.4 (B)	11.6 (B)
		40.1 (D)		39.3 (D)		13.5 (B)			18 (B)		
2035 Background	19.7 (B)	41.1 (D)	38.8 (D)	41.2 (D)	38.1 (D)	54.0 (D)	9.5 (A)	14.8 (B)	49.5 (D)	13.6 (B)	11.6 (B)
		40.1 (D)		39.3 (D)		13.4 (B)			19.6 (B)		
2035 Build	18.9 (B)	41.1 (D)	38.8 (D)	41.2 (D)	38.1 (D)	55.3 (E)	9.9 (A)	14.8 (B)	46.5 (D)	12.9 (B)	11.6 (B)
		40.1 (D)		39.3 (D)		13.5 (B)			18.2 (B)		
PM Peak Hour											
Existing	33.0 (C)	56.5 (E)	47.2 (D)	62.2 (E)	48.3 (D)	81.3 (F)	14.7 (B)	19.6 (B)	76.9 (E)	16.2 (B)	25.6 (C)
		51.9 (D)		54.6 (D)		27.4 (C)			27.1 (C)		
2030 Background	30.5 (C)	56.5 (E)	47.2 (D)	62.2 (E)	48.3 (D)	82.2 (F)	15.8 (B)	19.6 (B)	76.9 (E)	15.2 (B)	17.2 (B)
		51.9 (D)		54.6 (D)		26.3 (C)			23.9 (C)		
2030 Build	29.2 (C)	56.5 (E)	47.2 (D)	62.2 (E)	48.3 (D)	76.7 (E)	11.0 (B)	19.6 (B)	73.4 (E)	18.8 (B)	20.3 (C)
		51.9 (D)		54.6 (D)		21.2 (C)			26.1 (C)		
2035 Background	30.0 (C)	56.5 (E)	47.2 (D)	62.2 (E)	48.3 (D)	82.4 (F)	15.7 (B)	19.6 (B)	76.4 (E)	15.1 (B)	16.5 (B)
		51.9 (D)		54.6 (D)		26.0 (C)			23.4 (C)		
2035 Build	28.8 (C)	56.5 (E)	47.2 (D)	62.2 (E)	48.3 (D)	76.7 (E)	11.4 (B)	19.6 (B)	72.6 (E)	18.2 (B)	22.5 (C)
		51.9 (D)		54.6 (D)		21.2 (C)			25.5 (C)		

This intersection operates at an overall LOS C or better during all peak periods. This intersection will operate adequately with existing laneage and optimized signal timing.

7.2.11 N. Main Street / Walmart Entrance

This signalized intersection currently provides the following laneage:

- › Main Street (northbound): one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- › Main Street (southbound): one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- › Walmart Entrance (eastbound): one shared left-through-right turn lane.
- › Walmart Entrance (westbound): one exclusive left-turn lane, one shared through-left turn lane, one exclusive right-turn lane.

The results for the five scenarios are illustrated in **Table 13**. Detailed analyses are provided in the **Appendix**.

Table 16: Main Street / Walmart Entrance Signalized Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)											
		Eastbound			Westbound			Northbound			Southbound		
		LT - TH -RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
AM Peak Hour													
Existing	15.5 (B)	43.0 (D)	41.2 (D)	41.3 (D)	38.7 (D)	7.8 (A)	8.2 (A)	9.3 (A)	13.7 (B)	17.8 (B)	7.7 (A)		
			40.4 (D)			8.3 (A)			17.0 (B)				
2030 Background	16.0 (B)	43.0 (D)	41.2 (D)	41.3 (D)	38.7 (D)	7.8 (A)	8.3 (A)	9.3 (A)	14.3 (B)	19.3 (B)	7.7 (A)		
			40.4 (D)			8.4 (A)			18.6 (B)				
2030 Build	16.2 (B)	43.0 (D)	41.2 (D)	41.3 (D)	38.7 (D)	7.6 (A)	8.4 (A)	9.3 (A)	15.5 (B)	20.0 (C)	7.7 (A)		
			40.4 (D)			8.5 (A)			19.3 (B)				
2035 Background	16.0 (B)	43.0 (D)	41.2 (D)	41.3 (D)	38.7 (D)	7.8 (A)	8.4 (A)	9.3 (A)	14.3 (B)	19.4 (B)	7.7 (A)		
			40.4 (D)			8.5 (A)			18.6 (B)				
2035 Build	16.3 (B)	43.0 (D)	41.2 (D)	41.3 (D)	38.7 (D)	7.8 (A)	8.5 (A)	9.3 (A)	15.8 (B)	20.3 (C)	7.7 (A)		
			40.4 (D)			8.6 (A)			19.6 (B)				
PM Peak Hour													
Existing	17.4 (B)	55.8 (E)	55.6 (E)	55.6 (E)	48.0 (D)	6.1 (A)	8.3 (A)	12.8 (B)	10.9 (B)	12.4 (B)	11.4 (B)		
			53.4 (D)			8.6 (A)			12.3 (B)				
2030 Background	18.4 (B)	55.8 (E)	55.6 (E)	55.6 (E)	48.0 (D)	6.3 (A)	8.4 (A)	12.8 (B)	15.5 (B)	16.8 (B)	11.4 (B)		
			53.4 (D)			8.7 (A)			16.5 (B)				
2030 Build	22.1 (C)	55.8 (E)	55.6 (E)	55.6 (E)	48.0 (D)	20.7 (C)	17.5 (B)	12.8 (B)	17.2 (B)	17.7 (B)	11.4 (B)		
			53.4 (D)			17.2 (B)			17.4 (B)				
2035 Background	18.5 (B)	55.8 (E)	55.6 (E)	55.6 (E)	48.0 (D)	6.3 (A)	8.3 (A)	12.8 (B)	16.4 (B)	17.5 (B)	11.4 (B)		
			53.4 (D)			8.6 (A)			17.2 (B)				
2035 Build	22.6 (C)	55.8 (E)	55.6 (E)	55.6 (E)	48 (D)	21.4 (C)	17.9 (B)	12.9 (B)	19.1 (B)	18.8 (B)	11.4 (B)		
			53.4 (D)			17.6 (B)			18.5 (B)				

This intersection operates at an overall LOS A during the AM peak period scenarios and an overall LOS C or better during the PM peak period scenarios. This intersection will operate acceptably with existing laneages and optimized signal timing.

