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Sussex County
DELAWARE
sussexcountyde.gov

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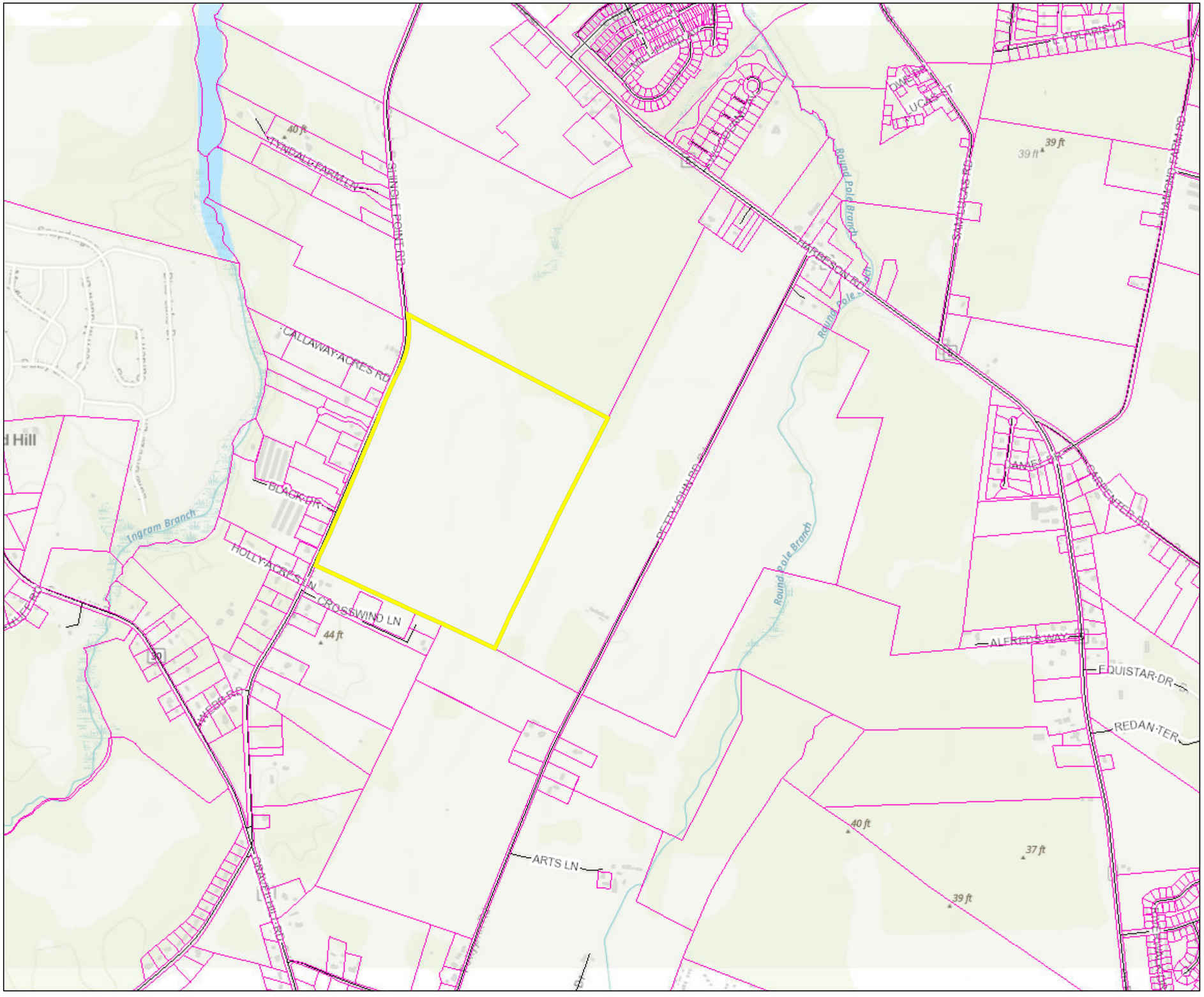
JAMIE WHITEHOUSE, AICP, MRTPI
DIRECTOR OF PLANNING & ZONING

PLANNING AND ZONING AND COUNTY COUNCIL INFORMATION SHEET
Planning Commission Public Hearing Date: April 14th, 2022

Application:	Four Winds Farm (2021-25)
Applicant:	Ribera Development, LLC – c/o John Stamato 8684 Veterans Highway, Suite 203 Millersville, MD 21108
Owner:	Spring Garden, LLC 16793 Island Farm Road Milton, DE 19968
Site Location:	The site is on the located on the east side of Shingle Point Road (S.C.R. 249), approximately 0.88 mile south of the intersection of Shingle Point Road (S.C.R. 249) and Harbeson Road (Route 5).
Current Zoning:	AR-1 – Agricultural Residential District
Proposed Use:	336 single-family lots
Comprehensive Land Use Plan Reference:	Low Density Area
Councilmanic District:	District 2 – Ms. Green
School District:	Cape Henlopen School District
Fire District:	Milton Fire Company
Sewer:	Artesian
Water:	Artesian
TID:	Not Applicable
Site Area:	168.90 acres +/-
Tax Map ID:	235-25.00-39.00

Sussex County



PIN:	235-25.00-39.00
Owner Name	SPRING GARDEN LLC
Book	4943
Mailing Address	16793 ISLAND FARM LN
City	MILTON
State	DE
Description	GEORGETOWNMILTON
Description 2	FX
Description 3	
Land Code	

polygonLayer
Override 1

polygonLayer
Override 1

Tax Parcels

Streets

County Boundaries

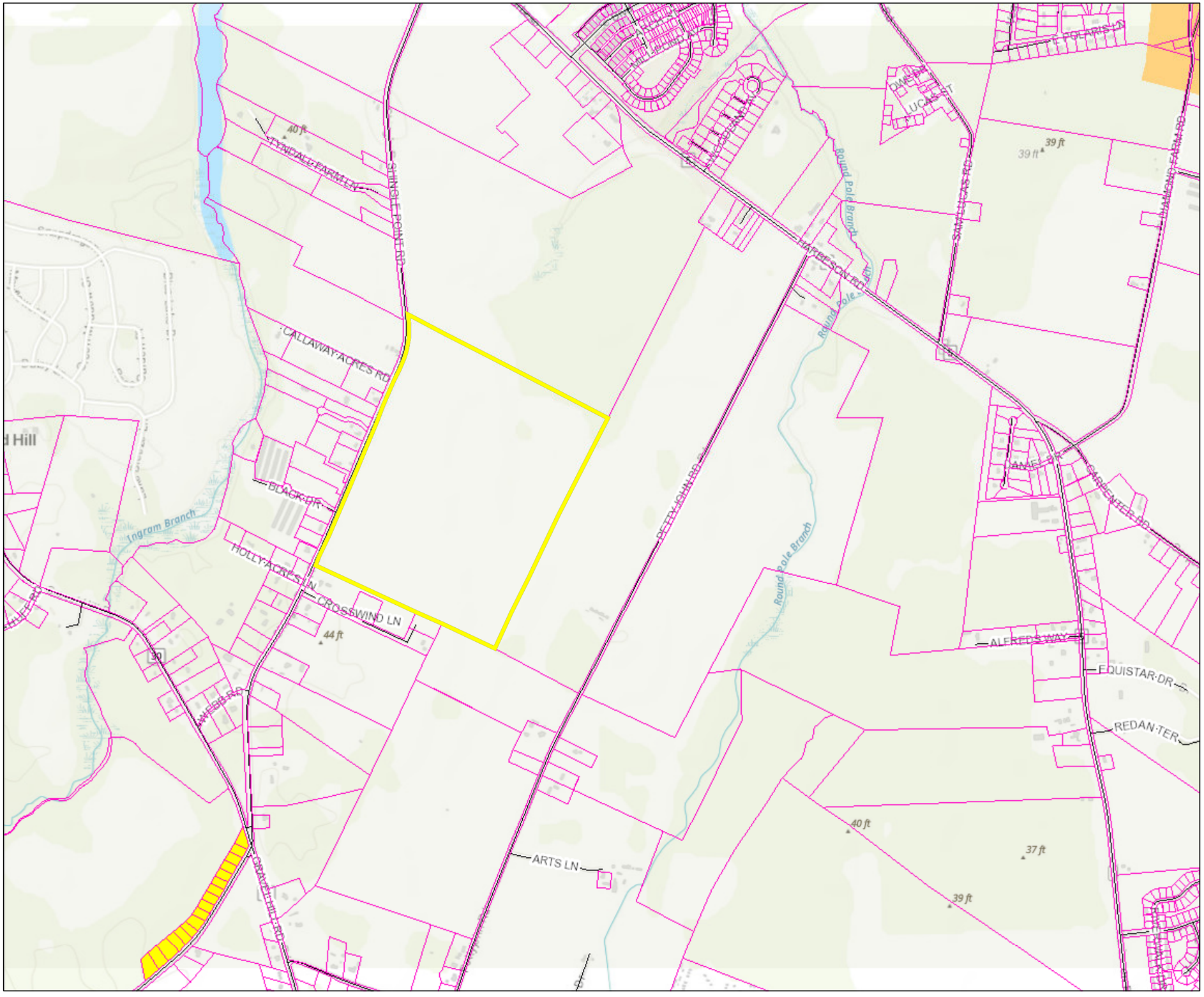
1:18,056

0 0.225 0.45 0.9 mi

0 0.35 0.7 1.4 km

March 17, 2022

Sussex County



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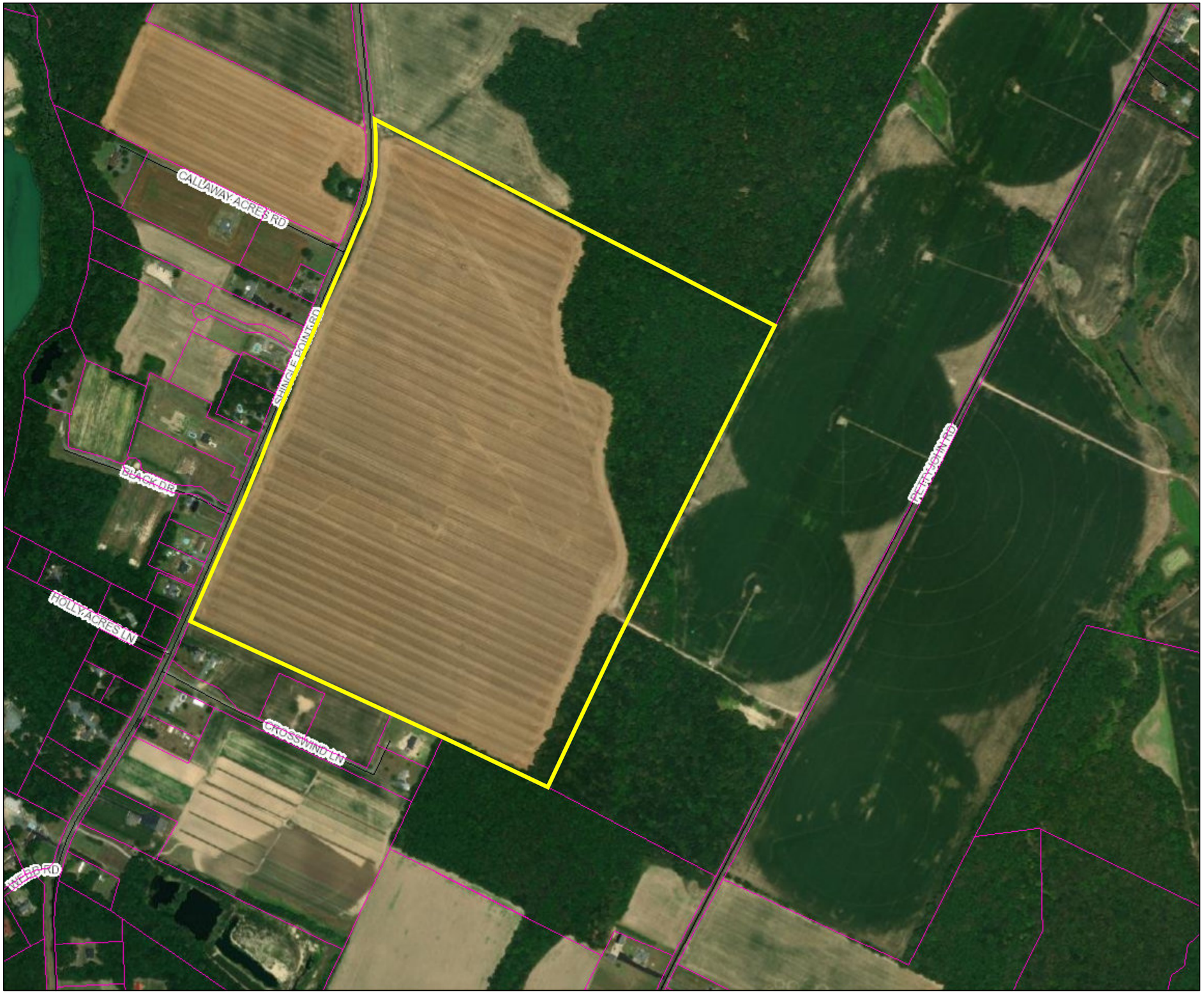

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Description 2	FX
Description 3	
Land Code	

polygonLayer
Override 1
polygonLayer
Override 1
Tax Parcels
Streets

1:9,028

0 0.1 0.2 0.4 mi
0 0.175 0.35 0.7 km

March 17, 2022

File #: 2021-25
Pre-App Date: 9/28/21

Sussex County Major Subdivision Application
Sussex County, Delaware

Sussex County Planning & Zoning Department
2 The Circle (P.O. Box 417) Georgetown, DE 19947
302-855-7878 ph. 302-854-5079 fax

Type of Application: (please check applicable)
Standard: __
Cluster: ✓
Coastal Area: __

Location of Subdivision:
Shingle Point Road, north of Crosswind Lane

Proposed Name of Subdivision:
Four Winds Farm

Tax Map #: 235-25.00-39.00 Total Acreage: +/- 168.9 AC

Zoning: AR-1 **Density:** 2/AC **Minimum Lot Size:** 7,500 **Number of Lots:** 336

Open Space Acres: +/- 61.8 AC

Water Provider: Artesian **Sewer Provider:** Artesian

Applicant Information

Applicant Name: John Stamato, Ribera Development, LLC
Applicant Address: 8684 Veterans Highway, Suite 203
City: Millersville State: MD ZipCode: 21108
Phone #: (443) 871-0486 E-mail: johnstamato@riberadev.com

Owner Information

Owner Name: Spring Garden, LLC
Owner Address: 16793 Island Farm Road
City: Milton State: DE Zip Code: 19968
Phone #: E-mail:

Agent/Attorney/Engineer Information

Agent/Attorney/Engineer Name: Alan M. Decktor, Pennoni Associates
Agent/Attorney/Engineer Address: 18072 Davidson Drive
City: Milton State: DE Zip Code: 19968
Phone #: (215) 254-7853 E-mail: ADecktor@Pennoni.com

EQUAL HOUSING OPPORTUNITY

20211260

Check List for Sussex County Major Subdivision Applications

The following shall be submitted with the application

___ **Completed Application**

___ **Provide ten (10) copies of the Site Plan or Survey of the property and a PDF (via e-mail)**

- Plan shall show the existing conditions, setbacks, roads, floodplain, wetlands, topography, proposed lots, landscape plan, etc. **Per Subdivision Code 99-22, 99-23 & 99-24**
- Provide compliance with Section 99-9.
- Deed or Legal description, copy of proposed deed restrictions, soil feasibility study

___ **Provide Fee $500.00**

___ **Optional - Additional information for the Commission to consider** (ex. photos, exhibit books, etc.) If provided submit seven (7) copies and they shall be submitted a minimum of ten (10) days prior to the Planning Commission meeting.

___ **Please be aware that Public Notice will be sent to property owners within 200 feet of the subject site and County staff will come out to the subject site, take photos and place a sign on the site stating the date and time of the Public Hearings for the application.**

___ **PLUS Response Letter** (if required) ☐ **Environmental Assessment & Public Facility Evaluation Report** (if within Coastal Area)

___ **51% of property owners consent if applicable**

The undersigned hereby certifies that the forms, exhibits, and statements contained in any papers or plans submitted as a part of this application are true and correct.

I also certify that I or an agent on by behalf shall attend all public hearing before the Planning and Zoning Commission and any other hearing necessary for this application and that I will answer any questions to the best of my ability to respond to the present and future needs, the health, safety, morals, convenience, order, prosperity, and general welfare of the inhabitants of Sussex County, Delaware.

Signature of Applicant/Agent/Attorney

_____ Date: 8/19/21

Signature of Owner

_____ Date: 8/11/21

For office use only:

Date Submitted: _____ Fee: $500.00 Check #: _____

Staff accepting application: _____ Application & Case #: _____

Location of property: _____

_____

Date of PC Hearing: _____ Recommendation of PC Commission: _____

STATE OF DELAWARE EXECUTIVE DEPARTMENT
OFFICE OF STATE PLANNING COORDINATION

October 20, 2021

March 1, 2022

Alan Decktor, P.E. Pennoni
18072 Davidson Drive
Milton, DE 19968

Mr. David L. Edgell, AICP
Director, Office of State Planning Coordination
122 Martin Luther King, Jr. Blvd. South – Haslet Armory
Dover, Delaware 19901

RE: PLUS review 2021-09-04; Four Winds Farm Subdivision

PLUS review responses for Four Winds Farm Subdivision

Dear Mr. Decktor:

Thank you for meeting with State agency planners on September 22, 2021 to discuss the Four Winds Farm Subdivision project. According to the information received you are seeking review of a proposed 336 unit subdivision on 168.9 acres along Shingle Point Road in Sussex County.

We are in receipt of your comments dated October 20, 2021, as it pertained to our presentation of the above referenced project on September 22, 2021. We thank you for the opportunity to present our client's project on property located on the east side of Shingle Point Road, Sussex County, Delaware. The project presented was for a 336 residential development on approximately 168.9 acres within Sussex County. The proposed residential development lies within the AR-1 zoning district and within the designated Level 4 State Investment Areas.

Please note that changes to the plan, other than those suggested in this letter, could result in additional comments from the State. Additionally, these comments reflect only issues that are the responsibility of the agencies represented at the meeting. **The developers will also need to comply with any Federal, State, and local regulations regarding this property. We also note that as Sussex County is the governing authority over this land, the developers will need to comply with any and all regulations/restrictions set forth by the County.**

Strategies for State Policies and Spending

This project represents a major land development that will result in 336 residential units predominately in an Investment Level 4 area according to the *2020 Strategies for State Policies and Spending.* This project is also located within a Low Density area according to the Sussex County comprehensive plan.

Investment Level 4 indicates where State investments will support agricultural preservation, natural resource protection, and the continuation of the rural nature of these areas. New development activities and suburban development are not supported in Investment Level 4. These areas are comprised of prime agricultural lands and environmentally sensitive wetlands and wildlife habitats, which should be, and in many cases have been preserved.

The proposed subdivision is on a parcel of land that is in an Investment Level 4 according to the 2020 Strategies for State Policies and Spending. The property is immediately adjacent to the Town of Milton future potential expansion area. In a relative short distance to these lands are Investment Level 2 and 3 areas associated with the Town of Milton. The County has commented in the 2019 Comprehensive Plan stating, "It is important to note that the maps contained within the Strategies for State Policies and Spending document are not "parcel-based," so it is still necessary to thoroughly investigate the constraints of particular land parcels, even though they may be contained in one of the growth-oriented investment levels of the Strategies for State Policies and Spending." (Page 4-10). To make the statement that "New development activities and suburban development are not supported in Investment Level 4" when the area shown on the Investment Maps are arbitrary at best. As presented, the project was designed to navigate and remove proposed disturbance from the environmentally sensitive areas with the property. Furthermore, the close proximity to the Town of Milton offers a thoughtful and deliberate expansion of an urban boundary to accommodate future growth and provide interconnectivity to the Town.

From a fiscal responsibility perspective, development of this site is likewise inappropriate. The cost of providing services to development in rural areas is an inefficient and wasteful use of the State's fiscal resources. Over the longer term, the unseen negative ramifications of this development will become even more evident as the community matures and the cost of maintaining infrastructure and providing services increases.

Services are existing within close proximity to this parcel and their expansion are already in discussion. We have been in contact with both Artesian and the Town of Milton, for services to this parcel. Artesian holds the CPCN for both water and sewer for this property. Artesian has sanitary sewer services located north and south of the property. Milton Fire and Ambulance is less than 1.5 miles from the property. Transportation improvements in the form of road widenings, shoulders and Traffic Impact Study Improvements will be part of this application that will not burden the State's fiscal resources. The cost of maintaining infrastructure and providing services will be offset by the additional tax revenue generated by the residents who choose to make Sussex County their home.

In addition, the development of this site may be environmentally inappropriate due to the following:

- There is a high chance for historic archaeological resources on this parcel. The Beers

Map of 1868 shows the parcel owned by a Mrs. A Marshall. The Millsboro 1917 topographic maps show a house in the center of the parcel, which was expanded by 1944 and then demolished by 1954. There is a high potential of archaeological resources in the center of the parcel relating to these historic buildings and a Phase I archaeological survey is recommended prior to any ground disturbance.

With that said, the comments in this letter are technical, and are not intended to suggest that the State supports this development. This letter does not in any way suggest or imply that you may receive or may be entitled to permits or other approvals necessary to build on this property.

Department of Transportation — Contact Bill Brockenbroueh 760-2109

- The site access on Shingle Point Road (Sussex Road 249) must be designed in accordance with DelDOT's Development Coordination Marital, which is available at http://we'.cleldot.gov/Business/stibdiv'isions/index.shtm1'?clc=ch2npes.
  NOTED.

- Pursuant to Section 1.3 of the Manual, a Pre-Submittal Meeting is required before plans are submitted for review. The form needed to request the meeting and guidance on what will be covered there and how to prepare for it is located at https://www.de1dot.gov/Business/subdivisions/pdfs/Meeting Request Form.pdf?080220 17. The Traffic Impact Study Scoping Meeting, held on August 19, is not sufficient for this purpose.
  NOTED.

- Section 1.7 of the Manual addresses fees that are assessed for the review of development proposals. DelDOT anticipates collecting the Initial Stage Fee when the record plan is submitted for review and the Construction Stage Fee when construction plans are submitted for review.
  NOTED.

- Per Section 2.2.2.1 of the Manual, Traffic Impact Studies (TIS) are warranted for developments generating more than 500 vehicle trip ends per day or 50 vehicle trip ends per hour in any hour of the day. From the PLUS application, the total daily trips from the are estimated at 3,171 vehicle trip ends per day. Therefore, the plan meets the warrants for a TIS. As noted above, a scoping meeting was held on August 19, 2021.

  The purpose of a TIS, per DelDOT regulations, is to determine the offsite improvements for which the developer should be responsible to build or contribute toward. In addition to whatever other offsite improvements may be identified, DelDOT anticipates requiring the developer to improve Shingle Point Road, within the limits of their frontage, to meet De1DOT's standards associated with its Functional Classification. Shingle Point Road is a Local Road, for which the standard includes 11-foot lanes and 5-foot shoulders. Frontage, as defined in Section 1.8 of the Manual, includes the length of roadway perpendicular to lines created by the projection of the outside parcel comers to the roadway.

The Four Winds Farm Final TIS has been submitted to DelDOT. The following improvements are proposed as part of the Four Winds Farm Development:

· Provision of a full-movement site access on Shingle Point Road, approximately 0.8 miles north of DE Route 30
o Provision of a 185-foot Southbound Left-Turn Lane with a 100-foot taper.
o Provision of a 290-foot Northbound Right-Turn Lane with a 50-foot taper.
o Two-lane access with a single exit lane.

· Provision of a 5-foot wide bicycle lane along Northbound Shingle Point Road at the site access.
· Provision of a 10-foot wide shared-use path (SUP) along Shingle Point Road along the site frontage.
· Enter into a Signal Agreement or contribute to the Traffic Signal Revolving Fund (TSRF) for the potential future installation of a traffic signal at the intersection of DE Route 30 and Shingle Point Road, whether and when a traffic signal is installed at DelDOT's discretion.

- As necessary, in accordance with Section 3.2.5 and Figure 3.2.5-a of the Manual, DelDOT will require dedication of right-of-way along the site's frontage on Shingle Point Road. By this regulation, this dedication is to provide a minimum of 30 feet of right-of-way from the physical centerline of the road. The following right-of-way dedication note is required, **"An X-foot wide right-of-way is hereby dedicated to the State of Delaware, as per this plat."**

  Dedications are shown on the plans

- In accordance with Section 3.2.5.1.2 of the Manual, DelDOT will require the establishment of a 15-foot-wide permanent easement across the property frontage. The location of the easement shall be outside the limits of the ultimate right-of-way. The easement area can be used as part of the open space calculation for the site. The following note is required, **"A 15-foot-wide permanent easement is hereby established for the State of Delaware, as per this plat."**

  Dedications are shown on the plans

- Referring to Section 3.4.2.1 of the Manual, the following items, among other things, are required on the Record Plan:

  - A Traffic Generation Diagram. See Figure 3.4.2-a for the required format and content.
  - Depiction of all existing entrances within 600 feet of the entrance.
  - Notes identifying the type of off-site improvements, agreements (signal, letter) contributions and when the off-site improvements are warranted.

- Section 3.5 of the Manual provides DelDOT's requirements with regard to connectivity.

The requirements in Sections 3.5.1 through 3.5.3 shall be followed for all development projects having access to state roads or proposing DelDOT maintained public streets for subdivisions. DelDOT anticipates recommending that the County require stub streets for future interconnections to Tax Parcel No. 235-25.00-45.01 near Lot 29, to Tax Parcel No. 235-25.00-46.00 near Lot 42, and to Tax Parcel No. 235-25.00-38.00 at the proposed cul-de-sac bulb.

Future interconnectivity to adjacent roads are shown on the plans.

- Section 3.5.4.2 of the Manual addresses requirements for Shared Use Paths (SUP) and sidewalks. For projects in Level 3 and 4 Investment Areas, installation of paths or sidewalks along the frontage on State-maintained roads is required where there is an existing path with which to connect. There is no existing path near this development and DelDOT does not anticipate requiring an SUP along this development's road frontage.

- Section 3.5.4.4 of the Manual addresses accessways, paved pathways connecting a sidewalk or path along a road frontage to an internal sidewalk or path. DelDOT anticipates requiring an accessway from Shingle Point Road to the internal street system in the general area of the proposed cul-de-sac bulb.

- In accordance with Section 3.8 of the Manual, storm water facilities, excluding filter strips and bioswales, shall be located a minimum of 20 feet from the ultimate State right-of-way along Shingle Point Road.

- In accordance with Section 5.2.9 of the Manual, the Auxiliary Lane Worksheet should be used to determine whether auxiliary lanes are warranted at the site entrances and how long those lanes should be. The worksheet can be found at http://www.deldot.gov/Business/subdivisions/index.shtm1.

- In accordance with Section 5.14 of the Manual, all existing utilities must be shown on the plan and a utility relocation plan will be required for any utilities that need to be relocated.

Department of Natural Resources and Environmental Control Beth Krumrine 735-3480
Concerns Identified Within the Development Footprint

Wetlands

Maps from the Statewide Wetlands Mapping Project indicate the presence of non-tidal wetlands on the site. The application indicates that wetlands have been delineated. The application does not propose direct impacts to the wetlands.

- If the site design changes and dredge or fill of wetlands or subaqueous lands becomes necessary, permitting and/or authorization requirements apply as described below.

  NOTED.

- Federal permits from the U.S. Army Corps of Engineers may be necessary if dredge or

fill is proposed in non-tidal wetlands or streams. A delineation of waterways and wetlands must be completed by a qualified professional hired by the landowner. In certain cases, permits from the US Army Corps of Engineers triggers additional certifications from DNREC (Coastal Zone Federal Consistency Certification and 401 Water Quality Certification). Work with the U.S. Army Corps of Engineers to determine the appropriate permitting requirements.

Federal Contact: U.S. Army Corps of Engineers (Dover Office) at (267) 240-5278.
Website: htttis://www.nap,usace.armv.mil/Missions/Regttlatorv/Contacts/

State Contact: DNREC Wetlands and Subaqueous Lands Section at (302) 739-9943.
Website: Jittps://dnrec.alpha.delaware.gov/water/wetlands-silba0ueous/

Vegetated Buffer Zones

Site plans show a 25-foot vegetated buffer along non-tidal wetlands. Vegetated buffer zones placed adjacent to waterways and wetlands help improve water quality by reducing sediment and pollutants loads. They also provide valuable habitat and can help prevent encroachment of human activities into ecologically sensitive areas. Vegetated buffers are not equivalent to setbacks, as residential lots, walkways, and stormwater management facilities should not be contained within the vegetated bufferzone.

- The applicant must comply with minimum vegetated buffer widths as identified within county and municipal codes.

  NOTED. The Four Winds subdivision will comply with all county and local codes as they relate to vegetated buffers.

Contact: DNREC Wildlife Species Conservation & Research Program at (302) 735-3600.
Website: httns://dnrec.alpha.delaware.gov/fish-wildlife/contact-in(ormation/

Stormwater Management

This application proposes greater than 5000 square feet of land disturbing activities, therefore, this project will be subject to Delaware's *Sediment and Stormwater Regulations.*

- A Sediment and Stormwater Plan must be developed, then approved by the appropriate plan review agency prior to any land disturbing activity taking place on the site. For this project, the plan review agency is the Sussex Conservation District.

  We are finalizing the stormwater assessment study and submission is pending to Sussex Conservation District. The project will propose a series of stormwater management measures including SWM ponds, biofiltration measures, and ephemeral constructed wetlands to handle water quality and quantity requirements for stormwater runoff management. Constructed wetlands are engineered ecosystems designed to treat stormwater runoff. Wetland water treatment systems use plants and naturally occurring microorganisms to reduce nutrients, pathogens and sediments.

- Additionally, to address federal requirements, construction activities that exceed 1.0 acre of land disturbance require Construction General Permit coverage through submittal of an electronic Notice of Intent for Stormwater Discharges Associated with Construction

Activity. This form must be submitted electronically (htttis://apps,dnrec.delaware.gov/enoi/, select Construction Stormwater General Permit) to the DNREC Division of Watershed Stewardship, along with the $195 fee.
NOTED.

- Schedule a project application meeting with the appropriate plan review agency prior to moving forward with the stormwater and site design. As part of this process, you must submit a Stormwater Assessment Study.

  A Stormwater Assessment Study is currently being prepared by Pennoni and submission to Sussex Conservation District is pending.

Plan review agency contact: Sussex Conservation District at (302) 856-2105 or (302) 856-7219.
Website: https://www.sussexconservation.o /

General stormwater contact: DNREC Sediment and Stormwater Program at (302) 739-9921.
E-mail. DNREC.Stormwater@,delaware.gov.
Website: https://dnrec.alyha.de1aware.Nov/watershed-stewardshin/sediment-stormwater/

Wildlife Displacement

Development of this site is anticipated to displace local wildlife. Wildlife displaced by encroaching development may become a nuisance for homeowners.

- Future residents are not permitted to discharge firearms within 100 yards (300 feet) of any occupied dwelling or building to hunt or remove nuisance wildlife.
  NOTED.

Contact: DNREC Division of Fish and Wildlife at (302) 739-9912.
Website: https://dnrec.alpha.delaware.gov/fish-wildlife/wildlife/

Hydrologic Soils Group

Hydrologic Soil Group B/D (poorly drained) soils have been identified in the northeastem portion of the site. These soil types are typically not conducive to utilizing infiltration stormwater Best Management Practices such as bioretention and infiltration basins, which must meet minimum infiltration requirements.

- Any stormwater Best Management Practices that propose the use of infiltration or natural recharge shall include a soils investigation.

  NOTED.

Contact: DNREC Sediment and Stormwater Program at (302) 739-9921.
E-mail: DNRfiC.StormwateW,delaware.gov.
Website: https://dnrec.alpha.de1aware.Nov/watershed-stewardship/sediment-stormwater/

Wastewater permits — Large Systems

Artesian holds existing permits with the DNREC Groundwater Discharges Section's Large Systems Branch for wastewater disposal.

- If additional flows to Sussex County's system will require capacity updates, it is the responsibility of the permitee (Artesian) to notify the Large Systems Branch.

  We have been in contact with Artesian regarding the Four Winds subdivision.

Contact: DNREC Large Systems Branch at (302) 739-9948.
Website: httns://dnrec,aloha.de1aware.gov/water/groundwaters

Nutrient Management Plan

This project proposes open space of 61.85 acres.

- A nutrient management plan is required for all persons or entities who apply nutrients to lands or areas of open space of 10 acres or more.
  NOTED.

Contact: Delaware Department of Agriculture's Nutrient Management Program at (302) 698-4558. Website: httPs://agriculture.delaware.zov/nutrient-manauement/

State Historic Preservation Office — Contact Carlton Hall 736-7400

- The Delaware State Historic Preservation Office does not recommend development in Level 4 areas.

- There are no known archaeological sites on the parcel. However, it has well drained soils and a stream runs through the eastern comer of the parcel. These conditions are known to be favorable for past human activity and thus there is a high potential for prehistoric archaeological resources. The parcel has remained consistently wooded or cultivated, with little disturbance. Based on these conditions, this Office recommends a Phase I archaeological survey prior to any ground disturbance.

- There is a high chance for historic archaeological resources on this parcel. The Beers Map of 1868 shows the parcel owned by a Mrs. A Marshall. The Millsboro 1917 topographic maps show a house in the center of the parcel, which was expanded by 1944 and then demolished by 1954. There is a high potential of archaeological resources in the center of the parcel relating to these historic buildings. This Office recommends a Phase I archaeological survey prior to any ground disturbance.

- If any project or development proceeds, the developer should be aware of the Unmarked Human Burials and Human Skeletal Remains Law (Del. C. Title 7, Ch. 54) which is currently being revised.

- If there is federal involvement, in the form of licenses, permits, or funds, the federal agency, often through its client, is responsible for complying with Section 106 of the National Historic Preservation Act (36 CFR 800) and must consider their project's effects on any known or potential cultural or historic resources. For further information on the Section 106 process please review the Advisory Council on Historic Preservation's website at: www.achp.gov

- If there are any questions, inquiries, or concerns, feel free to contact the Delaware State Historic Preservation Office for assistance at 302-736-7400.

  According to the State Historic Preservation Office, as noted above, there are NO known archaeological sites on the parcel. We acknowledge that historical imagery shows a house on the parcel, which was demolished by 1954. However, it should also be noted that historical imagery also shows this parcel was actively farmed since the second half of the 1900s until present day. This parcel has been continuously disturbed by farming activities, such as tilling, harvesting, crop rotation, etc., so the statement that "there is high potential of archaeological resources" is contradictory to the State's first conclusion.

  We do not agree that this parcel has a high probability rate of archaeological findings. However, if during the rough grading of the site, artifacts are uncovered, the site development contractor will notify the proper authorities.

Delaware State Fire Marshal's Office — Contact John Rudd 323-5365

At the time of formal submittal, the applicant shall provide; completed application, fee, and three sets of plans depicting the following in accordance with the Delaware State Fire Prevention Regulation (DSFPR):

Fire Protection Water Requirements:

- Water distribution system capable of delivering at least 1000 gpm for l-hour duration, at 20-psi residual pressure is required. Fire hydrants with 800 feet spacing on centers. (Assembly)
- Where a water distribution system is proposed for single-family dwellings it shall be capable of delivering at least 500 gpm for 1-hour duration, at 20-psi residual pressure. Fire hydrants with 800 feet spacing on centers are required. (One & Two- Family Dwelling)
- One- and Two-Family dwellings are required by law to offer the homeowner an automatic sprinkler system, therefore infrastructure should accommodate water needs.
- Where a water distribution system is proposed for the site, the infrastructure for fire protection water shall be provided, including the size of water mains for fire hydrants and sprinkler systems.

NOTED

Fire Protection Features:

- All structures over 10,000 sq. ft aggregate will require automatic sprinkler protection installed.
- Buildings greater than 10,000 sq. ft, 3-stories or more, over 35 feet, or classified as High Hazard, are required to meet fire lane marking requirements.
- Show Fire Department Connection location (Must be within 300 feet of fire hydrant), and detail as shown in the DSFPR.
- Show Fire Lanes and Sign Detail as shown in DSFPR

Accessibility

- All premises, which the fire department may be called upon to protect in case of fire, and which are not readily accessible from public roads, shall be provided with suitable gates

and access roads, and fire lanes so that all buildings on the premises are accessible to fire apparatus. This means that the access road to the subdivision from Shingle Point Road must be constructed so fire department apparatus may negotiate it.

- Fire department access shall be provided in such a manner so that fire apparatus will be able to locate within 100 ft. of the front door. Streets designed without parking need to develop a plan for enforcement once HOA takes charge. Fire apparatus still need to negotiate the streets.
- Any dead-end road more than 300 feet in length shall be provided with a turn-around or cul-de-sac arranged such that fire apparatus will be able to turn around by making not more than one backing maneuver. The minimum paved radius of the cul-de-sac shall be 38 feet. The dimensions of the cul-de-sac or turn-around shall be shown on the final plans. Also, please be advised that parking is prohibited in the cul-de-sac or turn around.
- The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements.
- The local Fire Chief, prior to any submission to our Agency, shall approve in writing the use of gates that limit fire department access into and out of the development or property.

A minimum 24' wide paved roadway (in accordance with the Sussex County Code) will be constructed to serve all 336 lots.

Gas Piping and System Information:

- Provide type of fuel proposed and show locations of bulk containers on plan.

NOTED.

Required Notes:

- Provide a note on the final plans submitted for review to read "All fire lanes, fire hydrants, and fire department connections shall be marked in accordance with the Delaware State Fire Prevention Regulations"
- Proposed Use
- Alpha or Numerical Labels for each building/unit for sites with multiple buildings/units
- Square footage of each structure (Total of all Floors)
- National Fire Protection Association (NFPA) Construction Type
- Maximum Height of Buildings (including number of stories)
- Note indicating if building is to be sprinklered
- Name of Water Provider
- Letter from Water Provider approving the system layout
- Provide Lock Box Note (as detailed in DSFPR) if Building is to be sprinklered
- Provide Road Names, even for County Roads

NOTED.

Sussex County Housing — Contact: Brandy Nauman 855-7779

- Sussex County endeavors to promote non-discrimination and affordable housing whenever possible throughout the County. In this regard, the developer and associated financial institutions are encouraged to provide and finance affordable housing opportunities to Sussex County residents in all new developments, and affirmatively market those affordable housing units to diverse populations.

- For questions about opportunities available for affordable housing projects within Sussex County, please consult Sussex County's "Affordable Housing Support Policy". The policy along with other resources are available on the County's Affordable & Fair Housing Resource Center website: www.sussexcountyde.gov/affordable-and-fair-housing-resource-center. The County's Community Development & Housing Department can advise about existing affordable housing opportunities in Sussex County and the appropriate County Department to contact regarding specific development issues concerning future affordable housing projects within Sussex County.

- The Community Development & Housing Department can also explain and assist with any financial support or incentives that may be available to a project from federal, state and county sources, as well as private funding sources that also promote affordable housing in Sussex County.

- Please understand that all residential projects, including Affordable Housing Projects are subject to the applicable provisions of the Sussex County Subdivision and Zoning Codes, and the approval processes set forth in those Codes.

- On behalf of Sussex County, we look forward to cooperating with you and your project as it moves forward.

Sussex County Planning & Zoning — Contact Lauren Devore 855-7878

- The Applicant is required to engage in a Pre-Application Meeting with Department staff prior to the submittal of a formal application to the Department of Planning and Zoning.

- The Department of Planning and Zoning has received an Application for the Four Winds Farm Subdivision and the County Project Reference Number for the project is Subdivision No. 2021-25. The Application was received by the Department on 8/23/21.

- The proposal of 336 single-family units to be located on a parcel containing 168.9 acres translates to a density of 1.98 dwelling units to the acre. This meets the minimum density permitted within the AR-1 Zoning District of 2 dwelling units to the acre.

- Please include a note on the plans which indicates that the proposed project is not located within the Henlopen Transportation Improvement District (TID).

- Staff note that there are no Tax Ditches or Flood Zones present on the property.

- Please note on the plans that the parcels are located within an area of "poor" groundwater recharge potential in order to comply with Chapter 89 "Source Water Protection" of the Sussex County Code (§89-7).

- Staff note that the parcels retain only one-way-in, one-way-out access to the subdivision. The Planning and Zoning Commission often desires more than one entrance or an easement for emergency access purposes in the event of an emergency occurring on the parcel.

  NOTED.

- It is noted that several stormwater management ponds have been provided within the

location of the required landscaped buffer. Please note that while stormwater management outfalls are permitted to be placed within the buffer area, stormwater management ponds are not. Please ensure that all stormwater management ponds are provided in such a way that the required 30-ft landscaped buffer may be installed.

NOTED.

- Please indicate if there will be additional landscaping provided in order to screen the adjacent Lots surrounding the proposed clubhouse and inground pool amenity, specifically Lot Numbers 216, 217-219 and Lot 182.

  NOTED. A Landscape Plan will be provided for the Four Winds subdivision and include all necessary vegetated buffers and screening.

- Please note that these are informal staff comments and do not prejudice any decision that the Sussex County Planning and Zoning Commission may wish to make as part of a formal application.

Sussex County Engineering Department — Contact Chris Calio 855-1299

- The project is within a Tier 3 area for wastewater planning. Sussex County does not currently have a schedule to provide sanitary sewer to these parcels. The Sussex County Engineering Department recommends the project receive wastewater service from a public utility or municipality.

  We have been in contact with Artesian as it relates to utility services to this project as they hold the CPCN for the property.

Following receipt of this letter and upon filing of an application with the local jurisdiction, the applicant shall provide to the local jurisdiction and the Office of State Planning Coordination a written response to comments received as a result of the pre-application process, noting whether comments were incorporated into the project design or not and the reason therefore.

Thank you for the opportunity to review this project. If you have any questions, please contact me at 302-739-3090.

Sincerely,

David L. Edgell, AICP
Director, Office of State Planning Coordination

CC: Sussex County

According to the Office of State Planning and Coordination (OSPC), the Preliminary Land Use Service (PLUS) process *involves reviews by all applicable state agencies at the start of the land development process, adding value and knowledge to the process without taking over the authority of local governments to make land use decisions*. The process according to OSPC is to identify and mitigate potential impacts of development which may affect areas beyond local boundaries. The application we have provided to the State and the County has provided the studies, designs, reports and facts that recognize the States requirements when it comes to proactive planning for a project located within a Low Density (Level 4) Area. The application follows the Agricultural Residential (AR-1) Zoning requirements for Major Subdivisions in accordance with Chapter 115 and 99 whereby the application has been planned to cluster the lots to be outside environmentally sensitive areas and meets the superior design requirements as well as a density that equals low-density standard lot option subdivision. The 2019 Sussex County Comprehensive Plan was also used as a guide for development related decisions when preparing the application. Careful attention was used in the collaborative planning of the project as it pertains to conservation, open space, utilities, housing and density, community design and mobility. The application promotes, in accordance with past, present and future needs, the health, safety, morals, convenience, order, prosperity and general welfare of the community and Sussex County.

Respectfully Submitted,

Mark H. Davidson, VP
Principal Land Planner

Eric W. Wahl, RLA
Senior Landscape Architect

Alan M. Decktor, PE, ENV SP
Senior Engineer

cc. SC Planning and Zoning

SUSSEX COUNTY ENGINEERING DEPARTMENT
UTILITY PLANNING & DESIGN REVIEW DIVISION
C/U & C/Z COMMENTS

TO: **Jamie Whitehouse**

REVIEWER: **Chris Calio**

DATE: **3/23/2022**

APPLICATION: **2021-25 Four Winds Farm**

APPLICANT: **Ribera Development, LLC**

FILE NO: **NCPA-5.03**

TAX MAP & PARCEL(S): **235-25.00-39.00**

LOCATION: **Site is located on the east side of Shingle Point Road (SCR 249)**

NO. OF UNITS: **336 single-family lots**

GROSS ACREAGE: **168.90**

SYSTEM DESIGN ASSUMPTION, MAXIMUM NO. OF UNITS/ACRE: **2**

SEWER:

(1). Is the project in a County operated and maintained sanitary sewer and/or water district?

Yes ☐ No ☒

a. If yes, see question (2).
b. If no, see question (7).

(2). Which County Tier Area is project in? **Tier 3**

(3). Is wastewater capacity available for the project? **N/A** If not, what capacity is available? **N/A**.

(4). Is a Construction Agreement required? **No** If yes, contact Utility Engineering at (302) 855-7717.

(5). Are there any System Connection Charge (SCC) credits for the project? **No** If yes, how many? **N/A**. Is it likely that additional SCCs will be required? **N/A** If yes, the current System Connection Charge Rate is **Unified $6,600.00** per EDU. Please contact **N/A** at **302-855-7719** for additional information on charges.

(6). Is the project capable of being annexed into a Sussex County sanitary sewer district? **N/A**

☐ Attached is a copy of the Policy for Extending District Boundaries in a Sussex County Water and/or Sanitary Sewer District.

(7). Is project adjacent to the Unified Sewer District? **N/A**

(8). Comments: **The proposed subdivision is not in an area where the Sussex County Engineering Department has a schedule to provide sanitary sewer/water service.**

(9). Is a Sewer System Concept Evaluation required? **Not at this time**

(10). Is a Use of Existing Infrastructure Agreement Required? **Not at this time**

(11). **All residential roads must meet or exceed Sussex County minimum design standards.**

UTILITY PLANNING & DESIGN REVIEW APPROVAL:

John J. Ashman
Sr. Manager of Utility Planning & Design Review

Xc: Hans M. Medlarz, P.E.
Lisa Walls
No Permit Tech Assigned

Sussex County, Delaware
Technical Advisory Committee

Comment Sheet

****

DATE OF REVIEW: August 30, 2021

REVIEWING AGENCY: **Delaware State Fire Marshal's Office, Sussex Office**

INDIVIDUAL REVIEWERS: **Duane T. Fox, CFPS, CFPE, CFI, Asst. Chief Technical Services**
Dennett E. Pridgeon, CFPS, CFPE, CFI, Sr. Fire Protection Specialist
Jefferson L. Cerri, CFI, Sr. Fire Protection Specialist
Desiree B. McCall, CFI, Sr. Fire Protection Specialist
John A. Colpo, Fire Protection Specialist

AGENCY PHONE NUMBERS: **302-856-5298, Fax: 302-856-5800**

RE: FOUR WINDS FARM (2021-25)

The reasons and conditions applied to this project and their sources are itemized below:

****

At the time of formal submittal, the applicant shall provide; completed application, fee, and three sets of plans depicting the following in accordance with the Delaware State Fire Prevention Regulation (DSFPR):

a. **Fire Protection Water Requirements**:
- Water distribution system capable of delivering at least 1000 gpm for 1-hour duration, at 20-psi residual pressure is required. Fire hydrants with 800 feet spacing on centers. (Assembly)
- Where a water distribution system is proposed for single-family dwellings it shall be capable of delivering at least 500 gpm for 1-hour duration, at 20-psi residual pressure. Fire hydrants with 1000 feet spacing on centers are required. (One & Two- Family Dwelling)
  - In September 2021 the DE State Fire Prevention Regulations are changing to require all fire hydrants to be on 800 ft centers and not more than 300 feet from a fire department connection. Measurements are as the fire apparatus drive.
- Where a water distribution system is proposed for the site, the infrastructure for fire protection water shall be provided, including the size of water mains for fire hydrants and sprinkler systems.

b. **Fire Protection Features:**
- All structures over 10,000 sqft aggregate will require automatic sprinkler protection installed.
- Buildings greater than 10,000 sqft, 3-stories or more, over 35 feet, or classified as High Hazard, are required to meet fire lane marking requirements.
- Show Fire Department Connection location (Must be within 300 feet of fire hydrant), and detail as shown in the DSFPR.
- Show Fire Lanes and Sign Detail as shown in DSFPR

c. **Accessibility**
   - All premises, which the fire department may be called upon to protect in case of fire, and which are not readily accessible from public roads, shall be provided with suitable gates and access roads, and fire lanes so that all buildings on the premises are accessible to fire apparatus. This means that the access road to the subdivision from Shingle Point Road must be constructed so fire department apparatus may negotiate it.
   - Fire department access shall be provided in such a manner so that fire apparatus will be able to locate within 100 ft. of the front door.
   - Any dead-end road more than 300 feet in length shall be provided with a turn-around or cul-de-sac arranged such that fire apparatus will be able to turn around by making not more than one backing maneuver. The minimum paved radius of the cul-de-sac shall be 38 feet. The dimensions of the cul-de-sac or turn-around shall be shown on the final plans. Also, please be advised that parking is prohibited in the cul-de-sac or turn around.
   - The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements.
   - The local Fire Chief, prior to any submission to our Agency, shall approve in writing the use of gates that limit fire department access into and out of the development or property.

d. **Gas Piping and System Information:**
   - Provide type of fuel proposed and show locations of bulk containers on plan.

e. **Required Notes**:
   - Provide a note on the final plans submitted for review to read "All fire lanes, fire hydrants, and fire department connections shall be marked in accordance with the Delaware State Fire Prevention Regulations"
   - Proposed Use
   - Alpha or Numerical Labels for each building/unit for sites with multiple buildings/units
   - Square footage of each structure (Total of all Floors)
   - National Fire Protection Association (NFPA) Construction Type
   - Maximum Height of Buildings (including number of stories)
   - Note indicating if building is to be sprinklered
   - Name of Water Provider
   - Letter from Water Provider approving the system layout
   - Provide Lock Box Note (as detailed in DSFPR) if Building is to be sprinklered
   - Provide Road Names, even for County Roads

Preliminary meetings with fire protection specialists are encouraged prior to formal submittal. Please call for appointment. Applications and brochures can be downloaded from our website: www.statefiremarshal.delaware.gov, technical services link, plan review, applications or brochures.