7.2.12 N. Main Street / Big Lots Entrance

This signalized intersection currently provides the following laneage:

- › N. Main Street (northbound): one exclusive left-turn lane, two exclusive through lanes, and one exclusive right-turn lane.
- › N. Main Street (southbound): one exclusive left-turn lane, one through lane, and one through-right turn lane.
- › Big Lots (eastbound): one left-through-right turn lane.
- › Big Lots (westbound): one exclusive left-turn lane and one left-through-right turn lane.

The results for the five scenarios are illustrated in **Table 14**. Detailed analyses are provided in the **Appendix**.

Table 17: Main Street / Big Lots Entrance Signalized Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)								
		Eastbound	Westbound		Northbound			Southbound		
		LT - TH - RT	LT	TH - RT	LT	TH	RT	LT	TH	RT
AM Peak Hour										
Existing	7.6 (A)	- (-)	41.2 (D)	39.4 (D)	5.0 (A)	7.0 (A)	5.7 (A)	1.9 (A)	3.5 (A)	
			40.4 (D)		6.8 (A)			3.3 (A)		
2030 Background	8.2 (A)	- (-)	41.2 (D)	39.4 (D)	5.0 (A)	7.3 (A)	5.7 (A)	3.2 (A)	5.6 (A)	
			40.4 (D)		7.1 (A)			5.4 (A)		
2030 Build	8.4 (A)	- (-)	41.2 (D)	39.4 (D)	5.0 (A)	7.5 (A)	5.7 (A)	3.6 (A)	6.1 (A)	
			40.4 (D)		7.3 (A)			5.9 (A)		
2035 Background	8.3 (A)	- (-)	41.2 (D)	39.4 (D)	5.0 (A)	7.4 (A)	5.7 (A)	3.4 (A)	5.8 (A)	
			40.4 (D)		7.2 (A)			5.6 (A)		
2035 Build	8.5 (A)	- (-)	41.2 (D)	39.4 (D)	5.0 (A)	7.7 (A)	5.7 (A)	3.8 (A)	6.3 (A)	
			40.4 (D)		7.5 (A)			6.0 (A)		
PM Peak Hour										
Existing	26.7 (C)	59.6 (E)	57.3 (E)	51.1 (D)	16.5 (B)	21.8 (C)	103.2 (F)	11.6 (B)	17.7 (B)	
			54.3 (D)		31.0 (C)			17.1 (B)		
2030 Background	29.0 (C)	59.6 (E)	57.3 (E)	51.1 (D)	17.9 (B)	26.0 (C)	93.5 (F)	19.2 (B)	21.8 (C)	
			54.3 (D)		32.4 (C)			21.5 (C)		
2030 Build	20.5 (C)	59.6 (E)	57.3 (E)	51.1 (D)	20.7 (C)	28.2 (C)	32.7 (C)	13.5 (B)	7.0 (A)	
			54.3 (D)		28.5 (C)			7.5 (A)		
2035 Background	29.5 (C)	59.6 (E)	57.3 (E)	51.1 (D)	18.5 (B)	26.6 (C)	92.2 (F)	21.4 (C)	22.5 (C)	
			54.3 (D)		32.6 (C)			22.4 (C)		
2035 Build	20.6 (C)	59.6 (E)	57.3 (E)	51.1 (D)	21.5 (C)	28.7 (C)	32.2 (C)	15.1 (B)	7.0 (A)	
			54.3 (D)		28.9 (C)			7.7 (A)		

This intersection operates at an overall LOS A during the AM peak period scenarios and an overall LOS C or better during the PM peak period scenarios. This intersection will operate adequately with existing laneage and optimized signal timing.

7.2.13 Main Street / Constance Road / US Route 58

This signalized intersection currently provides the following laneage:

- › N. Main Street (northbound): one exclusive left-turn lane, one through lane, and one shared through-right-turn lane.
- › N. Main Street (southbound): one exclusive left-turn lane, one through lane, and one through-right-turn lane.
- › Constance Road (eastbound): two exclusive left-turn lanes and one through lane, and one through-right-turn lane.
- › Constance Road (westbound): one exclusive left-turn lane, one through lane, and an exclusive right-turn lane.

The results for the five scenarios are illustrated in **Table 15**. Detailed analyses are provided in the **Appendix**.