THIS DOCUMENT IS INFORMATIONAL ONLY, AND DOES NOT CONSTITUTE ANY TYPE OF APPROVAL FROM THE DELAWARE STATE FIRE MARSHAL'S OFFICE

STATE OF DELAWARE
DEPARTM ENT OF NATURAL RESOURCES AND ENVIRONM ENTAL CONTROL
DIVISION OF WATERSHED STEWARDSHIP
21309 BERLIN RD
UNIT #6
GEORGETOWN, DE 19947

DRAINAGE PROGRAM

PHONE: (302) 855-1930
FAX: (302) 670-7059

August 31, 2021

Elliott Young
Sussex County
Planning and Zoning Office
2 The Circle
Georgetown, DE 19947

RE: Parcel # 235-25.00-39.00, Four Winds Farm (2021-25)

The Delaware Department of Natural Resources and Environmental Control (DNREC), Drainage Program has reviewed the above noted property for impacts to Tax Ditches.

My office has **no objection** to the works of improvement to this parcel and offer the following comments:

- The proposed project site is not located near or within a Tax Ditch watershed.
- There is a singe reported drainage concerns near the proposed project site. This concern relates to pipe failures in ditches.
- All existing ditches on the property should be evaluated for function and cleaned, if needed, prior to the construction of the project.
- All precautions should be taken to ensure the project does not hinder any off-site drainage upstream of the project or create any off-site drainage problems downstream by the release of on-site storm water.
- Any area designated as a drainage/utility easement should be open space and not owned by the individual landowners.
- Any drainage/utility easement owned by an individual landowner should not possess structures such as decks, buildings, sheds, kennels, or fences within the drainage

easement to allow for future drainage maintenance. Trees and shrubs planted within a drainage/utility easement should be spaced to allow for drainage maintenance at maturity.

If you have any questions or concerns, please contact the Drainage Program at (302) 855-1930.

Sincerely,

Brittany Haywood
Brittany Haywood
Tax Ditch Program Manager I

Sussex County, Delaware
Technical Advisory Committee

Comment Sheet

****

DATE OF REVIEW: August 30, 2021

REVIEWING AGENCY: **Delaware State Fire Marshal's Office, Sussex Office**

INDIVIDUAL REVIEWERS: **Duane T. Fox, CFPS, CFPE, CFI, Asst. Chief Technical Services**
Dennett E. Pridgeon, CFPS, CFPE, CFI, Sr. Fire Protection Specialist
Jefferson L. Cerri, CFI, Sr. Fire Protection Specialist
Desiree B. McCall, CFI, Sr. Fire Protection Specialist
John A. Colpo, Fire Protection Specialist

AGENCY PHONE NUMBERS: **302-856-5298, Fax: 302-856-5800**

RE: FOUR WINDS FARM (2021-25)

The reasons and conditions applied to this project and their sources are itemized below:

****

At the time of formal submittal, the applicant shall provide; completed application, fee, and three sets of plans depicting the following in accordance with the Delaware State Fire Prevention Regulation (DSFPR):

a. **Fire Protection Water Requirements**:
- Water distribution system capable of delivering at least 1000 gpm for 1-hour duration, at 20-psi residual pressure is required. Fire hydrants with 800 feet spacing on centers. (Assembly)
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   - Fire department access shall be provided in such a manner so that fire apparatus will be able to locate within 100 ft. of the front door.
   - Any dead-end road more than 300 feet in length shall be provided with a turn-around or cul-de-sac arranged such that fire apparatus will be able to turn around by making not more than one backing maneuver. The minimum paved radius of the cul-de-sac shall be 38 feet. The dimensions of the cul-de-sac or turn-around shall be shown on the final plans. Also, please be advised that parking is prohibited in the cul-de-sac or turn around.
   - The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements.
   - The local Fire Chief, prior to any submission to our Agency, shall approve in writing the use of gates that limit fire department access into and out of the development or property.

d. **Gas Piping and System Information:**
   - Provide type of fuel proposed and show locations of bulk containers on plan.

e. **Required Notes**:
   - Provide a note on the final plans submitted for review to read "All fire lanes, fire hydrants, and fire department connections shall be marked in accordance with the Delaware State Fire Prevention Regulations"
   - Proposed Use
   - Alpha or Numerical Labels for each building/unit for sites with multiple buildings/units
   - Square footage of each structure (Total of all Floors)
   - National Fire Protection Association (NFPA) Construction Type
   - Maximum Height of Buildings (including number of stories)
   - Note indicating if building is to be sprinklered
   - Name of Water Provider
   - Letter from Water Provider approving the system layout
   - Provide Lock Box Note (as detailed in DSFPR) if Building is to be sprinklered
   - Provide Road Names, even for County Roads

Preliminary meetings with fire protection specialists are encouraged prior to formal submittal. Please call for appointment. Applications and brochures can be downloaded from our website: www.statefiremarshal.delaware.gov, technical services link, plan review, applications or brochures.

THIS DOCUMENT IS INFORMATIONAL ONLY, AND DOES NOT CONSTITUTE ANY TYPE OF APPROVAL FROM THE DELAWARE STATE FIRE MARSHAL'S OFFICE

Elliott Young

From: Anthony, Mindy (DNREC) <Mindy.Anthony@delaware.gov>
Sent: Thursday, September 9, 2021 9:28 AM
To: Elliott Young
Subject: RE: TAC review for Four Winds Farm

Follow Up Flag: Follow up
Flag Status: Flagged

Good morning,

DNREC's Division of Waste and Hazardous Substances has no comments on this project.

Thank you,
Mindy

Mindy Anthony
Planner IV
Phone: 302-739-9466 • Mobile: 302-242-9780
Email: mindy.anthony@delaware.gov
89 Kings Highway, Dover, DE 19901
dnrec.delaware.gov

From: Elliott Young <elliott.young@sussexcountyde.gov>
Sent: Wednesday, August 25, 2021 11:28 AM
To: Krumrine, Beth (DNREC) <Beth.Krumrine@delaware.gov>; Brad Hawkes <bhawkes@sussexcountyde.gov>; Chris Calio <ccalio@sussexcountyde.gov>; ddetrick@chpk.com; dholden@chpk.com; C. Daniel Parsons <dparsons@sussexcountyde.gov>; Fox, Duane T. (FireMarshal) <Duane.Fox@delaware.gov>; Sullivan, James C. (DNREC) <James.Sullivan@delaware.gov>; jvandervort@chpk.com; Cinelli, Jennifer (DelDOT) <jennifer.cinelli@delaware.gov>; jessica.watson@sussexconservation.org; John J. Ashman <jashman@sussexcountyde.gov>; John.Hayes@delaware.gov; john.kennel@delaware.gov; john.martin@delaware.gov; Jordan T. Dickerson <jordan.dickerson@sussexcountyde.gov>; Kate.Flemming@delaware.gov; kgabbard@chpk.com; McCabe, R. Stephen (DelDOT) <Richard.McCabe@delaware.gov>; Crystall, Meghan (DNREC) <Meghan.Crystall@delaware.gov>; Tholstrup, Michael S. (DNREC) <Michael.Tholstrup@delaware.gov>; Melendez, Milton (DDA) <milton.melendez@delaware.gov>; Anthony, Mindy (DNREC) <Mindy.Anthony@delaware.gov>; Subdivision (MailBox Resources) <Subdivision@delaware.gov>; Susan Isaacs <sisaacs@sussexcountyde.gov>; tdickerson@decoop.com; Terri Dukes <tdukes@sussexcountyde.gov>; tgiroux@chpk.com; Vince Robertson <vrobertson@pgslegal.com>
Subject: TAC review for Four Winds Farm

All,

Sussex County Planning Office has received an application that requires TAC review. Attached is a memo regarding the application and a PDF of the plans submitted.

Please provide comments on or before October 27th, 2021.

Please feel free to contact me with any questions.

Thanks,

Elliott Young, Planner I
Sussex County Planning and Zoning Department
2 The Circle
Georgetown, DE 19947
302-855-7878

SUSSEX COUNTY ENGINEERING DEPARTMENT
UTILITY PLANNING & DESIGN REVIEW DIVISION
C/U & C/Z COMMENTS

TO: **Jamie Whitehouse**

REVIEWER: **Chris Calio**

DATE: **3/23/2022**

APPLICATION: **2021-25 Four Winds Farm**

APPLICANT: **Ribera Development, LLC**

FILE NO: **NCPA-5.03**

TAX MAP & PARCEL(S): **235-25.00-39.00**

LOCATION: **Site is located on the east side of Shingle Point Road (SCR 249)**

NO. OF UNITS: **336 single-family lots**

GROSS ACREAGE: **168.90**

SYSTEM DESIGN ASSUMPTION, MAXIMUM NO. OF UNITS/ACRE: **2**

SEWER:

(1). Is the project in a County operated and maintained sanitary sewer and/or water district?

Yes ☐ No ☒

a. If yes, see question (2).
b. If no, see question (7).

(2). Which County Tier Area is project in? **Tier 3**

(3). Is wastewater capacity available for the project? **N/A** If not, what capacity is available? **N/A**.

(4). Is a Construction Agreement required? **No** If yes, contact Utility Engineering at (302) 855-7717.

(5). Are there any System Connection Charge (SCC) credits for the project? **No** If yes, how many? **N/A**. Is it likely that additional SCCs will be required? **N/A** If yes, the current System Connection Charge Rate is **Unified $6,600.00** per EDU. Please contact **N/A** at **302-855-7719** for additional information on charges.

(6). Is the project capable of being annexed into a Sussex County sanitary sewer district? **N/A**

☐ Attached is a copy of the Policy for Extending District Boundaries in a Sussex County Water and/or Sanitary Sewer District.

(7). Is project adjacent to the Unified Sewer District? **N/A**

(8). Comments: **The proposed subdivision is not in an area where the Sussex County Engineering Department has a schedule to provide sanitary sewer/water service.**

(9). Is a Sewer System Concept Evaluation required? **Not at this time**

(10). Is a Use of Existing Infrastructure Agreement Required? **Not at this time**

(11). **All residential roads must meet or exceed Sussex County minimum design standards.**

UTILITY PLANNING & DESIGN REVIEW APPROVAL:

John J. Ashman
Sr. Manager of Utility Planning & Design Review

Xc: Hans M. Medlarz, P.E.
Lisa Walls
No Permit Tech Assigned

USDA

United States Department of Agriculture

Natural Resources
Conservation Service

Georgetown
Service Center

21315 Berlin Road
Unit 3
Georgetown, DE 19947

Voice 302.856.3990
Fax 855.306.8272

October 20, 2021

Jamie Whitehouse, Director
Sussex County Planning & Zoning
Sussex County Courthouse
Georgetown, DE 19947

RE: Four Winds Farm
Broadkill Hundred
336 single family lots

Dear Mr. Whitehouse:

Soils within the delineated area on the enclosed map are:

DoA	Downer sandy loam, 0 to 2 percent slopes
EvB	Evesboro loamy sand, 0 to 5 percent slopes
FhA	Fort Mott-Henlopen complex, 0 to 2 percent slopes
FmA	Fort Mott loamy sand, 0 to 2 percent slopes
HnA	Hammonton sandy loam, 0 to 2 percent slopes
HpB	Henlopen loamy sand, 2 to 5 percent slopes
IeA	Ingleside loamy sand, 0 to 2 percent slopes
PpB	Pepperbox loamy sand, 2 to 5 percent slopes
PsA	Pepperbox-Rosedale complex, 0 to 2 percent slopes
Za	Zekiah sandy loam, frequently flooded

Soil Interpretation Guide

Soil Limitation Class

Buildings

Map Symbol	Urbanizing Subclass	With Basement	Without Basement	Septic Filter Fields
DoA	G1	Not limited	Not limited	Not limited
EvB	G2	Not limited	Not limited	Very limited
FhA	G1	Not limited	Not limited	Somewhat limited/not limited
FmA	G1	Not limited	Not limited	Somewhat limited
HnA	Y2	Very limited	Somewhat limited	Very limited
HpB	G2	Not limited	Not limited	Not limited
IeA	Y2	Somewhat limited	Not limited	Very limited

PpB	Y2	Very limited	Somewhat limited	Very limited
PsA	Y2	Very limited/Somewhat limited	Somewhat limited/Not limited	Very limited
Za	R3	Very limited	Very limited	Very limited

Definition of soil limitation ratings classes:

Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site 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.

G1:
These soils are on nearly level to strongly sloping (0-10% slopes), well drained, mostly permeable soils. As sites for large commercial, industrial, institutional, and residential developments, these soils have fewer limitations than any other soils in the state. Slopes are favorable, and grading can be done without difficulty. Foundation conditions are generally good. Grasses, trees, and do well. Principal soil limitations: No apparent soil limitations for conventional uses.

G2:
The soils in this classification are nearly level or gently sloping, excessively drained or somewhat excessively drained, very sandy, rapidly permeable soils. These soils are sandy and droughty. They are well suited for large commercial and industrial developments, and somewhat less suited for residential uses because of low available moisture for grasses. Care should be taken in location of septic filter fields, wells, and the size of the building lots. Because of the excessive permeability of these particular soils, there is a probability of polluting nearby wells, springs, ponds, streams, or other sources of water.

R3:
These soils are alluvial soils that have a history of flooding. The hazard of potential flood damage and seasonal or fluctuating high water tables severely limits these soils for building use. The soil limitations are 1) soil is highly susceptible to frost action, 2) excavations are likely to fill with water in late winter or early spring, 3) delayed construction in spring - slow to dry out, 4) wet foundations or basements probable, and 5) potential flood damage.

Y2:
The soils in this classification are nearly level or gently sloping, moderately well drained or well drained with ground water between four to six feet from the surface, and are subject to seasonal high water tables. Seasonal wetness and seepage around foundations moderately limits these soils for residential use. The principal soil limitations are: 1) lateral seepage in subsoil causes concentration of water around foundations, 2) soil is highly susceptible to frost action, 3) excavations are likely to fill with water in late winter or early spring, and 4) wet basements or foundations are probable.

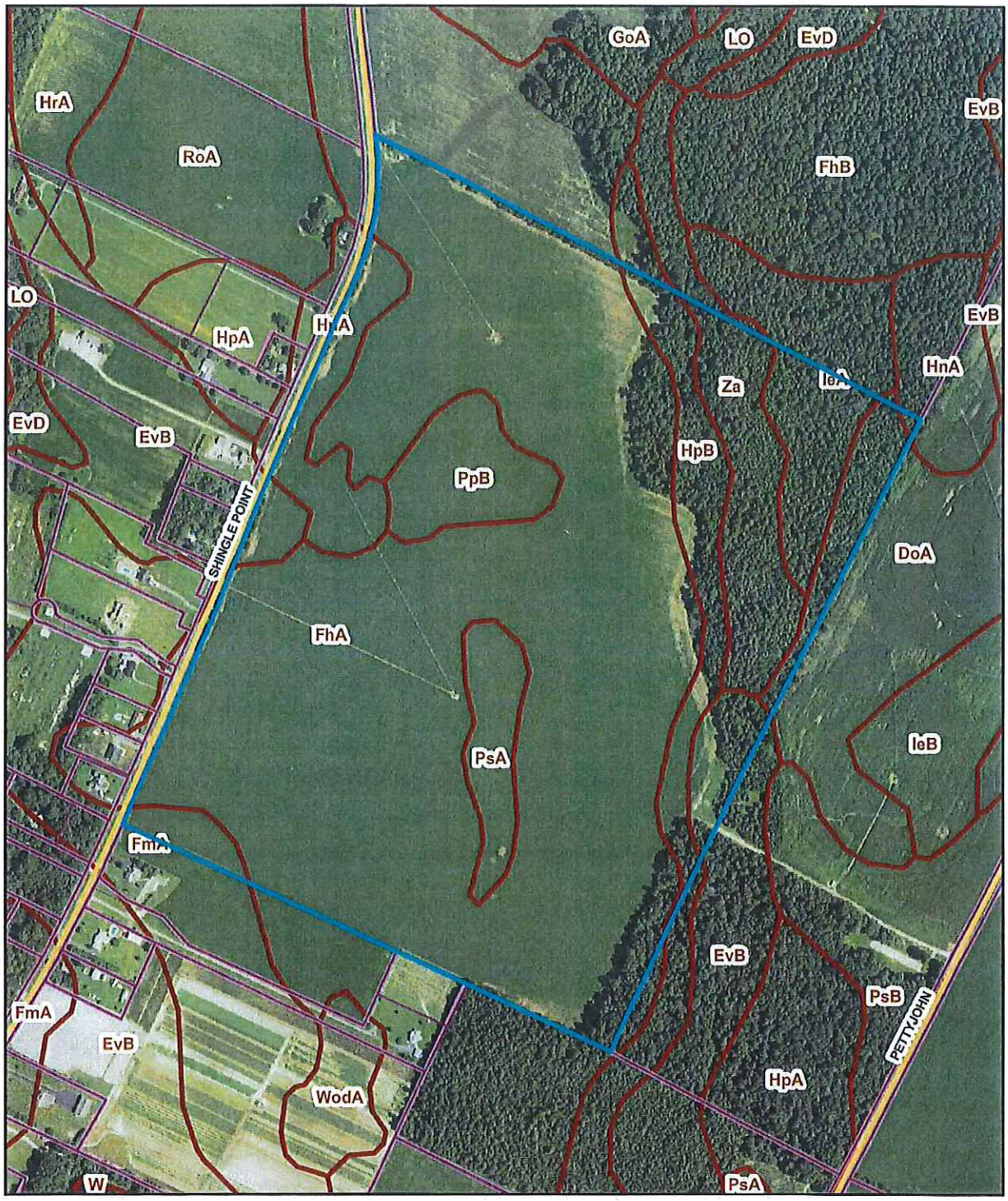
The soil interpretations above do not eliminate the need for detailed investigations at each proposed construction site. However, the interpretations can serve as a guide to planning more detailed investigations. No consideration was given in these interpretations regarding the size and shape of the soil area; nor to the pattern they form with other soils in the landscape. Also, because of the scale of the maps used, small areas of other kinds of soils may be included within some delineations of the soil map. Thus, an individual lot or building site could occupy a small area that would not fit the interpretations given for the soils symbol representing the entire delineation of the map. Interpretations apply to the soils in their natural state and not for areas that may have been altered through grading, compacting, and the like.

Sincerely,

Thelton D. Savage
District Conservationist
USDA, Natural Resources Conservation Service

TDS/bh

2021-25
TM #235-25.00-39.00
Four Winds Farm



2021-25
TM #235-25.00-39.00
Four Winds Farm

ENGINEERING DEPARTMENT

JOHN J. ASHMAN
SR. MANAGER OF UTILITY PLANNING
& DESIGN REVIEW

(302) 855-7370 T
(302) 854-5391 F
jashman@sussexcountyde.gov

Sussex County
DELAWARE
sussexcountyde.gov

Date: **September 20, 2021**

REF: **T. A. C. COMMENTS**
Four Winds Farm
SUSSEX COUNTY ENGINEERING DEPARTMENT
SUSSEX COUNTY TAX MAP NUMBER
235-25.00-39.00
AGREEMENT NO. 1181

The following comments are the result of the Sussex County Engineering Department's review of the preliminary site plan for the above referenced project:

DESIGN REVIEW COMMENTS

1. Proposed developments with private roads or projects required to meet or exceed the County street design requirements shall be regulated by and conform to Sussex County Code and the comments here listed.

2. This project **is not** located within the limits of a Ground Water Management Zone (GMZ). Projects located within a GMZ must be forwarded to the County Engineer for review and comment.

3. Project Construction Drawings shall show, in detail, the proposed improvements. The work required includes preparation and delivery of an AutoCAD 2012 digitized plan showing existing and proposed lines, grades, topography, and features in a given area, which was utilized in preparing plans for construction. The individual sheet types will be in a separate design to show plan views on sheets separate from profile views. In addition, each sheet of the plans shall be submitted in a PDF format.

4. All work shall be geo-referenced to the Delaware State Grid System NAD-83 (HARN) and provided in an AutoCAD 2012 format. North Arrow required to identify northern direction and viewport should be best fit for the project.

5. Topographic contours at one-foot intervals shall be shown and referenced to United States Geological Survey Mean Sea Level Datum NAVD 1988 Datum.

6. The plans shall be provided on 24" x 36" drawing sheets at a scale of 1" = 50' or less.

The plans shall show and address the following items at minimum:

7. The project requires professional land surveying services to accurately delineate, and show the following items but is not limited to the following: all property and right-of-

way lines, established at a minimum, survey monuments, easements, existing and proposed topographic contours at 1-foot vertical intervals and spot elevations as necessary to establish grades, the locations of all existing structures, highway and roadway pavements, shoulders, curbs, driveways, sidewalks, lighting structures, traffic control signs, and all public and private utilities, including, but not limited to, electric power and telephone lines, poles and boxes, underground electric, telephone, and communication lines, potable water lines, fire hydrants and valve boxes, gas lines, wells, sanitary sewers including septic systems, rim and invert elevations of manholes and cleanouts, and the rims and invert elevations and type of storm water structures, drainage ditches, ponds, streams and waterways, flood zones and flood zone boundaries and elevations, and State and Federal wetlands, trees, cemeteries and historic features, and the finished floor elevations of buildings.

8. Plans shall show the seal and signature of a registered Delaware land surveyor or registered Delaware professional engineer.

9. The plan requires a Certification Signature and/or a Certification Block for the following:

    a. Delaware Professional Engineer or Delaware Land Surveyor.
    b. Owner or Representative of the Owner.
    c. Professional Wetlands Delineator.

10. The name, address, phone number and contact person's name of the Owner of Record, the Developer and the Engineer or Surveyor preparing the plan.

11. Indicate the location of all wetlands, both state and federal, in order to facilitate compliance with County, State and Federal requirements.

12. Define the courses and distances of the property perimeter and the approximate acreage contained therein. Establish and set in the field two (2) CONCRETE MONUMENT project benchmarks, preferably at property perimeter corners, geo-referenced to the Delaware State Plane Coordinate system NAD 83 and show the location including the North and East coordinates of the marks on the plans.

13. Indicate the development construction phases proposed showing the boundaries of each phase. Phasing boundaries shall include buildings, residential units, amenities, roads, storm water management facilities, wastewater systems and all other improvements and utilities required to service each phase and shall be recorded prior to being issued a notice to proceed.

14. Show the layout, width and names of all streets, alleys, crosswalks and easements proposed to be dedicated for private or public use. Street names shall not duplicate nor closely resemble existing street names in the same hundred or postal district, except for extensions of existing streets. Sussex County Mapping & Addressing will have final say on proposed street names.

15. Provide the limits and elevations of the 100-year flood. This may require the design engineer to complete an analysis and provide a report including the depiction of the subject watershed(s), calculations and other technical data necessary to determine the limits and elevations of the base flood.

16. False berms shall not be utilized to create roadside drainage swale back slopes.

17. For parking lots and drives, provide spot elevations at the edge of pavement, right-of-way, or travel way centerline, at changes in grade, and high points and low points, to the nearest drainage facilities. Show the limits of the various surface materials and provide construction sections.

18. Provide and show the locations and details of all ADA pedestrian connections.

19. If the site has a cemetery located on it the Developer shall contact the Delaware State Historic Preservation Office and satisfy the requirements of that Office prior to beginning any construction activity. This area shall not be disturbed by this project. Adequate access to the site and buffers to protect the site, shall be provided.

20. Private rights-of-way adjacent to and abutting parcels not part of the project shall be located and designed to provide adequate buffer so that construction activities do not encroach onto adjacent properties.

21. Provide statements explaining how and when the developer proposes to provide and install the required water supply, sewers or other means of sewage disposal, street pavement, drainage structures and any other required improvements.

22. Provide statements concerning any proposed deed restrictions to be imposed by the owner.

23. Where special physical conditions exist, which may act as constraints on normal development or may preclude development, the developer may be required to submit special technical data, studies or investigations. This information must be prepared by individuals technically qualified to perform such work. Additional information may include but is not limited to the following: on-site sanitary sewage disposal feasibility, water supply surveys, such as test well drilling, storm water runoff computations and identification of areas subject to periodic flooding.

24. If special conditions are found to exist, the Engineering Department may elect to withhold approval of a construction plan until it is determined that it is technically feasible to overcome such conditions. The Engineering Department may then require the developer to incorporate specific improvement design criteria into the plat as a condition to its approval.

25. When special studies or investigations pertain to a regulatory program of another public agency, the developer shall submit the results of these studies or investigations to said public agencies for technical review and approval. Approvals and/or written comments from these agencies shall be supplied to Sussex County by the developer.

SEWER SPECIFIC COMMENTS

LOCATION: **East on Shingle Point Rd., North of Gravel Hill Rd.**

NO. OF UNITS: 336 Single Family

GROSS ACREAGE: 168.9

(1). Is the project in a County operated and maintained sanitary sewer and/or water district?

Yes ☐ No ☒

a. If yes, see question (2).
b. If no, see question (7).

(2). Which County Tier Area is project in? Tier 3

(3). Is wastewater capacity available for the project? N/A If not, what capacity is available? N/A.

(4). Is a Construction Agreement required? N/A If yes, contact Utility Engineering at (302) 855-7370 / option 2.

(5). Are there any System Connection Charge (SCC) credits for the project? No If yes, how many? N/A. Is it likely that additional SCCs will be required? **No**

If yes, the current System Connection Charge Rate is **Choose an item.** per EDU. Please contact **N/A** at **302-855-7719** for additional information on charges.

(6). Is the project capable of being annexed into a Sussex County sanitary sewer district? **No**

☐ Attached is a copy of the Policy for Extending District Boundaries in a Sussex County Water and/or Sanitary Sewer District.

(7). Is project adjacent to the Unified Sewer District? **No**

(8). Comments: **Receiving wastewater service through Artesian**.

(9). Is a Sewer System Concept Evaluation required? **No**

(10). Is a Use of Existing Infrastructure Agreement Required? **No**

If the above items, as applicable, are incorporated into the development plans, then preliminary approval is recommended. However, final plan approval should be withheld pending the approval of the construction plans by the Sussex County Engineering Department.

Elliott Young

From: Cullen, Kathleen M <kathleen_cullen@fws.gov>
Sent: Wednesday, October 13, 2021 7:45 AM
To: Planning and Zoning
Subject: FWS review of Four Winds Farm

Follow Up Flag: Follow up
Flag Status: Flagged

Hello-

This email is regarding the Four Winds Farm subdivision. There are no federally listed species at this location, so no further Section 7 consultation is needed. You can fill out the Online Certification Letter if further documentation is needed: https://www.fws.gov/chesapeakebay/saving-wildlife/project-review/online-certification-letter.html

Our office is currently teleworking for the foreseeable future, so there may be delays in mail pick up. For future projects, the fastest way to get a response is to submit through IPaC: https://ecos.fws.gov/ipac/. Please let me know if you have any questions!

Thank you,
Kathleen

Kathleen Cullen
U.S. Fish & Wildlife Service - Chesapeake Bay Field Office
177 Admiral Cochrane Dr., Annapolis MD, 21401
410-573-4579 - kathleen_cullen@fws.gov

DELAWARE DEPARTMENT OF
AGRICULTURE

2320 South DuPont Highway
Dover, Delaware 19901
agriculture.delaware.gov

Telephone: (302) 698-4500
Toll Free: (800) 282-8685
Fax: (302) 697-6287

October 8, 2021

Elliott Young, Planner I
Planning & Zoning Commission
P.O. Box 417
Georgetown, Delaware 19947

Subject: **Preliminary Plans for Four Winds Farm Subdivision**

Dear Mr. Young,

Thank you for providing preliminary plans for Four Winds Farm subdivision submitted by Ribera Development, LLC to our section dated August 20, 2021.

The Delaware Forest Service recommends the plans reflect tree planting specifications and that the ISA ANSI A300 best management practices are followed for newly installed trees. DFS recommends planting a 70/30 mix of hardwood and evergreen tree species. There are several tree species that are not recommended for planting in the state due to their invasive nature or the susceptibility to pests and diseases. These species are listed on our department website. The Delaware Forest Service requests planting details and tree species to be added to the preliminary plans before being approved. Please resubmit the preliminary plans to Delaware Forest Service once the updates are completed.

The Delaware Forest Service will await resubmission of plans.

If you have any questions please feel free to contact me at taryn.davidson@delaware.gov.

Sincerely,

Taryn Davidson
Urban Forestry Program
Delaware Forest Service

DELAWARE DEPARTMENT OF
AGRICULTURE

2320 South DuPont Highway
Dover, Delaware 19901
agriculture.delaware.gov

Telephone: (302) 698-4500
Toll Free: (800) 282-8685
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October 8, 2021

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P.O. Box 417
Georgetown, Delaware 19947

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The Delaware Forest Service will await resubmission of plans.

If you have any questions please feel free to contact me at taryn.davidson@delaware.gov.

Sincerely,

Taryn Davidson

Taryn Davidson
Urban Forestry Program
Delaware Forest Service

Elliott Young

From: Dickerson, Troy <TDickerson@delaware.coop>
Sent: Monday, August 30, 2021 3:03 PM
To: Elliott Young
Subject: RE: TAC review for Four Winds Farm (2021-25)

Follow Up Flag: Follow up
Flag Status: Flagged

Elliott,

This development is located within DEC's service territory and we have facilities in the area to serve the proposed single family units.

Thanks!

Troy W. Dickerson, P.E.
Vice President of Engineering
Voice: (302) 349-3125
Cell: (302) 535-9048
Fax: (302) 349-5891
tdickerson@delaware.coop

DELAWARE ELECTRIC CO-OP
"We Keep the Lights On"

From: Elliott Young <elliott.young@sussexcountyde.gov>
Sent: Wednesday, August 25, 2021 11:22 AM
To: beth.krumrine@delaware.gov; Brad Hawkes <bhawkes@sussexcountyde.gov>; Chris Calio <ccalio@sussexcountyde.gov>; ddetrick@chpk.com; dholden@chpk.com; C. Daniel Parsons <dparsons@sussexcountyde.gov>; Fox, Duane T. (FireMarshal) <Duane.Fox@delaware.gov> <Fox>; Duane T. <Duane.Fox@delaware.gov>; Sullivan, James C. (DNREC) <James.Sullivan@delaware.gov> <Sullivan>; James C. <James.Sullivan@delaware.gov>; jvandervort@chpk.com; Cinelli, Jennifer (DelDOT) <jennifer.cinelli@delaware.gov> <Cinelli>; Jennifer <jennifer.cinelli@delaware.gov>; jessica.watson@sussexconservation.org; John J. Ashman <jashman@sussexcountyde.gov> <John J.Ashman <jashman@sussexcountyde.gov>; John.Hayes@delaware.gov; john.kennel@delaware.gov; john.martin@delaware.gov; Jordan T. Dickerson <jordan.dickerson@sussexcountyde.gov> <Jordan T.Dickerson <jordan.dickerson@sussexcountyde.gov>; Kate.Flemming@delaware.gov; kgabbard@chpk.com; McCabe, R. Stephen (DelDOT) <Richard.McCabe@delaware.gov> <McCabe>; R.Stephen <Richard.McCabe@delaware.gov>; Crystall, Meghan (DNREC) <Meghan.Crystall@delaware.gov> <Crystall>; Meghan <Meghan.Crystall@delaware.gov>; Tholstrup, Michael S. (DNREC) <Michael.Tholstrup@delaware.gov> <Tholstrup>; Michael S. <Michael.Tholstrup@delaware.gov>; Melendez, Milton (DDA) <milton.melendez@delaware.gov> <Melendez>; Milton <milton.melendez@delaware.gov>; Anthony, Mindy (DNREC) <Mindy.Anthony@delaware.gov>

MAPPING & ADDRESSING

MEGAN NEHRBAS
MANAGER OF GEOGRAPHIC
INFORMATION SYSTEMS (GIS)
(302) 855-1176 T
(302) 853-5889 F

Sussex County
DELAWARE
sussexcountyde.gov

July 28, 2021

Pennoni

Attn: Alan M. Decktor, PE, ENV SP

RE: **Change of Sub Division Name(s)/Formally known as:**

ILEX BEACH FARM

I have received your request to change the subdivision previously approved as **ILEX BEACH FARM**, which is located in **Milton** (235-25.00-39.00). The name change has been approved and will now been known as:

FOUR WINDS FARM

Should you have any questions please contact the **Sussex County Addressing Department at 302-853-5888 or 302-855-1176.**

Sincerely,

Terri L Dukes

Terri L. Dukes
Addressing Technician II

CC: Christin Scott
Planning & Zoning

MAPPING & ADDRESSING

MEGAN NEHRBAS
MANAGER OF GEOGRAPHIC
INFORMATION SYSTEMS (GIS)
(302) 855-1176 T
(302) 853-5889 F

Sussex County
DELAWARE
sussexcountyde.gov

March 5, 2021

Pennoni
Attn: Katherine E. Davidson

RE: Proposed Subdivision Name(s)

I have reviewed the name(s) submitted for your proposed subdivision which is located in Milton (235-25.00-39.00). In reviewing the proposed name(s) the following has been approved for this subdivision:

ILEX BEACH FARM

Should you have any questions please contact the Sussex County Addressing Department at 302-853-5888 or 302-855-1176.

Sincerely,

Terri L Dukes

Terri L. Dukes
Addressing Technician II

CC: Christin Headley
Planning & Zoning

FUQUA, WILLARD & SCHAB, P.A.

☐ PAYNTER HOUSE
26 THE CIRCLE OR P.O. BOX 250
GEORGETOWN, DELAWARE 19947
PHONE 302-856-7777
FAX 302-856-2128
onthecircle@fwsdelaw.com

☐ BLUE BUILDING
105 W. 4TH STREET
LEWES, DE 19958
PHONE 302-856-9024
FAX 302-856-6360

JAMES A. FUQUA, JR.
WILLIAM SCHAB
TIMOTHY G. WILLARD
www.fwsdelaw.com

☐ LEWES REAL ESTATE OFFICE
16698 KINGS HIGHWAY, SUITE B
LEWES, DELAWARE 19958
PHONE 302-645-6626
FAX 302-645-6620
realestate@fwsdelaw.com

☐ REHOBOTH OFFICE
20245 BAY VISTA RD., UNIT 203
REHOBOTH BEACH, DE 19971
PHONE 302-227-7727
FAX 302-227-2226

January 24, 2022

Jamie Whitehouse, Director
Sussex County Planning & Zoning Office
2 The Circle
P.O. Box 417
Georgetown, DE 19947

RECEIVED
JAN 27 2022
SUSSEX COUNTY
PLANNING & ZONING

Re: Four Winds / Subdivision 2021-25

Dear Mr. Whitehouse:

In regard to the above subdivision application, the Declaration of Restrictions for the development will contain provisions similar to the following:

1. **ORGANIZATION AND OPERATION OF PROPERTY OWNERS' ASSOCIATION**

A. It is the intension of the party of the first part that a non-profit corporation called the "Four Winds Homeowners Association, Inc." (hereinafter "Homeowners Association") is to be formed, at any time, to control and maintain the entranceway, roads, streets, street lights, sidewalks, stormwater management areas including surface drainage facilities and erosion and sedimentation control facilities, buffer aeras and any community or common areas, maintained for the general good of the development and vacant and unimproved lots in the development, whether or not such lots be owned by the party of the first part, its successors or assigns, and to do any other things and perform any labor necessary or desirable in the judgment of such association to maintain the development in good repair and condition and to landscape any property in the development not owned by private parties.

B. All persons purchasing property (exclusive of the party of the first

part) within the area herein conveyed, by acceptable of their deeds, agree to the formation of the said Homeowners Association and further agree to become members thereof and pay their pro rata share of the funds necessary for the performance of its functions. All lot owners, by accepting title to any lot, automatically become members of said Association and subject to all assessments, regulations and rules thereof. Assessments on private property owners (exclusive of the party of the first part) may be made annually but shall not exceed $_____ per annum, total, per lot unless such assessment over and above this amount is approved by a majority of the property owners, each lot being entitled to one vote regardless of how title hereto may be held or how many lots may be owned by one person, partnership or corporation. The party of the second part, their heirs and assigns, hereby agrees to be contractually liable for said assessment at law if the same is made in accordance herewith.

C. The Homeowners Association shall be managed by the developer until the roads and common areas have been conveyed to the Association or until the last lot is sold by the developer or until such earlier time as the developer deems appropriate, at which time a meeting of all lot owners shall be convened for the purpose of electing directors or officer including but not limited to president, treasurer and secretary of same form the general membership.

D. Upon the first of occur of the events mentioned in the preceding paragraphs, all privileges, rights, powers, duties and authority of the party of the first part contained in these restrictive covenants shall thereupon vest in the Association, and thereafter such privileges, rights, powers, duties and authority shall be exercisable by the Association, and thereafter whenever the expression "party of the first part" is used herein, it shall be taken to mean the Homeowners Association.

2. USE OF ROADS

A. All streets and roads shown on the plot of the development are Hereby dedicated for the use of the property owners. Each such property owner, by the acceptance of the conveyance of a lot or lots, hereby agrees to assume the responsibility of maintaining, repairing and replacing all streets and roads in the development. This responsibility shall be shared equally by every lot and shall be binding on the property owners, their heirs and assigns. All deeds to lots shall comply with 9 Delaware Code, Section 9623 by containing a statement that such private streets and roads are not maintained by the State.

B. The party of the first part hereby gives and grants to the party of the second part, their heirs, executors, administrators and assigns, and to all other persons now or hereafter entitled to occupy any lots within the area described above, the right, in common with the party of the first part, its successors and assigns, of free and uninterrupted use of the road, streets, courts and any other ways hereafter laid out and opened in or through said lands for the general use of all lot owners, for convenient ingress, egress and passage to and from various parts of the lands hereby conveyed, and to and from points outside of the area described above.

C. Notwithstanding the above, the developer and/or the Association reserves the right to dedicate all streets to public use and convey said streets to the State of Delaware.

D. The party of the first part reserves unto itself, its successors or assigns, easements for the erection, construction, maintenance and use of underground cables, polies, wires, conduits, culverts, pipes, and the necessary property or desirable attachments in connection therewith for the transmission of electricity for lighting, heating, telephone, cable television, and other purposes; for public and private sewers, storm water drains; pipe lines for supplying as, water and heat; and for any other public or quasi-public utility or function conducted, maintained or performed or to be installed in the future in any manner above or beneath the surface of the ground. The party of the first part, its agents, employees, successors and assigns (and, with the permission of the party of the first part, its successors or assigns), the representatives of utility companies, private or quasi-public, and the representative or public agencies shall have the right to enter upon such strips subject to said easements at any time, for any of the utilitarian purposes for which said easements are reserved.

3. AGRICULTURAL USES

This property is located in the vicinity of land uses primarily for agricultural purposes on which normal agricultural uses and activities have been afforded the highest priority use status. It can be anticipated that such agricultural uses and activities may now or in the future involve noise, dust, manure and other odors, the use of agricultural chemicals and nighttime farm operations. The use and enjoyment of this property is expressly conditioned on acceptance of any annoyance or inconvenience which may result from such normal agricultural uses and activities.

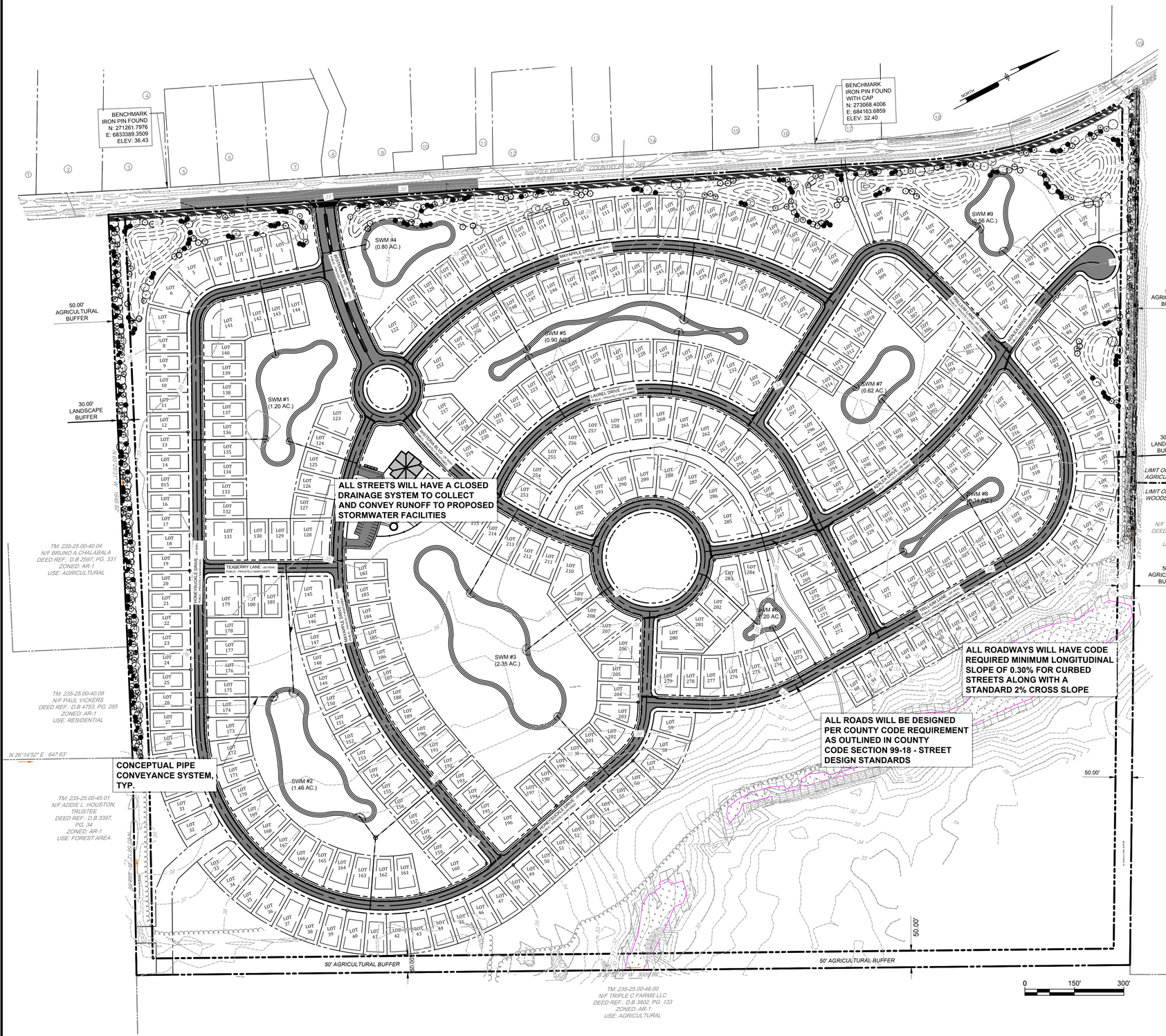
Please contact me if you have any questions.

Very truly yours,

FUQUA, WILLARD & SCHAB, P.A.

By:_____
James A. Fuqua, Jr.

JAF/jel
Pc: Vince Robertson, Esquire



GRADING NOTES:

1. BEDDING REQUIREMENTS SPECIFIED HEREIN ARE TO BE CONSIDERED AS MINIMUMS FOR RELATIVELY DRY, STABLE EARTH CONDITIONS. ADDITIONAL BEDDING SHALL BE REQUIRED FOR ROCK TRENCHES AND WET AREAS. CONTRACTOR SHALL HAVE THE RESPONSIBILITY TO PROVIDE SUCH ADDITIONAL BEDDING AS MAY BE REQUIRED TO PROPERLY CONSTRUCT THE WORK.
2. COMPACTION OF THE BACKFILL OF ALL TRENCHES SHALL BE COMPACTED TO THE DENSITY OF 95% OF THEORETICAL MAXIMUM DRY DENSITY (ASTM D698). BACKFILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS, OR OTHER FOREIGN DEBRIS AND SHALL BE PLACED IN LIFTS NOT TO EXCEED 8 INCHES IN COMPACTED FILL THICKNESS. CORRECTION OF ANY TRENCH SETTLEMENT WITHIN A YEAR FROM THE DATE OF APPROVAL WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. MATERIAL THAT CANNOT BE COMPACTED AS REQUIRED SHALL BE BROUGHT TO THE ATTENTION OF A GEOTECHNICAL ENGINEER, OVER EXCAVATED, AND THEN REPLACED WITH SUITABLE FILL
3. THE CONTRACTOR WILL INSURE THAT POSITIVE AND ADEQUATE DRAINAGE IS MAINTAINED AT ALL TIMES WITHIN THE PROJECT LIMITS. THIS MAY INCLUDE, BUT NOT BE LIMITED TO, REPLACEMENT OR RECONSTRUCTION OF EXISTING DRAINAGE STRUCTURES THAT HAVE BEEN DAMAGED OR REMOVED OR REGRADING AS REQUIRED BY THE ENGINEER, EXCEPT FOR THOSE DRAINAGE ITEMS SHOWN AT SPECIFIC LOCATIONS AND HAVING SPECIFIC PAY ITEMS IN THE DETAILED ESTIMATE. NO SEPARATE PAYMENT WILL BE MADE FOR ANY COSTS INCURRED TO COMPLY WITH THIS REQUIREMENT.
4. THE CONTRACTOR SHALL PROVIDE ANY AND ALL EXCAVATION AND MATERIAL SAMPLES NECESSARY TO CONDUCT REQUIRED SOIL TESTS. ALL ARRANGEMENTS AND SCHEDULING FOR THE TESTING SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
5. SOILS TESTING AND ON-SITE INSPECTION SHALL BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER. THE SOILS ENGINEER SHALL PROVIDE COPIES OF TEST REPORTS TO THE CONTRACTOR, THE OWNER AND THE OWNER'S REPRESENTATIVE AND SHALL PROMPTLY NOTIFY THE OWNER, HIS REPRESENTATIVE AND THE CONTRACTOR, SHOULD WORK PERFORMED BY THE CONTRACTOR FAIL TO MEET BUILDING STANDARDS.
6. CONTRACTOR SHALL FURNISH AND MAINTAIN ALL NECESSARY BARRICADES AROUND THE WORK AREA AND SHALL PROVIDE PROTECTION AGAINST WATER DAMAGE AND SOIL EROSION.
7. MAXIMUM SIDEWALK CROSS SLOPE IS 2% AND MINIMUM SIDEWALK CROSS SLOPE IS 1% FOR ADA ACCESSIBLE AREAS. IF ANY SLOPES DIFFER, CONTACT DESIGN ENGINEER TO DETERMINE RESOLUTION.
8. VERTICAL ELEVATIONS ARE BASED ON NAVD 88.
9. ALL SLOPES MAXIMUM 3:1 UNLESS OTHERWISE NOTED.
10. CONTRACTOR IS RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE TOWARDS OUTLET AT ALL TIMES DURING CONSTRUCTION. PONDING OF WATER, EXCLUDING STORMWATER MANAGEMENT PONDS, AND LACK OF POSITIVE DRAINAGE WITHIN THE PROPERTY DURING GRADING, FILLING OR EXCAVATION, NO MATTER OF THE DESIGN OR THE STAKEOUT, IS FORBIDDEN WITHOUT THE PERMISSION OF THE DESIGN ENGINEER OR THEIR AUTHORIZED REPRESENTATIVE. CONTRACTOR IS RESPONSIBLE TO DISCUSS ALL GRADING AND DRAINAGE CONCERNS WITH THE DESIGN ENGINEER, PRIOR AND DURING APPLICATION TO ENSURE THAT POSITIVE DRAINAGE TOWARDS OUTLETS ARE ADDRESSED APPROPRIATELY AND SAFELY. DESIGN ENGINEER WILL BE HELD HARMLESS FROM CONCERNS ARISING FROM THE LACK OF POSITIVE DRAINAGE IF NOT NOTIFIED PRIOR TO ITS APPLICATION
11. CONTRACTOR IS RESPONSIBLE FOR REMOVING AND DISPOSING OF EXCESS DIRT FROM THE SITE

SITE INFORMATION:

SITE ADDRESS:
SPRING GARDEN, LLC.
TAX MAP: 235-25.00-39.00
16793 ISLAND FARM LAND
MILTON, DE 19968

DEVELOPER:
RIBERA DEVELOPMENT, LLC.
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108
(443) 871-0486

ENGINEER, PLANNER & SURVEYOR CONSULTANTS:
PENNONI ASSOCIATES INC.
18072 DAVIDSON DRIVE
MILTON, DELAWARE 19968
(302) 684-8030

THE STREET DESIGN LAYOUT, GRADING AND DRAINAGE ELEMENTS ARE SUBJECT TO SUSSEX COUNTY ENGINEERING DEPARTMENT REVIEW AND APPROVAL.

PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

FOUR WINDS FARM SUBDIVISION

TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE

BULK GRADING CONCEPT PLAN

RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS	BY

PROJECT	RIBER21001
DATE	2022-03-28
DRAWING SCALE	1"=150'
DRAWN BY	RPP
APPROVED BY	AMD

CS1501

SHEET 1 OF 1

FOUR WINDS FARM
PRELIMINARY SUBDIVISION PLAN

(2021-25)

TM: 235-25.00-39.00

BROADKILL HUNDRED

SUSSEX COUNTY, DE

PREPARED FOR:

DEVELOPER

RIBERA DEVELOPMENT, LLC

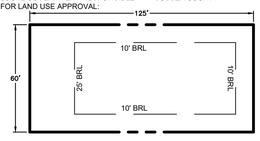
8684 VETERANS HIGHWAY, SUITE 203

MILLERSVILLE, MD 21108

(443) 871-0486

SITE DATA TABLE:

1.	TAX MAP NUMBER:	235-25.00-39.00
2.	OWNERS:	SPRING GARDEN, LLC. 16793 ISLAND FARM LAND MILTON, DE 19968
3.	DEVELOPER:	RIBERA DEVELOPMENT, LLC. 8684 VETERAN'S HIGHWAY, SUITE 203 MILLERSVILLE, MD 21108
4.	HUNDRED/ COUNTY:	BROADKILL HUNDRED / SUSSEX COUNTY
5.	CURRENT ZONING:	AR-1 (AGRICULTURAL RESIDENTIAL DISTRICT)
6.	PRESENT USE:	AGRICULTURAL
7.	PROPOSED USE (115-20):	DETACHED SINGLE FAMILY DWELLINGS ON INDIVIDUAL LOTS [PROPOSED 336 LOTS]
8.	REQUIRED SETBACKS (B.R.L.):	AR-1 CLUSTER DEVELOPMENT (115-25 B-2)
	DEPTH OF FRONT YARD (FEET) DEPTH OF CORNER SIDE YARD WIDTH OF SIDE YARD (FEET) DEPTH OF REAR YARD (FEET)	25' 15' 10' 10
9.	REQUIRED LOT AREAS:	AR-1 CLUSTER DEVELOPMENT (115-25 B-2)
	MINIMUM LOT WIDTH MAXIMUM LOT AREA MINIMUM LOT AREA AVERAGE LOT AREA	60' 15,630' S.F. 7,500' S.F. 8,501.04' S.F.
10.	DWELLING UNIT CALCULATIONS:	
	GROSS AREA: NON-TIDAL WETLAND AREA: MIN. LOT AREA/UNIT: PERMITTED DENSITY (115-25 B3): PROPOSED DENSITY:	168.9 AC. 2.96 AC. AR-1 ZONING MINIMUM AREA: 7,500 S.F. AR-1 ZONING MAXIMUM DENSITY: 2 UNITS / ACRE (337 UNITS) 336 SINGLE FAMILY DETACHED UNITS: 1.99± UNITS / ACRE
11.	WATER SUPPLIER:	PUBLIC - ARTESIAN
	SECTION 89: SOURCE WATER PROTECTION	A. SUBJECT PROPERTY IS WITHIN A POOR AREA OF GROUND WATER RECHARGE. B. SUBJECT PROPERTY IS NOT LOCATED IN A WELLHEAD PROTECTION AREA.
12.	SANITARY SEWER PROVIDER:	PUBLIC - ARTESIAN
13.	STREETS:	PRIVATE (99-18 D & E.)
14.	POSTED SPEED LIMIT (SHINGLE POINT ROAD):	50 MPH
15.	STATE INVESTMENT AREA (2020):	LEVEL 4 AND 3
16.	FUTURE LAND USE MAP (2019):	LOW DENSITY
17.	MAXIMUM BUILDING HEIGHT (115-25 D.):	42 FEET
18.	SITE AREA AND ACREAGE:	GROSS ACREAGE: 168.90 ± AC LOT AREA 65.58 ± AC DELDOT R.O.W. DEDICATION (SHINGLE POINT ROAD): 0.38 ± AC DELDOT PERMANENT EASEMENT: 0.73 ± AC PRIVATE SUBDIVISION STREETS ROW : 15.65 ± AC IMPERVIOUS - ROAD: 9.99 ± AC IMPERVIOUS - SIDEWALK: 1.88 ± AC OPEN SPACE: 86.56 ± AC TOTAL: 168.90 ± AC
19.	FORESTED AREA:	TOTAL AREA: 31.13 ± AC IMPACTED: 2.91 ± AC REMAINING: 28.22 ± AC (90.65%)
20.	OPEN SPACE AREA BREAKDOWN:	PASSIVE & ACTIVE RECREATION SPACE: 46.93 ± AC FORESTED AREA: 28.22 ± AC STORMWATER MANAGEMENT AREA 8.44 ± AC WETLAND AREA: 2.97 ± AC TOTAL OPEN SPACE AREA: 86.56 ± AC (51.2%) REQUIRED OPEN SPACE: 50.67 ± AC (30.0%)
	TOTAL REQUIRED ADJACENT OPEN SPACE TO EXISTING WETLANDS (115-25, F-3-A-3-ii):	30% OF REQURED OPEN SPACE: 30%(50.67 AC.) = 15.20 AC. PROPOSED OPEN SPACE (OPEN SPACE A): 44.14 AC. (REFER TO OPEN SPACE AREA BREAKDOWN ON SHEET PP1001)
21.	LONGITUDE AND LATITUDE	STATE PLANE COORDINATES: LONGITUDE: W 75°19'11.1" LATITUDE: N 38°44'45.0"
22.	PROPOSED DISCHARGE LOCATION: WATERSHED:	PROPOSED STORMWATER PONDS TO EXISTING WETLANDS ROUND POLE BRANCH-BROADKILL RIVER (WAGAMONS POND WATERSHED)
23.	LIMIT OF DISTURBANCE:	112.77 AC. ±
24.	FLOOD ZONE:	THIS PROPERTY IS LOCATED ON THE FEMA FLOOD INSURANCE RATE MAP NUMBER 10005C0325L, AND 10005C0310L, MAP REVISED JUNE 20, 2018. AREA DESIGNATED AS FLOOD ZONE "X" (UNSHADED) . THIS PROPERTY IS LOCATED ON THE FEMA FLOOD INSURANCE RATE MAP NUMBER 10005C0164J. MAP REVISED JANUARY 6, 2005. AREA DESIGNATED AS FLOOD ZONE "X" (UNSHADED)
25.	FEDERALLY REGULATED NONTIDAL WETLAND AREA: FEDERALLY REGULATED NONTIDAL WETLAND AREA IMPACTED:	2.96 ± AC. 0.00 ± AC.
26.	DATUM:	HORIZONTAL: NAD83 VERTICAL: NAVD88 STATE PLANE.
27.	HENLOPEN TID	NOT INCLUDED
28.	STATE TAX DITCH AREAS AND RIGHT OF WAY LIMITS:	NOT INCLUDED
29.	LOCAL GOVERNMENT RESPONSIBLE FOR LAND USE APPROVAL:	SUSSEX COUNTY



LOT DETAIL
Scale: 1" = 40'

OWNERS
SPRING GARDEN, LLC.
16793 ISLAND FARM LAND
MILTON, DE 19968

DEVELOPER
RIBERA DEVELOPMENT, LLC.
8684 VETERAN'S HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

ENGINEER/ PLANNER
PENNONI ASSOCIATES INC.
18072 DAVIDSON DRIVE
MILTON, DE 19968
(302) 684-8030

SURVEYOR
PENNONI ASSOCIATES, INC.

ENVIRONMENTAL CONSULTANT
PENNONI ASSOCIATES INC.
18072 DAVIDSON DRIVE
MILTON, DE 19968
(302) 684-8030

ENVIRONMENTAL CONSULTANT
ACCENT ENVIRONMENTAL
PO BOX 788
MILLSBORO, DE 19966
302-352-1700

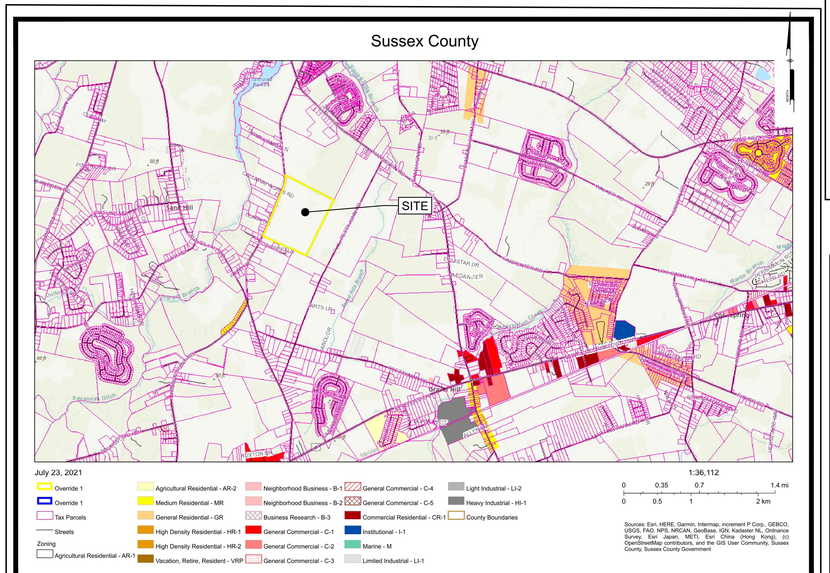
SCHOOL DISTRICT
CAPE HENLOPEN

FIRE DISTRICT
MILTON STATION (85)

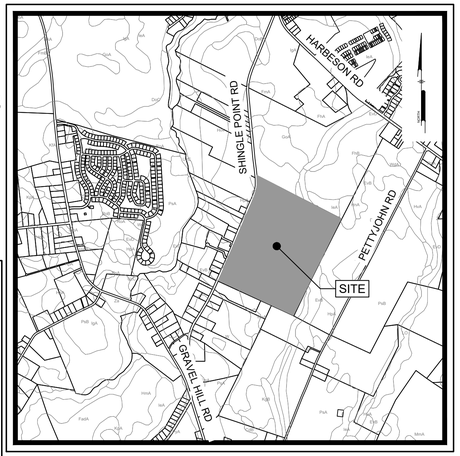
POSTAL DISTRICT
MILTON (19968)

WATER UTILITY
ARTESIAN

SEWER UTILITY
ARTESIAN



ZONING MAP
Scale: 1" = 3500'



SOILS MAP
Scale: 1" = 2000'

LOCATION MAP
Scale: 1" = 2000'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		CURB
		EDGE OF PAVEMENT
		PAVEMENT
		EDGE OF GRAVEL
		EASEMENT
		FENCE
		PROPERTY LINE/ RIGHT OF WAY
		BUILDING RESTRICTION LINE
		PROPERTY, CORNER FOUND
		PROPERTY, ADJOINING LINED
		SITE, MAIL BOX
		SITE, TRAFFIC SIGN
		SOIL BOUNDARY
WaC		SOIL LABEL
		STORM SEWER, INLET
		STORM SEWER,HEADWALL
		STORM SEWER, MANHOLE
D D		STORM SEWER, UNDERGROUND
101	101	MINOR CONTOUR
100	100	MAJOR CONTOUR
X 100.5	35.00	SPOT ELEVATION
		TREE LINE
W W	W W	WATER, UNDERGROUND
		WATER VALVE
	WM	WATER MAIN
		CLEAN OUT
S S	S S	SANITARY SEWER, UNDERGROUND
FM FM	FM FM	SANITARY SEWER, FORCED MAIN
		SANITARY SEWER, MANHOLE
UE UE	E	POWER-UNDERGROUND ELECTRIC
		POWER, UTILITY POLE
		STREET LIGHT
		BOUNDARY OF FEDERALLY REGULATED WETLANDS (USACOE)
		BOUNDARY OF DNREC (STATE) REGULATED TIDAL WETLAND
		LANDSCAPE BUFFER
		ROADWAY CENTERLINE
		FEDERALLY REGULATED NON-TIDAL WETLANDS (USACOE)
		WETLAND BUFFER
		CONCRETE SIDEWALK

CALL BEFORE YOU DIG
Call Miss Utility of Delmarva
800-282-8555
Ticket Number(s):

WETLANDS CERTIFICATION:
I, JOHN-THOMAS GRAUPENSPERGER, PWS, DO HEREBY STATE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF THAT THE INFORMATION CONTAINED IN THE PLANS SPECIFICATIONS AND REPORTS HAVE BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENVIRONMENTAL PRACTICES, IS TRUE AND CORRECT, AND IS IN CONFORMANCE WITH THE BOUNDARIES OF WATERS OF THE UNITED STATES INCLUDING WETLANDS SUBJECT TO THE CORPS OF ENGINEERS REGULATORY PROGRAM.

SIGNATURE DATE

JOHN-THOMAS GRAUPENSPERGER, PWS NO. 2339
PENNONI ASSOCIATES, INC
18072 DAVIDSON DRIVE
MILTON, DE 19968
OFFICE (302) 684-8030 - FAX (302) 684-8054
JGRAUPENSPERGER@PENNONI.COM

ENGINEER CERTIFICATION:
IT IS HEREBY CERTIFIED THAT I AM A REGISTERED ENGINEER IN THE STATE OF DELAWARE, THAT THE INFORMATION SHOWN HEREON HAS BEEN PREPARED UNDER MY SUPERVISION, AND TO MY BEST KNOWLEDGE COMPLIES WITH APPLICABLE STATE AND LOCAL REGULATIONS AND ORDINANCES. THE DESIGN REPRESENTS GOOD ENGINEERING PRACTICES AS REQUIRED BY THE APPLICABLE LAWS OF THE STATE OF DELAWARE.

SIGNATURE DATE
ALAN DECKTOR, PE (DE PE#17771)
PENNONI ASSOCIATES, INC
18072 DAVIDSON DRIVE
MILTON, DE 19968
OFFICE (302) 684-8030 - FAX (302) 684-8054
ADECKTOR@PENNONI.COM

APPROVED BY

CHAIRMAN OR SECRETARY OF PLANNING & ZONING COMMISSION DATE

PRESIDENT OF SUSSEX COUNTY COUNCIL (2021-25) DATE

SUSSEX CONSERVATION DISTRICT

NAME DATE

OWNER CERTIFICATION:
I HEREBY CERTIFY THAT I AM THE OWNER OF THE PROPERTY DESCRIBED AS SHOWN ON THIS PLAN, THAT THE PLAN WAS MADE AT MY DIRECTION, THAT I ACKNOWLEDGE THE SAME TO BE MY ACT, AND DESIRE THE PLAN TO BE RECORDED AS SHOWN IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

SPRING GARDEN LLC DATE
16793 ISLAND FARM LANE
MILTON, DE 19968

DEVELOPER CERTIFICATION:
I HEREBY CERTIFY THAT I AM THE DEVELOPER OF THE PROPERTY DESCRIBED AS SHOWN ON THIS PLAN, THAT THE PLAN WAS MADE AT MY DIRECTION, THAT I ACKNOWLEDGE THE SAME TO BE MY ACT, AND DESIRE THE PLAN TO BE RECORDED AS SHOWN IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

RIBERA DEVELOPMENT, LLC DATE
C/O JOHN STAMATO
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108
(443) 871-0486
JOHNSTAMATO@RIBERADEV.COM

SHEET LIST TABLE

SHEET #	DRAWING #	SHEET TITLE
1	PP0001	PRELIMINARY PLAT COVER SHEET
2	PP1000	PRELIMINARY PLAT DETAILS AND NOTES
3	PP1001	PRELIMINARY PLAT KEY SHEET
4	PP1002	PRELIMINARY PLAT
5	PP1003	PRELIMINARY PLAT
6	PP1004	PRELIMINARY PLAT
7	PP1005	PRELIMINARY PLAT
8	PP1006	PRELIMINARY PLAT
9	PP1007	PRELIMINARY PLAT
10	PP1008	PRELIMINARY PLAT
11	PP1009	PRELIMINARY PLAT
12	PP1010	PRELIMINARY PLAT
13	PP1011	PRELIMINARY PLAT PARCEL DATA
14	PP1012	PRELIMINARY PLAT PARCEL DATA

SOILS

TYPE	DESCRIPTION	HYDROLOGIC SOIL
DoA	DOWNER SANDY LOAM, 0 TO 2 PERCENT SLOPES	A
EvB	EVESBORO LOAMY SAND, 0 TO 5 PERCENT SLOPES	A
FhA	FORT MOTT-HENLOPEN COMPLEX, 0 TO 2 PERCENT SLOPES	A
HnA	HAMMONTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	B
HpA	HENLOPEN LOAMY SAND, 0 TO 0 PERCENT SLOPES	A
HpB	HENLOPEN LOAMY SAND, 2 TO 5 PERCENT SLOPES	A
IeA	INGLESIDE LOAMY SAND, 0 TO 2 PERCENT SLOPES	C
PpB	PEPPERBOX LOAMY SAND, 0 TO 5 PERCENT SLOPES	A/D
PsA	PEPPERBOX-ROSEDALE COMPLEX, 0 TO 2 PERCENT SLOPES	A
RoA	ROSEDALE LOAMY SAND, 0 TO 2 PERCENT SLOPES	A
Za	ZEKIAH SANDY LOAM, FREQUENTLY FLOODED	B/D

BASED ON FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM 10005C0325L AND 10005C0310L, EFFECTIVE DATE JUNE 20, 2018, ARE DESIGNATED PARTLY AS FLOOD ZONE 'X', (UNSHADED), WHICH IS AN AREA DETERMINED TO LIE OUTSIDE THE 500 YEAR FLOODPLAIN.

PREPARED BY:
PENNONI ASSOCIATES INC.

18072 Davidson Drive
Milton, DE 19968
T 302.684.8030
F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

FOUR WINDS FARM
(2021-25)
TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE
PRELIMINARY PLAT COVER SHEET

RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS	BY
1	2022-03-18	REVISED PER P&Z COMMENTS	EOC

PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	EW/LM
APPROVED BY	AMD

PP0001

SHEET 1 OF 14

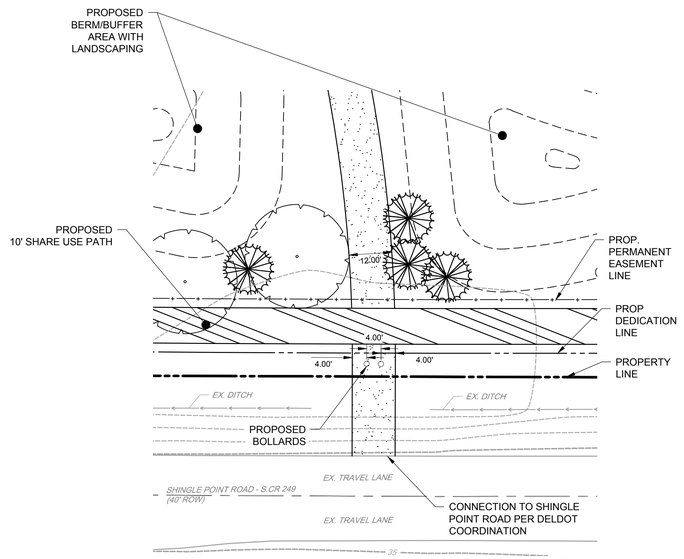
U:\Accounts\RIBER\RIBER21001 - Spring Garden Property\DESIGN_SHEETS\PP0001.dwg PLOTTED: 3/18/2022 3:11 PM, BY: Emmanuel Chiaka PLOTSTYLE: Pennoni WCS.stb PROJECT STATUS: —

GENERAL NOTES:

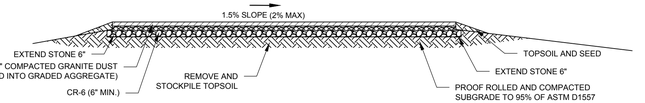
1. ALL PROPOSED ROADS SHOWN ARE PRIVATE AND ARE TO BE MAINTAINED BY THE DEVELOPER UNTIL SUCH TIME AS A HOMEOWNERS ASSOCIATION CAN PROVIDE FOR SAID MAINTENANCE. THE STATE AND COUNTY ASSUMES NO RESPONSIBILITY FOR THE FUTURE MAINTENANCE OF THESE STREETS.
2. STORMWATER SHALL BE HANDLED THROUGH THE DESIGN OF WET POND THAT WILL BE LOCATED ON SITE. THE MAINTENANCE OF ALL STORMWATER MANAGEMENT FACILITIES CONSTRUCTED WITHIN THIS SITE SHALL BE THE RESPONSIBILITY OF THE DEVELOPER UNTIL SUCH TIME AS A HOMEOWNER ASSOCIATION CAN PROVIDE FOR SAID MAINTENANCE.
3. BASED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) 10005C0325L AND 10005C0310L, REVISED JUNE 20, 2018; FLOOD INSURANCE RATE MAP (FIRM) 10005C0164J REVISED JANUARY 6, 2005. THE ENTIRE PROPERTY IS LOCATED IN AN AREA DESIGNATED AS FLOOD ZONE 'X', UNSHADED.
4. 2.96 ± AC. FEDERALLY REGULATED NON-TIDAL WETLANDS EXIST ON THIS SITE.
5. ALL SUBDIVISION LOTS SHALL HAVE FIVE-FOOT-WIDE PUBLIC UTILITY EASEMENTS ALONG LOT LINES FOR A TOTAL EASEMENT WIDTH OF AT LEAST TEN (10) FEET ALONG A LOT LINE COMMON TO TWO LOTS. EASEMENTS ALONG PERIMETER BOUNDARIES OF THE SUBDIVISION SHALL BE TEN (10) FEET IN WIDTH ON THE INTERIOR SIDE OF THE BOUNDARY. NO BUILDING, STRUCTURE OR OTHER PERMANENT OBSTRUCTION SHALL BE PLACED ON ANY EASEMENT.
6. THE SUSSEX CONSERVATION DISTRICT RESERVES THE RIGHT TO ADD, DELETE, OR MODIFY ANY EROSION AND SEDIMENT CONTROL MEASURES AS THEY DEEM NECESSARY.
7. ALL DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, BUT NOT IN PAVEMENT, SHALL BE TOPSOILED (6" MINIMUM), FERTILIZED AND SEEDED.
8. THE PROPOSED ENTRANCES/EXITS ARE PROPOSED ONLY, AND ARE SUBJECT TO REVIEW AND APPROVAL BY THE DELAWARE DEPARTMENT OF TRANSPORTATION BEFORE A CONSTRUCTION PERMIT IS ISSUED.
9. A 72 HOUR (MINIMUM) NOTICE SHALL BE GIVEN TO THE DISTRICT PERMIT SUPERVISOR PRIOR TO STARTING ENTRANCE CONSTRUCTION.
10. MISS UTILITY SHALL BE NOTIFIED THREE (3) DAYS PRIOR TO EXCAVATION.
11. ALL SIGNING FOR MAINTENANCE OF TRAFFIC IS THE CONTRACTORS RESPONSIBILITY, AND SHALL FOLLOW THE GUIDELINES SHOWN IN LATEST EDITION OF DE MUTCD.
12. DESIGN, FABRICATION, AND INSTALLATION OF ALL PERMANENT SIGNING SHALL BE AS OUTLINED IN THE LATEST VERSION OF THE DE MUTCD.
13. NO BUILDING PERMIT SHALL BE ISSUED UNTIL EITHER ALL REQUIRED IMPROVEMENTS HAVE BEEN INSTALLED, CONSTRUCTED, OR PLACED FOR THE LOT FOR WHICH THE PERMIT WILL BE ISSUED IN A MANNER ACCEPTABLE BY THE COUNTY AND STATE, OR UNTIL THE DEVELOPER FILES A PERFORMANCE BOND OR OTHER GUARANTEE WITH THE COUNTY FOR ANY UNCOMPLETED PUBLIC OR PRIVATE STREET OR OTHER REQUIRED IMPROVEMENT.
14. ALL PROPOSED FOREST BUFFERS ARE TO BE MAINTAINED BY THE DEVELOPER UNTIL SUCH TIME AS A HOMEOWNERS ASSOCIATION CAN PROVIDE FOR SAID MAINTENANCE.
15. ALL UNITS TO HAVE ACCESS FROM INTERNAL SUBDIVISION STREETS AND THAT NO DIRECT ACCESS FROM SCR #249 WILL BE PERMITTED.
16. ALL FIRE LANES, FIRE HYDRANTS AND FIRE DEPARTMENT CONNECTIONS SHALL BE MARKED IN ACCORDANCE WITH THE DELAWARE STATE FIRE PREVENTION REGULATIONS.
17. ALL SINGLE FAMILY DWELLINGS TO BE WOOD FRAME CONSTRUCTION WITH A MAXIMUM BUILDING HEIGHT OF THREE STORIES, NOT TO EXCEED 42' AND WILL NOT BE SPRINKLERED.
18. COMMON AREA: AN AREA OWNED AND USED IN COMMON BY RESIDENTS OF THE SUBDIVISION FOR RECREATION, LANDSCAPING AN STORM WATER MANAGEMENT.
19. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS AND ORDERS OF ANY PUBLIC BODY HAVING JURISDICTION. THE CONTRACTOR SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR SAFETY AND PROTECTION.
20. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING, TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION:
    - THE OWNER
    - SUSSEX CONSERVATION DISTRICT
    - DELDOT
21. THE CONTRACTOR SHALL PROVIDE SEDIMENT CONTROL MEASURES TO PROTECT STOCKPILE AREAS AND STORAGE AREAS. ALL AREAS USED BY THE CONTRACTOR FOR STAGING OPERATIONS SHALL BE FULLY RESTORED BY THE CONTRACTOR UPON COMPLETION OF THE PROJECT. IF THE STAGING AREA IS PAVED, IT SHALL BE RESTORED TO ITS ORIGINAL CONDITION. IF THE STAGING AREA IS UNPAVED, IT SHALL BE RE-GRADED, TOPSOILED, SEEDED AND MULCHED TO THE SATISFACTION OF THE ENGINEER. ALL COSTS ASSOCIATED WITH RESTORATION OF THE STAGING AREA SHALL BE AT THE CONTRACTOR'S EXPENSE. IF THE ENGINEER DETERMINES THAT A SATISFACTORY STAND OF GRASS DOES NOT EXIST AT THE TIME OF FINAL INSPECTION, ALL COSTS ASSOCIATED WITH RE-ESTABLISHING A SATISFACTORY STAND OF GRASS SHALL BE AT THE CONTRACTOR'S EXPENSE.
22. EQUIPMENT AND/OR STOCKPILE MATERIAL SHALL NOT BE STORED IN THE DRIPLINE AREA OF ANY TREE.
23. EXISTING UTILITIES ARE SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION. COMPLETENESS OR CORRECTNESS THEREOF IS NOT GUARANTEED. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO CONTACT THE UTILITY COMPANIES INVOLVED IN ORDER TO SECURE THE MOST ACCURATE INFORMATION AVAILABLE AS TO UTILITY LOCATION AND ELEVATION. NO CONSTRUCTION AROUND OR ADJACENT TO UTILITIES SHALL BEGIN WITHOUT NOTIFYING THEIR OWNERS AT LEAST 48 HOURS IN ADVANCE. THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE AND ANY DAMAGE DONE TO THEM DUE TO HIS/HER NEGLIGENCE SHALL BE IMMEDIATELY AND COMPLETELY REPAIRED AT THE CONTRACTORS EXPENSE. TO LOCATE EXISTING UTILITIES IN THE FIELD PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL CONTACT MISS UTILITY OF DELMARVA.
24. NO EASEMENTS WERE VERIFIED PER THIS PLAT.
25. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO LOCATE PROPERTY LINES AND RIGHT OF WAY LINES PRIOR TO CONSTRUCTION AND AVOID CONSTRUCTION ACTIVITIES ON PRIVATE PROPERTY AND/OR RIGHTS OF WAYS WHERE SAID CONSTRUCTION IS PROHIBITED. THE CONTRACTOR MAY CONDUCT CONSTRUCTION ACTIVITIES ON PRIVATE PROPERTY PROVIDED IF HE HAS OBTAINED PRIOR WRITTEN PERMISSION FROM THE PROPERTY OWNER AND HAS SUBMITTED A COPY OF SAID WRITTEN PERMISSION TO THE OWNER.
26. ROUTINE PERIODIC INSPECTIONS DURING CONSTRUCTION WILL BE PROVIDED BY THE OWNER. THESE INSPECTIONS DO NOT RELIEVE THE CONTRACTOR FROM HIS OBLIGATION AND RESPONSIBILITY FOR CONSTRUCTING ALL WORK IN STRICT ACCORDANCE WITH ALL STANDARDS AND SPECIFICATIONS AND CONSTRUCTION DOCUMENTS.
27. FINAL SET OF APPROVED CONSTRUCTION PLANS AND SPECIFICATIONS SHALL BE MAINTAINED ON THE JOB SITE AT ALL TIMES. FAILURE TO COMPLY WITH THIS PROVISION SHALL BE CONSIDERED CAUSE TO STOP THE WORK.
28. THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF CONTRACT DRAWINGS ON WHICH HE SHALL NOTE, IN RED, THE ALIGNMENTS AND INVERTS OF ALL UNDERGROUND UTILITIES INSTALLED OR ENCOUNTERED DURING THE PROSECUTION OF THE WORK. ALL DISCREPANCIES BETWEEN THE PLAN LOCATIONS AND ELEVATIONS OF BOTH THE EXISTING AND PROPOSED UTILITIES SHALL BE SHOWN ON THE AS-BUILT DRAWINGS TO BE MAINTAINED BY THE CONTRACTOR IN THE FIELD.
29. THE CONTRACTOR SHALL OPEN ONLY THAT SECTION OF TRENCH OR ACCESS PITS WHICH CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKING DAY. STEEL PLATES SHALL BE USED ON ANY TRENCH OR ACCESS PITS WHICH MUST REMAIN OPEN OVERNIGHT. THIS REQUIREMENT DOES NOT APPLY TO AREAS COMPLETELY CLOSED AND SECURE FROM VEHICULAR OR PEDESTRIAN TRAFFIC.
30. THE CONTRACTOR SHALL USE ONLY NEW MATERIALS, PARTS, AND PRODUCTS. ALL MATERIALS SHALL BE STORED SO AS TO ASSURE THE PRESERVATION OF THEIR QUALITY AND FITNESS FOR THE INTENDED WORK.
31. THE PROPOSED SIGN IS NOT APPROVED AS PART OF THIS SITE PLAN. A SEPARATE SUSSEX COUNTY PERMIT IS REQUIRED.
32. DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL WORK MUST BE PERFORMED IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, AS AMENDED AND ALL RULES AND REGULATIONS THERETO APPURTENANT.
33. ALL OPEN SPACE AREAS ON SITE ARE INTENDED FOR LANDSCAPE, RECREATION AND STORMWATER MANAGEMENT PRACTICES AND ARE THE RESPONSIBILITY OF THE DEVELOPER UNTIL A HOMEOWNER'S ASSOCIATION CAN ASSUME OWNERSHIP AND RESPONSIBILITY FOR THE OPEN SPACE.
34. THIS PROJECT IS NOT LOCATED WITHIN A WELLHEAD PROTECTION AREA PER CHAPTER 89 "SOURCE WATER PROTECTION" OF SUSSEX COUNTY CODE (89-6).
35. THE STREET LIGHTS ARE SHOWN GRAPHICALLY, THE DEVELOPER WILL COORDINATE WITH THE ELECTRIC COMPANY TO INSTALL THE STREET LIGHTS. THE TYPICAL LIGHT APPLICATION USED IS THE COLONIAL LIGHT, 18' IN HEIGHT.
36. ALL SECURITY LIGHTING (IF NECESSARY) SHALL BE DOWNWARD SCREENED SO THAT IT DOES NOT SHINE ON NEIGHBORING PROPERTIES OR ROADWAYS.
37. THE CONTRACTOR SHALL PROVIDE TEMPORARY SEED AND MULCH FOR ALL AREAS WHERE SOIL IS EXPOSED AND SILT FENCE IS NOT SPECIFIED, BY THE CLOSE OF EACH BUSINESS DAY.
38. THE CONTRACTOR SHALL MAINTAIN PUBLIC ROADS AND STREETS IN A BROOM SWEPT CONDITION AT ALL TIMES.
39. DELAWARE REGULATIONS PROHIBIT THE BURIAL OF CONSTRUCTION DEMOLITION DEBRIS, INCLUDING TREES AND STUMPS ON CONSTRUCTION SITES. ANY SOLID WASTE FOUND DURING THE EXCAVATION FOR STRUCTURES AND UTILITY LINES ON AND OFF SITE MUST BE REMOVED AND PROPERLY DISCARDED. ANY REMEDIAL ACTION REQUIRED IS THE RESPONSIBILITY OF THE CONTRACTOR.
40. THE CONTRACTOR SHALL REMOVE AND IMMEDIATELY REPLACE, RELOCATE, RESET OR RECONSTRUCT ALL OBSTRUCTIONS IN THE WORK AREA, INCLUDING, BUT NOT LIMITED TO, MAILBOXES, SIGNS, LANDSCAPING, LIGHTING, PLANTERS, CULVERTS, DRIVEWAYS, PARKING AREAS, CURBS, GUTTERS, FENCES, OR OTHER NATURAL OR MAN-MADE OBSTRUCTIONS. TRAFFIC CONTROL REGULATORY, WARNING AND INFORMATION SIGNS SHALL REMAIN FUNCTIONAL AND VISIBLE TO THE APPROPRIATE LANES OF TRAFFIC AT ALL TIMES, WITH THEIR RELOCATION KEPT TO A MINIMUM DISTANCE.
41. THE BOUNDARY INFORMATION & TOPOGRAPHY SHOWN ON THIS PLAN WAS TAKEN FROM DOCUMENTS OF PUBLIC RECORD AND IS ALSO THE RESULT OF AN ACTUAL FIELD SURVEY BY PENNONI ASSOCIATES, INC. DURING MAY 2020.
42. THIS PROPERTY IS LOCATED IN THE VICINITY OF LAND USED PRIMARILY FOR AGRICULTURAL PURPOSES UPON WHICH NORMAL AGRICULTURAL USES AND ACTIVITIES HAVE BEEN AFFORDED THE HIGHEST PRIORITY USE STATUS. IT CAN BE ANTICIPATED THAT SUCH AGRICULTURAL USES AND ACTIVITIES MAY NOW OR IN THE FUTURE INVOLVE DUST, NOISE, MANURE AND OTHER ODORS, THE USE OF AGRICULTURAL CHEMICALS, AND NIGHTTIME FARM OPERATIONS. THE USE AND ENJOYMENT OF THIS PROPERTY IS EXPRESSLY CONDITIONED ON ACCEPTANCE ON ANY ANNOYANCE OR INCONVENIENCE WHICH MAY RESULT FROM ANY SUCH AGRICULTURAL USES AND ACTIVITIES.

DELDOT RECORD/SITE PLAN NOTES (REVISED 3/21/2019):

1. ALL ENTRANCES SHALL CONFORM TO THE DELAWARE DEPARTMENT OF TRANSPORTATION'S (DELDOT'S) CURRENT DEVELOPMENT COORDINATION MANUAL AND SHALL BE SUBJECT TO ITS APPROVAL.
2. NO LANDSCAPING SHALL BE ALLOWED WITHIN THE RIGHT-OF-WAY UNLESS THE PLANS ARE COMPLIANT WITH SECTION 3.7 OF THE DEVELOPMENT COORDINATION MANUAL.
3. SHRUBBERY, PLANTINGS, SIGNS AND/OR OTHER VISUAL BARRIERS THAT COULD OBSTRUCT THE SIGHT DISTANCE OF A DRIVER PREPARING TO ENTER THE ROADWAY ARE PROHIBITED WITHIN THE DEFINED DEPARTURE SIGHT TRIANGLE AREA ESTABLISHED ON THIS PLAN. IF THE ESTABLISHED DEPARTURE SIGHT TRIANGLE AREA IS OUTSIDE THE RIGHT-OF-WAY OR PROJECTS ONTO AN ADJACENT PROPERTY OWNER'S LAND, A SIGHT EASEMENT SHOULD BE ESTABLISHED AND RECORDED WITH ALL AFFECTED PROPERTY OWNERS TO MAINTAIN THE REQUIRED SIGHT DISTANCE.
4. UPON COMPLETION OF THE CONSTRUCTION OF THE SIDEWALK OR SHARED-USE PATH ACROSS THIS PROJECT'S FRONTAGE AND PHYSICAL CONNECTION TO ADJACENT EXISTING FACILITIES, THE DEVELOPER, THE PROPERTY OWNERS OR BOTH ASSOCIATED WITH THIS PROJECT, SHALL BE RESPONSIBLE TO REMOVE ANY EXISTING ROAD TIE-IN CONNECTIONS LOCATED ALONG ADJACENT PROPERTIES, AND RESTORE THE AREA TO GRASS. SUCH ACTIONS SHALL BE COMPLETED AT DELDOT'S DISCRETION, AND IN CONFORMANCE WITH DELDOT'S DEVELOPMENT COORDINATION MANUAL.
5. PRIVATE STREETS CONSTRUCTED WITHIN THIS SUBDIVISION SHALL BE MAINTAINED BY THE DEVELOPER, THE PROPERTY OWNERS WITHIN THIS SUBDIVISION OR BOTH (TITLE 17 §131). DELDOT ASSUMES NO RESPONSIBILITIES FOR THE FUTURE MAINTENANCE OF THESE STREETS.
6. THE SIDEWALK SHALL BE THE RESPONSIBILITY OF THE DEVELOPER, THE PROPERTY OWNERS OR BOTH WITHIN THIS SUBDIVISION. THE STATE OF DELAWARE ASSUMES NO RESPONSIBILITY FOR THE FUTURE MAINTENANCE FOR THE SIDEWALK.
7. ALL LOTS SHALL HAVE ACCESS FROM THE INTERNAL SUBDIVISION STREET.
8. DRIVEWAYS WILL NOT BE PERMITTED TO BE PLACED AT CATCH BASIN LOCATIONS.
9. TO MINIMIZE RUTTING AND EROSION OF THE ROADSIDE DUE TO ON-STREET PARKING, DRIVEWAY AND BUILDING LAYOUTS MUST BE CONFIGURED TO ALLOW FOR VEHICLES TO BE STORED IN THE DRIVEWAY BEYOND THE RIGHT-OF-WAY, WITHOUT INTERFERING WITH SIDEWALK ACCESS AND CLARENCE.
10. THE DEVELOPER SHALL BE REQUIRED TO FURNISH AND PLACE RIGHT-OF-WAY MONUMENTS IN ACCORDANCE WITH DELDOT'S DEVELOPMENT COORDINATION MANUAL.
11. THE DEVELOPER SHALL BE REQUIRED TO FURNISH AND PLACE RIGHT-OF-WAY MARKERS TO PROVIDE A PERMANENT REFERENCE FOR RE-ESTABLISHING THE RIGHT-OF-WAY AND PROPERTY CORNERS ON LOCAL AND HIGHER ORDER FRONTAGE ROADS. RIGHT-OF-WAY MARKERS SHALL BE SET AND/OR PLACED ALONG THE FRONTAGE ROAD RIGHT-OF-WAY AT PROPERTY CORNERS AND AT EACH CHANGE IN RIGHT-OF-WAY ALIGNMENT IN ACCORDANCE WITH SECTION 3.2.4.2 OF THE DEVELOPMENT COORDINATION MANUAL.



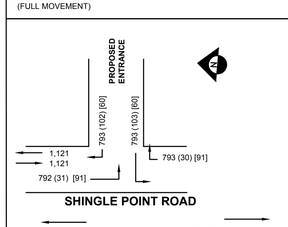
DETAIL- EMERGENCY PATH CONNECTION BLOW UP (1)
1" = 20'
PP1000



DETAIL- WALKING/JOGGING TRAIL (2)
NOT TO SCALE
PP1000

TRAFFIC GENERATION - SHINGLE POINT RD (SCR 249)

(FULL MOVEMENT)



TRAFFIC GENERATION DIAGRAM

ADT PEAK HOUR (A.M.), ADT PEAK HOUR [P.M.]