Table 18: N Main Street / Constance Road / US 58 Signalized Level of Service

Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach [sec/veh] (Level of Service)									
		Eastbound		Westbound			Northbound		Southbound		
		LT	TH - RT	LT	TH	RT	LT	TH - RT	LT	TH - RT	
AM Peak Hour											
Existing	35.3 (D)	53.5 (D)	48.4 (D)	55.8 (E)	55.1 (E)	30.4 (C)	62.2 (E)	24.1 (C)	56.8 (E)	16.5 (B)	
		51.0 (D)		43.4 (D)			25.4 (C)		25.8 (C)		
2030 Background	36.0 (D)	53.5 (D)	47.3 (D)	55.9 (E)	55.1 (E)	28.3 (C)	62.1 (E)	28.8 (C)	56.8 (E)	18.4 (B)	
		50.6 (D)		41.9 (D)			29.9 (C)		28.1 (C)		
2030 Build	37.3 (D)	69 (E)	42.0 (D)	61.7 (E)	53.0 (D)	24.3 (C)	58.7 (E)	30.9 (C)	56.6 (E)	19.7 (B)	
		56.8 (E)		40 (D)			31.8 (C)		29.0 (C)		
2035 Background	36.5 (D)	53.5 (D)	47.0 (D)	56.2 (E)	54.6 (D)	28.1 (C)	62.6 (E)	30.1 (C)	56.8 (E)	19.2 (B)	
		50.5 (D)		41.7 (D)			31.3 (C)		28.6 (C)		
2035 Build	37.7 (D)	69.6 (E)	41.2 (D)	62.6 (E)	52.0 (D)	23.9 (C)	59.5 (E)	32.1 (C)	56.9 (E)	20.4 (C)	
		56.8 (E)		39.7 (D)			33.0 (C)		29.6 (C)		
PM Peak Hour											
Existing	42.6 (D)	53.2 (D)	40.1 (D)	55.3 (E)	55.6 (E)	22 (C)	63.7 (E)	48.8 (D)	56.7 (E)	33.2 (C)	
		47.8 (D)		37.8 (D)			49.3 (D)		39.6 (D)		
2030 Background	53.0 (D)	53.2 (D)	37.4 (D)	55.6 (E)	52.9 (D)	22 (C)	58.6 (E)	79.4 (E)	84.6 (F)	40.1 (D)	
		47.2 (D)		36.0 (D)			78.8 (E)		52.5 (D)		
2030 Build	43.8 (D)	67.2 (E)	36.1 (D)	75.2 (E)	77.7 (E)	20.3 (C)	54.4 (D)	71.9 (E)	41.9 (D)	19.6 (B)	
		55.7 (E)		44.9 (D)			71.4 (E)		25.8 (C)		
2035 Background	58.6 (E)	53.7 (D)	37.0 (D)	55.7 (E)	53.1 (D)	22.8 (C)	58.8 (E)	90.7 (F)	106.7 (F)	42.8 (D)	
		47.3 (D)		36.5 (D)			89.7 (F)		60.5 (E)		
2035 Build	48.7 (D)	72.5 (E)	36.3 (D)	76.4 (E)	84.3 (F)	20.9 (C)	54.9 (D)	87.9 (F)	44.9 (D)	21.0 (C)	
		59.0 (E)		47.4 (D)			86.9 (F)		27.6 (C)		

This intersection currently operates at an overall LOS D during AM and PM Existing scenarios. With the addition of general growth and approved developments, this intersection will operate at LOS E during the 2035 Background PM scenario. To achieve acceptable levels of service, this intersection is recommended to be coordinated with upstream and downstream traffic signals along Constance Road. These optimized timings are modeled in the Build scenario analysis and the intersection will operate at overall LOS D during both AM and PM peak Build scenarios.

7.2.14 Riversbend Development Driveway

Primary access to the site is provided via a signalized intersection at Memorial Avenue. However, a secondary site entrance providing right-in/right-out access is proposed approximately 335' south of Memorial Avenue, see site plan included in the **Appendix**.

Based on the volumes of traffic, the site driveway will require a full length right-turn lane with 150' of storage and 50' of taper.

The site driveway should be configured to allow right-out only movements and restrict inbound left-turns.

7.3 Site Access Management

The site access is currently provided by two driveways, which were formally one way in (southern entrance) and one way out (northern entrance). The location and operations of these driveways do not meet the needs of the proposed site layout and furthermore do not meet access management criteria. The City of Suffolk Public Works Facilities Manual (PFM) states that the minimum crossover spacing requirement for a 45-mph design speed (35-mph posted speed plus 10mph) is 650 feet, with a desired spacing of 800 feet.

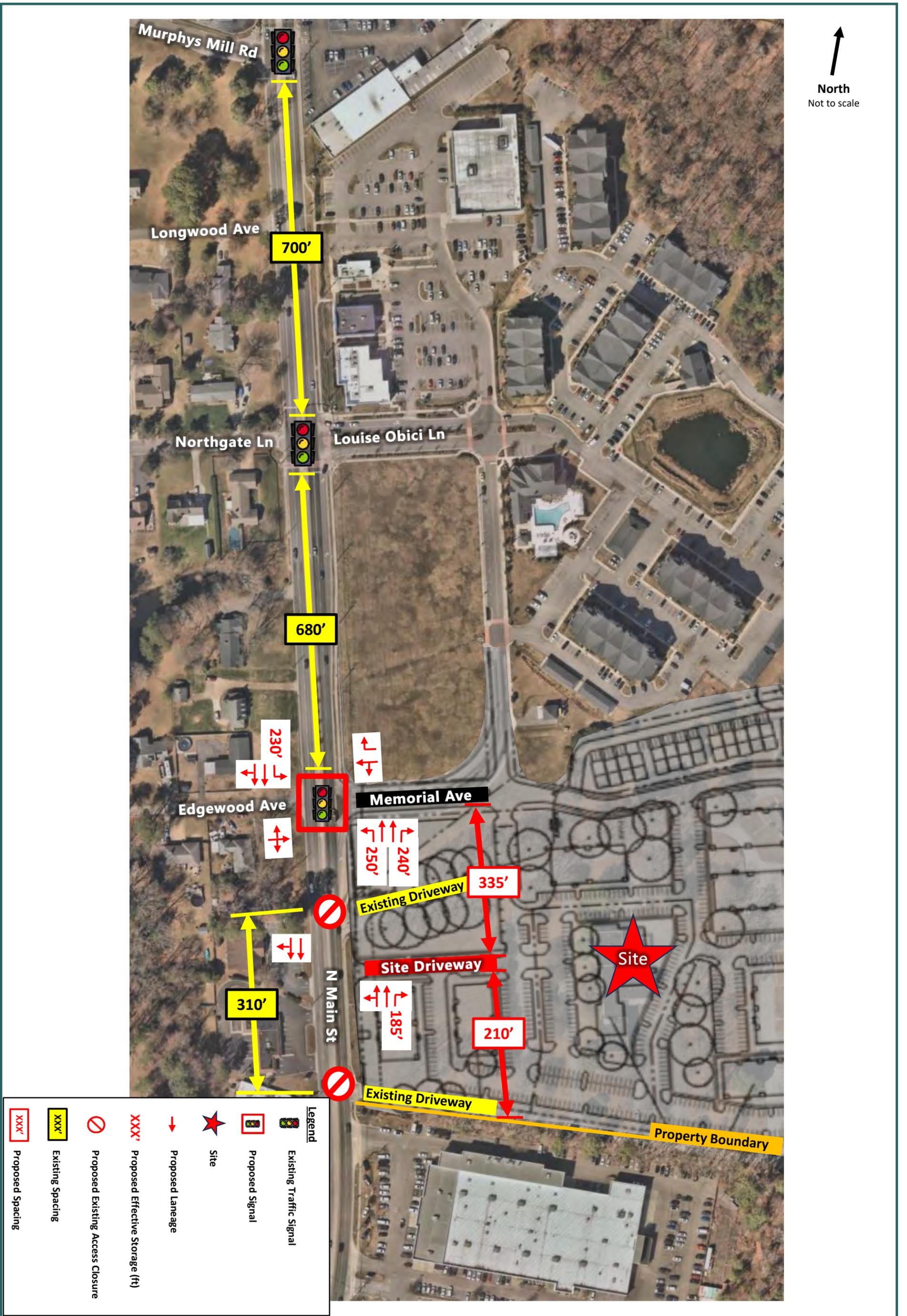
N. Main Street is a key corridor in the City that supports both residential commuters as well as various retail establishments. Some of the more recent developments generate higher traffic demands and have warranted signalized access, however there are a number of commercial and office sites with a single tenant/office that have full movement driveways.