[1] DIRECTIONAL DISTRIBUTION PROVIDED BY DELDOT
[2] DIRECTIONAL DISTRIBUTION PROVIDED BY ITE MANUAL

DESIGN VEHICLE = WB-40 & SU-30

ROAD TRAFFIC DATA:

FUNCTIONAL CLASSIFICATION - S249 (SHINGLE POINT RD.) - LOCAL
POSTED SPEED LIMIT - 50 MPH
AADT = 1,264 TRIPS (FROM 2019 DELDOT TRAFFIC SUMMARY)
10 YEAR PROJECTED AADT= 1.16 x 1,264 TRIPS = 1,466 TRIPS
10 YEAR PROJECTED AADT + SITE ADT = 4,637 TRIPS
TRAFFIC PATTERN GROUP = 7 (FROM 2019 DELDOT TRAFFIC SUMMARY)
PEAK HOUR - 17.89% x 4,637 TRIPS = 830 TRIPS
TRUCK VOLUME - 12.89% X 4,637 TRIPS = 598 TRIPS
DIRECTIONAL DISTRIBUTION = 62.32% / 37.68%

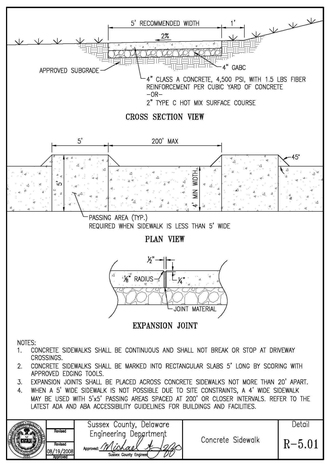
SITE TRAFFIC DATA:

SOURCE: ITE TRIP GENERATION MANUAL 10TH EDITION[2]

EXISTING LAND USE: VACANT FIELD
VACANT LAND - FARM FIELD
PROPOSED LAND USE:
336 DWELLINGS - SINGLE FAMILY DETACHED HOUSING (ITE 210)
Ln(T)=0.92 Ln(X) +2.71 = 3,171 TRIPS (WEEKDAY) (1,585 ENTER / 1,586 EXIT)

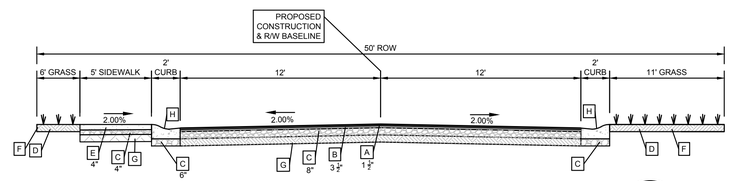
PEAK HOUR OF ADJACENT STREET TRAFFIC:
AM: T=0.71(X)+4.80 = 243 TRIPS (WEEKDAY) [25% / 75%] (61 / 182)
PM: Ln(T)=0.96Ln(X)+0.20 = 325 TRIPS (WEEKDAY) [63% / 37%] (205 / 120)

DIRECTIONAL DISTRIBUTION:
50% TO AND FROM THE NORTH (1,585 TRIPS) (31)[91] ENTER & (102)[60] EXIT
50% TO AND FROM THE SOUTH (1,586 TRIPS) (30)[91] ENTER & (103)[60] EXIT
TOTAL NEW TRIPS = 3,171 ADT
SITE TRUCK TRAFFIC = 159 TRIPS (5%)

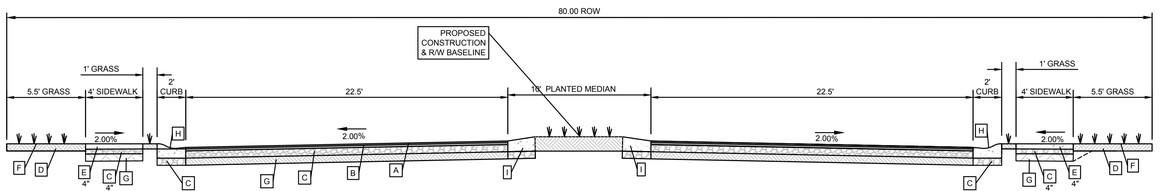


NOTE: THE SIDEWALK THICKNESS SHALL BE INCREASED TO 6" CONCRETE / 6" STONE BASE AT ALL PROPOSED DRIVEWAYS AND TRANSITION AREAS

- A ITEM 401005 - SUPERPAVE TYPE C, PG 64-22
- B ITEM 401014 - SUPERPAVE TYPE B, PG 64-22
- C ITEM 301001 - GRADED AGGREGATE BASE COURSE, TYPE B
- D ITEM 908004 - TOPSOIL, 6" DEPTH OR ITEM 908010 - TOPSOILING, 6" DEPTH ITEM 908014 - PERMANENT GRASS SEEDING, DRY GROUND
- E CONCRETE
- F ITEM 908020 - EROSION CONTROL BLANKET MULCH, TYPE 3 FOR 1 ROLL WITH MINIMUM 6" OF WIDTH
- G PROOF ROLLED AND COMPACTED SUBGRADE TO 95% OF ASTM D1557
- H ITEM 701010 - INTEGRAL PCC CURB AND GUTTER- TYPE 2
- I ITEM 701010 - PORTLAND CEMENT CONCRETE CURB - TYPE 2



DETAIL- TYPICAL 50' ROW SECTION (AZALEA DRIVE, HONEYSUCKLE DRIVE) (3)
NOT TO SCALE
LAUREL DRIVE, MAYAPPLE DRIVE, TEABERRY LANE, TRILLIUM DRIVE, WISTERIA BLVD)
PP1000



DETAIL- TYPICAL 80' ROW SECTION (WISTERIA BLVD) (4)
NOT TO SCALE
PP1000

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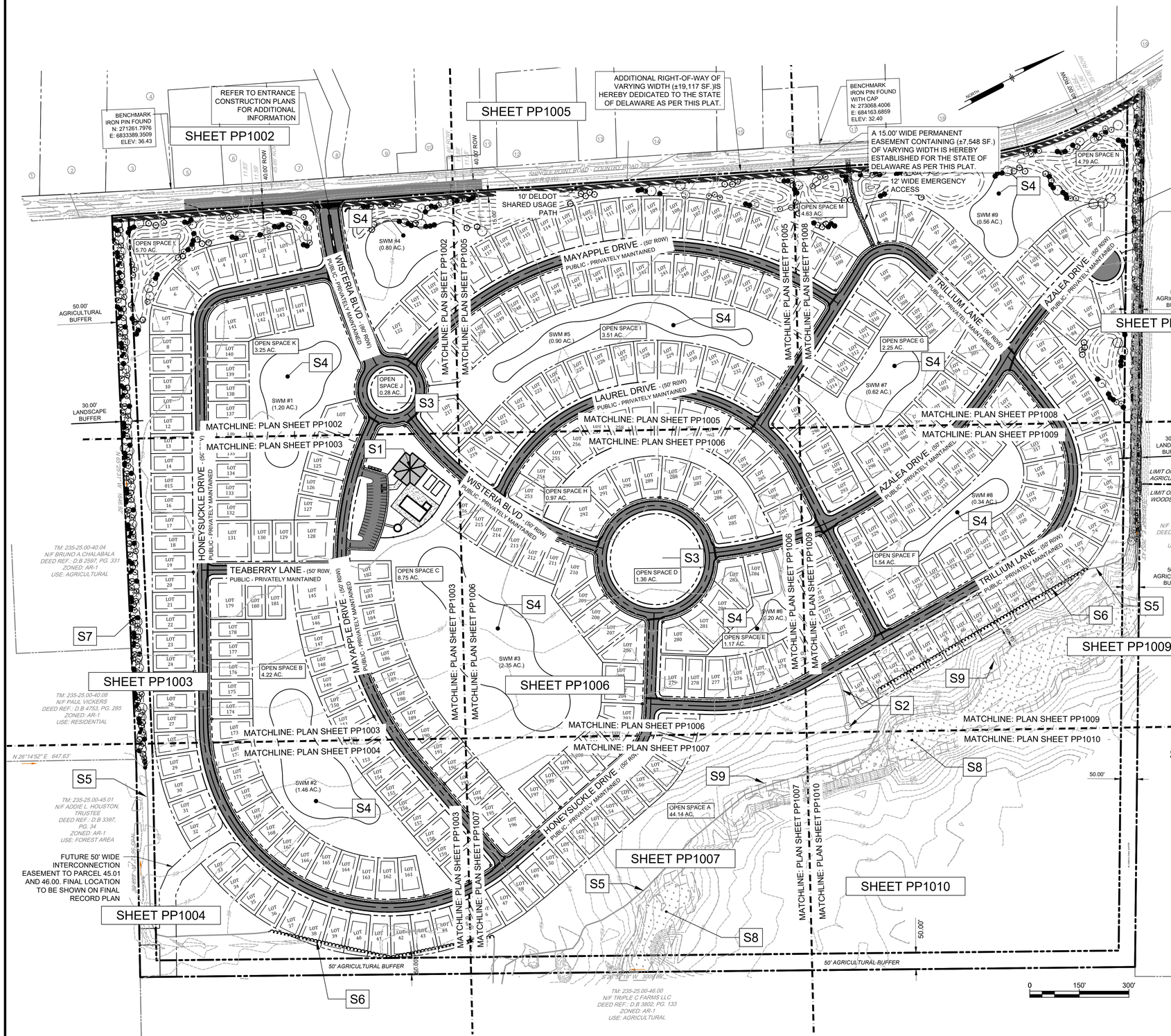
FOUR WINDS FARM SUBDIVISION
(2021-25)
TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE
PRELIMINARY PLAT DETAILS AND NOTES

RIBERA DEVELOPMENT, LLC
8884 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS	BY
1	2022-03-18	REVISED PER P&Z COMMENTS	EOC

PROJECT	RIBER21001
DATE	2021-08-11
DRAWING SCALE	AS SHOWN
DRAWN BY	LM/EW
APPROVED BY	AMD

PP1000



TAX ID TABLE	
(1) TM: 235-25.00-27.00 N/F ROBERT & SANDRA DAVIDSON DEED REF.: D.B 3263, PG. 335 ZONED: AR-1 USE: RESIDENTIAL	(11) TM: 235-25.00-30.06 N/F ANTHONY & JESSICA SAVINI DEED REF.: D.B 5617, PG. 118 ZONED: AR-1 USE: AGRICULTURAL
(2) TM: 235-25.00-29.00 N/F PATRICIA A. PERRY DEED REF.: D.B 1922, PG. 310 ZONED: AR-1 USE: RESIDENTIAL	(12) TM: 235-25.00-32.00 N/F ROBERT& ANGELA NATRIN DEED REF.: D.B 5633, PG. 230 ZONED: AR-1 USE: RESIDENTIAL
(3) TM: 235-25.00-30.01 N/F BRIAN & TRACY MENGEL DEED REF.: D.B 5633, PG. 230 ZONED: AR-1 USE: RESIDENTIAL	(13) TM: 235-25.00-31.00 N/F DONALD & MARY FLY DEED REF.: D.B 0, PG. 0 ZONED: AR-1 USE: RESIDENTIAL
(4) TM: 235-25.00-30.11 N/F UNKNOWN DEED REF.: D.B4996, PG.256 ZONED: AR-1 USE: AGRICULTURAL	(14) TM: 235-25.00-33.00 N/F ANTHONY & JESSICA SAVINI DEED REF.: D.B 5617, PG. 118 ZONED: AR-1 USE: AGRICULTURAL
(5) TTM: 235-25.00-30.04 N/F PHILLIP & KAREN RAMMENGEL DEED REF.: D.B 4189, PG. 310 ZONED: AR-1 USE: RESIDENTIAL	(15) TM: 235-25.00-34.01 N/F: JOSEPH. & JANET CALLAWAY DEED REF.: D.B 4954, PG. 327 ZONED: AR-1 USE: RESIDENTIAL / AGRICULTURAL
(6) TM: 235-25.00-30.05 N/F TIMOTHY & VALERIE BIGGS DEED REF.: D.B 5633, PG. 230 ZONED: AR-1 USE: RESIDENTIAL	(16) TM: 235-25.00-34.00 N/F MICHSEL & KATHLEEN SHOEMAKER DEED REF.: D.B 3674, PG. 334 ZONED: AR-1 USE: RESIDENTIAL / AGRICULTURAL
(7) TM: 235-25.00-30.00 N/F SHELLACE A. JAMES DEED REF.: D.B 4996, PG. 346 ZONED: AR-1 USE: RESIDENTIAL	(17) TM: 235-25.00-34.04 N/F. BRYAN CALLAWAY DEED REF.: D.B 4962, PG. 15 ZONED: AR-1 USE: RESIDENTIAL / AGRICULTURAL
(8) TM: 235-25.00-30.09 N/F SAVINI COMPLETE CONSTRUCTION INC. DEED REF.: D.B 4638, PG. 336 ZONED: AR-1 USE: INDUSTRIAL	(18) TM: 235-25.00-35.00 N/F. BRYAN CALLAWAY DEED REF.: D.B 4943, PG. 259 ZONED: AR-1 USE: RESIDENTIAL / AGRICULTURAL
(9) TM: 235-25.00-30.07 N/F JAMES & JOAN BAKER DEED REF.: D.B 4354, PG. 158 ZONED: AR-1 USE: RESIDENTIAL	(19) TM: 235-25.00-36.00 N/F. CD CAREY FARM LLC. DEED REF.: D.B 2785, PG. 103 ZONED: AR-1 USE: AGRICULTURAL
(10) TM: 235-25.00-30.12 N/F CHARLES & MARRY ANN SCHMID DEED REF.: D.B 4356, PG. 38 ZONED: AR-1 USE: RESIDENTIAL	

OPEN SPACE BREAKDOWN	
OPEN SPACE	AREA
A	44.14 AC.
B	4.22 AC.
C	8.75 AC.
D	1.36 AC.
E	1.17 AC.
F	1.54 AC.
G	2.25 AC.
H	0.97 AC.
I	3.51 AC.
J	0.28 AC.
K	3.25 AC.
L	5.70 AC.
M	4.63 AC.
N	4.79 AC.
TOTAL	86.56 AC.

SITE KEYED NOTES

- S1 PROPOSED COMMUNITY CLUBHOUSE AND AMENITY AREA
- S2 PROPOSED TRAIL AND OVERLOOK
- S3 PROPOSED VILLAGE GREENS (COMMUNITY COMMONS)
- S4 PROPOSED STORM WATER PONDS, TYP.
- S5 EXISTING TREE LINE
- S6 PROPOSED TREE LINE
- S7 PROPOSED 30' FOREST/LANDSCAPE BUFFER
- S8 FEDERALLY REGULATED NON-TIDAL WETLANDS AREA
- S9 25' WETLANDS BUFFER

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FOUR WINDS FARM

(2021-25)
TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE

PRELIMINARY PLAT KEY SHEET

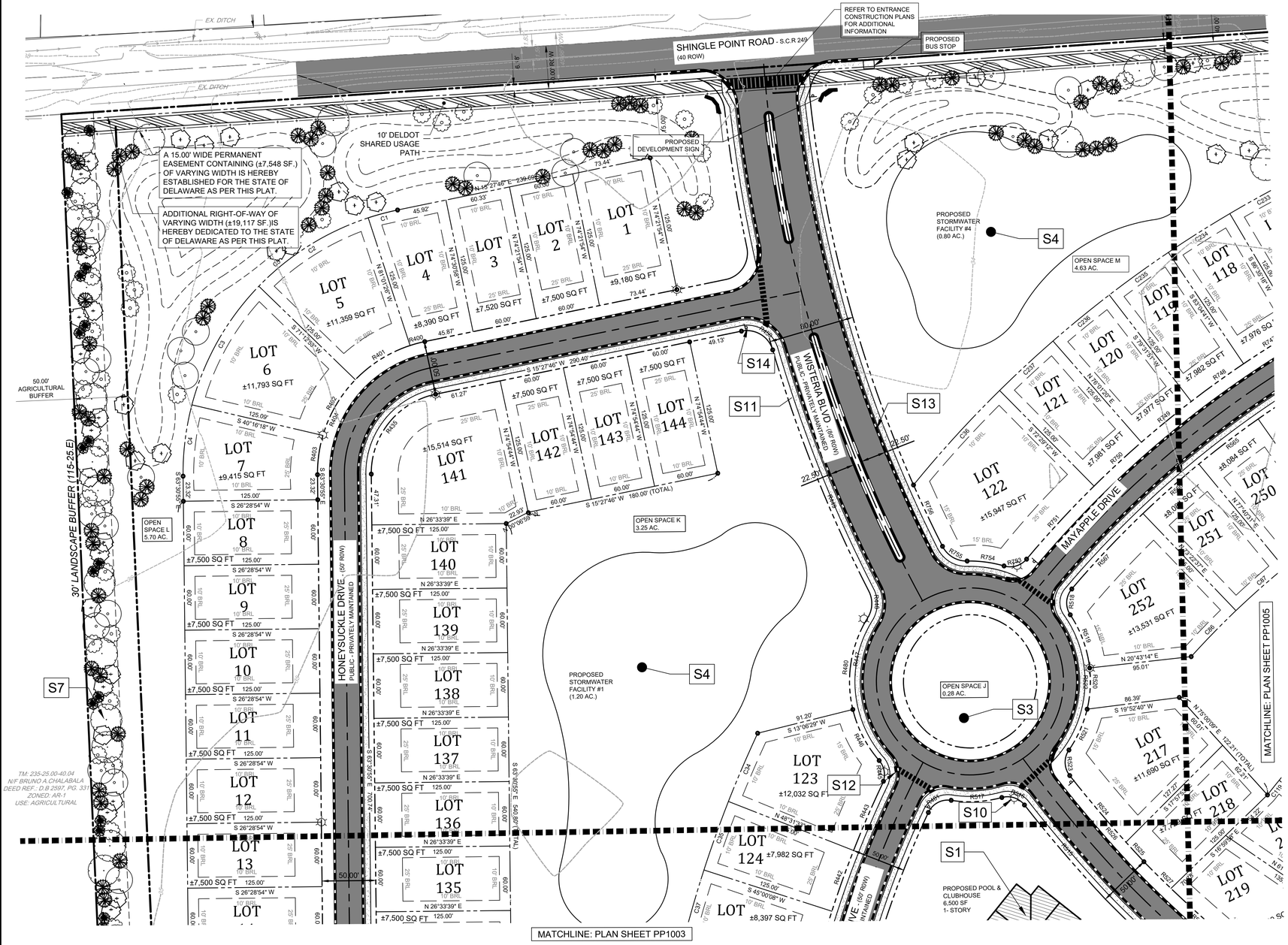
RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

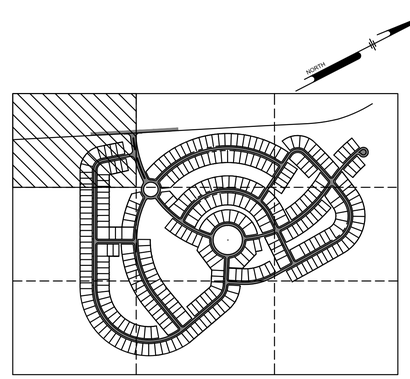
NO.	DATE	REVISIONS	BY
1	2022-03-18	REVISED PER PJZ COMMENTS	EOC

PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	EW/LM
APPROVED BY	AMD

PP1001

SHEET 3 OF 14





SITE KEY MAP

SITE KEYED NOTES

- S1 PROPOSED COMMUNITY CLUBHOUSE AND AMENITY AREA
- S3 PROPOSED VILLAGE GREENS (COMMUNITY COMMONS)
- S4 PROPOSED STORM WATER PONDS, TYP.
- S7 PROPOSED 30' FOREST/LANDSCAPE BUFFER
- S10 PROPOSED STREET LIGHT, TYP.
- S11 PROPOSED CONCRETE SIDEWALK
- S12 PROPOSED ADA RAMP, DELDOT TYPE 1, TYP.
- S13 PROPOSED CURB, TYP.
- S14 PROPOSED STOP SIGN, TYP.

0 50' 100'

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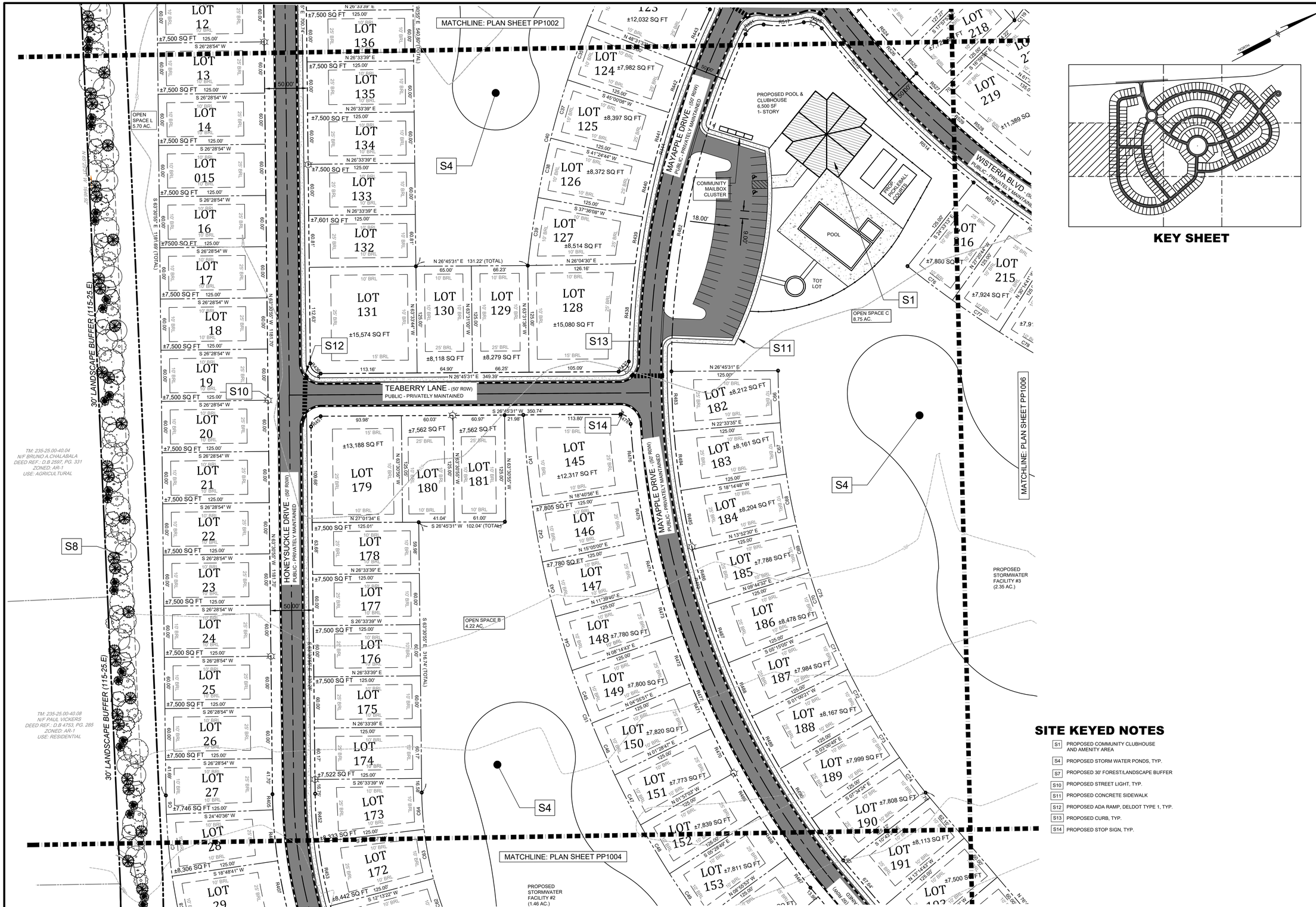
PP1002

SHEET 4 OF 14



KEY SHEET

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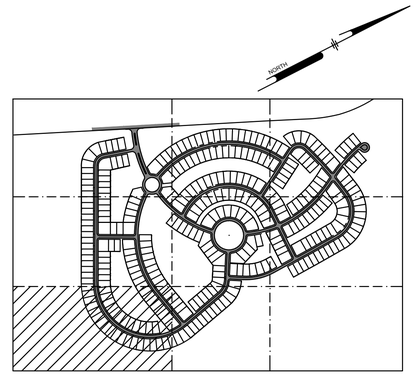
PP1003

SHEET 5 OF 14



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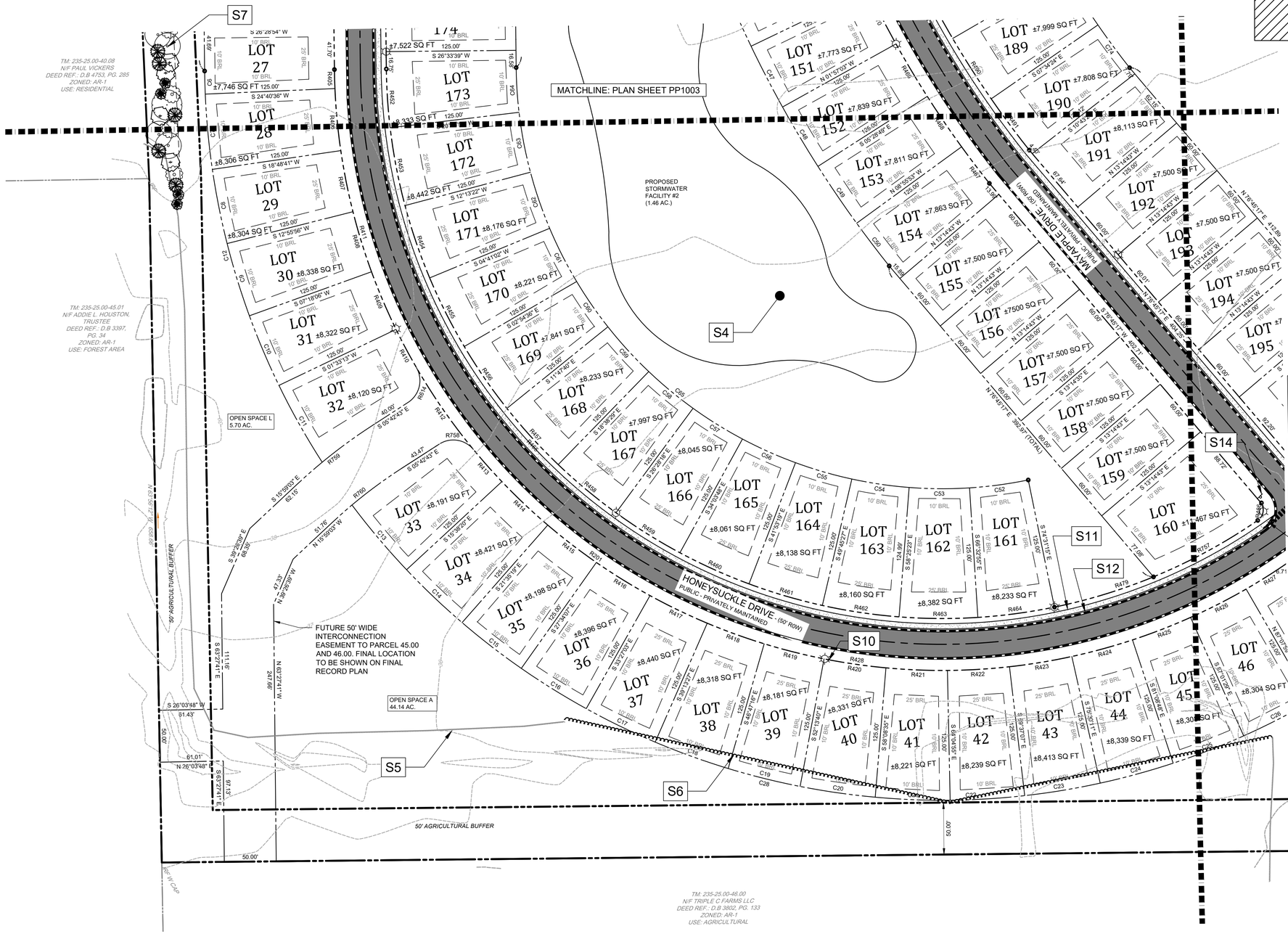

SITE KEYED NOTES

S4	PROPOSED STORM WATER PONDS, TYP.
S5	EXISTING TREE LINE
S6	PROPOSED TREE LINE
S7	PROPOSED 30' FOREST/LANDSCAPE BUFFER
S10	PROPOSED STREET LIGHT, TYP.
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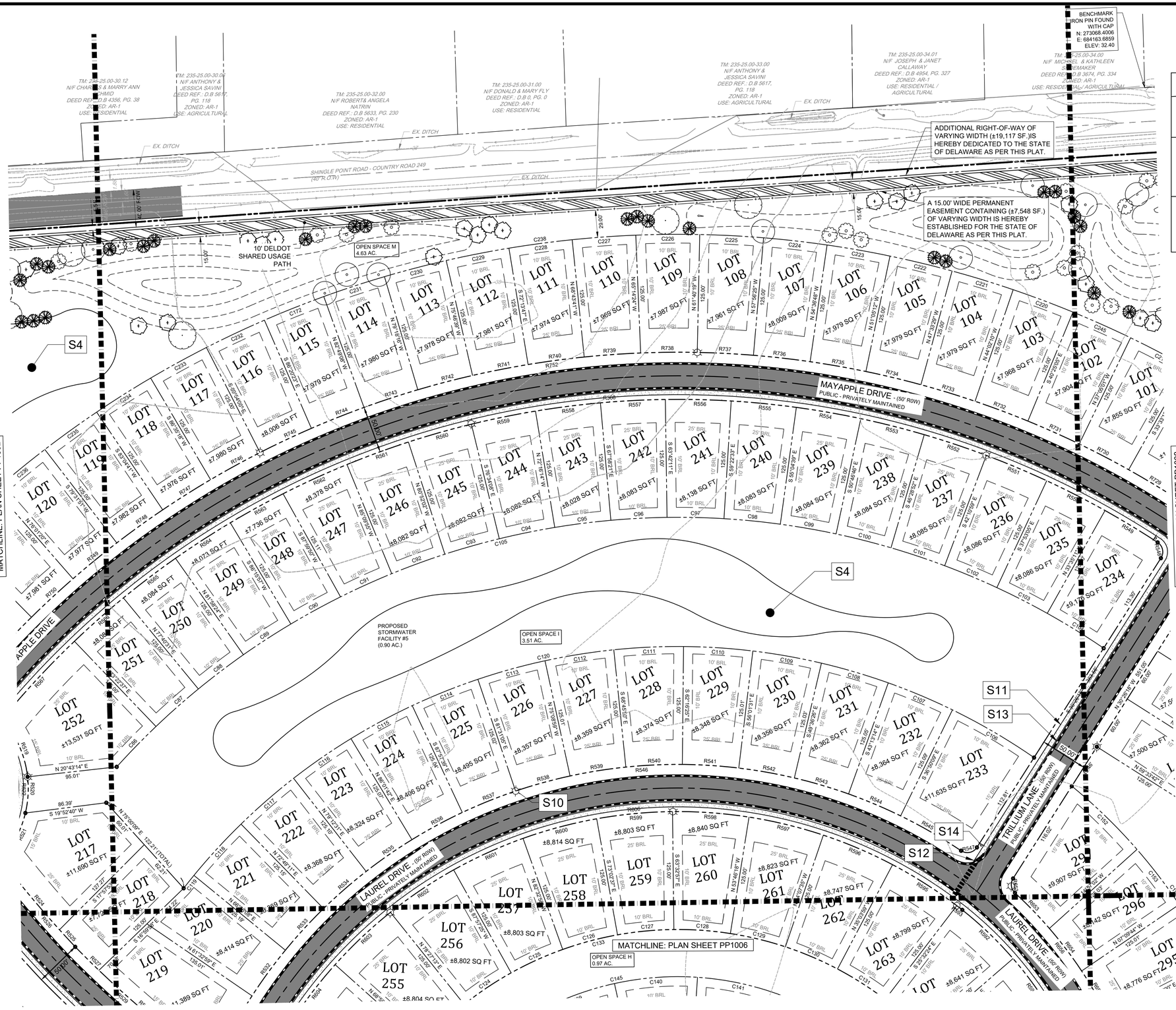
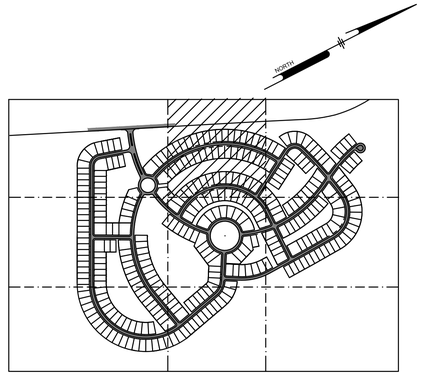
PP1004

SHEET 6 OF 14





KEY SHEET

SITE KEYED NOTES

- S4 PROPOSED STORM WATER PONDS, TYP.
- S10 PROPOSED STREET LIGHT, TYP.
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FOUR WINDS FARM

(2021-25)

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APPROVED BY	AMD

PP1005

SHEET 7 OF 14

MATCHLINE: PLAN SHEET PP1005

MATCHLINE: PLAN SHEET PP1003

MATCHLINE: PLAN SHEET PP1009

MATCHLINE: PLAN SHEET PP1007

LAUREL DRIVE - (50' ROW) PUBLIC - PRIVATELY MAINTAINED

WISTERIA BLVD. - (50' ROW) PUBLIC - PRIVATELY MAINTAINED

LIGHTHOUSE CIRCLE - (50' ROW) PUBLIC - PRIVATELY MAINTAINED

AZALEA DRIVE - (50' ROW) PUBLIC - PRIVATELY MAINTAINED

TRILLIUM LANE - (50' ROW) PUBLIC - PRIVATELY MAINTAINED

OPEN SPACE A 44.14 AC.

OPEN SPACE C 8.75 AC.

OPEN SPACE D 1.36 AC.

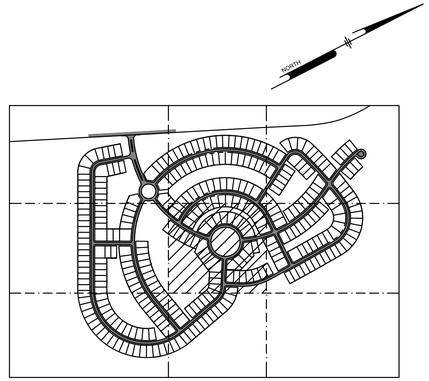
OPEN SPACE E 1.17 AC.

OPEN SPACE H 0.97 AC.

PROPOSED STORMWATER FACILITY #3 (2.35 AC.)

PROPOSED STORMWATER FACILITY #6 (0.20 AC.)

S2 S3 S4 S10 S11 S12 S13 S14



KEY SHEET

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FOUR WINDS FARM
(2021-25)
TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE
PRELIMINARY PLAT

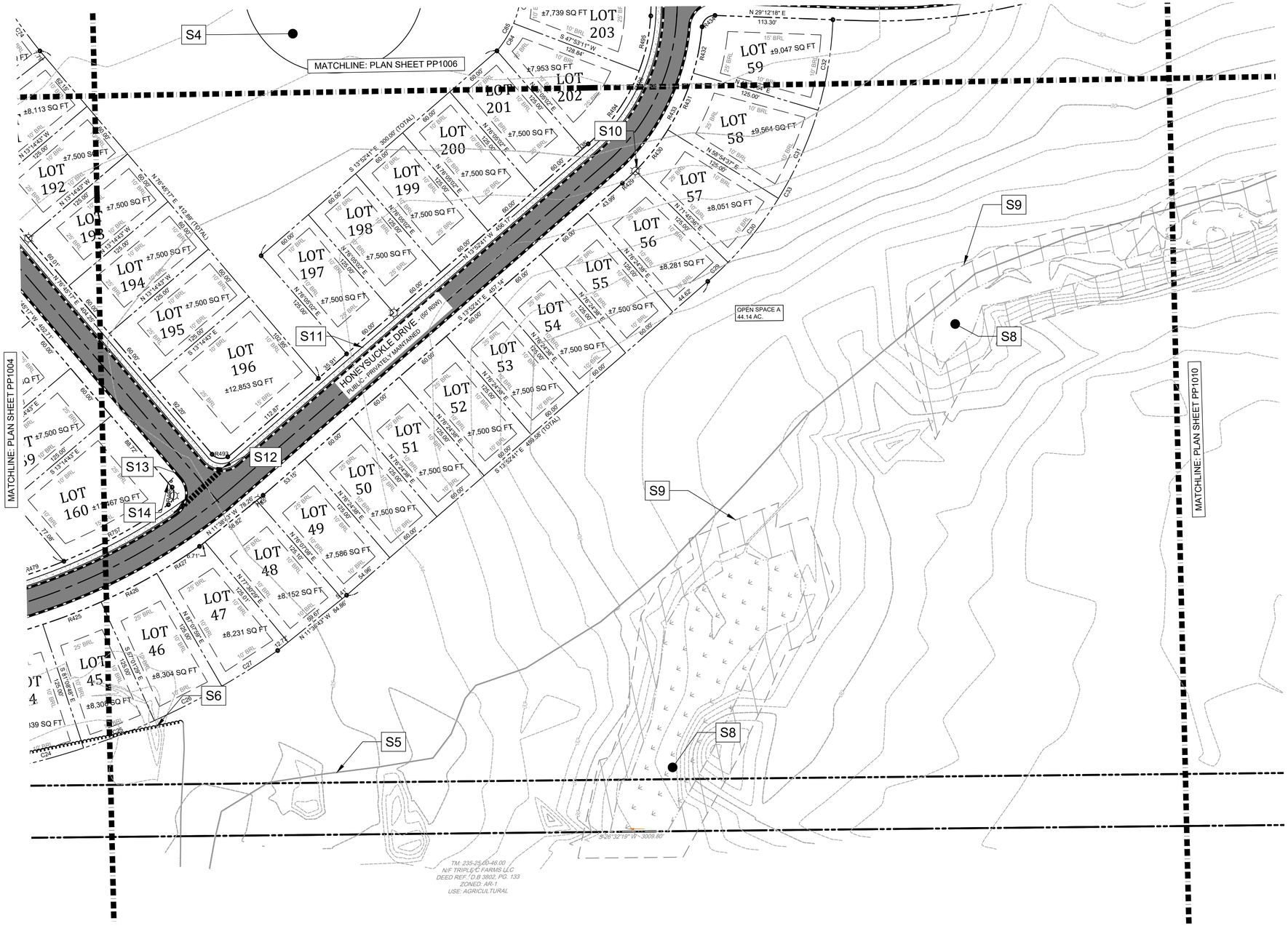
RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

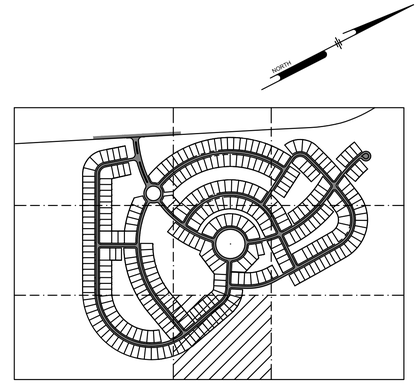
NO.	DATE	REVISIONS	BY
1	2022-03-18	REVISED PER PAZ COMMENTS	EOC

PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	LM/EW
APPROVED BY	AMD

PP1006

SHEET 8 OF 14





KEY SHEET

SITE KEYED NOTES

- S4 PROPOSED STORM WATER PONDS, TYP.
- S5 EXISTING TREE LINE
- S6 PROPOSED TREE LINE
- S8 FEDERALLY REGULATED NON-TIDAL WETLANDS AREA
- S9 25' WETLANDS BUFFER
- S10 PROPOSED STREET LIGHT, TYP.
- S11 PROPOSED CONCRETE SIDEWALK
- S12 PROPOSED ADA RAMP, DELDOT TYPE 1, TYP.
- S13 PROPOSED CURB, TYP.
- S14 PROPOSED STOP SIGN, TYP.

PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

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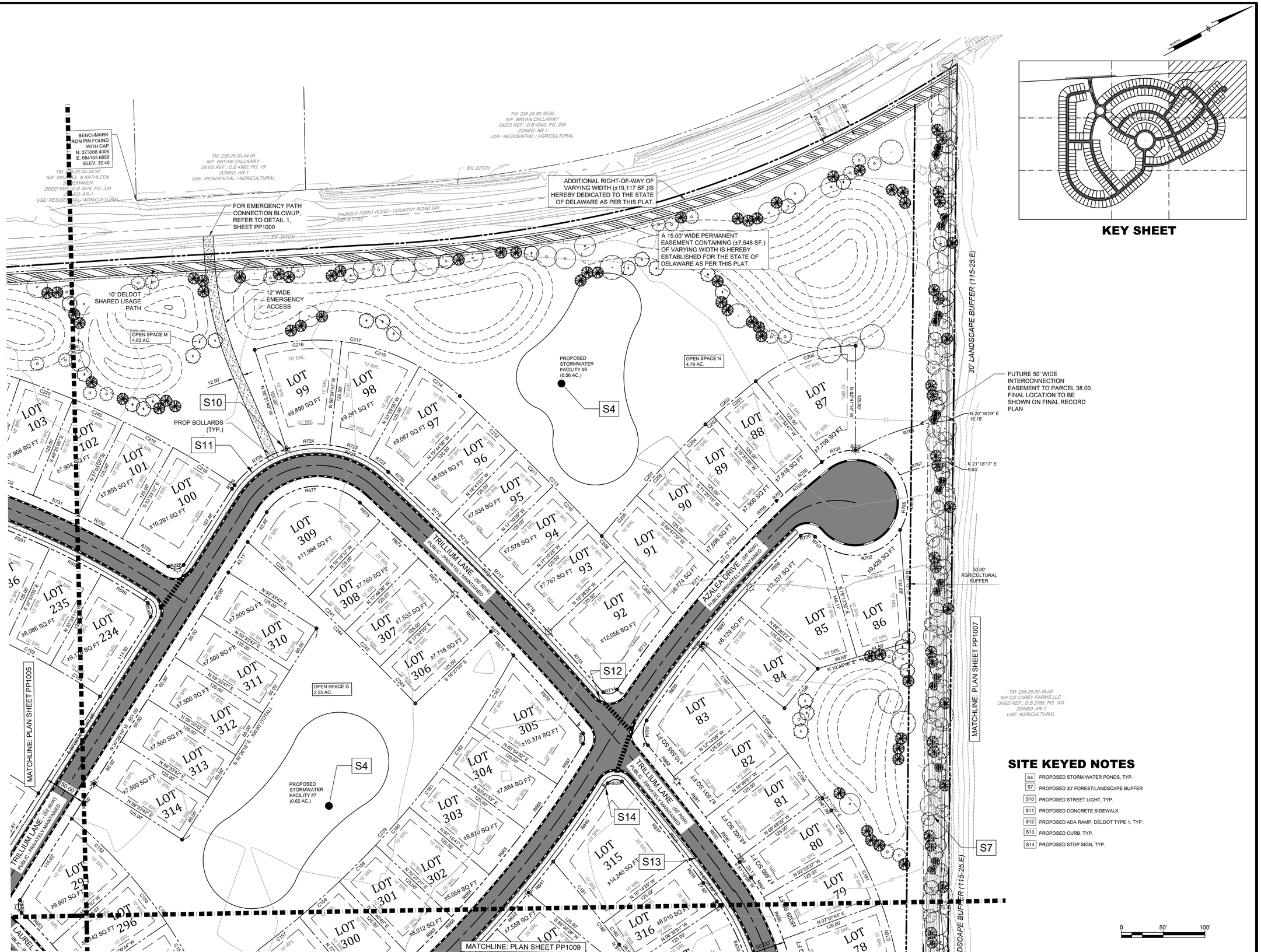
PP1007

SHEET 9 OF 14



KEY SHEET

SITE KEYED NOTES

S4	PROPOSED STORM WATER PONDS, TYP.
S7	PROPOSED 30' FOREST/LANDSCAPE BUFFER
S10	PROPOSED STREET LIGHT, TYP.
S11	PROPOSED CONCRETE SIDEWALK
S12	PROPOSED ADA RAMP, DELDOT TYPE 1, TYP.
S13	PROPOSED CURB, TYP.
S14	PROPOSED STOP SIGN, TYP.

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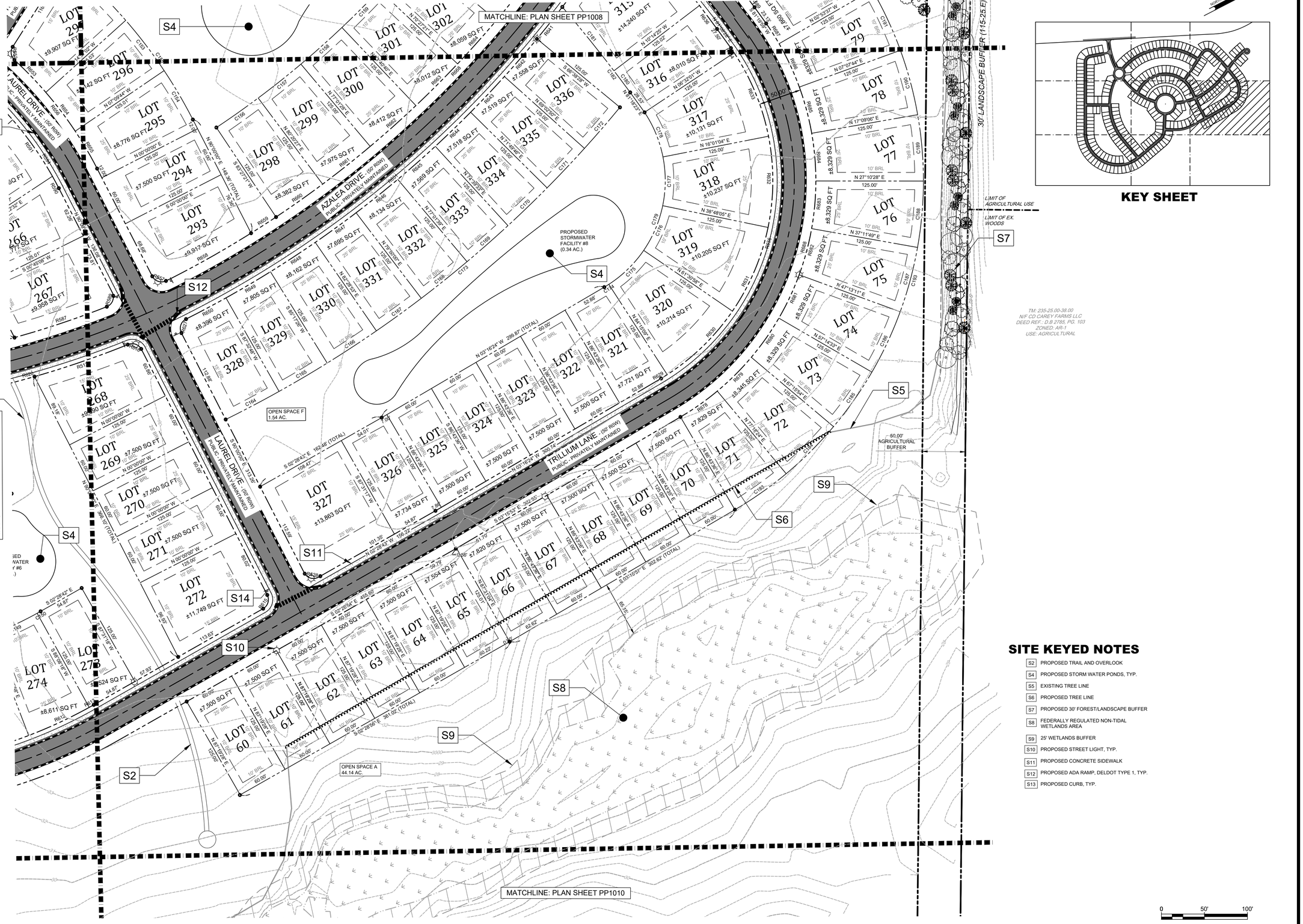
PP1008

SHEET 10 OF 14



KEY SHEET

SITE KEYED NOTES

- S2 PROPOSED TRAIL AND OVERLOOK
- S4 PROPOSED STORM WATER PONDS, TYP.
- S5 EXISTING TREE LINE
- S6 PROPOSED TREE LINE
- S7 PROPOSED 30' FOREST/LANDSCAPE BUFFER
- S8 FEDERALLY REGULATED NON-TIDAL WETLANDS AREA
- S9 25' WETLANDS BUFFER
- S10 PROPOSED STREET LIGHT, TYP.
- S11 PROPOSED CONCRETE SIDEWALK
- S12 PROPOSED ADA RAMP, DELDOT TYPE 1, TYP.
- S13 PROPOSED CURB, TYP.