Figure 15 illustrates the existing signal spacing along N. Main Street.

Access for the Riversbend development requires a minimum of two points, with at least one full movement access and a secondary right-in/right-out (RI/RO) driveway. With limited frontage along N. Main Street, the ability to provide two access points within the property limits that meet City standards is not feasible.

Various options for site access were developed and shared with City staff and are included in the **Appendix**. It was determined that connection via Memorial Avenue was the preferred option for full movement access and also allows for the secondary RI/RO to be provided within the development property limits. This option does not negatively impact the adjacent properties, maintains the existing center turn to support a northbound left-turn for the properties west of N. Main Streets, and meets the access management requirements.

With proposed shared access to the N. Main Street and Memorial Avenue intersection, this existing RI/RO access can be converted to full movement signalized. Signalized control operations at the intersection of N Main Street and Memorial Avenue meet minimum city standards for access management spacing, allow the construction of turn lanes within the site's frontage, and cause minimal impact to adjacent parcels. A traffic signal adequately supports the traffic generated by the Riversbend development.



7.4 Safety Analysis

The city noted that the study area has experienced a high frequency of crashes. As part of the traffic impact study, crash data was analyzed using the Virginia Department of Transportation (VDOT) Crash Analysis tool, along Main St in the immediate vicinity of the proposed Riversbend development site frontage. Data from 2019 through 2025 is summarized in **Table 19** and identifies a total of 51 crashes occurring over the study period. Detailed crash information by crash type and severity is illustrated in figures as follows:

- › **Figure 16** – Crash Analysis Study Area Overview
- › **Figure 17** – Crash Analysis Diagram A
- › **Figure 18** – Crash Analysis Diagram B
- › **Figure 19** – Crash Analysis Diagram C

Table 19: Main Street Crash Summary by Type and Severity

Crash Type	Crash Severity				Total
	A. Severe Injury	B. Visible Injury	C. Non-visible Injury	PDO. Property Damage Only	
Angle	0	0	5	5	10
Rear End	0	1	15	9	25
Sideswipe - Same Direction	0	0	2	6	8
Fixed Object - Off Road	0	1	0	1	2
Pedestrian	1	0	1	0	2
Deer	0	1	0	0	1
Other	1	0	1	1	3
Total	2	3	24	22	51

This segment of Main St is especially afflicted by rear end crashes, contributing to 49% of the crashes within the study area. Additionally, angle and side swipe – same direction account for 20% and 16%, respectively, of the total crashes occurring within the study area.

While some identified recommendations supporting site traffic for the proposed Riversbend development may not directly mitigate existing corridor crashes, they align with countermeasures statistically shown to reduce crash risks.

In accordance with City of Suffolk’s Public Facilities Manual (PFM), an exclusive right-turn lane is required at the proposed right-in only site entrance to adequately support site traffic to the mixed-use development. The construction of the exclusive right-turn lane is compatible with the below described crash modification factor (CMF):

- › Presence of right turning lane on arterial with signal coordination – CMF ID: 3071

This countermeasure allows right-turning vehicles to remove themselves from mainline through movements while reducing speed to make the right turn, reducing conflicts at the proposed site entrance. While the addition of a driveway creates a new conflict point along Main Street, a right-turn lane has a CMF of 0.06, indicating a significant reduction in rear end crashes at coordinated signalized intersections when exclusive right-turn lanes are installed.

Riversbend Development Traffic Impact Analysis

Therefore, the additional driveway will be constructed with countermeasures applied to ensure rear end crashes, which are consistent throughout this segment of Main St, are proactively mitigated. Additionally, the site driveway is restricted to right-in only and is not anticipated to create additional crashes.

The primary access point for the Riversbend development will be provided via a proposed full-movement signalized intersection at the intersection of Main Street and Edgewood Lane/Memorial Avenue. This improvement supports ingress and egress for side streets with signalized control, providing benefits from both an operational and safety perspective. While a traffic signal would create an additional stop along Main Street, optimized signal timings are recommended to support the additional site traffic along Main Street. Though optimized signal timing doesn't correlate to an evaluated and established countermeasure, coordinated conditions with platooned traffic can enable drivers to move through the corridor with reduced stops and stopped delay, thereby reducing speed variations and mitigating risk of rear-end collisions. [1]

Additionally, to provide safer conditions for vehicles destined to and from the proposed development, dedicated left-turn lanes are recommended at the Main Street & Edgewood Ave/Memorial Ave signalized intersection. The southbound left-turn lane is expected to be constructed within the existing raised median and a raised median is expected to be constructed with the northbound left turn lane. A raised median along Main Street within the development frontage limits would restrict access for neighboring developments west of Main Street to right-in/right-out access only and would reduce the potential for angle crashes from left turning vehicles using the existing two way left turn lane (TWLTL). This condition is in alignment with the following CMF:

- › Replace TWLTL with raised median – CMF ID: 2515

This countermeasure allows left-turning vehicles using the existing TWLTL to have a physical barrier between them and opposing traffic. Implementing this countermeasure can reduce angle and sideswipe crashes by 36% and 21% respectively, two crash types that are prevalent within the study area.

[1] Yue, R., Yang, G., Zheng, Y. et al. *Effects of traffic signal coordination on the safety performance of urban arterials*. Computational Urban Science. 2, 3. 2022.

Figure 16: Crash Analysis Study Area

Riversbend TIA | Suffolk, Virginia

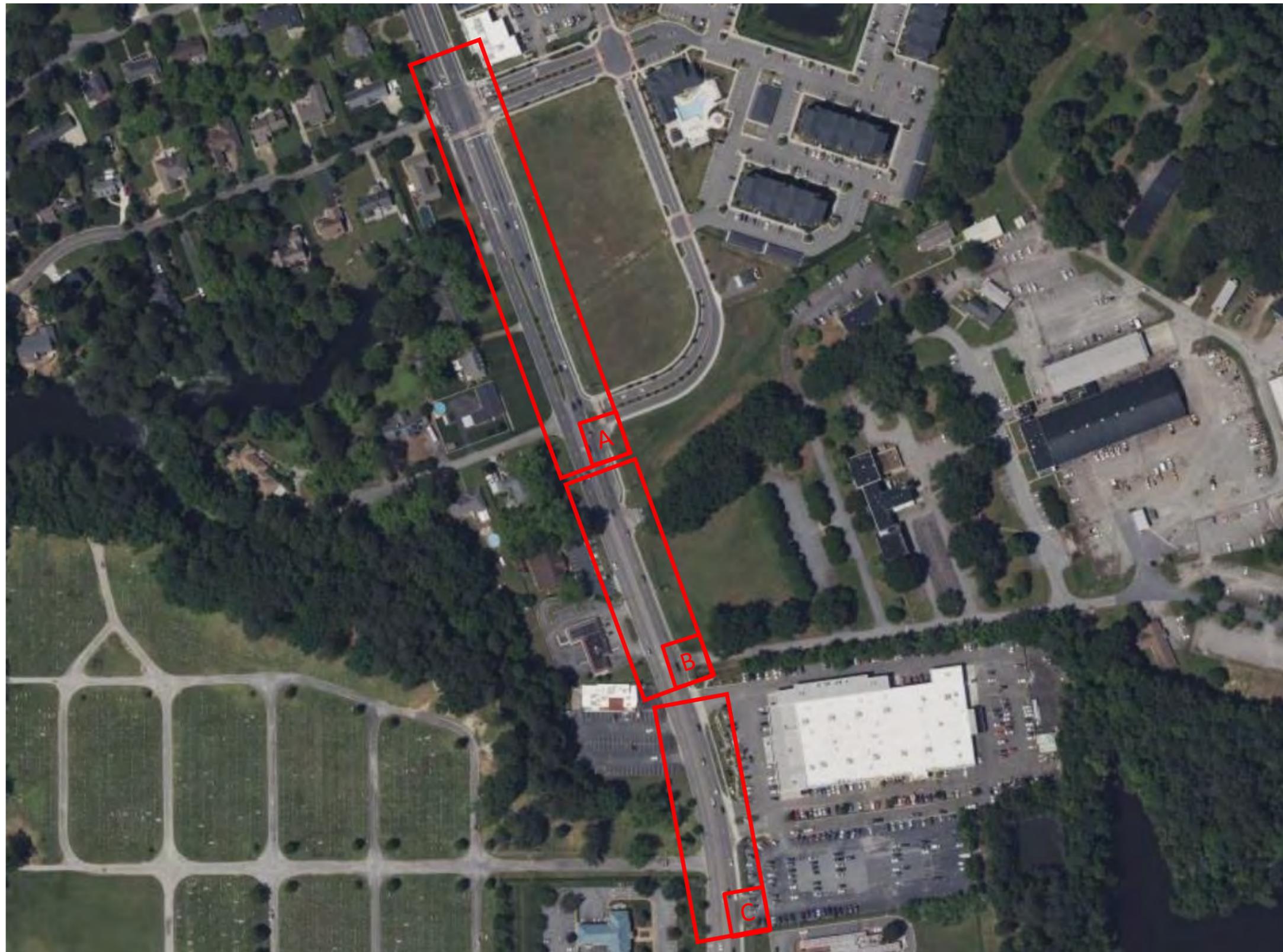


Figure 17: Crash Analysis Diagram A – Main St: Northgate Ln to Edgewood Ave

Riversbend TIA | Suffolk, Virginia

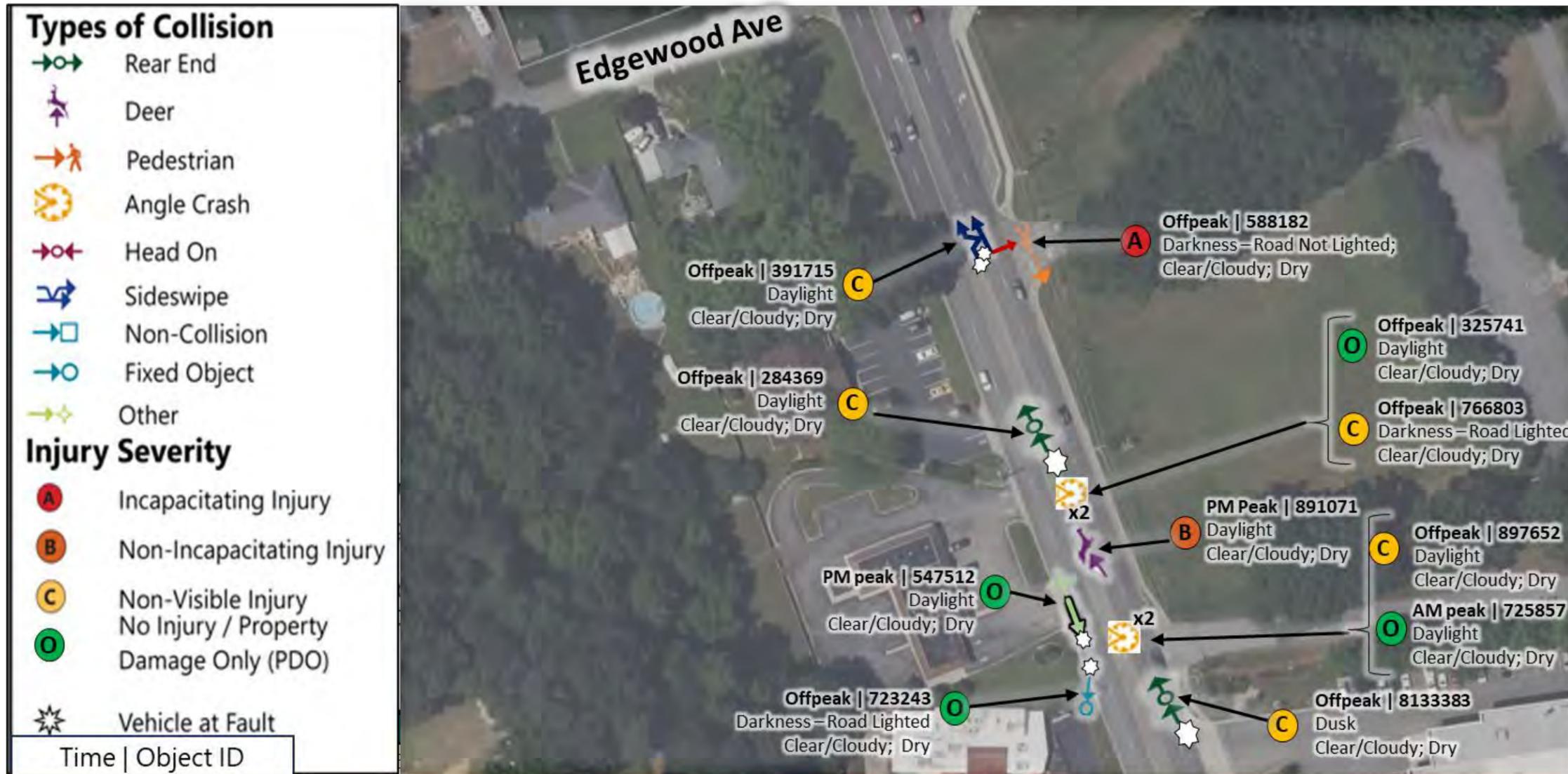


Collision Summary

Year	Type of Collision						Time of Day			Lighting			Weather		Pavement Condition			Severity					Total
	Angle	Rear-End	Head-On	Sideswipe	Fixed Object	Other	AM Peak (7-10AM)	PM Peak (4-7PM)	Off Peak	Daylight	Dawn/Dusk	Darkness - Lighting	Clear	Rain/Snow	Dry	Wet	Icy	K	A	B	C	PDO	
2019	1	3		1				2	3	3		2	5		5							5	5
2020	2	5					1	1	5	6		1	4	3	4	3					5	2	7
2021		5						2	3	4	1		2	3	3	2					2	3	5
2022		1				1			2	1		1	2		2						2		2
2023		1		1		1			3	1		2	3		3				1		2		3
2024	1	6						2	5	5		2	6	1	6	1					5	2	7
2025				1			1			1			1		1							1	1
Total	4	21		3		2	2	7	21	21	1	8							1		16	13	30

Figure 18: Crash Analysis Diagram B – Main St: Edgewood Ave to Commercial Property Entrance

Riversbend TIA | Suffolk, Virginia



Types of Collision

- Rear End
- 🦌 Deer
- 🚶 Pedestrian
- 🚗🚗 Angle Crash
- 🚗 Head On
- 🚗↔️ Sideswipe
- 🚗 Non-Collision
- 🚗 Fixed Object
- 🌟 Other

Injury Severity

- ⓐ Incapacitating Injury
- ⓑ Non-Incapacitating Injury
- ⓒ Non-Visible Injury
- ⓓ No Injury / Property Damage Only (PDO)
- 🌟 Vehicle at Fault