0 50' 100'

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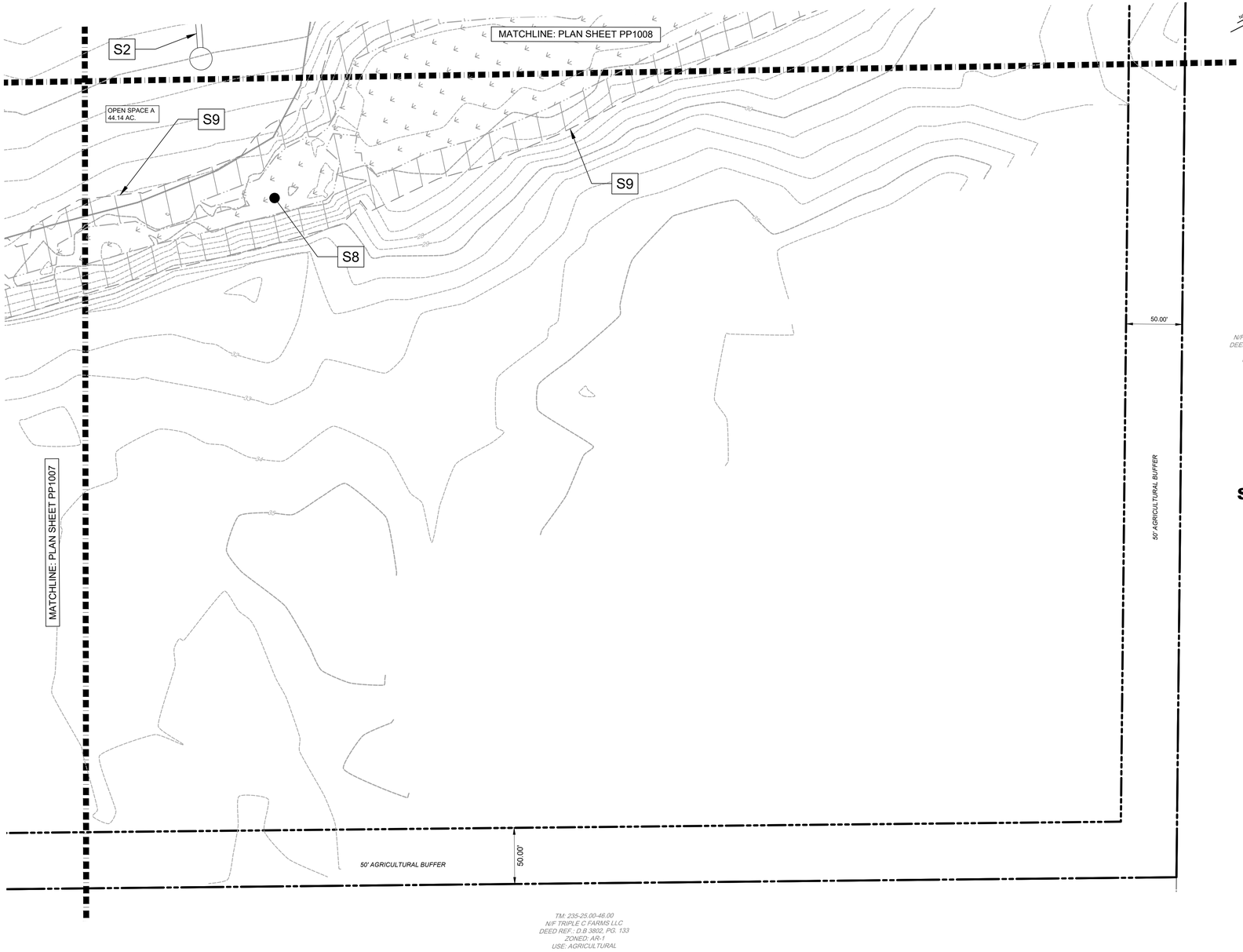
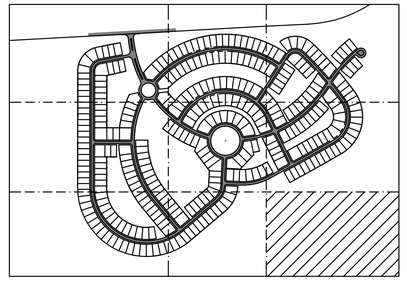
PP1009

SHEET 11 OF 14





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APPROVED BY	AMD

PP1010

SHEET 12 OF 14

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C1	250.00'	006°29'12"	28.30'	14.17	28.29'	S 12°13'10" W
C2	250.00'	027°46'02"	121.16'	61.79	119.98'	S 04°54'27" E
C3	250.00'	029°21'31"	128.10'	65.49	126.70'	S 33°28'14" E
C4	250.00'	015°21'55"	67.04'	33.72	66.84'	S 55°49'57" E
C5	250.00'	078°58'41"	344.61'	206.00	317.97'	S 24°01'34" E
C6	693.73'	001°50'14"	22.24'	11.12	22.24'	S 64°26'18" E
C7	715.59'	005°49'57"	72.85'	36.45	72.81'	S 68°14'32" E
C8	717.85'	005°48'53"	72.85'	36.46	72.82'	S 74°09'09" E
C9	710.34'	005°52'33"	72.85'	36.46	72.82'	S 80°00'48" E
C10	710.34'	005°52'33"	72.85'	36.46	72.82'	S 85°53'21" E
C11	710.34'	006°51'09"	84.96'	42.53	84.91'	N 87°44'48" E
C12	710.34'	032°09'01"	398.59'	204.70	393.38'	S 79°36'16" E
C13	710.34'	006°34'53"	81.59'	40.84	81.55'	N 76°58'51" E
C14	710.34'	005°57'29"	73.87'	36.97	73.83'	N 70°42'40" E
C15	710.34'	005°49'00"	72.11'	36.09	72.08'	N 64°49'26" E
C16	710.34'	005°56'09"	73.59'	36.83	73.56'	N 58°56'51" E
C17	710.34'	005°57'17"	73.83'	36.95	73.79'	N 53°00'08" E
C18	710.34'	006°02'00"	74.80'	37.43	74.77'	N 47°00'30" E
C19	710.34'	005°45'30"	71.39'	35.72	71.36'	N 41°06'45" E
C20	710.34'	005°53'48"	73.11'	36.58	73.07'	N 35°17'06" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C21	710.34'	005°49'40"	72.25'	36.16	72.22'	N 29°25'22" E
C22	710.34'	005°48'15"	71.96'	36.01	71.93'	N 23°36'25" E
C23	710.34'	005°56'50"	73.73'	36.90	73.70'	N 17°43'52" E
C24	710.34'	005°52'40"	72.87'	36.47	72.84'	N 11°49'07" E
C25	710.34'	005°52'42"	72.88'	36.47	72.85'	N 05°56'26" E
C26	710.34'	005°52'21"	72.80'	36.43	72.77'	N 00°03'54" E
C27	710.34'	005°07'58"	63.64'	31.84	63.61'	N 05°26'15" W
C28	710.34'	088°16'31"	1094.42'	689.27	989.34'	N 36°08'02" E
C29	350.00'	004°22'15"	26.70'	13.36	26.69'	N 16°03'49" W
C30	350.00'	012°50'17"	78.42'	39.38	78.26'	N 24°40'05" W
C31	350.00'	015°14'53"	93.15'	46.85	92.87'	N 38°42'40" W
C32	350.00'	014°27'35"	88.33'	44.40	88.10'	N 53°33'54" W
C33	350.00'	046°55'00"	286.60'	151.88	278.66'	N 37°20'11" W
C34	1101.22'	003°35'38"	69.07'	34.55	69.06'	N 39°40'38" W
C35	1101.22'	003°31'25"	67.72'	33.87	67.71'	S 43°14'10" E
C36	989.69'	005°59'01"	103.36'	51.73	103.31'	S 20°16'38" E
C37	1101.22'	003°41'57"	71.10'	35.56	71.08'	S 46°50'50" E
C38	1101.22'	003°42'03"	71.13'	35.58	71.12'	S 50°32'50" E
C39	1101.24'	004°12'02"	80.73'	40.39	80.72'	S 54°29'52" E
C40	1101.22'	018°43'04"	359.76'	181.49	358.16'	S 47°14'21" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C41	1101.11'	005°35'47"	107.55'	53.82	107.51'	S 68°31'01" E
C42	1101.11'	003°27'12"	66.37'	33.19	66.36'	S 73°02'30" E
C43	1101.11'	003°25'58"	65.97'	32.99	65.96'	S 76°29'05" E
C44	1101.11'	003°25'58"	65.97'	32.99	65.96'	S 79°55'03" E
C45	1101.11'	003°26'07"	66.02'	33.02	66.01'	S 83°21'05" E
C46	1101.11'	003°27'04"	66.33'	33.17	66.32'	S 86°47'41" E
C47	1101.11'	003°25'49"	65.93'	32.97	65.92'	N 89°45'52" E
C48	1101.11'	003°27'49"	66.56'	33.29	66.55'	N 86°19'03" E
C49	1101.11'	003°26'51"	66.25'	33.14	66.24'	N 82°51'43" E
C50	1101.11'	002°41'30"	51.73'	25.87	51.72'	N 79°47'33" E
C51	1101.11'	035°50'07"	688.68'	356.02	677.51'	S 83°38'08" E
C52	410.31'	007°58'21"	57.09'	28.59	57.05'	N 19°27'43" E
C53	410.32'	008°07'34"	58.19'	29.15	58.15'	N 27°30'41" E
C54	437.32'	007°18'51"	55.83'	27.95	55.79'	N 35°28'21" E
C55	410.44'	007°53'27"	56.53'	28.31	56.48'	N 43°19'04" E
C56	410.23'	007°48'57"	55.96'	28.02	55.92'	N 51°10'15" E
C57	410.36'	007°49'49"	56.08'	28.08	56.04'	N 58°59'38" E
C58	410.32'	007°44'30"	55.44'	27.76	55.40'	N 66°46'49" E
C59	410.33'	008°09'16"	58.40'	29.25	58.35'	N 74°43'43" E
C60	410.22'	007°24'28"	53.04'	26.56	53.00'	N 82°30'33" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C181	1741.10'	003°08'22"	95.40'	47.71	95.39'	N 78°09'21" E
C182	1741.10'	004°10'33"	126.90'	63.48	126.87'	N 78°40'27" E
C183	443.43'	009°25'13"	72.91'	36.54	72.82'	N 07°59'00" W
C184	443.43'	010°02'30"	77.72'	38.96	77.62'	N 17°42'51" W
C185	443.43'	010°01'22"	77.57'	38.88	77.47'	N 27°44'47" W
C186	443.43'	010°01'22"	77.57'	38.88	77.47'	N 37°46'08" W
C187	443.43'	010°01'22"	77.57'	38.88	77.47'	N 47°47'30" W
C188	443.43'	010°01'22"	77.57'	38.88	77.47'	N 57°48'52" W
C189	443.43'	010°01'22"	77.57'	38.88	77.47'	N 67°50'13" W
C190	443.43'	010°01'22"	77.57'	38.88	77.47'	N 77°51'35" W
C191	443.43'	010°01'22"	77.57'	38.88	77.47'	N 87°52'56" W
C192	443.43'	006°24'14"	49.56'	24.81	49.54'	S 83°54'16" W
C193	443.43'	096°01'27"	743.17'	492.69	659.20'	N 51°17'07" W
C194	3510.42'	000°05'40"	5.79'	2.90	5.79'	N 80°23'40" E
C195	3509.57'	001°03'47"	65.12'	32.56	65.12'	N 79°48'56" E
C196	3510.42'	001°03'38"	64.98'	32.49	64.98'	N 78°45'14" E
C197	3510.42'	001°38'32"	100.62'	50.31	100.62'	N 77°24'09" E
C198	3510.42'	003°51'37"	236.51'	118.30	236.47'	N 78°30'41" E
C199	1203.44'	002°56'36"	61.82'	30.92	61.82'	S 22°51'55" E
C200	188.00'	039°27'46"	129.49'	67.43	126.94'	S 07°34'53" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C61	410.23'	008°01'45"	57.49'	28.79	57.44'	S 89°46'27" E
C62	410.31'	007°59'07"	57.19'	28.64	57.14'	S 81°46'04" E
C63	410.33'	008°12'12"	58.75'	29.43	58.70'	S 73°40'24" E
C64	410.35'	006°02'15"	43.24'	21.64	43.22'	S 66°33'08" E
C65	410.31'	100°59'27"	723.23'	497.67	633.18'	N 65°58'17" E
C66	801.22'	004°22'13"	61.11'	30.57	61.10'	S 65°15'18" E
C67	801.22'	004°19'56"	60.58'	30.31	60.57'	S 69°36'23" E
C68	801.22'	004°21'09"	60.86'	30.45	60.85'	S 73°56'55" E
C69	801.22'	004°07'58"	57.79'	28.91	57.78'	S 78°11'29" E
C70	801.22'	004°30'00"	62.93'	31.48	62.91'	S 82°30'28" E
C71	801.22'	004°14'11"	59.24'	29.63	59.23'	S 86°52'33" E
C72	801.22'	004°21'31"	60.95'	30.49	60.94'	N 88°49'36" E
C73	801.22'	004°13'14"	59.02'	29.52	59.01'	N 84°32'13" E
C74	801.22'	003°39'52"	51.24'	25.63	51.23'	N 80°35'40" E
C75	801.22'	038°10'03"	533.74'	277.20	523.92'	S 82°09'14" E
C76	1265.45'	002°59'31"	66.08'	33.05	66.08'	N 64°15'53" E
C77	1265.45'	003°00'48"	66.55'	33.28	66.55'	N 61°15'43" E
C78	1276.28'	002°59'47"	66.74'	33.38	66.74'	N 58°15'22" E
C79	1295.66'	002°43'47"	61.73'	30.87	61.72'	N 55°19'21" E
C80	1264.94'	003°09'50"	69.85'	34.93	69.84'	N 52°21'27" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C81	1265.45'	003°03'51"	67.68'	33.85	67.67'	N 49°14'37" E
C82	1265.45'	018°02'57"	398.64'	200.98	396.99'	N 56°44'10" E
C83	100.79'	022°57'29"	40.39'	20.47	40.12'	N 51°51'35" W
C84	100.79'	017°36'56"	30.99'	15.62	30.87'	N 31°34'23" W
C85	100.79'	040°34'24"	71.38'	37.26	69.89'	N 43°03'07" W
C86	801.22'	004°16'09"	59.70'	29.86	59.69'	S 18°41'32" E
C87	801.22'	004°17'23"	59.99'	30.01	59.97'	S 14°24'46" E
C88	801.22'	004°17'22"	59.98'	30.01	59.97'	S 10°07'23" E
C89	801.22'	004°17'00"	59.90'	29.96	59.88'	S 05°50'13" E
C90	801.22'	004°17'26"	60.00'	30.01	59.99'	S 01°32'59" E
C91	801.22'	004°15'33"	59.56'	29.79	59.55'	S 02°43'30" W
C92	801.22'	004°17'19"	59.97'	30.00	59.96'	S 06°59'57" W
C93	801.22'	004°17'19"	59.97'	30.00	59.96'	S 11°17'16" W
C94	801.22'	004°17'19"	59.97'	30.00	59.96'	S 15°34'34" W
C95	801.22'	004°17'19"	59.97'	30.00	59.96'	S 19°51'53" W
C96	801.22'	004°15'36"	59.57'	29.80	59.56'	S 24°08'21" W
C97	801.22'	004°19'04"	60.38'	30.20	60.36'	S 28°25'40" W
C98	801.22'	004°17'21"	59.98'	30.00	59.96'	S 32°43'52" W
C99	801.22'	004°17'21"	59.98'	30.00	59.97'	S 37°01'13" W
C100	801.22'	004°17'23"	59.99'	30.01	59.97'	S 41°18'35" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C101	801.22'	004°17'24"	59.99'	30.01	59.98'	S 45°35'59" W
C102	801.22'	004°17'25"	60.00'	30.01	59.98'	S 49°53'24" W
C103	801.22'	004°17'27"	60.00'	30.02	59.99'	S 54°10'50" W
C104	801.22'	005°01'15"	70.21'	35.13	70.19'	S 58°50'11" W
C105	801.22'	082°10'24"	1149.11'	698.63	1053.13'	S 20°15'36" W
C106	663.13'	008°39'41"	100.25'	50.22	100.15'	S 57°28'02" W
C107	663.13'	006°22'49"	73.84'	36.96	73.80'	S 49°56'47" W
C108	663.13'	006°22'49"	73.84'	36.96	73.81'	S 43°33'59" W
C109	663.13'	006°22'47"	73.84'	36.96	73.80'	S 37°11'10" W
C110	663.13'	006°21'33"	73.60'	36.84	73.56'	S 30°49'00" W
C111	663.13'	006°23'59"	74.07'	37.07	74.03'	S 24°26'14" W
C112	663.13'	006°22'47"	73.84'	36.96	73.80'	S 18°02'51" W
C113	663.13'	006°22'35"	73.80'	36.94	73.76'	S 11°40'11" W
C114	663.13'	006°28'40"	74.97'	37.53	74.93'	S 05°14'33" W
C115	663.13'	006°22'29"	73.78'	36.93	73.74'	S 01°11'01" E
C116	663.13'	006°23'35"	73.99'	37.03	73.95'	S 07°34'03" E
C117	663.13'	006°22'53"	73.86'	36.97	73.82'	S 13°57'17" E
C118	663.13'	006°22'48"	73.84'	36.96	73.80'	S 20°20'07" E
C119	663.13'	001°30'28"	17.45'	8.73	17.45'	S 24°16'45" E
C120	663.13'	086°49'52"	1004.97'	627.43	911.52'	S 18°22'57" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C201	1545.89'	002°26'34"	65.91'	32.96	65.90'	S 13°14'49" E
C202	1545.89'	000°30'14"	13.60'	6.80	13.60'	S 14°43'13" E
C203	1545.89'	002°56'48"	79.50'	39.76	79.49'	N 13°29'56" W
C204	1546.07'	002°00'28"	54.18'	27.09	54.17'	S 17°39'30" E
C205	1545.68'	002°22'43"	64.17'	32.09	64.16'	S 19°51'06" E
C206	1545.46'	002°23'08"	64.35'	32.18	64.34'	S 22°14'01" E
C207	1545.75'	006°46'18"	182.69'	91.45	182.58'	N 20°02'25" W
C208	3511.04'	001°23'46"	85.56'	42.78	85.56'	S 75°03'19" W
C209	3511.04'	001°02'28"	63.80'	31.90	63.80'	S 73°50'12" W
C210	3511.04'	000°59'21"	60.61'	30.31	60.61'	S 72°49'17" W
C211	3511.73'	001°00'37"	61.92'	30.96	61.92'	S 71°49'18" W
C212	3511.58'	001°04'04"	65.44'	32.72	65.44'	S 70°46'57" W
C213	3511.04'	005°59'03"	366.71'	183.52	366.54'	N 72°45'41" E
C214	250.00'	013°27'13"	58.70'	29.49	58.57'	S 63°02'33" W
C215	250.00'	022°32'37"	98.37'	49.83	97.73'	S 45°02'37" W
C216	250.00'	024°09'53"	105.44'	53.52	104.66'	S 21°41'22" W
C217	250.00'	060°09'44"	262.51'	144.81	250.61'	N 39°41'17" E
C218	1101.27'	004°29'30"	86.33'	43.19	86.31'	S 58°37'56" W
C219	1101.27'	003°28'11"	66.69'	33.36	66.68'	S 54°39'05" W
C220	1101.27'	003°31'19"	67.69'	33.86	67.68'	S 47°40'36" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C221	1101.27'	003°31'15"	67.67'	33.85	67.66'	S 44°09'19" W
C222	1101.27'	003°31'17"	67.68'	33.85	67.67'	S 40°38'03" W
C223	1101.27'	003°31'16"	67.68'	33.85	67.67'	S 37°06'46" W
C224	1101.27'	003°31'20"	67.70'	33.86	67.69'	S 33°35'29" W
C225	1101.27'	003°31'31"	67.76'	33.89	67.75'	S 30°04'03" W
C226	1101.27'	003°31'37"	67.79'	33.90	67.78'	S 26°32'30" W
C227	1101.27'	003°30'54"	67.56'	33.79	67.55'	S 23°01'15" W
C228	1101.27'	003°31'04"	67.61'	33.82	67.60'	S 19°30'16" W
C229	1101.27'	003°31'23"	67.72'	33.87	67.70'	S 15°59'02" W
C230	1101.27'	003°31'14"	67.67'	33.84	67.66'	S 12°27'44" W
C231	1101.27'	003°31'14"	67.67'	33.85	67.66'	S 08°56'30" W
C232	1101.27'	003°32'04"	67.94'	33.98	67.93'	S 01°53'35" W
C233	1101.27'	003°30'29"	67.43'	33.73	67.42'	S 01°37'42" E
C234	1101.27'	003°31'09"	67.64'	33.83	67.63'	S 05°08'31" E
C235	1101.27'	003°31'24"	67.72'	33.87	67.71'	S 08°39'47" E
C236	1101.27'	003°31'09"	67.64'	33.83	67.63'	S 12°11'04" E
C237	1101.27'	003°31'21"	67.70'	33.86	67.69'	S 15°42'19" E
C238	1101.27'	084°31'58"	1624.78'	1000.90	1481.38'	S 18°36'42" W
C239	1094.37'	027°44'47"	529.96'	270.29	524.80'	N 20°25'03" W
C240	3279.51'	001°42'34"	97.84'	48.92	97.84'	S 69°26'18" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C241	3397.46'	001°01'07"	60.40'	30.20	60.40'	S 70°52'27" W
C242	3211.10'	001°03'39"	59.45'	29.73	59.45'	S 71°55'43" W
C243	3211.09'	001°05'25"	61.10'	30.55	61.10'	S 73°00'15" W
C244	3211.06'	004°58'28"	278.79'	139.48	278.70'	S 71°03'43" W
C245	1101.27'	003°28'44"	66.87'	33.44	66.86'	S 51°10'37" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C141	312.48'	016°13'59"	88.53'	44.56	88.24'	S 39°03'12" W
C142	312.50'	016°15'22"	88.66'	44.63	88.37'	S 55°17'51" W
C143	312.50'	016°14'07"	88.55'	44.57	88.25'	S 71°32'36" W
C144	312.50'	025°20'07"	138.18'	70.24	137.06'	N 87°40'17" W
C145	312.50'	147°56'37"	806.91'	1087.80	600.70'	S 31°01'28" W
C146	425.03'	096°39'46"	49.43'	24.74	49.40'	S 25°52'21" W
C147	425.03'	008°08'48"	60.43'	30.27	60.38'	N 18°28'04" E
C148	423.98'	008°10'50"	60.53'	30.32	60.48'	N 10°18'52" E
C149	425.03'	008°05'42"	60.05'	30.07	60.00'	N 02°11'13" E
C150	418.04'	000°38'16"	4.65'	2.33	4.65'	N 02°10'27" W
C151	424.96'	031°41'50"	235.10'	120.64	232.11'	N 13°21'29" E
C152	575.00'	009°36'07"	96.36'	48.29	96.25'	S 71°16'59" W
C153	575.00'	007°20'13"	73.63'	36.87	73.58'	S 79°45'09" W
C154	575.00'	006°34'44"	66.02'	33.05	65.99'	S 86°42'38" W
C155	575.00'	023°31'04"	236.02'	119.69	234.36'	S 78°14'28" W
C156	1094.37'	003°06'53"	59.49'	29.75	59.49'	N 08°06'06" W
C157	1094.37'	003°18'59"	63.35'	31.68	63.34'	N 11°19'02" W
C158	1094.37'	003°20'48"	63.92'	31.97	63.91'	N 14°38'56" W
C159	1094.37'	003°13'20"	61.54'	30.78	61.54'	N 17°55'59" W
C160	1094.37'	003°11'00"	60.80'	30.41	60.80'	N 21°08'09" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C161	1094.37'	003°13'37"	61.63'	30.83	61.63'	N 24°20'28" W
C163	1094.37'	005°11'35"	99.19'	49.63	99.16'	N 31°41'39" W
C164	1394.37'	002°52'49"	70.09'	35.05	70.09'	N 00°36'09" W
C165	1394.37'	002°40'01"	64.90'	32.46	64.90'	N 03°22'33" W
C166	1394.37'	002°48'33"	68.36'	34.19	68.36'	N 06°06'50" W
C167	1394.37'	002°38'54"	64.45'	32.23	64.44'	N 08°50'34" W
C168	1394.37'	002°47'59"	68.14'	34.07	68.13'	N 11°34'00" W
C169	1394.37'	002°36'12"	63.36'	31.68	63.35'	N 14°16'06" W
C170	1400.65'	002°35'11"	63.23'	31.62	63.22'	N 16°51'58" W
C171	1399.65'	002°35'13"	63.20'	31.60	63.19'	N 19°28'10" W
C172	1394.37'	002°35'33"	63.09'	31.55	63.09'	N 22°03'40" W
C172	1101.27'	003°31'15"	67.68'	33.85	67.66'	S 05°25'15" W
C173	1394.37'	024°11'42"	588.82'	298.86	584.45'	N 11°15'35" W
C174	143.43'	002°28'27"	6.19'	3.10	6.19'	N 04°30'37" W
C175	143.42'	022°44'19"	56.92'	28.84	56.55'	N 17°06'54" W
C176	143.43'	022°42'53"	56.86'	28.81	56.49'	N 39°50'28" W
C177	143.43'	022°47'07"	57.04'	28.90	56.67'	N 62°35'28" W
C178	143.43'	022°32'59"	56.45'	28.60	56.09'	N 85°15'32" W
C179	143.43'	093°15'37"	233.47'	151.84	208.54'	N 49°54'12" W
C180	1741.10'	001°02'11"	31.49'	15.75	31.49'	N 80°14'38" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R720	3386.04'	000°30'19"	29.87'	14.93	29.87'	N 70°01'19" E
R721	3386.04'	006°11'18"	365.71'	183.03	365.54'	S 72°51'48" W
R722	125.00'	011°56'29"	26.05'	13.07	26.01'	N 63°47'55" E
R723	125.00'	023°52'53"	52.10'	26.43	51.72'	N 45°53'14" E
R724	125.00'	024°12'17"	52.81'	26.80	52.41'	N 21°50'38" E
R725	125.00'	035°06'48"	76.61'	39.55	75.41'	N 07°48'55" W
R726	125.00'	002°26'35"	5.33'	2.67	5.33'	S 26°35'36" E
R727	125.00'	097°35'03"	212.90'	142.75	188.08'	S 20°58'38" W
R728	12.00'	090°44'34"	19.01'	12.16	17.09'	S 14°56'34" W
R729	972.82'	003°56'49"	67.02'	33.52	67.00'	S 58°20'51" W
R730	976.27'	003°27'44"	58.99'	29.50	58.98'	N 54°38'51" E
R731	976.27'	003°29'51"	59.59'	29.81	59.58'	N 51°10'04" E
R732	976.27'	003°30'34"	59.80'	29.91	59.79'	N 47°39'51" E
R733	976.27'	003°31'14"	59.99'	30.00	59.98'	N 44°08'57" E
R734	976.30'	003°31'13"	59.99'	30.00	59.98'	N 40°37'43" E
R735	976.27'	003°31'13"	59.98'	30.00	59.97'	N 37°06'29" E
R736	976.99'	003°32'40"	60.44'	30.23	60.43'	N 33°34'28" E
R737	976.40'	003°29'54"	59.62'	29.82	59.61'	N 30°03'05" E
R738	976.27'	003°31'17"	60.00'	30.01	59.99'	N 26°32'29" E
R739	976.27'	003°31'06"	59.95'	29.98	59.94'	N 23°01'17" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R740	976.27'	003°31'11"	59.97'	30.00	59.97'	N 19°30'08" E
R741	976.27'	003°31'12"	59.98'	30.00	59.97'	N 15°58'57" E
R742	976.27'	003°31'11"	59.97'	30.00	59.96'	N 12°27'45" E
R743	976.27'	003°31'17"	60.00'	30.01	59.99'	N 08°56'31" E
R744	976.27'	003°36'49"	61.57'	30.80	61.56'	N 05°22'28" E
R745	976.27'	003°26'17"	58.58'	29.30	58.57'	N 01°50'54" E
R746	976.27'	003°30'29"	59.77'	29.90	59.76'	N 01°37'29" W
R747	976.27'	003°31'13"	59.98'	30.00	59.97'	N 05°08'19" W
R748	976.27'	003°31'13"	59.98'	30.00	59.97'	N 08°39'32" W
R749	976.27'	003°31'14"	59.99'	30.00	59.98'	N 12°10'46" W
R750	976.27'	003°31'15"	59.99'	30.00	59.98'	N 15°42'00" W
R751	976.27'	005°25'47"	92.52'	46.29	92.48'	N 20°10'31" W
R752	976.27'	083°12'08"	1417.69'	866.80	1296.37'	S 18°42'39" W
R753	20.00'	066°26'37"	23.19'	13.10	21.92'	N 10°19'54" E
R754	112.01'	017°46'07"	34.74'	17.51	34.60'	N 34°40'05" E
R755	25.00'	064°32'49"	28.16'	15.79	26.70'	N 58°03'22" E
R756	1215.72'	002°58'30"	63.12'	31.57	63.12'	S 88°10'00" E
R757	535.07'	012°18'16"	114.91'	57.68	114.69'	N 01°21'44" W
R758	25.00'	083°18'58"	36.35'	22.24	33.23'	N 35°56'46" E
R759	520.00'	010°16'21"	93.23'	46.74	93.10'	S 10°50'53" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R760	470.00'	010°16'21"	84.26'	42.25	84.15'	N 10°50'53" W
R767	200.00'	016°04'35"	56.12'	28.24	55.93'	N 12°16'12" E
R768	252.02'	024°07'57"	106.15'	53.87	105.37'	N 08°10'38" E

PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

FOUR WINDS FARM
(2021-25)
TAX ID 235-23.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE
PRELIMINARY PLAT PARCEL DATA

RIBERA DEVELOPMENT, LLC
8884 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS	BY
1	2022-03-18	REVISED PER P&Z COMMENTS	EOC

PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	LM/EW
APPROVED BY	AMD

PP1011

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R400	125.00'	006°29'12"	14.15'	7.08	14.14'	S 12°13'10" W
R401	125.00'	027°46'23"	60.59'	30.90	60.00'	N 04°54'37" W
R402	125.00'	027°46'23"	60.59'	30.90	60.00'	N 32°41'00" W
R403	125.00'	016°56'43"	36.97'	18.62	36.83'	N 55°02'33" W
R404	125.00'	078°58'49"	172.30'	103.00	158.98'	S 24°01'34" E
R405	585.33'	001°47'28"	18.30'	9.15	18.30'	S 64°25'34" E
R406	592.48'	005°48'26"	60.05'	30.05	60.02'	S 68°14'35" E
R407	592.49'	005°48'16"	60.02'	30.04	60.00'	N 74°09'19" W
R408	585.33'	005°55'42"	60.56'	30.31	60.54'	N 80°02'23" W
R409	585.33'	005°54'12"	60.31'	30.18	60.28'	N 85°57'20" W
R410	585.33'	005°40'21"	57.95'	29.00	57.93'	S 88°15'24" W
R411	585.33'	029°27'41"	300.98'	153.89	297.67'	S 78°15'41" E
R412	585.33'	009°24'14"	96.07'	48.14	95.96'	N 82°18'22" E
R413	585.33'	004°03'24"	41.44'	20.73	41.43'	S 75°34'33" W
R414	585.33'	005°57'36"	60.89'	30.47	60.86'	N 70°34'03" E
R415	585.33'	005°46'55"	59.07'	29.56	59.04'	N 64°41'48" E
R416	585.33'	005°56'50"	60.76'	30.41	60.73'	N 58°49'55" E
R417	585.33'	005°59'37"	61.23'	30.64	61.20'	N 52°51'41" E
R418	585.33'	005°42'24"	58.30'	29.17	58.28'	N 47°00'40" E
R419	582.31'	005°51'24"	59.52'	29.79	59.50'	N 41°14'40" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R420	585.33'	005°53'34"	60.20'	30.13	60.17'	N 35°23'06" E
R421	585.33'	005°48'15"	59.30'	29.67	59.27'	N 29°32'11" E
R422	585.33'	005°51'42"	59.88'	29.97	59.86'	N 23°42'12" E
R423	585.33'	005°57'38"	60.89'	30.47	60.87'	N 17°47'32" E
R424	585.33'	005°55'41"	60.56'	30.31	60.53'	N 11°50'53" E
R425	585.33'	005°52'43"	60.06'	30.05	60.03'	N 05°56'41" E
R426	585.33'	005°52'44"	60.06'	30.06	60.03'	N 00°03'57" E
R427	585.33'	004°45'42"	48.65'	24.34	48.63'	N 05°15'16" W
R428	585.33'	085°14'22"	870.80'	538.61	792.69'	N 34°59'04" E
R429	225.00'	004°22'33"	17.18'	8.60	17.18'	S 16°03'58" E
R430	225.00'	012°49'53"	50.39'	25.30	50.28'	N 24°40'11" W
R431	225.00'	015°14'59"	59.89'	30.12	59.71'	N 38°42'37" W
R432	225.00'	011°33'27"	45.39'	22.77	45.31'	N 52°06'50" W
R433	225.00'	044°00'52"	172.84'	90.94	168.63'	N 35°53'07" W
R434	12.00'	087°05'51"	18.24'	11.41	16.54'	S 14°20'37" E
R435	75.00'	078°58'41"	103.38'	61.80	95.39'	S 24°01'34" E
R436	12.00'	089°43'34"	18.79'	11.94	16.93'	N 71°37'18" E
R437	12.00'	089°09'55"	18.67'	11.83	16.85'	N 17°49'26" W
R438	972.85'	006°46'35"	115.06'	57.60	114.99'	S 59°01'49" E
R439	976.22'	003°15'22"	55.48'	27.75	55.47'	S 54°01'33" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R440	976.22'	003°41'13"	62.82'	31.42	62.81'	S 50°33'15" E
R441	1000.96'	003°37'16"	63.26'	31.64	63.25'	S 46°51'15" E
R442	974.25'	003°31'50"	60.04'	30.03	60.03'	S 43°14'03" E
R443	974.62'	003°58'16"	67.55'	33.79	67.54'	S 39°29'36" E
R444	976.22'	024°53'50"	424.21'	215.50	420.88'	N 49°57'29" W
R445	20.00'	066°27'20"	23.20'	13.10	21.92'	N 70°44'14" W
R446	111.96'	027°36'23"	53.94'	27.51	53.42'	N 89°49'49" E
R447	111.96'	073°02'41"	142.73'	82.91	133.26'	N 67°27'02" W
R448	25.00'	059°01'40"	25.76'	14.15	24.63'	N 60°26'32" W
R449	1291.98'	010°44'09"	242.09'	121.40	241.73'	N 84°35'17" W
R450	25.00'	085°19'01"	37.23'	23.04	33.88'	S 58°07'17" W
R451	12.00'	090°14'27"	18.90'	12.05	17.01'	S 18°23'36" E
R452	535.32'	006°04'34"	56.77'	28.41	56.74'	S 66°34'08" E
R453	535.33'	008°10'12"	76.33'	38.23	76.27'	S 73°41'31" E
R454	535.33'	007°52'51"	73.63'	36.87	73.57'	S 81°43'03" E
R455	535.33'	007°55'33"	74.05'	37.09	73.99'	S 89°37'15" E
R456	535.33'	007°45'04"	72.42'	36.26	72.36'	N 82°32'27" E
R457	535.33'	007°50'57"	73.34'	36.73	73.28'	N 74°44'26" E
R458	535.33'	007°45'43"	72.52'	36.32	72.47'	N 66°56'06" E
R459	535.33'	007°46'30"	72.64'	36.38	72.59'	N 59°10'00" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R580	187.50'	016°15'22"	53.20'	26.78	53.02'	N 55°17'51" E
R581	187.50'	016°14'07"	53.13'	26.74	52.95'	N 71°32'36" E
R582	187.50'	020°23'55"	66.75'	33.73	66.40'	N 89°51'37" E
R583	187.50'	139°53'45"	457.81'	513.70	352.27'	N 30°06'42" E
R584	12.00'	079°22'04"	16.62'	9.96	15.33'	N 60°22'32" E
R585	1104.40'	005°58'17"	115.10'	57.60	115.05'	N 17°36'01" E
R586	1067.03'	002°51'36"	53.26'	26.64	53.26'	N 13°04'43" E
R587	1066.67'	006°04'43"	113.16'	56.63	113.11'	N 08°36'31" E
R588	1066.67'	015°07'21"	281.53'	141.59	280.71'	N 13°07'50" E
R589	12.00'	095°34'10"	20.02'	13.23	17.77'	N 42°12'55" W
R590	400.52'	002°15'05"	15.74'	7.87	15.74'	S 88°51'58" W
R591	400.52'	011°29'39"	80.35'	40.31	80.21'	S 81°59'36" W
R592	400.52'	010°40'13"	74.59'	37.40	74.48'	S 70°54'40" W
R593	487.50'	000°52'11"	7.40'	3.70	7.40'	S 64°51'46" W
R594	400.52'	024°24'57"	170.67'	86.65	169.39'	S 77°47'01" W
R595	487.50'	009°29'39"	80.78'	40.48	80.69'	S 59°40'51" W
R596	487.50'	009°17'02"	78.99'	39.58	78.91'	S 50°17'30" W
R597	487.50'	009°38'02"	81.97'	41.08	81.87'	S 40°49'58" W
R598	487.50'	009°33'55"	81.39'	40.79	81.29'	S 31°14'00" W
R599	487.50'	009°29'39"	80.78'	40.48	80.69'	S 21°42'13" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R460	535.33'	007°48'59"	73.03'	36.57	72.97'	N 51°22'15" E
R461	535.33'	007°53'15"	73.69'	36.91	73.64'	N 43°31'08" E
R462	535.33'	007°59'56"	74.74'	37.43	74.68'	N 35°34'33" E
R463	535.33'	008°07'33"	75.92'	38.02	75.86'	N 27°30'48" E
R464	535.33'	007°58'20"	74.49'	37.30	74.43'	N 19°27'52" E
R465	535.33'	123°58'56"	1158.39'	1006.43	945.25'	N 54°28'41" E
R466	12.00'	093°40'49"	19.62'	12.80	17.51'	N 56°24'15" W
R467	714.07'	004°40'12"	58.20'	29.12	58.18'	S 79°06'21" W
R468	976.11'	003°26'48"	58.72'	29.37	58.71'	S 82°52'14" W
R469	976.11'	003°27'19"	58.86'	29.44	58.85'	N 86°19'18" E
R470	976.11'	003°25'50"	58.44'	29.23	58.43'	N 89°45'52" E
R471	976.11'	003°27'04"	58.80'	29.41	58.79'	S 86°47'41" E
R472	976.11'	003°27'03"	58.79'	29.40	58.78'	S 83°20'38" E
R473	976.11'	003°26'05"	58.51'	29.27	58.50'	S 79°54'04" E
R474	976.11'	003°26'03"	58.51'	29.26	58.50'	N 76°28'00" W
R475	976.11'	003°26'05"	58.52'	29.27	58.51'	S 73°01'55" E
R476	976.11'	004°36'59"	78.65'	39.35	78.63'	S 69°00'23" E
R477	976.11'	034°45'00"	592.01'	305.43	582.98'	N 84°04'23" W
R478	12.00'	086°32'58"	18.13'	11.30	16.45'	S 70°01'46" W
R479	534.76'	010°42'15"	99.91'	50.10	99.76'	N 10°07'45" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R480	111.96'	045°26'18"	88.79'	46.88	86.48'	S 53°38'51" E
R481	20.00'	073°56'46"	25.81'	15.06	24.06'	S 00°53'29" E
R482	926.22'	025°13'44"	407.84'	207.28	404.55'	S 50°28'43" E
R483	926.22'	004°20'49"	70.27'	35.15	70.26'	S 65°16'00" E
R484	926.22'	004°19'47"	69.99'	35.01	69.98'	S 69°36'18" E
R485	926.22'	004°21'18"	70.40'	35.22	70.39'	S 73°56'51" E
R486	926.22'	004°07'58"	66.81'	33.42	66.79'	S 78°11'29" E
R487	926.22'	004°29'55"	72.72'	36.38	72.71'	S 82°30'25" E
R488	926.22'	004°14'15"	68.50'	34.27	68.49'	S 86°52'31" E
R489	926.22'	004°18'46"	69.72'	34.88	69.70'	N 88°50'58" E
R490	925.79'	004°16'06"	68.97'	34.50	68.95'	N 84°33'34" E
R491	925.67'	003°48'25"	61.51'	30.76	61.50'	N 80°31'30" E
R492	926.22'	063°30'49"	1026.74'	573.32	974.97'	S 69°37'16" E
R493	12.00'	090°37'59"	18.98'	12.13	17.06'	N 31°26'18" E
R494	175.00'	028°16'21"	86.35'	44.07	85.48'	N 28°00'52" W
R495	175.00'	018°38'39"	56.95'	28.73	56.69'	N 51°28'22" W
R496	175.00'	046°55'00"	143.30'	75.94	139.33'	N 37°20'12" W
R497	12.00'	072°51'34"	15.26'	8.86	14.25'	S 82°46'31" W
R498	12.00'	006°37'19"	1.39'	0.69	1.39'	S 43°02'05" W
R499	12.00'	079°30'10"	16.65'	9.98	15.35'	S 79°28'32" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R500	187.50'	022°35'33"	73.93'	37.45	73.46'	S 51°01'12" W
R501	187.50'	019°35'31"	64.11'	32.37	63.80'	N 72°06'43" E
R502	187.50'	020°25'34"	66.84'	33.78	66.49'	N 87°52'44" W
R503	187.50'	016°22'10"	53.57'	26.97	53.39'	S 69°28'53" E
R504	187.50'	078°58'47"	258.46'	154.51	238.48'	S 79°12'49" W
R505	12.00'	074°23'34"	15.58'	9.11	14.51'	S 81°30'25" W
R506	1140.45'	003°23'21"	67.46'	33.74	67.45'	N 46°00'19" E
R507	1140.45'	003°00'51"	60.00'	30.01	59.99'	N 49°12'25" E
R508	1140.45'	003°13'27"	64.18'	32.10	64.17'	N 52°19'34" E
R509	1140.45'	002°48'19"	55.84'	27.92	55.83'	N 55°20'27" E
R510	1140.45'	003°00'42"	59.95'	29.98	59.94'	N 58°14'58" E
R511	1140.45'	003°01'33"	60.23'	30.12	60.22'	N 61°16'06" E
R512	1116.67'	005°54'59"	115.31'	57.70	115.26'	N 08°09'41" E
R512	1140.45'	003°00'50"	59.99'	30.00	59.98'	N 64°17'17" E
R513	1140.45'	028°28'38"	566.83'	289.40	561.01'	S 58°32'58" W
R515	1276.27'	005°10'11"	115.16'	57.62	115.12'	S 76°29'11" W
R516	20.00'	067°18'00"	23.49'	13.31	22.16'	S 45°25'16" W
R517	112.00'	024°18'37"	47.52'	24.12	47.17'	S 23°55'35" W
R518	20.01'	073°53'43"	25.81'	15.05	24.06'	N 59°31'27" W
R519	112.00'	027°12'05"	53.17'	27.10	52.68'	N 82°52'55" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R600	487.50'	009°30'22"	80.88'	40.53	80.79'	S 12°12'13" W
R601	487.50'	009°29'39"	80.78'	40.48	80.69'	S 02°42'12" W
R602	487.50'	009°29'40"	80.78'	40.48	80.69'	S 06°47'27" E
R603	487.50'	009°29'39"	80.78'	40.48	80.69'	S 16°17'07" E
R604	487.50'	009°29'39"	80.78'	40.48	80.69'	S 25°46'46" E
R605	487.50'	008°14'38"	70.14'	35.13	70.08'	S 34°38'55" E
R606	487.50'	104°04'06"	885.46'	624.74	768.67'	S 13°15'49" W
R607	12.01'	077°45'03"	16.30'	9.68	15.08'	S 21°51'41" E
R608	12.00'	090°00'00"	18.85'	12.00	16.97'	N 74°12'18" E
R609	550.00'	006°39'48"	63.96'	32.02	63.93'	N 25°52'25" E
R610	550.00'	008°08'50"	78.21'	39.17	78.14'	N 18°28'06" E
R611	550.00'	008°09'39"	78.34'	39.24	78.27'	N 10°18'51" E
R612	550.00'	008°05'44"	77.71'	38.92	77.65'	N 02°11'10" E
R613	550.00'	000°37'30"	6.00'	3.00	6.00'	N 02°10'27" W
R614	25.00'	087°16'49"	38.08'	23.84	34.51'	S 49°21'07" E
R615	12.00'	087°31'18"	18.33'	11.49	16.60'	N 46°14'21" W
R616	12.00'	084°47'49"	17.76'	10.96	16.18'	S 47°36'06" W
R617	1116.67'	003°06'13"	60.49'	30.25	60.48'	N 12°40'17" E
R618	1116.67'	003°04'45"	60.01'	30.01	60.00'	S 15°45'46" W
R619	1116.67'	003°23'35"	66.13'	33.07	66.12'	S 18°59'56" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R520	112.00'	019°44'24"	38.59'	19.49	38.40'	N 59°24'40" W
R521	112.31'	021°20'11"	41.82'	21.16	41.58'	S 38°50'34" E
R522	112.00'	068°20'19"	133.59'	76.03	125.81'	N 62°18'50" W
R523	20.00'	072°59'21"	25.48'	14.80	23.79'	S 64°38'20" E
R524	1226.27'	003°47'24"	81.12'	40.57	81.10'	N 76°58'17" E
R525	1226.27'	001°09'08"	24.66'	12.33	24.66'	N 74°30'01" E
R526	1226.27'	004°56'32"	105.77'	52.92	105.74'	S 76°23'43" W
R527	1090.45'	001°51'33"	35.38'	17.69	35.38'	N 71°49'59" E
R528	1090.45'	007°33'52"	143.97'	72.09	143.86'	N 67°07'16" E
R529	1090.45'	009°25'25"	179.35'	89.88	179.15'	S 68°03'02" W
R530	12.00'	100°44'08"	21.10'	14.49	18.48'	N 12°58'16" E
R531	537.50'	007°26'31"	69.81'	34.96	69.76'	N 33°40'32" W
R532	537.50'	006°23'24"	59.95'	30.00	59.91'	N 26°45'35" W
R533	537.50'	006°23'04"	59.89'	29.98	59.86'	N 20°22'21" W
R534	537.50'	006°23'08"	59.90'	29.98	59.87'	N 13°59'15" W
R535	537.50'	006°18'01"	59.10'	29.58	59.07'	N 07°38'40" W
R536	537.50'	006°27'58"	60.66'	30.36	60.63'	N 01°15'41" W
R537	537.50'	006°29'35"	60.91'	30.49	60.88'	N 05°13'06" E
R538	537.50'	006°23'08"	59.90'	29.98	59.87'	N 11°39'27" E
R539	537.50'	006°23'08"	59.90'	29.98	59.87'	N 18°02'36" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R540	537.50'	006°23'10"	59.91'	29.99	59.88'	N 24°25'45" E
R541	537.50'	006°23'32"	59.97'	30.01	59.94'	N 30°49'06" E
R542	537.50'	006°22'41"	59.83'	29.95	59.80'	N 37°12'13" E
R543	537.50'	006°23'08"	59.90'	29.98	59.87'	N 43°35'08" E
R544	537.50'	006°23'09"	59.91'	29.98	59.87'	N 49°58'17" E
R545	537.50'	007°53'02"	73.96'	37.04	73.90'	S 57°06'22" W
R546	537.50'	098°26'41"	923.52'	623.19	814.04'	S 11°49'33" W
R547	12.00'	091°29'12"	19.16'	12.32	17.19'	N 15°18'17" E
R548	12.00'	089°11'16"	18.68'	11.83	16.85'	S 75°01'56" E
R549	926.22'	004°02'10"	65.25'	32.64	65.23'	N 58°21'21" E
R550	926.22'	004°17'31"	69.38'	34.71	69.36'	N 54°11'31" E
R551	926.22'	004°17'29"	69.37'	34.70	69.36'	N 49°54'01" E
R552	926.22'	004°17'28"	69.37'	34.70	69.35'	N 45°36'32" E
R553	926.22'	004°17'27"	69.37'	34.70	69.35'	N 41°19'05" E
R554	926.22'	004°17'26"	69.36'	34.70	69.34'	N 37°01'38" E
R555	926.22'	004°17'25"	69.36'	34.69	69.34'	N 32°44'13" E
R556	926.22'	004°19'08"	69.82'	34.93	69.80'	N 28°25'56" E
R557	926.22'	004°15'40"	68.88'	34.46	68.87'	N 24°08'32" E
R558	926.22'	004°17'24"	69.35'	34.69	69.33'	N 19°52'00" E
R559	926.22'	004°17'24"	69.35'	34.69	69.33'	N 15°34'36" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R560	926.19'	004°17'24"	69.35'	34.69	69.33'	N 11°17'13" E
R561	926.19'	004°17'24"	69.35'	34.69	69.33'	N 06°59'49" E
R562	926.22'	004°36'27"	74.48'	37.26	74.46'	N 02°32'54" E
R563	926.22'	003°56'42"	63.77'	31.90	63.76'	N 01°43'40" W
R564	926.22'	004°17'05"	69.26'	34.65	69.25'	N 05°50'34" W
R565	926.22'	004°17'26"	69.36'	34.70	69.34'	N 10°07'49" W
R566	926.14'	004°17'28"	69.36'	34.70	69.35'	N 14°25'16" W
R567	927.97'	005°57'35"	96.53'	48.31	96.48'	N 19°32'57" W
R568	926.22'	082°54'39"	1340.31'	818.17	1226.39'	N 18°55'06" E
R569	12.00'	081°52'35"	17.15'	10.41	15.73'	S 79°42'31" E
R570	1088.66'	006°05'56"	115.88'	58.00	115.83'	N 56°18'31" E
R571	1090.45'	002°38'08"	50.16'	25.09	50.16'	N 51°56'47" E
R572	1090.45'	005°58'56"	113.86'	56.98	113.80'	N 47°38'15" E
R573	1090.45'	014°42'25"	279.90'	140.72	279.13'	N 51°59'59" E
R574	11.98'	084°40'25"	17.70'	10.91	16.13'	N 02°24'18" E
R575	187.50'	021°47'35"	71.32'	36.10	70.89'	N 28°56'23" W
R576	187.50'	016°30'58"	54.05'	27.21	53.86'	N 09°47'06" W
R577	187.60'	016°13'18"	53.11'	26.74	52.94'	N 06°35'11" E
R578	187.60'	016°13'24"	53.12'	26.74	52.94'	N 22°49'15" E
R579	187.50'	016°14'05"	53.13'	26.74	52.95'	N 39°03'08" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R620	1116.67'	015°29'32"	301.94'	151.89	301.02'	N 12°56'57" E
R621	12.00'	079°15'34"	16.60'	9.94	15.31'	S 18°56'04" E
R622	187.21'	015°52'35"	51.87'	26.10	51.71'	S 50°41'53" E
R623	187.42'	023°42'10"	77.53'	39.33	76.98'	S 30°53'43" E
R624	187.27'	023°25'30"	76.57'	38.83	76.03'	S 07°18'58" E
R625	187.39'	014°05'09"	46.07'	23.15	45.95'	N 11°27'21" E
R626	187.21'	077°08'19"	252.04'	149.28	233.43'	N 20°04'01" W
R627	12.01'	090°18'09"	18.93'	12.07	17.03'	N 44°47'36" W
R628	12.00'	092°28'43"	19.37'	12.53	17.33'	S 43°45'39" W
R629	268.43'	002°28'27"	11.59'	5.80	11.59'	S 04°30'37" E
R630	268.43'	022°44'11"	106.52'	53.97	105.82'	S 17°06'56" E
R631	268.43'	022°42'53"	106.42'	53.92	105.72'	S 39°50'28" E
R632	268.43'	022°47'04"	106.75'	54.09	106.05'	S 62°35'27" E
R633	268.43'	022°33'02"	105.65'	53.52	104.97'	S 85°15'30" E
R634	268.43'	001°23'21"	6.51'	3.25	6.51'	N 82°46'18" E
R635	268.43'	094°38'58"	443.44'	291.15	394.71'	N 50°35'53" W
R636	1784.09'	001°05'43"	34.10'	17.05	34.10'	N 80°16'53" E
R637	1784.09'	003°49'45"	119.24'	59.64	119.22'	N 77°49'09" E
R638	1784.09'	004°55'28"	153.34'	76.72	153.29'	S 78°22'01" W
R639	12.00'	107°51'31"	22.59'	16.47	19.40'	N 23°20'07" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R640	1269.37'	005°05'51"	112.93'	56.50	112.90'	N 28°02'43" W
R641	1269.37'	002°08'22"	47.40'	23.70	47.40'	N 24°25'37" W
R642	1263.06'	002°37'26"	57.84'	28.93	57.84'	N 22°02'52" W
R643	1255.64'	002°36'23"	57.12'	28.57	57.12'	N 19°27'30" W
R644	1266.41'	002°34'54"	57.06'	28.54	57.06'	N 16°53'03" W
R645	1281.25'	002°36'08"	58.19'	29.10	58.18'	N 14°16'58" W
R646	1298.08'	002°44'14"	62.02'	31.01	62.01'	N 11°34'25" W
R647	1293.52'	002°35'56"	58.67'	29.34	58.67'	N 08°49'49" W
R648	1269.37'	002°52'12"	63.59'	31.80	63.58'	N 06°05'01" W
R649	1269.37'	002°38'47"	58.63'	29.32	58.63'	N 03°19'31" W
R650	1269.37'	002°22'37"	52.66'	26.33	52.66'	N 00°48'49" W
R651	1269.37'	030°58'08"	686.11'	351.66	677.79'	S 15°06'35" E
R652	12.00'	079°52'00"	16.73'	10.05	15.41'	S 70°22'18" E
R653	450.00'	006°40'36"	52.44'	26.25	52.41'	N 73°02'00" E
R654	450.00'	007°12'42"	56.64'	28.36	56.60'	N 79°58'38" E
R655	450.00'	006°25'01"	50.40'	25.23	50.37'	N 86°47'30" E
R656	450.00'	020°18'18"	159.48'	80.58	158.64'	S 79°50'51" W
R657	12.02'	088°16'15"	18.52'	11.66	16.74'	N 45°46'13" E
R658	1346.44'	004°28'57"	105.34'	52.70	105.31'	N 02°26'49" W
R659	1219.37'	001°37'21"	34.53'	17.27	34.53'	N 05°43'59" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R660	1219.37'	003°06'53"	66.29'	33.15	66.28'	S 08°06'06" E
R661	1219.37'	003°18'59"	70.58'	35.30	70.57'	S 11°19'02" E
R662	1209.10'	003°22'30"	71.22'	35.62	71.21'	S 14°39'21" E
R663	1186.71'	003°18'39"	68.57'	34.30	68.56'	S 17°56'26" E
R664	1204.52'	003°13'25"	67.77'	33.89	67.76'	S 21°07'18" E
R665	1211.75'	003°16'55"	69.41'	34.71	69.40'	S 24°21'49" E
R666	1215.03'	003°07'04"	66.12'	33.07	66.11'	S 27°32'21" E
R667	1219.37'	002°42'05"	57.49'	28.75	57.48'	S 30°26'51" E
R668	1219.37'	031°49'35"	677.33'	347.65	668.65'	S 15°53'06" E
R669	12.00'	071°51'53"	15.05'	8.70	14.08'	S 67°43'44" E
R670	3336.04'	002°06'58"	123.21'	61.61	123.21'	N 75°16'56" E
R671	3336.04'	000°40'30"	39.30'	19.65	39.30'	S 73°53'12" W
R672	3336.04'	001°04'16"	62.37'	31.18	62.37'	N 73°00'49" E
R673	3336.04'	001°02'56"	61.07'	30.54	61.07'	N 71°57'13" E
R674	3336.04'	001°05'43"	63.77'	31.88	63.77'	N 70°52'53" E
R675	3149.34'	000°35'54"	32.88'	16.44	32.88'	N 70°03'06" E
R676	3336.04'	006°34'16"	382.60'	191.51	382.39'	N 73°03'17" E
R677	75.00'	096°49'13"	126.74'	84.50	112.19'	N 21°21'32" E
R678	318.43'	009°25'13"	52.35'	26.24	52.30'	N 07°59'00" W
R679	318.43'	010°02'30"	55.81'	27.98	55.74'	N 17°42'51" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R680	318.43'	010°01'22"	55.70'	27.92	55.63'	N 27°44'47" W
R681	318.42'	010°01'24"	55.70'	27.92	55.63'	N 37°46'08" W
R682	319.95'	009°58'31"	55.70'	27.92	55.63'	N 47°47'30" W
R683	318.43'	010°01'22"	55.70'	27.92	55.63'	N 57°48'52" W
R684	318.43'	010°01'22"	55.70'	27.92	55.63'	N 67°50'13" W
R685	318.43'	010°01'22"	55.70'	27.92	55.63'	N 77°51'35" W
R686	318.43'	010°01'22"	55.70'	27.92	55.63'	N 87°52'56" W
R687	318.43'	005°01'45"	27.95'	13.98	27.94'	S 84°35'30" W
R688	318.43'	094°38'58"	526.04'	345.38	468.23'	S 50°35'53" E
R689	4736.67'	000°03'05"	4.25'	2.12	4.25'	S 80°23'40" W
R690	3391.22'	001°00'41"	59.87'	29.93	59.87'	S 79°50'47" W
R691	3385.78'	000°59'18"	58.41'	29.21	58.41'	S 78°50'45" W
R692	3384.73'	000°56'06"	55.23'	27.62	55.23'	S 77°53'03" W
R693	3385.45'	003°00'30"	177.76'	88.90	177.74'	N 78°55'16" E
R694	25.00'	073°18'54"	31.99'	18.61	29.85'	S 65°55'32" E
R695	1330.30'	004°44'55"	110.26'	55.16	110.22'	S 26°53'36" E
R696	1409.56'	000°10'10"	4.17'	2.09	4.17'	S 24°25'35" E
R697	1330.20'	002°56'23"	68.25'	34.13	68.24'	N 22°52'09" W
R698	1330.20'	004°35'22"	106.55'	53.31	106.52'	N 19°06'16" W
R699	1330.20'	012°27'29"	289.23'	145.19	288.66'	S 23°02'19" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R700	12.00'	088°49'40"	18.60'	11.76	16.80'	N 32°23'52" E
R701	63.00'	013°19'32"	14.65'	7.36	14.62'	N 70°08'56" E
R702	63.00'	095°06'48"	104.59'	68.89	92.98'	N 15°55'46" E
R703	63.00'	063°04'15"	69.35'	38.66	65.90'	N 63°09'49" W
R704	63.00'	039°33'21"	43.49'	22.65	42.64'	N 07°32'01" E
R705	63.00'	149°38'51"	164.55'	232.26	121.61'	S 62°34'46" W
R706	1420.89'	002°26'59"	60.75'	30.38	60.74'	S 13°14'36" E
R707	1420.89'	000°25'48"	10.66'	5.33	10.66'	S 14°40'59" E
R708	1420.89'	002°52'46"	71.41'	35.71	71.40'	S 13°27'30" E
R709	1420.89'	001°56'02"	47.96'	23.98	47.96'	S 17°41'44" E
R710	1420.89'	002°22'42"	58.98'	29.49	58.97'	S 19°51'06" E
R711	1420.89'	003°06'09"	76.94'	38.48	76.93'	S 22°35'31" E
R712	1420.89'	004°32'16"	112.54'	56.30	112.51'	N 26°24'43" W
R713	1420.89'	011°57'09"	296.41'	148.75	295.87'	S 22°42'17" E
R714	12.00'	104°53'19"	21.97'	15.61	19.03'	N 23°30'47" E
R715	3386.04'	001°36'01"	94.57'	47.29	94.57'	N 75°09'27" E
R716	3386.04'	001°01'23"	60.47'	30.23	60.46'	N 73°50'44" E
R717	3386.04'	001°01'32"	60.61'	30.30	60.60'	N 72°49'17" E
R718	3385.36'	000°59'32"	58.63'	29.32	58.63'	N 71°48'45" E
R719	3385.41'	001°02'31"	61.57'	30.79	61.57'	N 70°47'44" E

Pennoni
PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

FOUR WINDS FARM
(2021-25)
TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE

PRELIMINARY PLAT PARCEL DATA

RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

DATE	NO.	REVISIONS	BY
2022-03-18	1	REVISED PER P&Z COMMENTS	EOC

PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	LM/EW
APPROVED BY	AMD

PP1012

18072 Davidson Drive
Milton, DE 19968
T: 302-684-8030
F: 302-684-8054
www.pennoni.com

BOOK 1 OF 2

FOUR WINDS

CASE NO. S2021-25

MAJOR SUBDIVISION

OWNER/DEVELOPER:

RIBER DEVELOPMENT, LLC
8684 VETERAN'S HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108
JOHN STAMATO

SPRING GARDEN, LLC
16793 ISLAND FARM ROAD
MILTON, DE 19968

LEGAL:

FUQUA, WILLIARD, STEVENS & SCHAB, P.A.
20245 BAY VISTA ROAD, UNIT 203
REHOBOTH BEACH, DE 19971
JAMES A . FUQUA, JR., ESQUIRE

PLANNER/ENGINEER/SURVEYOR:

PENNONI
18072 DAVIDSON DRIVE
MILTON, DE 19968
MARK H. DAVIDSON, PRINCIPAL LAND PLANNER
ALAN DECKTOR, PE., ENV SP
ERIC WAHL, RLA
JOHN W. HAUPT, PLS

ENVIRONMENTAL:

PENNONI
MARC CHARTIER, PG, LSRP
JOHN-THOMAS GRAUPENSPERGER, PWS

ACCENT ENVIRONMENTAL
WILLIAM J. GANGLOFF, PhD. PROF. SOIL SCIENTIST

18072 Davidson Drive
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F: 302-684-8054
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BOOK 2 OF 2

FOUR WINDS

CASE NO. S2021-25

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OWNER/DEVELOPER:

RIBER DEVELOPMENT, LLC
8684 VETERAN'S HIGHWAY, SUITE 203
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WILLIAM J. GANGLOFF, PhD. PROF. SOIL SCIENTIST

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Mark H. Davidson / Vice President

Principal Land Planner/Office Director

EDUCATION

University of Delaware; Civil Engineering, (1986-1990)

Land Surveying, Delaware Technical & Community College (1984-1986) and Wastewater Microbiology Diploma (1997)

Land Planning, Institute for Public Administration (2006)

CERTIFICATIONS

DNREC Class A Percolation Tester & Class B Septic Designer, (DE #2418)

Sediment & Stormwater Management, Responsible Personnel, DE (#8760) and MD (#4914)

DNREC Certified Construction Reviewer: DE (#1270)

Delaware Notary

TRAININGS

Hydrology, Delaware TR-20 (1993)

Reducing Flood Hazard in Coastal Development (1996)

Law for Managers/Supervisors (1999)

State and Federal Laws (2000)

Advanced Real Estate Law in Delaware (2002)

Land Conservation and Historic Preservation (2003)

Land Surveying Business Diploma (1998)

Project Manager Training I, Pennoni (2015)

PROFESSIONAL AFFILIATIONS

National Onsite Wastewater Recycling Association

Delaware Onsite Wastewater Recycling Association

American Planning Association

American Institute of Certified Planners

HONORS/AWARDS

Association of Professionals Philanthropy, Brandywine Chapter Fundraising Nominee (2014)

Notable Networker Award, BNI (2013)

EXPERIENCE SUMMARY

Mark H. Davidson serves as Vice President of Pennoni and Office Director for our Southern Delaware, Milton Office. Mark also serves as the Principal Land Planner for Pennoni. He has over 35-years of past experience in Surveying, Engineering, Consulting, Construction and Land Planning. For 12-years he owned a professional engineering, surveying, land planning, environmental and consulting firm that provided professional consulting and design in land planning for residential, industrial, institutional, municipal and commercial applications to a wide range of clients in Delaware and Maryland. Mr. Davidson's project experience includes land development planning, surveying, engineering, environmental design and permitting; construction and project consulting, management and inspection; water resource consulting, management and inspection and municipal consulting, planning and inspection for residential, industrial, institutional, municipal and commercial applications.

Mark is a past director of the Delaware Onsite Wastewater Recycling Association as well as a member of the American Planning Association, American Institute of Certified Planners and has served in the past as a committee member of Delaware Low Impact Development Roundtable Committee, Delaware Pollution Control Strategy Committee, Delaware Sediment & Stormwater Regulatory Advisory Committee, and the Delaware Technical & Community College A/E Curriculum Committee. Past Board Member for the On Site Septic Advisory Board for the State of Delaware. He was also nominated for the Brandywine Chapter Association of Fundraising Professionals Philanthropy Award and has won the BNI Notable Networker Award.

Along with all the experience and education stated and with many years of combined experience in Surveying, Engineering, Consulting and Land Planning, he has been responsible for providing consulting, layout and design in surveying, engineering and land planning for residential, industrial, institutional, municipal and commercial applications to a wide range of clients in Delaware, Maryland, Virginia and West Virginia. He has project managed, studied, planned, surveyed, designed and engineered sustainable, master-planned communities, commercial and urban redevelopment projects, and the public infrastructure that supports them.

Mark has provided nationwide land planning consulting services to a variety of clientele to help coordinate project startups as well as final construction consulting services when it came to commercial, residential, industrial, municipal, educational and community land planning. Provided additional consulting in civil/site engineering, stormwater management, erosion and sediment control, wastewater collection and disposal, transportation, and environmental. Market areas practiced; Delaware, Maryland, West Virginia, Virginia, North Carolina, South Carolina, North Dakota, Puerto Rico, Canada and Panama.

Additional Project experience includes cutting edge design and technology as well as value engineering and construction to help clients through the ever-changing market including but not limited to solar voltaic and wind generation projects.

TAB 1

APPLICATION

File #: _____
Pre-App Date: _____

Sussex County Major Subdivision Application
Sussex County, Delaware

Sussex County Planning & Zoning Department
2 The Circle (P.O. Box 417) Georgetown, DE 19947
302-855-7878 ph. 302-854-5079 fax

Type of Application: (please check applicable)
Standard: __
Cluster: ✓
Coastal Area: __

Location of Subdivision:

Shingle Point Road, north of Crosswind Lane

Proposed Name of Subdivision:

Four Winds Farm

Tax Map #: 235-25.00-39.00 Total Acreage: +/- 168.9 AC

Zoning: AR-1 **Density:** 2/AC **Minimum Lot Size:** 7,500 **Number of Lots:** 336

Open Space Acres: +/- 61.8 AC

Water Provider: Artesian **Sewer Provider:** Artesian

Applicant Information

Applicant Name: John Stamato, Ribera Development, LLC
Applicant Address: 8684 Veterans Highway, Suite 203
City: Millersville State: MD ZipCode: 21108
Phone #: (443) 871-0486 E-mail: johnstamato@riberadev.com

Owner Information

Owner Name: Spring Garden, LLC
Owner Address: 16793 Island Farm Road
City: Milton State: DE Zip Code: 19968
Phone #: _____ E-mail: _____

Agent/Attorney/Engineer Information

Agent/Attorney/Engineer Name: Alan M. Decktor, Pennoni Associates
Agent/Attorney/Engineer Address: 18072 Davidson Drive
City: Milton State: DE Zip Code: 19968
Phone #: (215) 254-7853 E-mail: ADecktor@Pennoni.com

Check List for Sussex County Major Subdivision Applications

The following shall be submitted with the application

___ **Completed Application**

___ **Provide ten (10) copies of the Site Plan or Survey of the property and a PDF (via e-mail)**

- Plan shall show the existing conditions, setbacks, roads, floodplain, wetlands, topography, proposed lots, landscape plan, etc. **Per Subdivision Code 99-22, 99-23 & 99-24**
- Provide compliance with Section 99-9.
- Deed or Legal description, copy of proposed deed restrictions, soil feasibility study

___ **Provide Fee $500.00**

___ **Optional - Additional information for the Commission to consider** (ex. photos, exhibit books, etc.) If provided submit seven (7) copies and they shall be submitted a minimum of ten (10) days prior to the Planning Commission meeting.

___ **Please be aware that Public Notice will be sent to property owners within 200 feet of the subject site and County staff will come out to the subject site, take photos and place a sign on the site stating the date and time of the Public Hearings for the application.**

___ **PLUS Response Letter** (if required) ☐ **Environmental Assessment & Public Facility Evaluation Report** (if within Coastal Area)

___ **51% of property owners consent if applicable**

The undersigned hereby certifies that the forms, exhibits, and statements contained in any papers or plans submitted as a part of this application are true and correct.

I also certify that I or an agent on by behalf shall attend all public hearing before the Planning and Zoning Commission and any other hearing necessary for this application and that I will answer any questions to the best of my ability to respond to the present and future needs, the health, safety, morals, convenience, order, prosperity, and general welfare of the inhabitants of Sussex County, Delaware.

Signature of Applicant/Agent/Attorney

Date: 8/19/21

Signature of Owner

Date: 8/11/21

For office use only:

Date Submitted: _____ Fee: $500.00 Check #: _____

Staff accepting application: _____ Application & Case #: _____

Location of property: _____

Date of PC Hearing: _____ Recommendation of PC Commission: _____

Pennoni

18072 Davidson Drive
Milton, DE 19968
T: 302-684-8030
F: 302-684-8054

www.pennoni.com

METES AND BOUNDS DESCRIPTION

LANDS NOW OR FORMERLY OF SPRING GARDEN, LLC
BROADKILL HUNDRED
SUSSEX COUNTY, DELAWARE

TAX MAP 235-25.00-39.00

ALL that certain piece, parcel and tract of land lying and being situate in the Broadkill Hundred, Sussex County, Delaware and being more particularly described as follows:

BEGINNING at a point, said point lying along the Westerly side of Shingle Point Road, (Sussex County Road 249), said shared corner between Lands now or formerly of C D Carey Farms LLC, and said lands; thence **South 62 degrees, 16 minutes, 57 seconds East, 2652.43 feet** to an iron rod with cap found; thence along shared line with Lands now for formerly of Triple C Farms LLC., **South 26 degrees, 32 minutes, 19 seconds West, 3009.80 feet** to an iron rod with cap found; thence **North 63 degrees, 56 minutes, 12 seconds West 658.66 feet**, along Lands now or formerly of Addie L. Houston Trustee to an iron pipe found; thence **North 65 degrees, 25 minutes, 31 seconds West, 1646.92 feet** to a shared point with Lands now or formerly of Bruno A. and Sharon L. Chalabala; thence along the westerly side of Shingle Point Road (SCR249) the following six (6) courses and distances:

1) **North 23 degrees, 19 minutes, 58 seconds East, 466.68 feet to a point,**

2) **North 23 degrees, 08 minutes, 37 seconds East, 1249.12 feet to a point,**

3) **North 23 degrees, 18 minutes, 08 seconds East, 432.56 feet to a point,**

4) **North 23 degrees, 47 minutes, 34 seconds, East, 259.45 feet to a point,**

5) **With a curve to the left with an Arc Length of 371.55 a Radius of 1729.03 feet, a Chord Bearing of North 18 degrees, 49 minutes, 29 seconds East, 370.84 feet and a Delta Angle of 12 degrees, 18 minutes, 45 seconds, thence;**

6) **With a curve to the left with an Arc Length of 390.82 feet and a Radius of 1388.73 feet, a Chord Bearing of North 02 degrees, 11 minutes, 33 seconds East, 389.53 and a Delta Angle of 16 degrees, 07 minutes, 27 seconds to a point,**

said point being **the Point of Beginning.**

This Parcel contains 169 acres more or less.

Document# 201800032149 BK: 4943 PG: 264
Recorder of Deeds, Scott Dailey On 9/5/2018 at 12:08:16 PM Sussex County, DE
Consideration: $0.00 County/Town: $0.00 State: $0.00 Total: $0.00
Doc Surcharge Paid Town: SUSSEX COUNTY

RIBER21001
235-25.00-39.00
DB4943 PG264

Tax Parcel No. 2-35-25.00-39.00

PREPARED BY AND RETURN TO:
Jerome K. Grossman, Esquire (CGARZ)
Young Conaway Stargatt & Taylor, LLP
110 West Pine Street
P. O. Box 594
Georgetown, DE 19947

THIS DEED, made this 31 day of July, 2018,

Between:

TRIPLE C FARMS, LLC, a Delaware limited liability company, of 16793 Island Farm Lane, Milton, DE 19968, party of the first part,

AND

SPRING GARDEN LLC, a Delaware limited liability company ,of 16793 Island Farm Lane, Milton, DE 19968, party of the second part,

WITNESSETH:

That the party of the first part, for and in consideration of the sum of **TEN AND 00/100 DOLLARS ($10.00)** lawful money of the United States of America, the receipt whereof is hereby acknowledged, hereby grants and conveys unto the party of the second part, its successors and assigns:

ALL THOSE certain lots, pieces and parcels of land situate, lying and being in Broadkiln Hundred, County of Sussex and State of Delaware, bounded and described, as follow, to-wit:

Tract No. 1: Lying on the Public Road leading from Georgetown to Milton adjoining lands now or late of James H. Jefferson, heirs of Davis Carey, deceased, and others, containing One Hundred and Sixty-nine (169) acres of land, more or less.

Tract No.2: Adjoining lands now or formerly owned by Walter B. Hilyard, heirs of Davis Carey, deceased, and lying on the east side of the Public Road leading from Georgetown to Milton containing about one-half acre, be the same more or less.

It is hereby acknowledged that there may exist a discrepancy between the acreage in the foregoing legal description, which was taken from the prior deed, and the total acreage now known on the Sussex County Tax Assessment records. No title search or survey was requested or performed to reconcile such discrepancy.

Document# 201800032149 BK: 4943 PG: 265
Recorder of Deeds, Scott Dailey On 9/5/2018 at 12:08:16 PM Sussex County, DE
Doc Surcharge Paid

EXCEPTING THEREFROM that certain piece of parcel of land conveyed to The State of Delaware by deed of Island Farm, Inc. dated March 1, 1964, and of record in the Office of the Recorder of Deeds in and for Sussex County, Delaware at Deed Book 558, Page 235.

SUBJECT TO AND TOGETHER WITH THE BENEFIT OF ALL covenants, conditions, restrictions, plans and easements of record with respect to the property described above, this reference to which shall not be construed to reimpose any such covenants, conditions, restrictions, plans and easements which have otherwise lapsed, expired or have otherwise been terminated in accordance with their terms or otherwise, as applicable.

BEING part of the same lands and premises which The Island Farm, Inc., by deed dated June 30, 2010, and recorded in the Office of the Recorder of Deeds in and for Sussex County, in Deed Book 3802, Page 133, did grant and convey unto Triple C Farms, LLC, in fee.

NO TITLE SEARCH OR SURVEY REQUESTED OR PERFORMED

Document# 201800032149 BK: 4943 PG: 266
Recorder of Deeds, Scott Dailey On 9/5/2018 at 12:08:16 PM Sussex County, DE
Doc Surcharge Paid

IN WITNESS WHEREOF, the said party of the first part has hereunto set its hand and seal the day and year first above written.

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF:

Witness

TRIPLE C FARMS, LLC
By: The Island Farm, Inc., its Manager

By: _____ (Seal)
Name: Mark Bonk
Title: President

STATE OF DELAWARE)
): **S.S.**
COUNTY OF SUSSEX)

BE IT REMEMBERED, that on this 31st day of July, 2018, came before me, the Subscriber, a Notary Public in and for the State and County aforesaid, The Island Farm, Inc., a Delaware corporation, the Manager of Triple C Farms, LLC, a Delaware limited liability company, known to me personally to be such, and acknowledged this Indenture on behalf of the limited liability company.

GIVEN under my Hand and Seal of office, the day and year aforesaid.

_____ (Seal)
Notary Public or Notarial Officer
Print Name: Jerome K. Grossman
My Commission Expires: _____

JEROME K. GROSSMAN, ESQ.
NOTARIAL OFFICER
STATE OF DELAWARE
LICENSED ATTORNEY AT LAW

FOUR WINDS FARM
PRELIMINARY SUBDIVISION PLAN

(2021-25)

TM: 235-25.00-39.00

BROADKILL HUNDRED

SUSSEX COUNTY, DE

PREPARED FOR:

DEVELOPER

RIBERA DEVELOPMENT, LLC

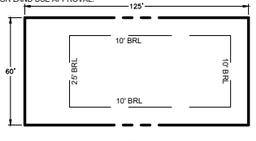
8684 VETERANS HIGHWAY, SUITE 203

MILLERSVILLE, MD 21108

(443) 871-0486

SITE DATA TABLE:

1.	TAX MAP NUMBER:	235-25.00-39.00
2.	OWNERS:	SPRING GARDEN, LLC. 16793 ISLAND FARM LAND MILTON, DE 19968
3.	DEVELOPER:	RIBERA DEVELOPMENT, LLC. 8684 VETERAN'S HIGHWAY, SUITE 203 MILLERSVILLE, MD 21108
4.	HUNDRED/ COUNTY:	BROADKILL HUNDRED / SUSSEX COUNTY
5.	CURRENT ZONING:	AR-1 (AGRICULTURAL RESIDENTIAL DISTRICT)
6.	PRESENT USE:	AGRICULTURAL
7.	PROPOSED USE (115-20):	DETACHED SINGLE FAMILY DWELLINGS ON INDIVIDUAL LOTS [PROPOSED 336 LOTS]
8.	REQUIRED SETBACKS (B.R.L.):	AR-1 CLUSTER DEVELOPMENT (115-25 B-2)
	DEPTH OF FRONT YARD (FEET) DEPTH OF CORNER SIDE YARD WIDTH OF SIDE YARD (FEET) DEPTH OF REAR YARD (FEET)	25' 15' 10' 10
9.	REQUIRED LOT AREAS:	AR-1 CLUSTER DEVELOPMENT (115-25 B-2)
	MINIMUM LOT WIDTH MAXIMUM LOT AREA MINIMUM LOT AREA AVERAGE LOT AREA	60' 15,630' S.F. 7,500' S.F. 8,501.04' S.F.
10.	DWELLING UNIT CALCULATIONS:	
	GROSS AREA: NON-TIDAL WETLAND AREA: MIN. LOT AREA/UNIT: PERMITTED DENSITY (115-25 B3): PROPOSED DENSITY:	168.9 AC. 2.96 AC. AR-1 ZONING MINIMUM AREA: 7,500 S.F. AR-1 ZONING MAXIMUM DENSITY: 2 UNITS / ACRE (337 UNITS) 336 SINGLE FAMILY DETACHED UNITS: 1.99± UNITS / ACRE
11.	WATER SUPPLIER:	PUBLIC - ARTESIAN
	SECTION 89: SOURCE WATER PROTECTION	A. SUBJECT PROPERTY IS WITHIN A POOR AREA OF GROUND WATER RECHARGE. B. SUBJECT PROPERTY IS NOT LOCATED IN A WELLHEAD PROTECTION AREA.
12.	SANITARY SEWER PROVIDER:	PUBLIC - ARTESIAN
13.	STREETS:	PRIVATE (99-18 D & E.)
14.	POSTED SPEED LIMIT (SHINGLE POINT ROAD):	50 MPH
15.	STATE INVESTMENT AREA (2020):	LEVEL 4 AND 3
16.	FUTURE LAND USE MAP (2019):	LOW DENSITY
17.	MAXIMUM BUILDING HEIGHT (115-25 D.):	42 FEET
18.	SITE AREA AND ACREAGE:	GROSS ACREAGE: 168.90 ± AC LOT AREA 65.58 ± AC DELDOT R.O.W. DEDICATION (SHINGLE POINT ROAD): 0.38 ± AC DELDOT PERMANENT EASEMENT: 0.73 ± AC PRIVATE SUBDIVISION STREETS ROW : 15.65 ± AC IMPERVIOUS - ROAD: 9.99 ± AC IMPERVIOUS - SIDEWALK: 1.88 ± AC OPEN SPACE: 86.56 ± AC TOTAL: 168.90 ± AC
19.	FORESTED AREA:	TOTAL AREA: 31.13 ± AC IMPACTED: 2.91 ± AC REMAINING: 28.22 ± AC (90.65%)
20.	OPEN SPACE AREA BREAKDOWN:	PASSIVE & ACTIVE RECREATION SPACE: 46.93 ± AC FORESTED AREA: 28.22 ± AC STORMWATER MANAGEMENT AREA 8.44 ± AC WETLAND AREA: 2.97 ± AC TOTAL OPEN SPACE AREA: 86.56 ± AC (51.2%) REQUIRED OPEN SPACE: 50.67 ± AC (30.0%)
	TOTAL REQUIRED ADJACENT OPEN SPACE TO EXISTING WETLANDS (115-25, F-3-A-3-ii):	30% OF REQUIRED OPEN SPACE: 30%(50.67 AC.) = 15.20 AC. PROPOSED OPEN SPACE (OPEN SPACE A): 44.14 AC. (REFER TO OPEN SPACE AREA BREAKDOWN ON SHEET PP1001)
21.	LONGITUDE AND LATITUDE	STATE PLANE COORDINATES: LONGITUDE: W 75°19'11.1" LATITUDE: N 38°44'45.0"
22.	PROPOSED DISCHARGE LOCATION: WATERSHED:	PROPOSED STORMWATER PONDS TO EXISTING WETLANDS ROUND POLE BRANCH-BROADKILL RIVER (WAGAMONS POND WATERSHED)
23.	LIMIT OF DISTURBANCE:	112.77 AC. ±
24.	FLOOD ZONE:	THIS PROPERTY IS LOCATED ON THE FEMA FLOOD INSURANCE RATE MAP NUMBER 10005C0325L, AND 10005C0310L, MAP REVISED JUNE 20, 2018. AREA DESIGNATED AS FLOOD ZONE "X" (UNSHADED) . THIS PROPERTY IS LOCATED ON THE FEMA FLOOD INSURANCE RATE MAP NUMBER 10005C0164J, MAP REVISED JANUARY 6, 2005. AREA DESIGNATED AS FLOOD ZONE "X" (UNSHADED)
25.	FEDERALLY REGULATED NONTIDAL WETLAND AREA: FEDERALLY REGULATED NONTIDAL WETLAND AREA IMPACTED:	2.96 ± AC. 0.00 ± AC.
26.	DATUM:	HORIZONTAL: NAD83 VERTICAL: NAVD88 STATE PLANE.
27.	HENLOPEN TID	NOT INCLUDED
28.	STATE TAX DITCH AREAS AND RIGHT OF WAY LIMITS:	NOT INCLUDED
29.	LOCAL GOVERNMENT RESPONSIBLE FOR LAND USE APPROVAL:	SUSSEX COUNTY



LOT DETAIL
Scale: 1" = 40'

OWNERS
SPRING GARDEN, LLC.
16793 ISLAND FARM LAND
MILTON, DE 19968

DEVELOPER
RIBERA DEVELOPMENT, LLC.
8684 VETERAN'S HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

ENGINEER/ PLANNER
PENNONI ASSOCIATES INC.
18072 DAVIDSON DRIVE
MILTON, DE 19968
(302) 684-8030

SURVEYOR
PENNONI ASSOCIATES, INC.

ENVIRONMENTAL CONSULTANT
PENNONI ASSOCIATES INC.
18072 DAVIDSON DRIVE
MILTON, DE 19968
(302) 684-8030

ENVIRONMENTAL CONSULTANT
ACCENT ENVIRONMENTAL
PO BOX 788
MILLSBORO, DE 19966
302-352-1700

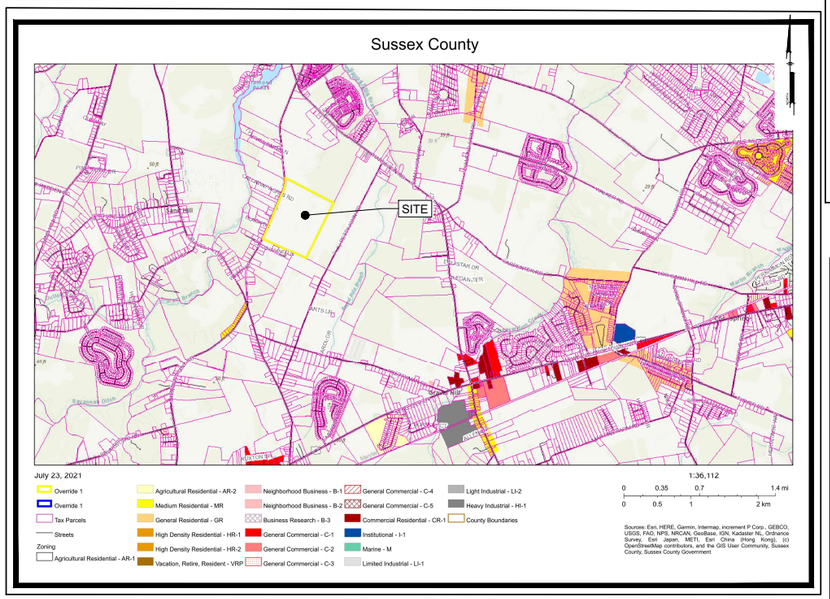
SCHOOL DISTRICT
CAPE HENLOPEN

FIRE DISTRICT
MILTON STATION (85)

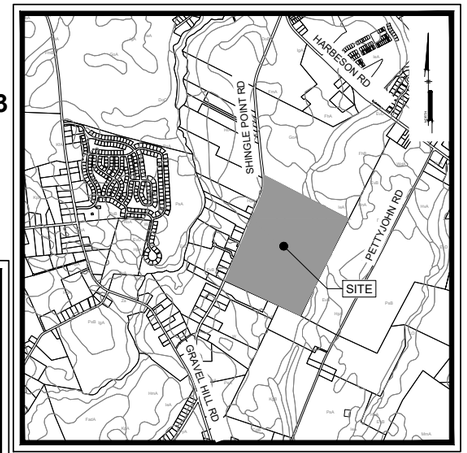
POSTAL DISTRICT
MILTON (19968)

WATER UTILITY
ARTESIAN

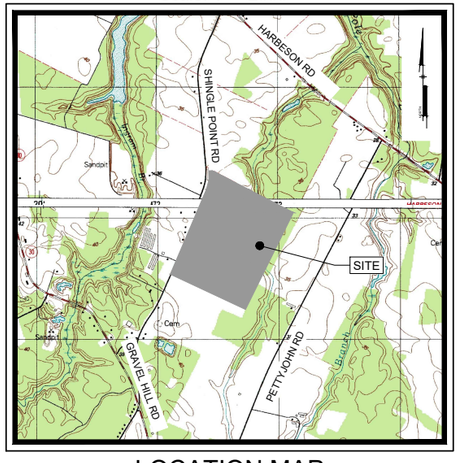
SEWER UTILITY
ARTESIAN



ZONING MAP
Scale: 1" = 3500'



SOILS MAP
Scale: 1" = 2000'



LOCATION MAP
Scale: 1" = 2000'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		CURB
		EDGE OF PAVEMENT
		PAVEMENT
		EDGE OF GRAVEL
		EASEMENT
		FENCE
		PROPERTY LINE/ RIGHT OF WAY
		BUILDING RESTRICTION LINE
		PROPERTY, CORNER FOUND
		PROPERTY, ADJOINING LINED
		SITE, MAIL BOX
		SITE, TRAFFIC SIGN
		SOIL BOUNDARY
WaC		SOIL LABEL
		STORM SEWER, INLET
		STORM SEWER,HEADWALL
		STORM SEWER, MANHOLE
D	D	STORM SEWER, UNDERGROUND
101	101	MINOR CONTOUR
100	100	MAJOR CONTOUR
X 100.5	35.00	SPOT ELEVATION
		TREE LINE
W	W	WATER, UNDERGROUND
		WATER VALVE
		WATER MAIN
		CLEAN OUT
S	S	SANITARY SEWER, UNDERGROUND
FM	FM	SANITARY SEWER, FORCED MAIN
		SANITARY SEWER, MANHOLE
UE	E	POWER-UNDERGROUND ELECTRIC
		POWER, UTILITY POLE
		STREET LIGHT
		BOUNDARY OF FEDERALLY REGULATED WETLANDS (USACOE)
		BOUNDARY OF DNREC (STATE) REGULATED TIDAL WETLAND
		LANDSCAPE BUFFER
		ROADWAY CENTERLINE
		FEDERALLY REGULATED NON-TIDAL WETLANDS (USACOE)
		WETLAND BUFFER
		CONCRETE SIDEWALK

CALL BEFORE YOU DIG
Call Miss Utility of Delmarva
800-282-8555
Ticket Number(s):

WETLANDS CERTIFICATION:
I, JOHN-THOMAS GRAUPENSPERGER, PWS. DO HEREBY STATE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF THAT THE INFORMATION CONTAINED IN THE PLANS SPECIFICATIONS AND REPORTS HAVE BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENVIRONMENTAL PRACTICES, IS TRUE AND CORRECT, AND IS IN CONFORMANCE WITH THE BOUNDARIES OF WATERS OF THE UNITED STATES INCLUDING WETLANDS SUBJECT TO THE CORPS OF ENGINEERS REGULATORY PROGRAM.

SIGNATURE DATE

JOHN-THOMAS GRAUPENSPERGER, PWS NO. 2339
PENNONI ASSOCIATES, INC
18072 DAVIDSON DRIVE
MILTON, DE 19968
OFFICE (302) 684-8030 - FAX (302) 684-8054
JGRAUPENSPERGER@PENNONI.COM

ENGINEER CERTIFICATION:
IT IS HEREBY CERTIFIED THAT I AM A REGISTERED ENGINEER IN THE STATE OF DELAWARE, THAT THE INFORMATION SHOWN HEREON HAS BEEN PREPARED UNDER MY SUPERVISION, AND TO MY BEST KNOWLEDGE COMPLIES WITH APPLICABLE STATE AND LOCAL REGULATIONS AND ORDINANCES. THE DESIGN REPRESENTS GOOD ENGINEERING PRACTICES AS REQUIRED BY THE APPLICABLE LAWS OF THE STATE OF DELAWARE.

SIGNATURE DATE

ALAN DECKTOR, PE (DE PE#17771)
PENNONI ASSOCIATES, INC
18072 DAVIDSON DRIVE
MILTON, DE 19968
OFFICE (302) 684-8030 - FAX (302) 684-8054
ADECKTOR@PENNONI.COM

APPROVED BY

CHAIRMAN OR SECRETARY OF PLANNING & ZONING COMMISSION DATE

PRESIDENT OF SUSSEX COUNTY COUNCIL (2021-25) DATE

SUSSEX CONSERVATION DISTRICT

NAME DATE

OWNER CERTIFICATION:
I HEREBY CERTIFY THAT I AM THE OWNER OF THE PROPERTY DESCRIBED AS SHOWN ON THIS PLAN, THAT THE PLAN WAS MADE AT MY DIRECTION, THAT I ACKNOWLEDGE THE SAME TO BE MY ACT, AND DESIRE THE PLAN TO BE RECORDED AS SHOWN IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

SPRING GARDEN LLC DATE
16793 ISLAND FARM LANE
MILTON, DE 19968

DEVELOPER CERTIFICATION:
I HEREBY CERTIFY THAT I AM THE DEVELOPER OF THE PROPERTY DESCRIBED AS SHOWN ON THIS PLAN, THAT THE PLAN WAS MADE AT MY DIRECTION, THAT I ACKNOWLEDGE THE SAME TO BE MY ACT, AND DESIRE THE PLAN TO BE RECORDED AS SHOWN IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

RIBERA DEVELOPMENT, LLC DATE
C/O JOHN STAMATO
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108
(443) 871-0486
JOHNSTAMATO@RIBERADEV.COM

SHEET #	DRAWING #	SHEET TITLE
1	PP0001	PRELIMINARY PLAT COVER SHEET
2	PP1000	PRELIMINARY PLAT DETAILS AND NOTES
3	PP1001	PRELIMINARY PLAT KEY SHEET
4	PP1002	PRELIMINARY PLAT
5	PP1003	PRELIMINARY PLAT
6	PP1004	PRELIMINARY PLAT
7	PP1005	PRELIMINARY PLAT
8	PP1006	PRELIMINARY PLAT
9	PP1007	PRELIMINARY PLAT
10	PP1008	PRELIMINARY PLAT
11	PP1009	PRELIMINARY PLAT
12	PP1010	PRELIMINARY PLAT
13	PP1011	PRELIMINARY PLAT PARCEL DATA
14	PP1012	PRELIMINARY PLAT PARCEL DATA

SHEET LIST TABLE

SOILS		
TYPE	DESCRIPTION	HYDROLOGIC SOIL
DoA	DOWNER SANDY LOAM, 0 TO 2 PERCENT SLOPES	A
EvB	EVESBORO LOAMY SAND, 0 TO 5 PERCENT SLOPES	A
FhA	FORT MOTT-HENLOPEN COMPLEX, 0 TO 2 PERCENT SLOPES	A
HnA	HAMMONTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	B
HpA	HENLOPEN LOAMY SAND, 0 TO 0 PERCENT SLOPES	A
HpB	HENLOPEN LOAMY SAND, 2 TO 5 PERCENT SLOPES	A
IeA	INGLESIDE LOAMY SAND, 0 TO 2 PERCENT SLOPES	C
PpB	PEPPERBOX LOAMY SAND, 0 TO 5 PERCENT SLOPES	A/D
PsA	PEPPERBOX-ROSEDALE COMPLEX, 0 TO 2 PERCENT SLOPES	A
RoA	ROSEDALE LOAMY SAND, 0 TO 2 PERCENT SLOPES	A
Za	ZEKIAH SANDY LOAM, FREQUENTLY FLOODED	B/D

BASED ON FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM 10005C0325L AND 10005C0310L, EFFECTIVE DATE JUNE 20, 2018, ARE DESIGNATED PARTLY AS FLOOD ZONE 'X', (UNSHADED), WHICH IS AN AREA DETERMINED TO LIE OUTSIDE THE 500 YEAR FLOODPLAIN.

PREPARED BY:
PENNONI ASSOCIATES INC.