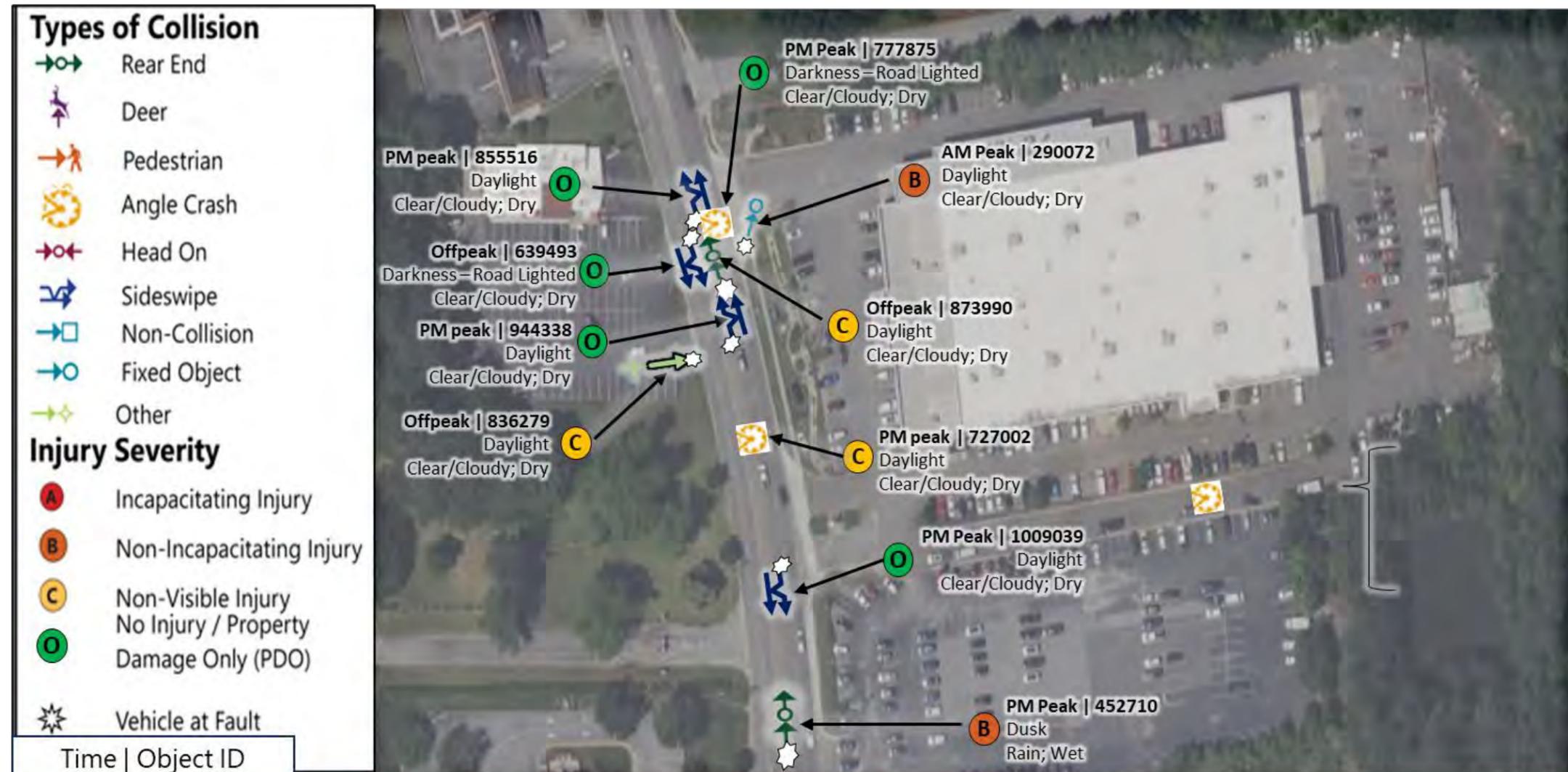
Time | Object ID

Collision Summary

Year	Type of Collision						Time of Day			Lighting			Weather		Pavement Condition			Severity					Total
	Angle	Rear-End	Head-On	Sideswipe	Fixed Object	Other	AM Peak (7-10AM)	PM Peak (4-7PM)	Off Peak	Daylight	Dawn/Dusk	Darkness - Lighting	Clear	Rain/Snow	Dry	Wet	Icy	K	A	B	C	PDO	
2019	1	1							2	2		2		2							1	1	2
2020				1					1	1		1		1							1		1
2021						2		1	1	1		1		2					1			1	2
2022	1				1		1		1	1		1		2								2	2
2023	1	1							2			2		2		1					2		2
2024	1					1		2		2		2		2						1	1		2
2025																							
Total	4	2		1	1	3	1	3	7	7	1	3	11		11				1	1	5	4	11

Figure 19: Crash Analysis Diagram C – Main St: Commercial Entrance (Barton Ford) to Holly Lawn Cemetery Entrance