18072 Davidson Drive
Milton, DE 19968
T 302.684.8030
F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

FOUR WINDS FARM
(2021-25)
TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE
PRELIMINARY PLAT COVER SHEET

RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS	BY
1	2022-03-18	REVISED PER PAZ COMMENTS	EOC

PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	EW/LM
APPROVED BY	AMD

PP0001

SHEET 1 OF 14

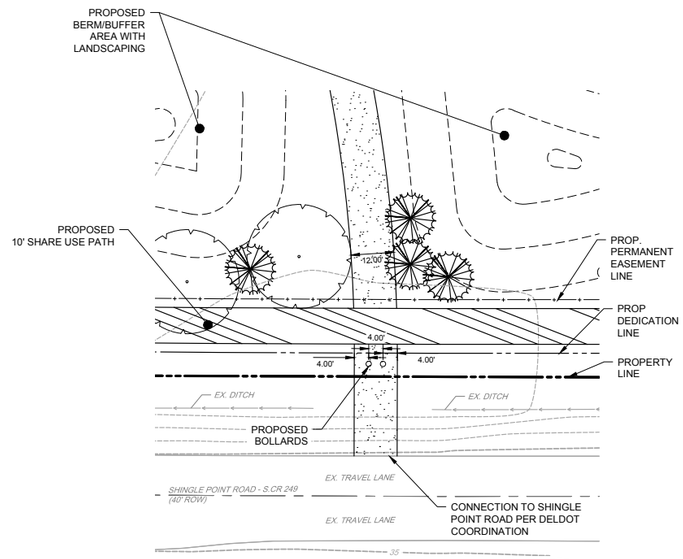
U:\Accounts\RIBER\RIBER21001 - Spring Garden Property\DESIGN_SHEETS\PP0001.dwg PLOTTED: 3/18/2022 3:11 PM, BY: EmmanuelFChinaka PLOTSTYLE: Pennoni HCB.ctb PROJECT STATUS: ---

GENERAL NOTES:

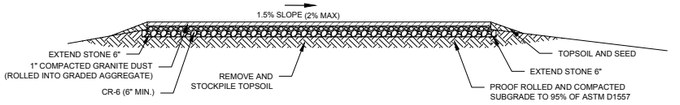
1. ALL PROPOSED ROADS SHOWN ARE PRIVATE AND ARE TO BE MAINTAINED BY THE DEVELOPER UNTIL SUCH TIME AS A HOMEOWNERS ASSOCIATION CAN PROVIDE FOR SAID MAINTENANCE. THE STATE AND COUNTY ASSUMES NO RESPONSIBILITY FOR THE FUTURE MAINTENANCE OF THESE STREETS.
2. STORMWATER SHALL BE HANDLED THROUGH THE DESIGN OF WET POND THAT WILL BE LOCATED ON SITE. THE MAINTENANCE OF ALL STORMWATER MANAGEMENT FACILITIES CONSTRUCTED WITHIN THIS SITE SHALL BE THE RESPONSIBILITY OF THE DEVELOPER UNTIL SUCH TIME AS A HOMEOWNER ASSOCIATION CAN PROVIDE FOR SAID MAINTENANCE.
3. BASED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) 10005C0325L AND 10005C0310L, REVISED JUNE 20, 2018; FLOOD INSURANCE RATE MAP (FIRM) 10005C0164J REVISED JANUARY 6, 2005. THE ENTIRE PROPERTY IS LOCATED IN AN AREA DESIGNATED AS FLOOD ZONE 'X', UNSHADED.
4. 2.96 ± AC. FEDERALLY REGULATED NON-TIDAL WETLANDS EXIST ON THIS SITE.
5. ALL SUBDIVISION LOTS SHALL HAVE FIVE-FOOT-WIDE PUBLIC UTILITY EASEMENTS ALONG LOT LINES FOR A TOTAL EASEMENT WIDTH OF AT LEAST TEN (10) FEET ALONG A LOT LINE COMMON TO TWO LOTS. EASEMENTS ALONG PERIMETER BOUNDARIES OF THE SUBDIVISION SHALL BE TEN (10) FEET IN WIDTH ON THE INTERIOR SIDE OF THE BOUNDARY. NO BUILDING, STRUCTURE OR OTHER PERMANENT OBSTRUCTION SHALL BE PLACED ON ANY EASEMENT.
6. THE SUSSEX CONSERVATION DISTRICT RESERVES THE RIGHT TO ADD, DELETE, OR MODIFY ANY EROSION AND SEDIMENT CONTROL MEASURES AS THEY DEEM NECESSARY.
7. ALL DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, BUT NOT IN PAVEMENT, SHALL BE TOPSOILED (6" MINIMUM), FERTILIZED AND SEEDED.
8. THE PROPOSED ENTRANCES/EXITS ARE PROPOSED ONLY, AND ARE SUBJECT TO REVIEW AND APPROVAL BY THE DELAWARE DEPARTMENT OF TRANSPORTATION BEFORE A CONSTRUCTION PERMIT IS ISSUED.
9. A 72 HOUR (MINIMUM) NOTICE SHALL BE GIVEN TO THE DISTRICT PERMIT SUPERVISOR PRIOR TO STARTING ENTRANCE CONSTRUCTION.
10. MISS UTILITY SHALL BE NOTIFIED THREE (3) DAYS PRIOR TO EXCAVATION.
11. ALL SIGNING FOR MAINTENANCE OF TRAFFIC IS THE CONTRACTORS RESPONSIBILITY, AND SHALL FOLLOW THE GUIDELINES SHOWN IN LATEST EDITION OF DE MUTCD.
12. DESIGN, FABRICATION, AND INSTALLATION OF ALL PERMANENT SIGNING SHALL BE AS OUTLINED IN THE LATEST VERSION OF THE DE MUTCD.
13. NO BUILDING PERMIT SHALL BE ISSUED UNTIL EITHER ALL REQUIRED IMPROVEMENTS HAVE BEEN INSTALLED, CONSTRUCTED, OR PLACED FOR THE LOT FOR WHICH THE PERMIT WILL BE ISSUED IN A MANNER ACCEPTABLE BY THE COUNTY AND STATE, OR UNTIL THE DEVELOPER FILES A PERFORMANCE BOND OR OTHER GUARANTEE WITH THE COUNTY FOR ANY UNCOMPLETED PUBLIC OR PRIVATE STREET OR OTHER REQUIRED IMPROVEMENT.
14. ALL PROPOSED FOREST BUFFERS ARE TO BE MAINTAINED BY THE DEVELOPER UNTIL SUCH TIME AS A HOMEOWNERS ASSOCIATION CAN PROVIDE FOR SAID MAINTENANCE.
15. ALL UNITS TO HAVE ACCESS FROM INTERNAL SUBDIVISION STREETS AND THAT NO DIRECT ACCESS FROM SCR #249 WILL BE PERMITTED.
16. ALL FIRE LANES, FIRE HYDRANTS AND FIRE DEPARTMENT CONNECTIONS SHALL BE MARKED IN ACCORDANCE WITH THE DELAWARE STATE FIRE PREVENTION REGULATIONS.
17. ALL SINGLE FAMILY DWELLINGS TO BE WOOD FRAME CONSTRUCTION WITH A MAXIMUM BUILDING HEIGHT OF THREE STORIES, NOT TO EXCEED 42' AND WILL NOT BE SPRINKLERED.
18. COMMON AREA: AN AREA OWNED AND USED IN COMMON BY RESIDENTS OF THE SUBDIVISION FOR RECREATION, LANDSCAPING AN STORM WATER MANAGEMENT.
19. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS AND ORDERS OF ANY PUBLIC BODY HAVING JURISDICTION. THE CONTRACTOR SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR SAFETY AND PROTECTION.
20. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING, TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION:
    - THE OWNER
    - SUSSEX CONSERVATION DISTRICT
    - DELDOT
21. THE CONTRACTOR SHALL PROVIDE SEDIMENT CONTROL MEASURES TO PROTECT STOCKPILE AREAS AND STORAGE AREAS. ALL AREAS USED BY THE CONTRACTOR FOR STAGING OPERATIONS SHALL BE FULLY RESTORED BY THE CONTRACTOR UPON COMPLETION OF THE PROJECT. IF THE STAGING AREA IS PAVED, IT SHALL BE RESTORED TO ITS ORIGINAL CONDITION. IF THE STAGING AREA IS UNPAVED, IT SHALL BE RE-GRADED, TOPSOILED, SEEDED AND MULCHED TO THE SATISFACTION OF THE ENGINEER. ALL COSTS ASSOCIATED WITH RESTORATION OF THE STAGING AREA SHALL BE AT THE CONTRACTOR'S EXPENSE. IF THE ENGINEER DETERMINES THAT A SATISFACTORY STAND OF GRASS DOES NOT EXIST AT THE TIME OF FINAL INSPECTION, ALL COSTS ASSOCIATED WITH RE-ESTABLISHING A SATISFACTORY STAND OF GRASS SHALL BE AT THE CONTRACTOR'S EXPENSE.
22. EQUIPMENT AND/OR STOCKPILE MATERIAL SHALL NOT BE STORED IN THE DRIPLINE AREA OF ANY TREE.
23. EXISTING UTILITIES ARE SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION. COMPLETENESS OR CORRECTNESS THEREOF IS NOT GUARANTEED. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO CONTACT THE UTILITY COMPANIES INVOLVED IN ORDER TO SECURE THE MOST ACCURATE INFORMATION AVAILABLE AS TO UTILITY LOCATION AND ELEVATION. NO CONSTRUCTION AROUND OR ADJACENT TO UTILITIES SHALL BEGIN WITHOUT NOTIFYING THEIR OWNERS AT LEAST 48 HOURS IN ADVANCE. THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE AND ANY DAMAGE DONE TO THEM DUE TO HIS/HER NEGLIGENCE SHALL BE IMMEDIATELY AND COMPLETELY REPAIRED AT THE CONTRACTORS EXPENSE. TO LOCATE EXISTING UTILITIES IN THE FIELD PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL CONTACT MISS UTILITY OF DELMARVA.
24. NO EASEMENTS WERE VERIFIED PER THIS PLAT.
25. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO LOCATE PROPERTY LINES AND RIGHT OF WAY LINES PRIOR TO CONSTRUCTION AND AVOID CONSTRUCTION ACTIVITIES ON PRIVATE PROPERTY AND/OR RIGHTS OF WAYS WHERE SAID CONSTRUCTION IS PROHIBITED. THE CONTRACTOR MAY CONDUCT CONSTRUCTION ACTIVITIES ON PRIVATE PROPERTY PROVIDED IF HE HAS OBTAINED PRIOR WRITTEN PERMISSION FROM THE PROPERTY OWNER AND HAS SUBMITTED A COPY OF SAID WRITTEN PERMISSION TO THE OWNER.
26. ROUTINE PERIODIC INSPECTIONS DURING CONSTRUCTION WILL BE PROVIDED BY THE OWNER. THESE INSPECTIONS DO NOT RELIEVE THE CONTRACTOR FROM HIS OBLIGATION AND RESPONSIBILITY FOR CONSTRUCTING ALL WORK IN STRICT ACCORDANCE WITH ALL STANDARDS AND SPECIFICATIONS AND CONSTRUCTION DOCUMENTS.
27. FINAL SET OF APPROVED CONSTRUCTION PLANS AND SPECIFICATIONS SHALL BE MAINTAINED ON THE JOB SITE AT ALL TIMES. FAILURE TO COMPLY WITH THIS PROVISION SHALL BE CONSIDERED CAUSE TO STOP THE WORK.
28. THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF CONTRACT DRAWINGS ON WHICH HE SHALL NOTE, IN RED, THE ALIGNMENTS AND INVERTS OF ALL UNDERGROUND UTILITIES INSTALLED OR ENCOUNTERED DURING THE PROSECUTION OF THE WORK. ALL DISCREPANCIES BETWEEN THE PLAN LOCATIONS AND ELEVATIONS OF BOTH THE EXISTING AND PROPOSED UTILITIES SHALL BE SHOWN ON THE AS-BUILT DRAWINGS TO BE MAINTAINED BY THE CONTRACTOR IN THE FIELD.
29. THE CONTRACTOR SHALL OPEN ONLY THAT SECTION OF TRENCH OR ACCESS PITS WHICH CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKING DAY. STEEL PLATES SHALL BE USED ON ANY TRENCH OR ACCESS PITS WHICH MUST REMAIN OPEN OVERNIGHT. THIS REQUIREMENT DOES NOT APPLY TO AREAS COMPLETELY CLOSED AND SECURE FROM VEHICULAR OR PEDESTRIAN TRAFFIC.
30. THE CONTRACTOR SHALL USE ONLY NEW MATERIALS, PARTS, AND PRODUCTS. ALL MATERIALS SHALL BE STORED SO AS TO ASSURE THE PRESERVATION OF THEIR QUALITY AND FITNESS FOR THE INTENDED WORK.
31. THE PROPOSED SIGN IS NOT APPROVED AS PART OF THIS SITE PLAN. A SEPARATE SUSSEX COUNTY PERMIT IS REQUIRED.
32. DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL WORK MUST BE PERFORMED IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, AS AMENDED AND ALL RULES AND REGULATIONS THERETO APPURTENANT.
33. ALL OPEN SPACE AREAS ON SITE ARE INTENDED FOR LANDSCAPE, RECREATION AND STORMWATER MANAGEMENT PRACTICES AND ARE THE RESPONSIBILITY OF THE DEVELOPER UNTIL A HOMEOWNER'S ASSOCIATION CAN ASSUME OWNERSHIP AND RESPONSIBILITY FOR THE OPEN SPACE.
34. THIS PROJECT IS NOT LOCATED WITHIN A WELLHEAD PROTECTION AREA PER CHAPTER 89 "SOURCE WATER PROTECTION" OF SUSSEX COUNTY CODE (89-6).
35. THE STREET LIGHTS ARE SHOWN GRAPHICALLY, THE DEVELOPER WILL COORDINATE WITH THE ELECTRIC COMPANY TO INSTALL THE STREET LIGHTS. THE TYPICAL LIGHT APPLICATION USED IS THE COLONIAL LIGHT, 18' IN HEIGHT.
36. ALL SECURITY LIGHTING (IF NECESSARY) SHALL BE DOWNWARD SCREENED SO THAT IT DOES NOT SHINE ON NEIGHBORING PROPERTIES OR ROADWAYS.
37. THE CONTRACTOR SHALL PROVIDE TEMPORARY SEED AND MULCH FOR ALL AREAS WHERE SOIL IS EXPOSED AND SILT FENCE IS NOT SPECIFIED, BY THE CLOSE OF EACH BUSINESS DAY.
38. THE CONTRACTOR SHALL MAINTAIN PUBLIC ROADS AND STREETS IN A BROOM SWEPT CONDITION AT ALL TIMES.
39. DELAWARE REGULATIONS PROHIBIT THE BURIAL OF CONSTRUCTION DEMOLITION DEBRIS, INCLUDING TREES AND STUMPS ON CONSTRUCTION SITES. ANY SOLID WASTE FOUND DURING THE EXCAVATION FOR STRUCTURES AND UTILITY LINES ON AND OFF SITE MUST BE REMOVED AND PROPERLY DISCARDED. ANY REMEDIAL ACTION REQUIRED IS THE RESPONSIBILITY OF THE CONTRACTOR.
40. THE CONTRACTOR SHALL REMOVE AND IMMEDIATELY REPLACE, RELOCATE, RESET OR RECONSTRUCT ALL OBSTRUCTIONS IN THE WORK AREA, INCLUDING, BUT NOT LIMITED TO, MAILBOXES, SIGNS, LANDSCAPING, LIGHTING, PLANTERS, CULVERTS, DRIVEWAYS, PARKING AREAS, CURBS, GUTTERS, FENCES, OR OTHER NATURAL OR MAN-MADE OBSTRUCTIONS. TRAFFIC CONTROL REGULATORY, WARNING AND INFORMATION SIGNS SHALL REMAIN FUNCTIONAL AND VISIBLE TO THE APPROPRIATE LANES OF TRAFFIC AT ALL TIMES, WITH THEIR RELOCATION KEPT TO A MINIMUM DISTANCE.
41. THE BOUNDARY INFORMATION & TOPOGRAPHY SHOWN ON THIS PLAN WAS TAKEN FROM DOCUMENTS OF PUBLIC RECORD AND IS ALSO THE RESULT OF AN ACTUAL FIELD SURVEY BY PENNONI ASSOCIATES, INC. DURING MAY 2020.
42. THIS PROPERTY IS LOCATED IN THE VICINITY OF LAND USED PRIMARILY FOR AGRICULTURAL PURPOSES UPON WHICH NORMAL AGRICULTURAL USES AND ACTIVITIES HAVE BEEN AFFORDED THE HIGHEST PRIORITY USE STATUS. IT CAN BE ANTICIPATED THAT SUCH AGRICULTURAL USES AND ACTIVITIES MAY NOW OR IN THE FUTURE INVOLVE DUST, NOISE, MANURE AND OTHER ODORS, THE USE OF AGRICULTURAL CHEMICALS, AND NIGHTTIME FARM OPERATIONS. THE USE AND ENJOYMENT OF THIS PROPERTY IS EXPRESSLY CONDITIONED ON ACCEPTANCE ON ANY ANNOYANCE OR INCONVENIENCE WHICH MAY RESULT FROM ANY SUCH AGRICULTURAL USES AND ACTIVITIES.

DELDOT RECORD/SITE PLAN NOTES (REVISED 3/21/2019):

1. ALL ENTRANCES SHALL CONFORM TO THE DELAWARE DEPARTMENT OF TRANSPORTATION'S (DELDOT'S) CURRENT DEVELOPMENT COORDINATION MANUAL AND SHALL BE SUBJECT TO ITS APPROVAL.
2. NO LANDSCAPING SHALL BE ALLOWED WITHIN THE RIGHT-OF-WAY UNLESS THE PLANS ARE COMPLIANT WITH SECTION 3.7 OF THE DEVELOPMENT COORDINATION MANUAL.
3. SHRUBBERY, PLANTINGS, SIGNS AND/OR OTHER VISUAL BARRIERS THAT COULD OBSTRUCT THE SIGHT DISTANCE OF A DRIVER PREPARING TO ENTER THE ROADWAY ARE PROHIBITED WITHIN THE DEFINED DEPARTURE SIGHT TRIANGLE AREA ESTABLISHED ON THIS PLAN. IF THE ESTABLISHED DEPARTURE SIGHT TRIANGLE AREA IS OUTSIDE THE RIGHT-OF-WAY OR PROJECTS ONTO AN ADJACENT PROPERTY OWNER'S LAND, A SIGHT EASEMENT SHOULD BE ESTABLISHED AND RECORDED WITH ALL AFFECTED PROPERTY OWNERS TO MAINTAIN THE REQUIRED SIGHT DISTANCE.
4. UPON COMPLETION OF THE CONSTRUCTION OF THE SIDEWALK OR SHARED-USE PATH ACROSS THIS PROJECT'S FRONTAGE AND PHYSICAL CONNECTION TO ADJACENT EXISTING FACILITIES, THE DEVELOPER, THE PROPERTY OWNERS OR BOTH ASSOCIATED WITH THIS PROJECT, SHALL BE RESPONSIBLE TO REMOVE ANY EXISTING ROAD TIE-IN CONNECTIONS LOCATED ALONG ADJACENT PROPERTIES, AND RESTORE THE AREA TO GRASS. SUCH ACTIONS SHALL BE COMPLETED AT DELDOT'S DISCRETION, AND IN CONFORMANCE WITH DELDOT'S DEVELOPMENT COORDINATION MANUAL.
5. PRIVATE STREETS CONSTRUCTED WITHIN THIS SUBDIVISION SHALL BE MAINTAINED BY THE DEVELOPER, THE PROPERTY OWNERS WITHIN THIS SUBDIVISION OR BOTH (TITLE 17 §131). DELDOT ASSUMES NO RESPONSIBILITIES FOR THE FUTURE MAINTENANCE OF THESE STREETS.
6. THE SIDEWALK SHALL BE THE RESPONSIBILITY OF THE DEVELOPER, THE PROPERTY OWNERS OR BOTH WITHIN THIS SUBDIVISION. THE STATE OF DELAWARE ASSUMES NO RESPONSIBILITY FOR THE FUTURE MAINTENANCE FOR THE SIDEWALK.
7. ALL LOTS SHALL HAVE ACCESS FROM THE INTERNAL SUBDIVISION STREET.
8. DRIVEWAYS WILL NOT BE PERMITTED TO BE PLACED AT CATCH BASIN LOCATIONS.
9. TO MINIMIZE RUTTING AND EROSION OF THE ROADSIDE DUE TO ON-STREET PARKING, DRIVEWAY AND BUILDING LAYOUTS MUST BE CONFIGURED TO ALLOW FOR VEHICLES TO BE STORED IN THE DRIVEWAY BEYOND THE RIGHT-OF-WAY, WITHOUT INTERFERING WITH SIDEWALK ACCESS AND CLARENCE.
10. THE DEVELOPER SHALL BE REQUIRED TO FURNISH AND PLACE RIGHT-OF-WAY MONUMENTS IN ACCORDANCE WITH DELDOT'S DEVELOPMENT COORDINATION MANUAL.
11. THE DEVELOPER SHALL BE REQUIRED TO FURNISH AND PLACE RIGHT-OF-WAY MARKERS TO PROVIDE A PERMANENT REFERENCE FOR RE-ESTABLISHING THE RIGHT-OF-WAY AND PROPERTY CORNERS ON LOCAL AND HIGHER ORDER FRONTAGE ROADS. RIGHT-OF-WAY MARKERS SHALL BE SET AND/OR PLACED ALONG THE FRONTAGE ROAD RIGHT-OF-WAY AT PROPERTY CORNERS AND AT EACH CHANGE IN RIGHT-OF-WAY ALIGNMENT IN ACCORDANCE WITH SECTION 3.2.4.2 OF THE DEVELOPMENT COORDINATION MANUAL.



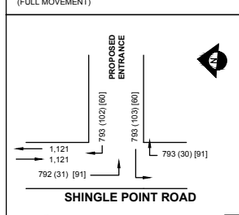
DETAIL- EMERGENCY PATH CONNECTION BLOW UP (1)
1" = 20'
PP1000



DETAIL- WALKING/JOGGING TRAIL (2)
NOT TO SCALE
PP1000

TRAFFIC GENERATION - SHINGLE POINT RD (SCR 249)

(FULL MOVEMENT)



ROAD TRAFFIC DATA:

FUNCTIONAL CLASSIFICATION - S249 (SHINGLE POINT RD.) - LOCAL
POSTED SPEED LIMIT - 50 MPH
AADT = 1,264 TRIPS (FROM 2019 DELDOT TRAFFIC SUMMARY)
10 YEAR PROJECTED AADT= 1.16 x 1,264 TRIPS = 1,466 TRIPS
10 YEAR PROJECTED AADT = SITE ADT = 4,637 TRIPS
TRAFFIC PATTERN GROUP = 7 (FROM 2019 DELDOT TRAFFIC SUMMARY)
PEAK HOUR - 17.89% x 4,637 TRIPS = 830 TRIPS
TRUCK VOLUME - 12.69% X 4,637 TRIPS = 588 TRIPS
DIRECTIONAL DISTRIBUTION = 62.32% / 37.68%

SITE TRAFFIC DATA:

SOURCE: ITE TRIP GENERATION MANUAL 10TH EDITION[2]

EXISTING LAND USE: VACANT FIELD
VACANT LAND - FARM FIELD
PROPOSED LAND USE:
336 DWELLINGS - SINGLE FAMILY DETACHED HOUSING (ITE 210)
Ln(T)=0.92 Ln(X) +2.71 = 3,171 TRIPS (WEEKDAY) (1,585 ENTER / 1,586 EXIT)

PEAK HOUR OF ADJACENT STREET TRAFFIC:
AM: T=0.71(X)+4.80 = 243 TRIPS (WEEKDAY) [25% / 75%] (61 / 182)
PM: Ln(T)=0.96Ln(X)+0.20 = 325 TRIPS (WEEKDAY) [63% / 37%] (205 / 120)

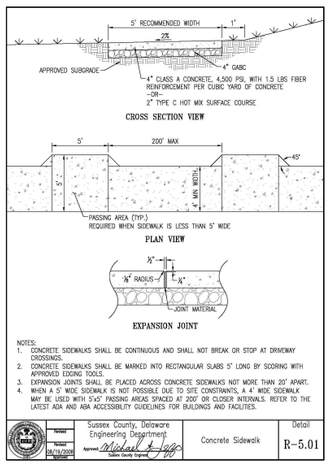
DIRECTIONAL DISTRIBUTION:
50% TO AND FROM THE NORTH (1,585 TRIPS) (31)[91] ENTER & (102)[60] EXIT
50% TO AND FROM THE SOUTH (1,586 TRIPS) (30)[91] ENTER & (103)[60] EXIT
TOTAL NEW TRIPS = 3,171 ADT
SITE TRUCK TRAFFIC = 159 TRIPS (5%)

TRAFFIC GENERATION DIAGRAM

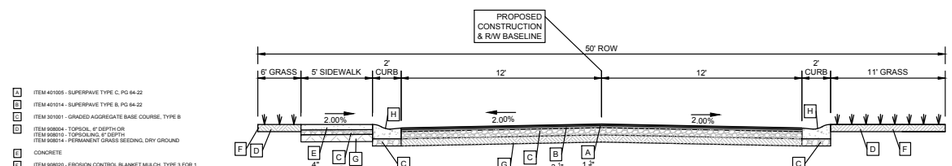
ADT PEAK HOUR (A.M.), ADT PEAK HOUR [P.M.]

[1] DIRECTIONAL DISTRIBUTION PROVIDED BY DELDOT
[2] DIRECTIONAL DISTRIBUTION PROVIDED BY ITE MANUAL

DESIGN VEHICLE = WB-40 & SU-30

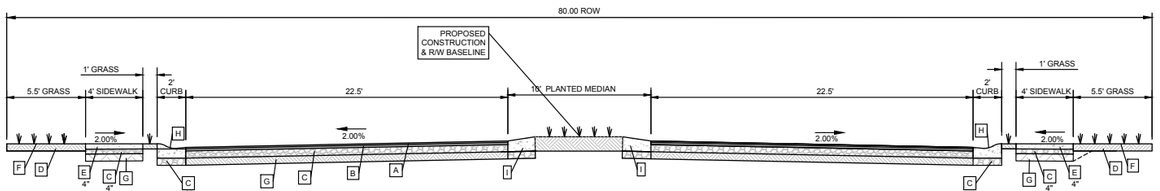


NOTE: THE SIDEWALK THICKNESS SHALL BE INCREASED TO 6" CONCRETE / 6" STONE BASE AT ALL PROPOSED DRIVEWAYS AND TRANSITION AREAS



- ITEM 401005 - SUPERPAVE TYPE C, PG 64-22
- ITEM 401014 - SUPERPAVE TYPE B, PG 64-22
- ITEM 301001 - GRADED AGGREGATE BASE COURSE, TYPE B
- ITEM 908004 - TOPSOIL, 6" DEPTH OR ITEM 908010 - TOPSOILING, 6" DEPTH
- ITEM 908014 - PERMANENT GRASS SEEDING, DRY GROUND
- CONCRETE
- ITEM 908020 - EROSION CONTROL BLANKET MULCH, TYPE 3 FOR 1 ROLL WITH MINIMUM 6" OF WIDTH
- PROOF ROLLED AND COMPACTED SUBGRADE TO 95% OF ASTM D1557
- ITEM 701010 - INTEGRAL PCC CURB AND GUTTER- TYPE 2
- ITEM 701010 - PORTLAND CEMENT CONCRETE CURB - TYPE 2

DETAIL- TYPICAL 50' ROW SECTION (AZALEA DRIVE, HONEYSUCKLE DRIVE) (3)
NOT TO SCALE
LAUREL DRIVE, MAYAPPLE DRIVE, TEABERRY LANE, TRILLIUM DRIVE, WISTERIA BLVD)
PP1000



DETAIL- TYPICAL 80' ROW SECTION (WISTERIA BLVD) (4)
NOT TO SCALE
PP1000

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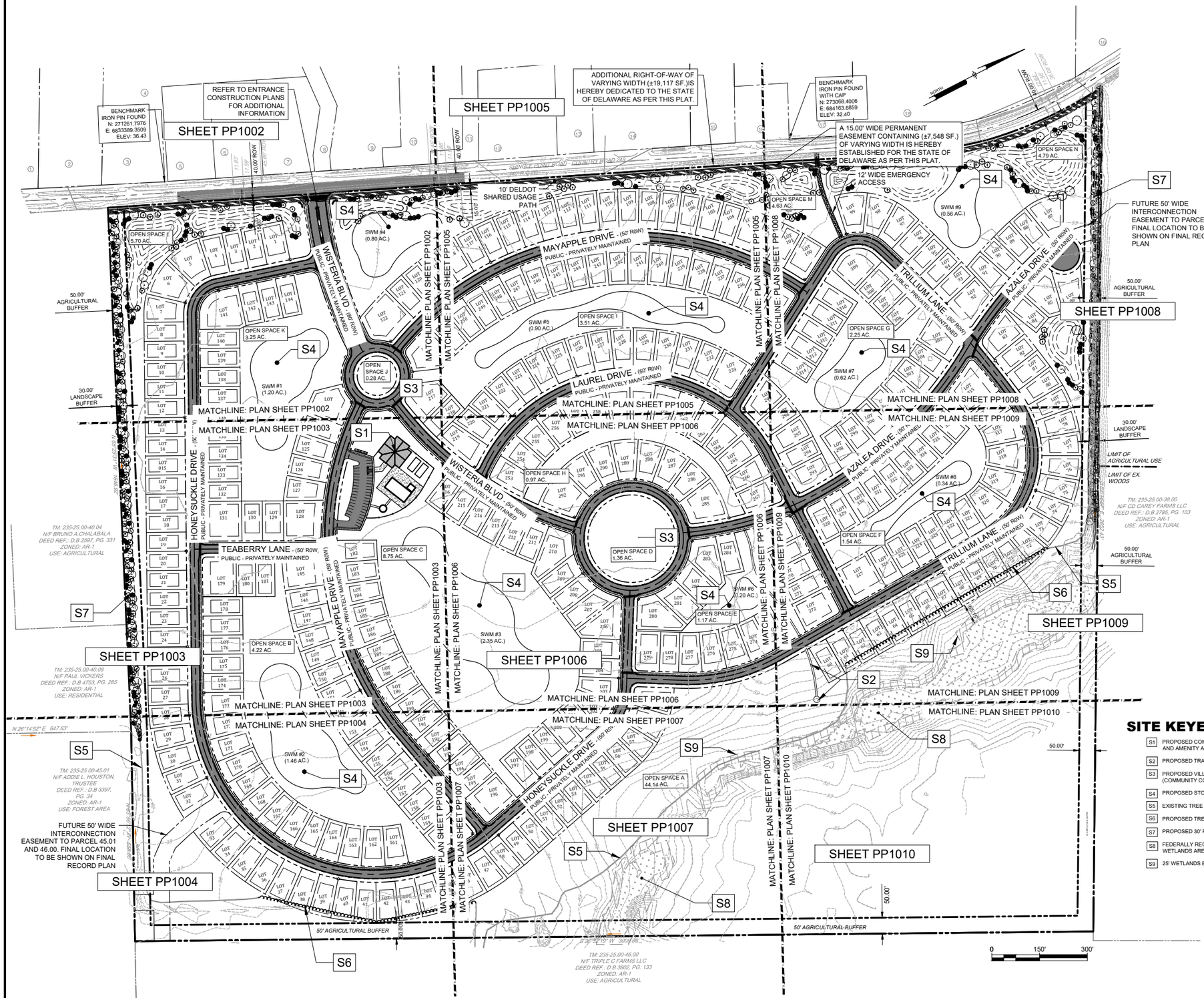
FOUR WINDS FARM SUBDIVISION
(2021-25)
TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE
PRELIMINARY PLAT DETAILS AND NOTES

RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS	BY
1	2022-03-18	REVISED PER P&Z COMMENTS	EOC

PROJECT	RIBER21001
DATE	2021-08-11
DRAWING SCALE	AS SHOWN
DRAWN BY	LM/EW
APPROVED BY	AMD

PP1000



TAX ID TABLE	
(1) TM: 235-25.00-27.00 N/F ROBERT & SANDRA DAVIDSON DEED REF.: D.B 3263, PG. 335 ZONED: AR-1 USE: RESIDENTIAL	(11) TM: 235-25.00-30.06 N/F ANTHONY & JESSICA SAVINI DEED REF.: D.B 5617, PG. 118 ZONED: AR-1 USE: AGRICULTURAL
(2) TM: 235-25.00-29.00 N/F PATRICIA A. PERRY DEED REF.: D.B 1922, PG. 310 ZONED: AR-1 USE: RESIDENTIAL	(12) TM: 235-25.00-32.00 N/F ROBERT& ANGELA NATRIN DEED REF.: D.B 5833, PG. 230 ZONED: AR-1 USE: RESIDENTIAL
(3) TM: 235-25.00-30.01 N/F BRIAN & TRACY MENGEL DEED REF.: D.B 5833, PG. 230 ZONED: AR-1 USE: RESIDENTIAL	(13) TM: 235-25.00-31.00 N/F DONALD & MARY FLY DEED REF.: D.B 0, PG. 0 ZONED: AR-1 USE: RESIDENTIAL
(4) TM: 235-25.00-30.11 N/F UNKNOWN DEED REF.: D.B4998, PG.256 ZONED: AR-1 USE: AGRICULTURAL	(14) TM: 235-25.00-33.00 N/F ANTHONY & JESSICA SAVINI DEED REF.: D.B 5617, PG. 118 ZONED: AR-1 USE: AGRICULTURAL
(5) TTM: 235-25.00-30.04 N/F PHILLIP & KAREN RAMMENGEL DEED REF.: D.B 4189, PG. 310 ZONED: AR-1 USE: RESIDENTIAL	(15) TM: 235-25.00-34.01 N/F JOSEPH. & JANET CALLAWAY DEED REF.: D.B 4954, PG. 327 ZONED: AR-1 USE: RESIDENTIAL / AGRICULTURAL
(6) TM: 235-25.00-30.05 N/F TIMOTHY & VALERIE BIGGS DEED REF.: D.B 5833, PG. 230 ZONED: AR-1 USE: RESIDENTIAL	(16) TM: 235-25.00-34.00 N/F MICHSEL & KATHLEEN SHOEMAKER DEED REF.: D.B 3674, PG. 334 ZONED: AR-1 USE: RESIDENTIAL / AGRICULTURAL
(7) TM: 235-25.00-30.00 N/F SHELLACE A. JAMES DEED REF.: D.B 4996, PG. 346 ZONED: AR-1 USE: RESIDENTIAL	(17) TM: 235-25.00-34.04 N/F BRYAN CALLAWAY DEED REF.: D.B 4962, PG. 15 ZONED: AR-1 USE: RESIDENTIAL / AGRICULTURAL
(8) TM: 235-25.00-30.09 N/F SAVINI COMPLETE CONSTRUCTION INC. DEED REF.: D.B 4638, PG. 336 ZONED: AR-1 USE: INDUSTRIAL	(18) TM: 235-25.00-35.00 N/F BRYAN CALLAWAY DEED REF.: D.B 4943, PG. 259 ZONED: AR-1 USE: RESIDENTIAL / AGRICULTURAL
(9) TM: 235-25.00-30.07 N/F JAMES & JOAN BAKER DEED REF.: D.B 4354, PG. 158 ZONED: AR-1 USE: RESIDENTIAL	(19) TM: 235-25.00-36.00 N/F CD CAREY FARM LLC. DEED REF.: D.B 2785, PG. 103 ZONED: AR-1 USE: AGRICULTURAL
(10) TM: 235-25.00-30.12 N/F CHARLES & MARRY ANN SCHMID DEED REF.: D.B 4356, PG. 38 ZONED: AR-1 USE: RESIDENTIAL	

OPEN SPACE BREAKDOWN	
OPEN SPACE	AREA
A	44.14 AC.
B	4.22 AC.
C	8.75 AC.
D	1.36 AC.
E	1.17 AC.
F	1.54 AC.
G	2.25 AC.
H	0.97 AC.
I	3.51 AC.
J	0.28 AC.
K	3.25 AC.
L	5.70 AC.
M	4.63 AC.
N	4.79 AC.
TOTAL	86.56 AC.

SITE KEYED NOTES

- S1 PROPOSED COMMUNITY CLUBHOUSE AND AMENITY AREA
- S2 PROPOSED TRAIL AND OVERLOOK
- S3 PROPOSED VILLAGE GREENS (COMMUNITY COMMONS)
- S4 PROPOSED STORM WATER PONDS, TYP.
- S5 EXISTING TREE LINE
- S6 PROPOSED TREE LINE
- S7 PROPOSED 30' FOREST/LANDSCAPE BUFFER
- S8 FEDERALLY REGULATED NON-TIDAL WETLANDS AREA
- S9 25' WETLANDS BUFFER

PENNONI ASSOCIATES INC.
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FOUR WINDS FARM

(2021-25)
TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE

PRELIMINARY PLAT KEY SHEET

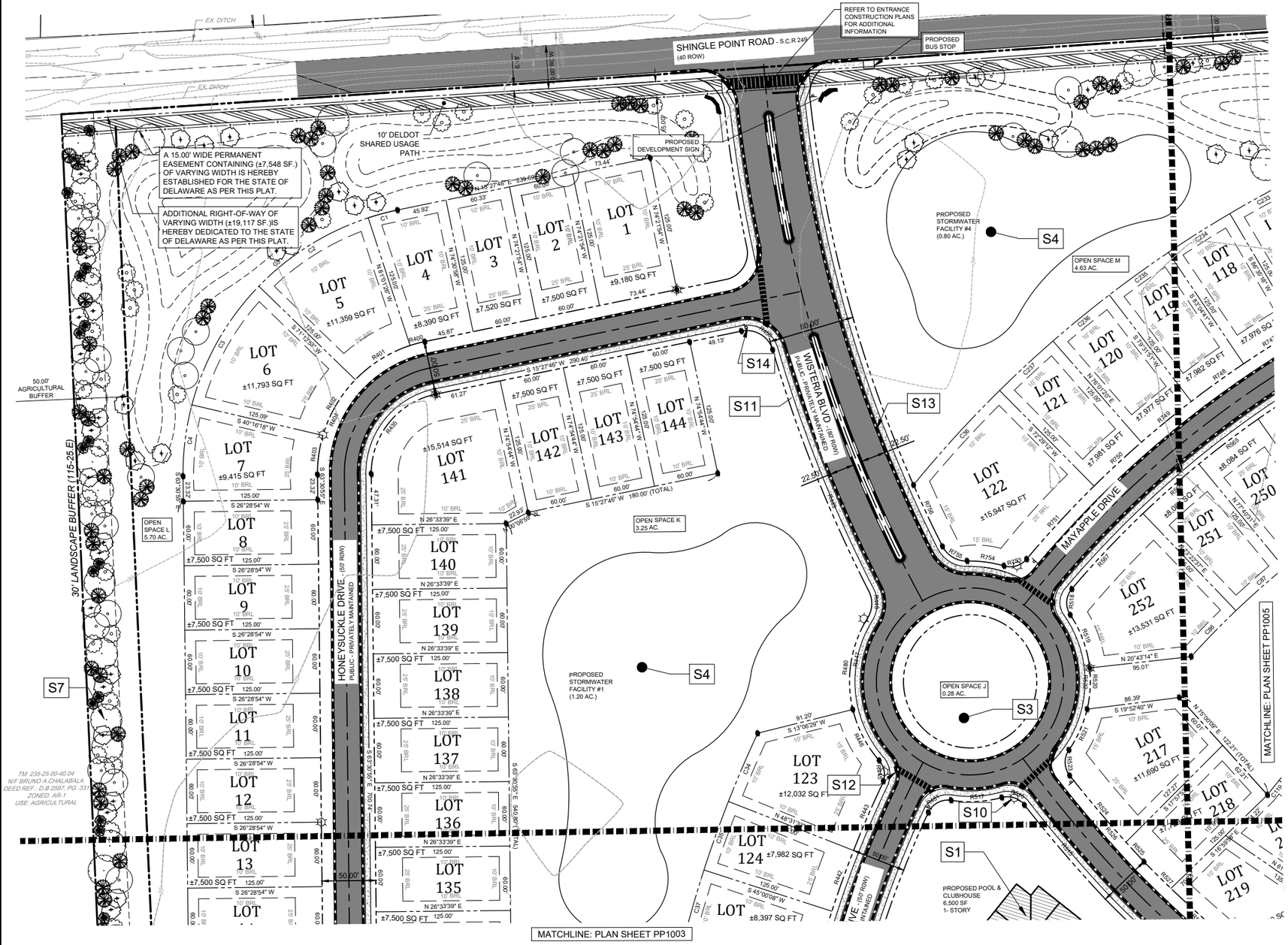
RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

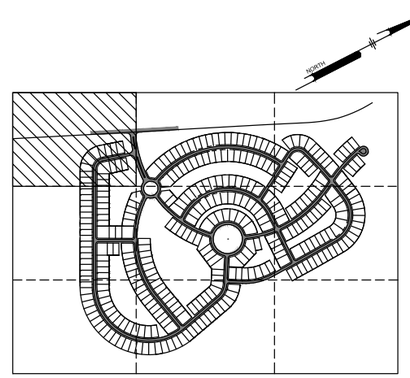
BY	REVISIONS	NO.	DATE
EOC	REVISED PER PJZ COMMENTS	1	2022-03-18

PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	EW/LM
APPROVED BY	AMD

PP1001

SHEET 3 OF 14





SITE KEY MAP

SITE KEYED NOTES

- S1 PROPOSED COMMUNITY CLUBHOUSE AND AMENITY AREA
- S3 PROPOSED VILLAGE GREENS (COMMUNITY COMMONS)
- S4 PROPOSED STORM WATER PONDS, TYP.
- S7 PROPOSED 30' FOREST/LANDSCAPE BUFFER
- S10 PROPOSED STREET LIGHT, TYP.
- S11 PROPOSED CONCRETE SIDEWALK
- S12 PROPOSED ADA RAMP, DELDOT TYPE 1, TYP.
- S13 PROPOSED CURB, TYP.
- S14 PROPOSED STOP SIGN, TYP.

0 50' 100'

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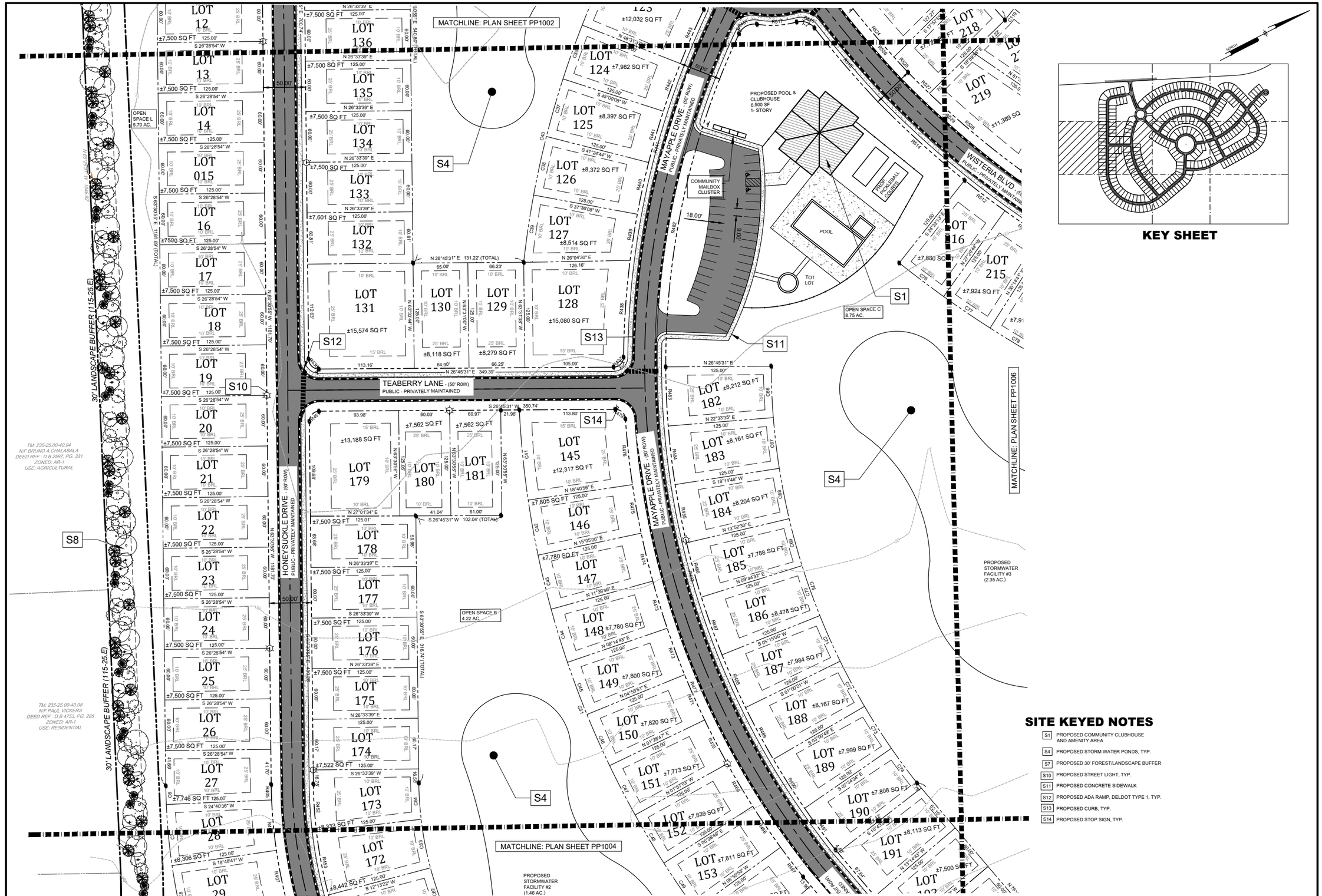
PP1002

SHEET 4 OF 14



KEY SHEET

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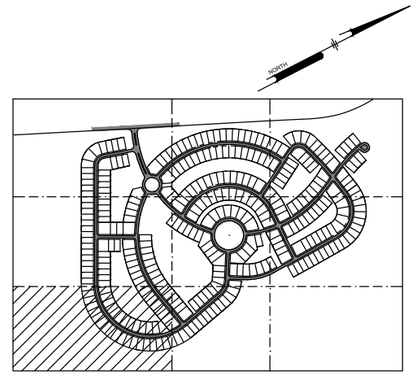
PP1003

SHEET 5 OF 14



KEY SHEET

MATCHLINE: PLAN SHEET PP1003

MATCHLINE: PLAN SHEET PP1007

PROPOSED STORMWATER FACILITY #2 (1.46 AC.)

HONEYSUCKLE DRIVE - PUBLIC - PRIVATELY MAINTAINED - (50' ROW)

MAPLE APPLE DRIVE - PUBLIC - PRIVATELY MAINTAINED - (40' ROW)

OPEN SPACE L 5.70 AC.

OPEN SPACE A 44.14 AC.

50' AGRICULTURAL BUFFER

FUTURE 50' WIDE INTERCONNECTION EASEMENT TO PARCEL 45.00 AND 46.00. FINAL LOCATION TO BE SHOWN ON FINAL RECORD PLAN

TM: 235-25.00-40.08
N/F PAUL VICKERS
DEED REF.: D.B 4753, PG. 285
ZONED: AR-1
USE: RESIDENTIAL

TM: 235-25.00-45.01
N/F ADDIE L. HOUSTON, TRUSTEE
DEED REF.: D.B 3397, PG. 34
ZONED: AR-1
USE: FOREST AREA

TM: 235-25.00-46.00
N/F TRIPLE C FARMS LLC
DEED REF.: D.B 3802, PG. 133
ZONED: AR-1
USE: AGRICULTURAL

SITE KEYED NOTES

- S4 PROPOSED STORM WATER PONDS, TYP.
- S5 EXISTING TREE LINE
- S6 PROPOSED TREE LINE
- S7 PROPOSED 30' FOREST/LANDSCAPE BUFFER
- S10 PROPOSED STREET LIGHT, TYP.
- S11 PROPOSED CONCRETE SIDEWALK
- S12 PROPOSED ADA RAMP, DELDOT TYPE 1, TYP.
- S13 PROPOSED CURB, TYP.
- S14 PROPOSED STOP SIGN, TYP.

0 50' 100'

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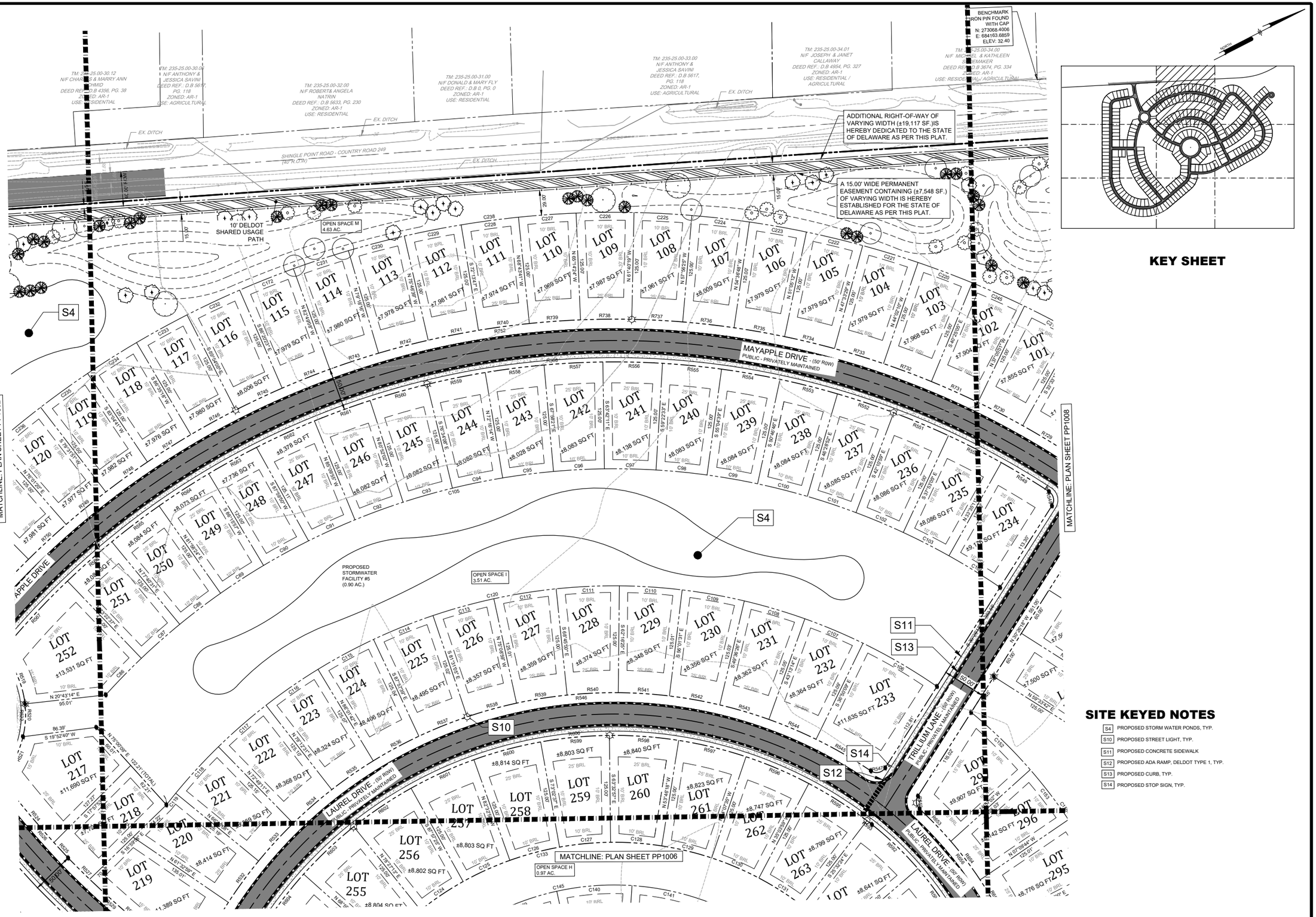
PP1004

SHEET 6 OF 14



KEY SHEET

SITE KEYED NOTES

- S4 PROPOSED STORM WATER PONDS, TYP.
- S10 PROPOSED STREET LIGHT, TYP.
- S11 PROPOSED CONCRETE SIDEWALK
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- S13 PROPOSED CURB, TYP.
- S14 PROPOSED STOP SIGN, TYP.

Pennoni

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PP1005

SHEET 7 OF 14

MATCHLINE: PLAN SHEET PP1005

MATCHLINE: PLAN SHEET PP1003

MATCHLINE: PLAN SHEET PP1009

MATCHLINE: PLAN SHEET PP1007

LAUREL DRIVE - (60' ROW) PUBLIC - PRIVATELY MAINTAINED

WISTERIA BLVD. - (50' ROW) PUBLIC - PRIVATELY MAINTAINED

LIGHTHOUSE CIRCLE - (50' ROW) PUBLIC - PRIVATELY MAINTAINED

AZALEA DRIVE - (50' ROW) PUBLIC - PRIVATELY MAINTAINED

TRILLIUM LANE - (50' ROW) PUBLIC - PRIVATELY MAINTAINED

OPEN SPACE H 0.97 AC.

OPEN SPACE D 1.36 AC.

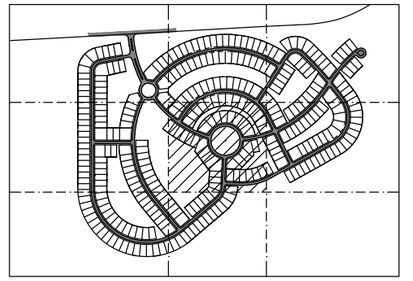
OPEN SPACE C 8.75 AC.

OPEN SPACE A 44.14 AC.