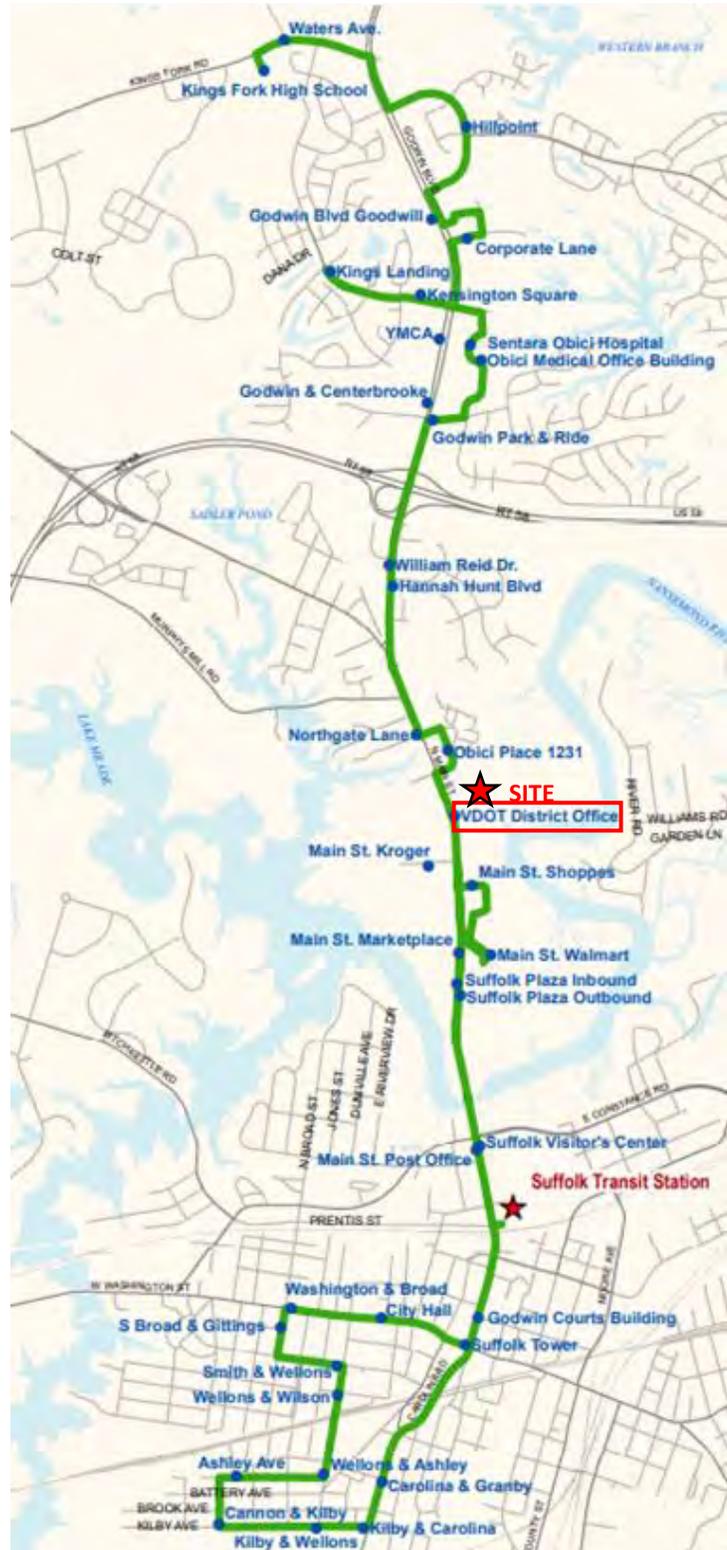
Riversbend TIA | Suffolk, Virginia



Collision Summary																							
Year	Type of Collision						Time of Day			Lighting			Weather		Pavement Condition			Severity					Total
	Angle	Rear-End	Head-On	Sideswipe	Fixed Object	Other	AM Peak (7-10AM)	PM Peak (4-7PM)	Off Peak	Daylight	Dawn/Dusk	Darkness – Lighting	Clear	Rain/Snow	Dry	Wet	Icy	K	A	B	C	PDO	
2019					1		1			1			1		1					1			1
2020		1						1					1		1					1			1
2021																							
2022	1			1					2	1		1			2						1	1	2
2023	1			1		1			2	1		3		2	1						1	2	3
2024		1		1					2			1		2							1	1	2
2025				1					1			1		1								1	1
Total	2	2		4	1	1	1	6	3	7	2	1	8	2	8	2				2	3	5	10

8 Multimodal Opportunity

Transit service is provided throughout the City via Suffolk Transit. Within the study area limits, the Green Route travels along N. Main Street and Godwin Boulevard and heads north to Kings Fork Road. This route provides thirteen stops within the study area, located at various locations as shown below. The route provides a stop right where the Riversbend development is to be located (former VDOT District Office).



9 Conclusions and Recommendations

The proposed development is located in the City of Suffolk along N. Main Street, just south of Memorial Avenue. The parcel was previously utilized for a Virginia Department of Transportation (VDOT) operational facility. The Riversbend development is requesting a rezoning of approximately 73.5 acres from Business/Commercial land usage to Residential in order to support a mix of condominiums and townhomes. The remaining 15.3 acres of the total site is proposed to remain commercial, per the site plan completed by Land Planning Solutions (LPS), dated March 31, 2025. Detailed site plan is included in the **Appendix**.

The traffic study area includes the roadways and intersections along N. Main Street, Godwin Boulevard, and Pruden Boulevard in the vicinity of the proposed development. As currently proposed, the Riversbend development will increase the volume of traffic on roadways and at intersections throughout the study area, adding 515 and 535 trips during the AM and PM peak hours, respectively.

To maintain traffic operations within the study area and mitigate impacts associated with the proposed development, the following are recommended:

N. Main Street / Site Entrance

Construct site driveway to provide right-in only access.

- Provide a northbound right-turn lane (150' storage / 50' taper, within available property limits) prior to the issuance of the first certificate of occupancy.

N. Main Street / Memorial Avenue / Edgewood Avenue

Reconstruct the intersection to include the following laneage prior to the issuance of the first certificate of occupancy:

- N. Main Street (northbound):
 - one exclusive left-turn lane (extend to include 200' storage / 100' taper)
 - two through lanes
 - one exclusive right-turn lane (200' storage / 80' taper to tie into proposed RI/RO driveway)
- N. Main Street (southbound):
 - one exclusive left-turn lane (180' storage / 100' taper)
 - one exclusive through lane
 - one shared through-right turn lane
- Memorial Avenue (eastbound):
 - one shared through-left lane
 - one exclusive right-turn lane
- Edgewood Avenue (westbound):
 - one full (left-through-right) movement lane

Construct a traffic signal. The signal shall be constructed and operational prior to the issuance of the first certificate of occupancy. Permits for model homes are acceptable prior to the completion of the Main Street / Memorial Avenue improvements.

Riversbend Development Traffic Impact Analysis

The recommendations for this TIA have been limited to the proposed land uses listed in **Chapter 5**. Should the developer consider a fast-food restaurant with drive-thru or similar use that generates higher traffic volumes, an updated traffic impact study will be required.

In addition to site entrance improvements, optimized signal timings are recommended as summarized below:

N. Main Street Corridor

Maintain existing laneage and provide optimized signal timings at the following intersections:

- N. Main Street / Pruden Boulevard / Godwin Boulevard
- N. Main Street / Murphy's Mill Road
- N. Main Street / Louise Obici Lane / Northgate Lane
- N. Main Street / Lowe's entrance
- N. Main Street / Walmart entrance
- N. Main Street / Big Lots Entrance
- N. Main Street / Constance Road / US Route 58

Optimized timings should be provided within six months of project completion or with construction of the proposed signal at Memorial Avenue. It is assumed that the City operates the coordinated systems with up to four timing plans. Optimized timings should be developed using existing cycle lengths by time of day and include minor changes to existing corridor progression, limited to updated splits, offsets, and phasing sequences. Data collection for timings is assumed to be provided by the City via Grid Smart data, and the developer will provide updated timing plans and implementation of these timings by a licensed engineer.