OPEN SPACE E 1.17 AC.

PROPOSED STORMWATER FACILITY #3 (2.35 AC.)

PROPOSED STORMWATER FACILITY #6 (0.20 AC.)



KEY SHEET

SITE KEYED NOTES

- S2 PROPOSED TRAIL AND OVERLOOK
- S3 PROPOSED VILLAGE GREENS (COMMUNITY COMMONS)
- S4 PROPOSED STORM WATER PONDS, TYP.
- S10 PROPOSED STREET LIGHT, TYP.
- S11 PROPOSED CONCRETE SIDEWALK
- S12 PROPOSED ADA RAMP, DELDOT TYPE 1, TYP.
- S13 PROPOSED CURB, TYP.
- S14 PROPOSED STOP SIGN, TYP.

0 50' 100'

PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

FOUR WINDS FARM

(2021-25)

TAX ID 235-25.00-39.00

SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE

PRELIMINARY PLAT

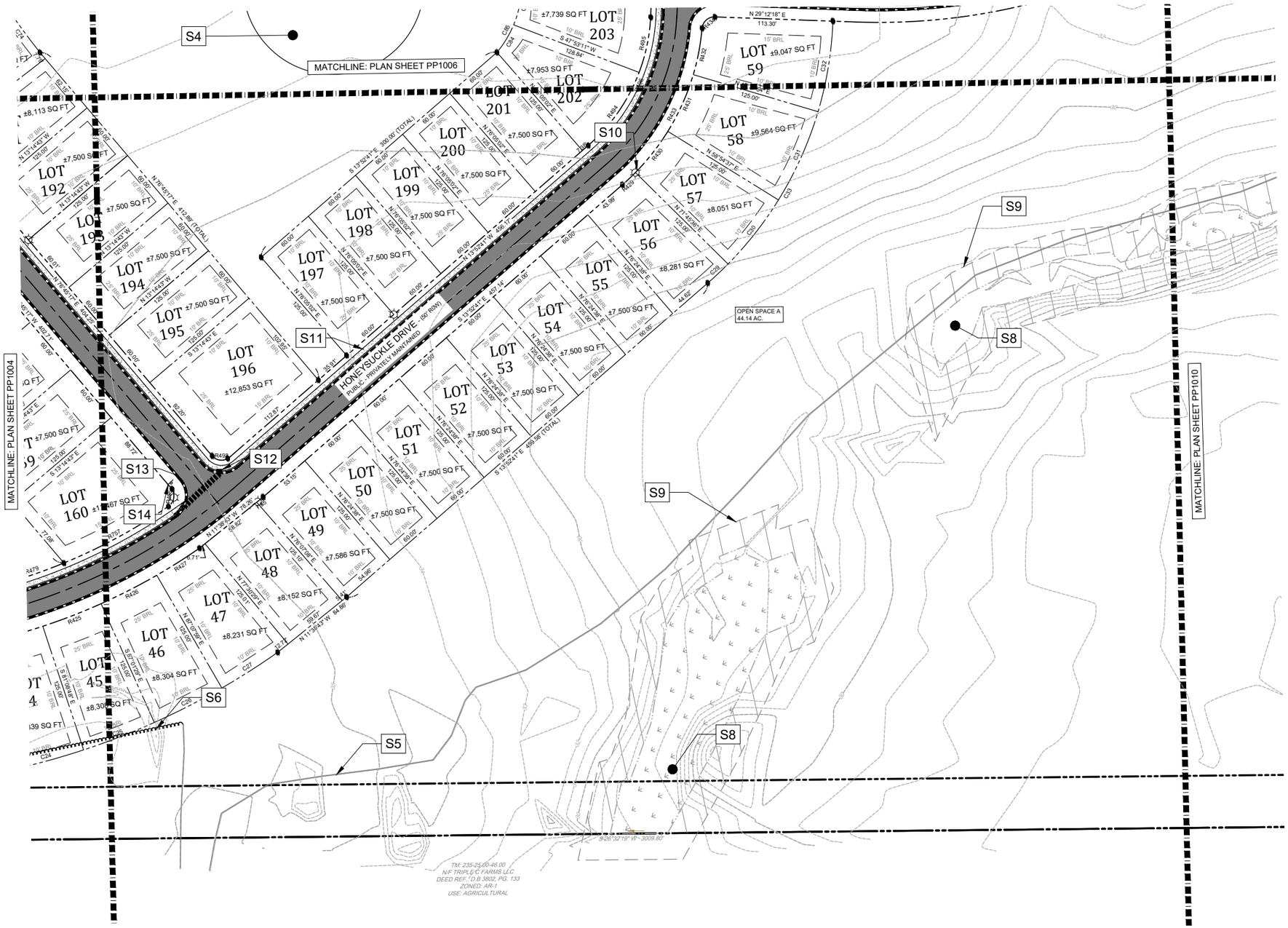
RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

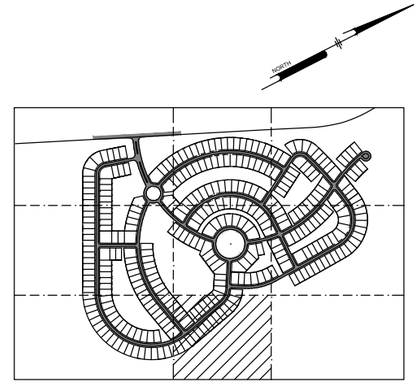
NO.	DATE	REVISIONS	BY
1	2022-03-18	REVISED PER PAZ COMMENTS	EOC

PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	LM/EW
APPROVED BY	AMD

PP1006

SHEET 8 OF 14





KEY SHEET

SITE KEYED NOTES

- S4 PROPOSED STORM WATER PONDS, TYP.
- S5 EXISTING TREE LINE
- S6 PROPOSED TREE LINE
- S8 FEDERALLY REGULATED NON-TIDAL WETLANDS AREA
- S9 25' WETLANDS BUFFER
- S10 PROPOSED STREET LIGHT, TYP.
- S11 PROPOSED CONCRETE SIDEWALK
- S12 PROPOSED ADA RAMP, DELDOT TYPE 1, TYP.
- S13 PROPOSED CURB, TYP.
- S14 PROPOSED STOP SIGN, TYP.

0 50' 100'

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FOUR WINDS FARM
(2021-25)
TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE
PRELIMINARY PLAT

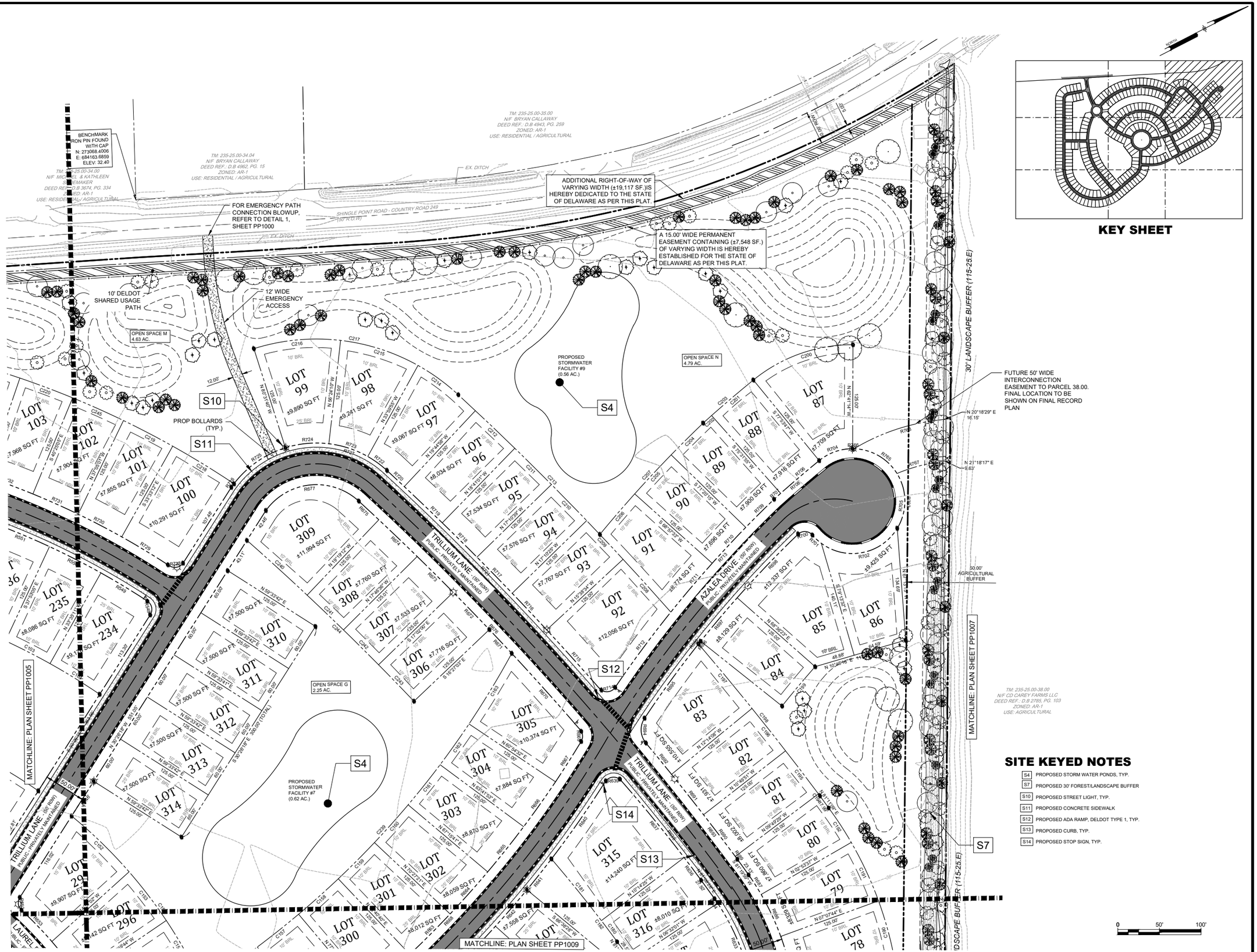
RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

BY	EOC	NO.	REVISIONS	DATE
		1	REVISED PER PAZ COMMENTS	2022-03-18

PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	LM/EW
APPROVED BY	AMD

PP1007

SHEET 9 OF 14



KEY SHEET

SITE KEYED NOTES

- S4 PROPOSED STORM WATER PONDS, TYP.
- S7 PROPOSED 30' FOREST/LANDSCAPE BUFFER
- S10 PROPOSED STREET LIGHT, TYP.
- S11 PROPOSED CONCRETE SIDEWALK
- S12 PROPOSED ADA RAMP, DELDOT TYPE 1, TYP.
- S13 PROPOSED CURB, TYP.
- S14 PROPOSED STOP SIGN, TYP.

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NO.	DATE	REVISIONS	BY
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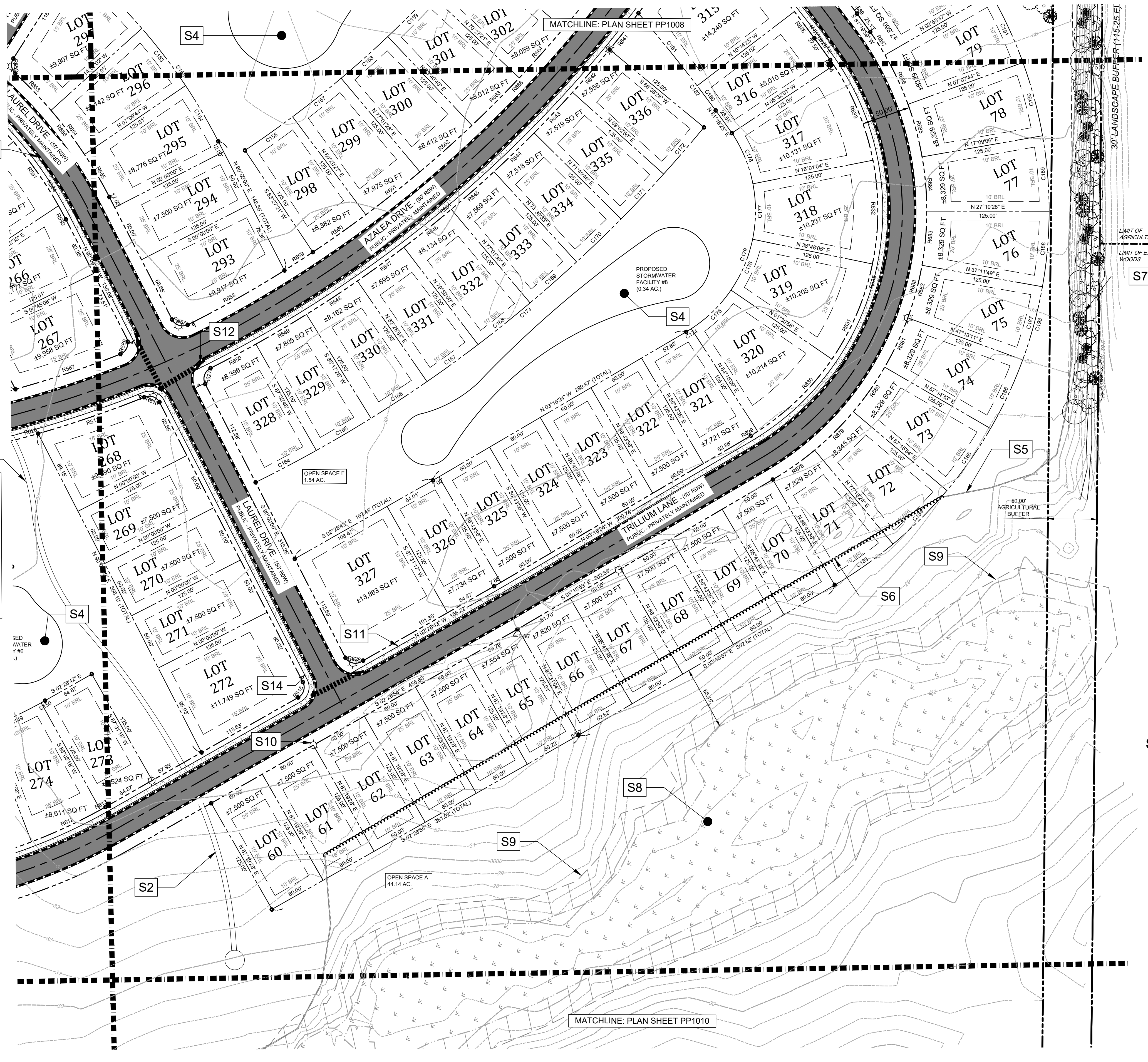
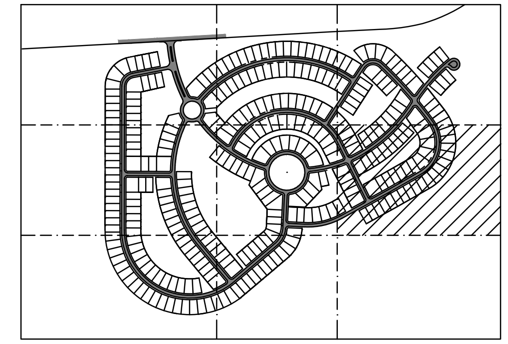
PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	LM/EW
APPROVED BY	AMD

PP1008

SHEET 10 OF 14





KEY SHEET

SITE KEYED NOTES

S2	PROPOSED TRAIL AND OVERLOOK
S4	PROPOSED STORM WATER PONDS, TYP.
S5	EXISTING TREE LINE
S6	PROPOSED TREE LINE
S7	PROPOSED 30' FOREST/LANDSCAPE BUFFER
S8	FEDERALLY REGULATED NON-TIDAL WETLANDS AREA
S9	25' WETLANDS BUFFER
S10	PROPOSED STREET LIGHT, TYP.
S11	PROPOSED CONCRETE SIDEWALK
S12	PROPOSED ADA RAMP, DELDOT TYPE 1, TYP.
S13	PROPOSED CURB, TYP.

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FOUR WINDS FARM

(2021-25)
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MILLERSVILLE, MD 21108

DATE	NO.	REVISIONS	BY
2022-03-18	1	REVISED PER P&Z COMMENTS	EOC

PROJECT	RIBER21001
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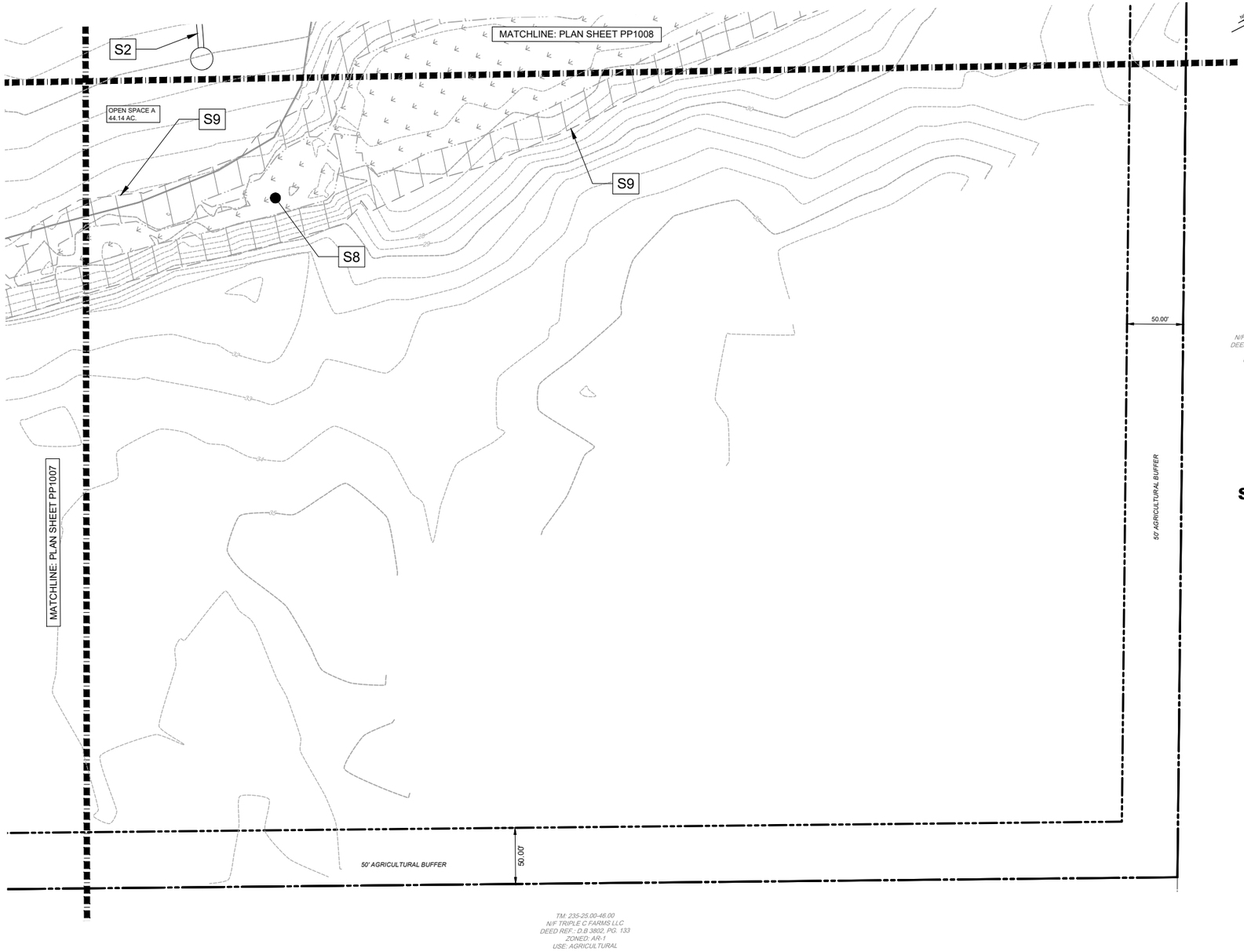
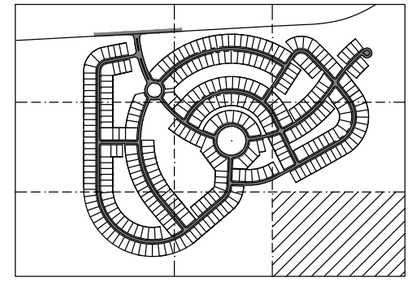
DRAWING SCALE	AS SHOWN
DRAWN BY	LM/EW
APPROVED BY	AMD

PP1009





KEY SHEET

SITE KEYED NOTES

- S2 PROPOSED TRAIL AND OVERLOOK
- S8 FEDERALLY REGULATED NON-TIDAL WETLANDS AREA
- S9 25' WETLANDS BUFFER

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FOUR WINDS FARM

(2021-25)

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SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE

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PROJECT	RIBER21001
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DRAWING SCALE	AS SHOWN
DRAWN BY	LM/EW
APPROVED BY	AMD

PP1010

SHEET 12 OF 14

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C1	250.00'	006°29'12"	28.30'	14.17	28.29'	S 12°13'10" W
C2	250.00'	027°46'02"	121.16'	61.79	119.98'	S 04°54'27" E
C3	250.00'	029°21'31"	128.10'	65.49	126.70'	S 33°28'14" E
C4	250.00'	015°21'55"	67.04'	33.72	66.84'	S 55°49'57" E
C5	250.00'	078°58'41"	344.61'	206.00	317.97'	S 24°01'34" E
C6	693.73'	001°50'14"	22.24'	11.12	22.24'	S 64°26'18" E
C7	715.59'	005°49'57"	72.85'	36.45	72.81'	S 68°14'32" E
C8	717.85'	005°48'53"	72.85'	36.46	72.82'	S 74°09'09" E
C9	710.34'	005°52'33"	72.85'	36.46	72.82'	S 80°00'48" E
C10	710.34'	005°52'33"	72.85'	36.46	72.82'	S 85°53'21" E
C11	710.34'	006°51'09"	84.96'	42.53	84.91'	N 87°44'48" E
C12	710.34'	032°09'01"	398.59'	204.70	393.38'	S 79°36'16" E
C13	710.34'	006°34'53"	81.59'	40.84	81.55'	N 76°58'51" E
C14	710.34'	005°57'29"	73.87'	36.97	73.83'	N 70°42'40" E
C15	710.34'	005°49'00"	72.11'	36.09	72.08'	N 64°49'26" E
C16	710.34'	005°56'09"	73.59'	36.83	73.56'	N 58°56'51" E
C17	710.34'	005°57'17"	73.83'	36.95	73.79'	N 53°00'08" E
C18	710.34'	006°02'00"	74.80'	37.43	74.77'	N 47°00'30" E
C19	710.34'	005°45'30"	71.39'	35.72	71.36'	N 41°06'45" E
C20	710.34'	005°53'48"	73.11'	36.58	73.07'	N 35°17'06" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C21	710.34'	005°49'40"	72.25'	36.16	72.22'	N 29°25'22" E
C22	710.34'	005°48'15"	71.96'	36.01	71.93'	N 23°36'25" E
C23	710.34'	005°56'50"	73.73'	36.90	73.70'	N 17°43'52" E
C24	710.34'	005°52'40"	72.87'	36.47	72.84'	N 11°49'07" E
C25	710.34'	005°52'42"	72.88'	36.47	72.85'	N 05°56'26" E
C26	710.34'	005°52'21"	72.80'	36.43	72.77'	N 00°03'54" E
C27	710.34'	005°07'58"	63.64'	31.84	63.61'	N 05°26'15" W
C28	710.34'	088°16'31"	1094.42'	689.27	989.34'	N 36°08'02" E
C29	350.00'	004°22'15"	26.70'	13.36	26.69'	N 16°03'49" W
C30	350.00'	012°50'17"	78.42'	39.38	78.26'	N 24°40'05" W
C31	350.00'	015°14'53"	93.15'	46.85	92.87'	N 38°42'40" W
C32	350.00'	014°27'35"	88.33'	44.40	88.10'	N 53°33'54" W
C33	350.00'	046°55'00"	286.60'	151.88	278.66'	N 37°20'11" W
C34	1101.22'	003°35'38"	69.07'	34.55	69.06'	N 39°40'38" W
C35	1101.22'	003°31'25"	67.72'	33.87	67.71'	S 43°14'10" E
C36	989.69'	005°59'01"	103.36'	51.73	103.31'	S 20°16'38" E
C37	1101.22'	003°41'57"	71.10'	35.56	71.08'	S 46°50'50" E
C38	1101.22'	003°42'03"	71.13'	35.58	71.12'	S 50°32'50" E
C39	1101.24'	004°12'02"	80.73'	40.39	80.72'	S 54°29'52" E
C40	1101.22'	018°43'04"	359.76'	181.49	358.16'	S 47°14'21" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C41	1101.11'	005°35'47"	107.55'	53.82	107.51'	S 68°31'01" E
C42	1101.11'	003°27'12"	66.37'	33.19	66.36'	S 73°02'30" E
C43	1101.11'	003°25'58"	65.97'	32.99	65.96'	S 76°29'05" E
C44	1101.11'	003°25'58"	65.97'	32.99	65.96'	S 79°55'03" E
C45	1101.11'	003°26'07"	66.02'	33.02	66.01'	S 83°21'05" E
C46	1101.11'	003°27'04"	66.33'	33.17	66.32'	S 86°47'41" E
C47	1101.11'	003°25'49"	65.93'	32.97	65.92'	N 89°45'52" E
C48	1101.11'	003°27'49"	66.56'	33.29	66.55'	N 86°19'03" E
C49	1101.11'	003°26'51"	66.25'	33.14	66.24'	N 82°51'43" E
C50	1101.11'	002°41'30"	51.73'	25.87	51.72'	N 79°47'33" E
C51	1101.11'	035°50'07"	688.68'	356.02	677.51'	S 83°38'08" E
C52	410.31'	007°58'21"	57.09'	28.59	57.05'	N 19°27'43" E
C53	410.32'	008°07'34"	58.19'	29.15	58.15'	N 27°30'41" E
C54	437.32'	007°18'51"	55.83'	27.95	55.79'	N 35°28'21" E
C55	410.44'	007°53'27"	56.53'	28.31	56.48'	N 43°19'04" E
C56	410.23'	007°48'57"	55.96'	28.02	55.92'	N 51°10'15" E
C57	410.36'	007°49'49"	56.08'	28.08	56.04'	N 58°59'38" E
C58	410.32'	007°44'30"	55.44'	27.76	55.40'	N 66°46'49" E
C59	410.33'	008°09'16"	58.40'	29.25	58.35'	N 74°43'43" E
C60	410.22'	007°24'28"	53.04'	26.56	53.00'	N 82°30'33" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C181	1741.10'	003°08'22"	95.40'	47.71	95.39'	N 78°09'21" E
C182	1741.10'	004°10'33"	126.90'	63.48	126.87'	N 78°40'27" E
C183	443.43'	009°25'13"	72.91'	36.54	72.82'	N 07°59'00" W
C184	443.43'	010°02'30"	77.72'	38.96	77.62'	N 17°42'51" W
C185	443.43'	010°01'22"	77.57'	38.88	77.47'	N 27°44'47" W
C186	443.43'	010°01'22"	77.57'	38.88	77.47'	N 37°46'08" W
C187	443.43'	010°01'22"	77.57'	38.88	77.47'	N 47°47'30" W
C188	443.43'	010°01'22"	77.57'	38.88	77.47'	N 57°48'52" W
C189	443.43'	010°01'22"	77.57'	38.88	77.47'	N 67°50'13" W
C190	443.43'	010°01'22"	77.57'	38.88	77.47'	N 77°51'35" W
C191	443.43'	010°01'22"	77.57'	38.88	77.47'	N 87°52'56" W
C192	443.43'	006°24'14"	49.56'	24.81	49.54'	S 83°54'16" W
C193	443.43'	096°01'27"	743.17'	492.69	659.20'	N 51°17'07" W
C194	3510.42'	000°05'40"	5.79'	2.90	5.79'	N 80°23'40" E
C195	3509.57'	001°03'47"	65.12'	32.56	65.12'	N 79°48'56" E
C196	3510.42'	001°03'38"	64.98'	32.49	64.98'	N 78°45'14" E
C197	3510.42'	001°38'32"	100.62'	50.31	100.62'	N 77°24'09" E
C198	3510.42'	003°51'37"	236.51'	118.30	236.47'	N 78°30'41" E
C199	1203.44'	002°56'36"	61.82'	30.92	61.82'	S 22°51'55" E
C200	188.00'	039°27'46"	129.49'	67.43	126.94'	S 07°34'53" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C61	410.23'	008°01'45"	57.49'	28.79	57.44'	S 89°46'27" E
C62	410.31'	007°59'07"	57.19'	28.64	57.14'	S 81°46'04" E
C63	410.33'	008°12'12"	58.75'	29.43	58.70'	S 73°40'24" E
C64	410.35'	006°02'15"	43.24'	21.64	43.22'	S 66°33'08" E
C65	410.31'	100°59'27"	723.23'	497.67	633.18'	N 65°58'17" E
C66	801.22'	004°22'13"	61.11'	30.57	61.10'	S 65°15'18" E
C67	801.22'	004°19'56"	60.58'	30.31	60.57'	S 69°36'23" E
C68	801.22'	004°21'09"	60.86'	30.45	60.85'	S 73°56'55" E
C69	801.22'	004°07'58"	57.79'	28.91	57.78'	S 78°11'29" E
C70	801.22'	004°30'00"	62.93'	31.48	62.91'	S 82°30'28" E
C71	801.22'	004°14'11"	59.24'	29.63	59.23'	S 86°52'33" E
C72	801.22'	004°21'31"	60.95'	30.49	60.94'	N 88°49'36" E
C73	801.22'	004°13'14"	59.02'	29.52	59.01'	N 84°32'13" E
C74	801.22'	003°39'52"	51.24'	25.63	51.23'	N 80°35'40" E
C75	801.22'	038°10'03"	533.74'	277.20	523.92'	S 82°09'14" E
C76	1265.45'	002°59'31"	66.08'	33.05	66.08'	N 64°15'53" E
C77	1265.45'	003°00'48"	66.55'	33.28	66.55'	N 61°15'43" E
C78	1276.28'	002°59'47"	66.74'	33.38	66.74'	N 58°15'22" E
C79	1295.66'	002°43'47"	61.73'	30.87	61.72'	N 55°19'21" E
C80	1264.94'	003°09'50"	69.85'	34.93	69.84'	N 52°21'27" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C81	1265.45'	003°03'51"	67.68'	33.85	67.67'	N 49°14'37" E
C82	1265.45'	018°02'57"	398.64'	200.98	396.99'	N 56°44'10" E
C83	100.79'	022°57'29"	40.39'	20.47	40.12'	N 51°51'35" W
C84	100.79'	017°36'56"	30.99'	15.62	30.87'	N 31°34'23" W
C85	100.79'	040°34'24"	71.38'	37.26	69.89'	N 43°03'07" W
C86	801.22'	004°16'09"	59.70'	29.86	59.69'	S 18°41'32" E
C87	801.22'	004°17'23"	59.99'	30.01	59.97'	S 14°24'46" E
C88	801.22'	004°17'22"	59.98'	30.01	59.97'	S 10°07'23" E
C89	801.22'	004°17'00"	59.90'	29.96	59.88'	S 05°50'13" E
C90	801.22'	004°17'26"	60.00'	30.01	59.99'	S 01°32'59" E
C91	801.22'	004°15'33"	59.56'	29.79	59.55'	S 02°43'30" W
C92	801.22'	004°17'19"	59.97'	30.00	59.96'	S 06°59'57" W
C93	801.22'	004°17'19"	59.97'	30.00	59.96'	S 11°17'16" W
C94	801.22'	004°17'19"	59.97'	30.00	59.96'	S 15°34'34" W
C95	801.22'	004°17'19"	59.97'	30.00	59.96'	S 19°51'53" W
C96	801.22'	004°15'36"	59.57'	29.80	59.56'	S 24°08'21" W
C97	801.22'	004°19'04"	60.38'	30.20	60.36'	S 28°25'40" W
C98	801.22'	004°17'21"	59.98'	30.00	59.96'	S 32°43'52" W
C99	801.22'	004°17'21"	59.98'	30.00	59.97'	S 37°01'13" W
C100	801.22'	004°17'23"	59.99'	30.01	59.97'	S 41°18'35" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C101	801.22'	004°17'24"	59.99'	30.01	59.98'	S 45°35'59" W
C102	801.22'	004°17'25"	60.00'	30.01	59.98'	S 49°53'24" W
C103	801.22'	004°17'27"	60.00'	30.02	59.99'	S 54°10'50" W
C104	801.22'	005°01'15"	70.21'	35.13	70.19'	S 58°50'11" W
C105	801.22'	082°10'24"	1149.11'	698.63	1053.13'	S 20°15'36" W
C106	663.13'	008°39'41"	100.25'	50.22	100.15'	S 57°28'02" W
C107	663.13'	006°22'49"	73.84'	36.96	73.80'	S 49°56'47" W
C108	663.13'	006°22'49"	73.84'	36.96	73.81'	S 43°33'59" W
C109	663.13'	006°22'47"	73.84'	36.96	73.80'	S 37°11'10" W
C110	663.13'	006°21'33"	73.60'	36.84	73.56'	S 30°49'00" W
C111	663.13'	006°23'59"	74.07'	37.07	74.03'	S 24°26'14" W
C112	663.13'	006°22'47"	73.84'	36.96	73.80'	S 18°02'51" W
C113	663.13'	006°22'35"	73.80'	36.94	73.76'	S 11°40'11" W
C114	663.13'	006°28'40"	74.97'	37.53	74.93'	S 05°14'33" W
C115	663.13'	006°22'29"	73.78'	36.93	73.74'	S 01°11'01" E
C116	663.13'	006°23'35"	73.99'	37.03	73.95'	S 07°34'03" E
C117	663.13'	006°22'53"	73.86'	36.97	73.82'	S 13°57'17" E
C118	663.13'	006°22'48"	73.84'	36.96	73.80'	S 20°20'07" E
C119	663.13'	001°30'28"	17.45'	8.73	17.45'	S 24°16'45" E
C120	663.13'	086°49'52"	1004.97'	627.43	911.52'	S 18°22'57" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C201	1545.89'	002°26'34"	65.91'	32.96	65.90'	S 13°14'49" E
C202	1545.89'	000°30'14"	13.60'	6.80	13.60'	S 14°43'13" E
C203	1545.89'	002°56'48"	79.50'	39.76	79.49'	N 13°29'56" W
C204	1546.07'	002°00'28"	54.18'	27.09	54.17'	S 17°39'30" E
C205	1545.68'	002°22'43"	64.17'	32.09	64.16'	S 19°51'06" E
C206	1545.46'	002°23'08"	64.35'	32.18	64.34'	S 22°14'01" E
C207	1545.75'	006°46'18"	182.69'	91.45	182.58'	N 20°02'25" W
C208	3511.04'	001°23'46"	85.56'	42.78	85.56'	S 75°03'19" W
C209	3511.04'	001°02'28"	63.80'	31.90	63.80'	S 73°50'12" W
C210	3511.04'	000°59'21"	60.61'	30.31	60.61'	S 72°49'17" W
C211	3511.73'	001°00'37"	61.92'	30.96	61.92'	S 71°49'18" W
C212	3511.58'	001°04'04"	65.44'	32.72	65.44'	S 70°46'57" W
C213	3511.04'	005°59'03"	366.71'	183.52	366.54'	N 72°45'41" E
C214	250.00'	013°27'13"	58.70'	29.49	58.57'	S 63°02'33" W
C215	250.00'	022°32'37"	98.37'	49.83	97.73'	S 45°02'37" W
C216	250.00'	024°09'53"	105.44'	53.52	104.66'	S 21°41'22" W
C217	250.00'	060°09'44"	262.51'	144.81	250.61'	N 39°41'17" E
C218	1101.27'	004°29'30"	86.33'	43.19	86.31'	S 58°37'56" W
C219	1101.27'	003°28'11"	66.69'	33.36	66.68'	S 54°39'05" W
C220	1101.27'	003°31'19"	67.69'	33.86	67.68'	S 47°40'36" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C221	1101.27'	003°31'15"	67.67'	33.85	67.66'	S 44°09'19" W
C222	1101.27'	003°31'17"	67.68'	33.85	67.67'	S 40°38'03" W
C223	1101.27'	003°31'16"	67.68'	33.85	67.67'	S 37°06'46" W
C224	1101.27'	003°31'20"	67.70'	33.86	67.69'	S 33°35'29" W
C225	1101.27'	003°31'31"	67.76'	33.89	67.75'	S 30°04'03" W
C226	1101.27'	003°31'37"	67.79'	33.90	67.78'	S 26°32'30" W
C227	1101.27'	003°30'54"	67.56'	33.79	67.55'	S 23°01'15" W
C228	1101.27'	003°31'04"	67.61'	33.82	67.60'	S 19°30'16" W
C229	1101.27'	003°31'23"	67.72'	33.87	67.70'	S 15°59'02" W
C230	1101.27'	003°31'14"	67.67'	33.84	67.66'	S 12°27'44" W
C231	1101.27'	003°31'14"	67.67'	33.85	67.66'	S 08°56'30" W
C232	1101.27'	003°32'04"	67.94'	33.98	67.93'	S 01°53'35" W
C233	1101.27'	003°30'29"	67.43'	33.73	67.42'	S 01°37'42" E
C234	1101.27'	003°31'09"	67.64'	33.83	67.63'	S 05°08'31" E
C235	1101.27'	003°31'24"	67.72'	33.87	67.71'	S 08°39'47" E
C236	1101.27'	003°31'09"	67.64'	33.83	67.63'	S 12°11'04" E
C237	1101.27'	003°31'21"	67.70'	33.86	67.69'	S 15°42'19" E
C238	1101.27'	084°31'58"	1624.78'	1000.90	1481.38'	S 18°36'42" W
C239	1094.37'	027°44'47"	529.96'	270.29	524.80'	N 20°25'03" W
C240	3279.51'	001°42'34"	97.84'	48.92	97.84'	S 69°26'18" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C241	3397.46'	001°01'07"	60.40'	30.20	60.40'	S 70°52'27" W
C242	3211.10'	001°03'39"	59.45'	29.73	59.45'	S 71°55'43" W
C243	3211.09'	001°05'25"	61.10'	30.55	61.10'	S 73°00'15" W
C244	3211.06'	004°58'28"	278.79'	139.48	278.70'	S 71°03'43" W
C245	1101.27'	003°28'44"	66.87'	33.44	66.86'	S 51°10'37" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R720	3386.04'	000°30'19"	29.87'	14.93	29.87'	N 70°01'19" E
R721	3386.04'	006°11'18"	365.71'	183.03	365.54'	S 72°51'48" W
R722	125.00'	011°56'29"	26.05'	13.07	26.01'	N 63°47'55" E
R723	125.00'	023°52'53"	52.10'	26.43	51.72'	N 45°53'14" E
R724	125.00'	024°12'17"	52.81'	26.80	52.41'	N 21°50'38" E
R725	125.00'	035°06'48"	76.61'	39.55	75.41'	N 07°48'55" W
R726	125.00'	002°26'35"	5.33'	2.67	5.33'	S 26°35'36" E
R727	125.00'	097°35'03"	212.90'	142.75	188.08'	S 20°58'38" W
R728	12.00'	090°44'34"	19.01'	12.16	17.09'	S 14°56'34" W
R729	972.82'	003°56'49"	67.02'	33.52	67.00'	S 58°20'51" W
R730	976.27'	003°27'44"	58.99'	29.50	58.98'	N 54°38'51" E
R731	976.27'	003°29'51"	59.59'	29.81	59.58'	N 51°10'04" E
R732	976.27'	003°30'34"	59.80'	29.91	59.79'	N 47°39'51" E
R733	976.27'	003°31'14"	59.99'	30.00	59.98'	N 44°08'57" E
R734	976.30'	003°31'13"	59.99'	30.00	59.98'	N 40°37'43" E
R735	976.27'	003°31'13"	59.98'	30.00	59.97'	N 37°06'29" E
R736	976.99'	003°32'40"	60.44'	30.23	60.43'	N 33°34'28" E
R737	976.40'	003°29'54"	59.62'	29.82	59.61'	N 30°03'05" E
R738	976.27'	003°31'17"	60.00'	30.01	59.99'	N 26°32'29" E
R739	976.27'	003°31'06"	59.95'	29.98	59.94'	N 23°01'17" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R740	976.27'	003°31'11"	59.97'	30.00	59.97'	N 19°30'08" E
R741	976.27'	003°31'12"	59.98'	30.00	59.97'	N 15°58'57" E
R742	976.27'	003°31'11"	59.97'	30.00	59.96'	N 12°27'45" E
R743	976.27'	003°31'17"	60.00'	30.01	59.99'	N 08°56'31" E
R744	976.27'	003°36'49"	61.57'	30.80	61.56'	N 05°22'28" E
R745	976.27'	003°26'17"	58.58'	29.30	58.57'	N 01°50'54" E
R746	976.27'	003°30'29"	59.77'	29.90	59.76'	N 01°37'29" W
R747	976.27'	003°31'13"	59.98'	30.00	59.97'	N 05°08'19" W
R748	976.27'	003°31'13"	59.98'	30.00	59.97'	N 08°39'32" W
R749	976.27'	003°31'14"	59.99'	30.00	59.98'	N 12°10'46" W
R750	976.27'	003°31'15"	59.99'	30.00	59.98'	N 15°42'00" W
R751	976.27'	005°25'47"	92.52'	46.29	92.48'	N 20°10'31" W
R752	976.27'	083°12'08"	1417.69'	866.80	1296.37'	S 18°42'39" W
R753	20.00'	066°26'37"	23.19'	13.10	21.92'	N 10°19'54" E
R754	112.01'	017°46'07"	34.74'	17.51	34.60'	N 34°40'05" E
R755	25.00'	064°32'49"	28.16'	15.79	26.70'	N 58°03'22" E
R756	1215.72'	002°58'30"	63.12'	31.57	63.12'	S 88°10'00" E
R757	535.07'	012°18'16"	114.91'	57.68	114.69'	N 01°21'44" W
R758	25.00'	083°18'58"	36.35'	22.24	33.23'	N 35°56'46" E
R759	520.00'	010°16'21"	93.23'	46.74	93.10'	S 10°50'53" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R760	470.00'	010°16'21"	84.26'	42.25	84.15'	N 10°50'53" W
R767	200.00'	016°04'35"	56.12'	28.24	55.93'	N 12°16'12" E
R768	252.02'	024°07'57"	106.15'	53.87	105.37'	N 08°10'38" E

PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

FOUR WINDS FARM
TAX ID 235-25.00-38.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE
PRELIMINARY PLAT PARCEL DATA

RIBERA DEVELOPMENT, LLC
8884 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

DATE	NO.	REVISIONS	BY
2022-03-18	1	REVISED PER P&Z COMMENTS	EOC

PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	LM/EW
APPROVED BY	AMD

PP1011

SHEET 13 OF 14

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R400	125.00'	006°29'12"	14.15'	7.08	14.14'	S 12°13'10" W
R401	125.00'	027°46'23"	60.59'	30.90	60.00'	N 04°54'37" W
R402	125.00'	027°46'23"	60.59'	30.90	60.00'	N 32°41'00" W
R403	125.00'	016°56'43"	36.97'	18.62	36.83'	N 55°02'33" W
R404	125.00'	078°58'49"	172.30'	103.00	158.98'	S 24°01'34" E
R405	585.33'	001°47'28"	18.30'	9.15	18.30'	S 64°25'34" E
R406	592.48'	005°48'26"	60.05'	30.05	60.02'	S 68°14'35" E
R407	592.49'	005°48'16"	60.02'	30.04	60.00'	N 74°09'19" W
R408	585.33'	005°55'42"	60.56'	30.31	60.54'	N 80°02'23" W
R409	585.33'	005°54'12"	60.31'	30.18	60.28'	N 85°57'20" W
R410	585.33'	005°40'21"	57.95'	29.00	57.93'	S 88°15'24" W
R411	585.33'	029°27'41"	300.98'	153.89	297.67'	S 78°15'41" E
R412	585.33'	009°24'14"	96.07'	48.14	95.96'	N 82°18'22" E
R413	585.33'	004°03'24"	41.44'	20.73	41.43'	S 75°34'33" W
R414	585.33'	005°57'36"	60.89'	30.47	60.86'	N 70°34'03" E
R415	585.33'	005°46'55"	59.07'	29.56	59.04'	N 64°41'48" E
R416	585.33'	005°56'50"	60.76'	30.41	60.73'	N 58°49'55" E
R417	585.33'	005°59'37"	61.23'	30.64	61.20'	N 52°51'41" E
R418	585.33'	005°42'24"	58.30'	29.17	58.28'	N 47°00'40" E
R419	582.31'	005°51'24"	59.52'	29.79	59.50'	N 41°14'40" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R420	585.33'	005°53'34"	60.20'	30.13	60.17'	N 35°23'06" E
R421	585.33'	005°48'15"	59.30'	29.67	59.27'	N 29°32'11" E
R422	585.33'	005°51'42"	59.88'	29.97	59.86'	N 23°42'12" E
R423	585.33'	005°57'38"	60.89'	30.47	60.87'	N 17°47'32" E
R424	585.33'	005°55'41"	60.56'	30.31	60.53'	N 11°50'53" E
R425	585.33'	005°52'43"	60.06'	30.05	60.03'	N 05°56'41" E
R426	585.33'	005°52'44"	60.06'	30.06	60.03'	N 00°03'57" E
R427	585.33'	004°45'42"	48.65'	24.34	48.63'	N 05°15'16" W
R428	585.33'	085°14'22"	870.80'	538.61	792.69'	N 34°59'04" E
R429	225.00'	004°22'33"	17.18'	8.60	17.18'	S 16°03'58" E
R430	225.00'	012°49'53"	50.39'	25.30	50.28'	N 24°40'11" W
R431	225.00'	015°14'59"	59.89'	30.12	59.71'	N 38°42'37" W
R432	225.00'	011°33'27"	45.39'	22.77	45.31'	N 52°06'50" W
R433	225.00'	044°00'52"	172.84'	90.94	168.63'	N 35°53'07" W
R434	12.00'	087°05'51"	18.24'	11.41	16.54'	S 14°20'37" E
R435	75.00'	078°58'41"	103.38'	61.80	95.39'	S 24°01'34" E
R436	12.00'	089°43'34"	18.79'	11.94	16.93'	N 71°37'18" E
R437	12.00'	089°09'55"	18.67'	11.83	16.85'	N 17°49'26" W
R438	972.85'	006°46'35"	115.06'	57.60	114.99'	S 59°01'49" E
R439	976.22'	003°15'22"	55.48'	27.75	55.47'	S 54°01'33" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R440	976.22'	003°41'13"	62.82'	31.42	62.81'	S 50°33'15" E
R441	1000.96'	003°37'16"	63.26'	31.64	63.25'	S 46°51'15" E
R442	974.25'	003°31'50"	60.04'	30.03	60.03'	S 43°14'03" E
R443	974.62'	003°58'16"	67.55'	33.79	67.54'	S 39°29'36" E
R444	976.22'	024°53'50"	424.21'	215.50	420.88'	N 49°57'29" W
R445	20.00'	066°27'20"	23.20'	13.10	21.92'	N 70°44'14" W
R446	111.96'	027°36'23"	53.94'	27.51	53.42'	N 89°49'49" E
R447	111.96'	073°02'41"	142.73'	82.91	133.26'	N 67°27'02" W
R448	25.00'	059°01'40"	25.76'	14.15	24.63'	N 60°26'32" W
R449	1291.98'	010°44'09"	242.09'	121.40	241.73'	N 84°35'17" W
R450	25.00'	085°19'01"	37.23'	23.04	33.88'	S 58°07'17" W
R451	12.00'	090°14'27"	18.90'	12.05	17.01'	S 18°23'36" E
R452	535.32'	006°04'34"	56.77'	28.41	56.74'	S 66°34'08" E
R453	535.33'	008°10'12"	76.33'	38.23	76.27'	S 73°41'31" E
R454	535.33'	007°52'51"	73.63'	36.87	73.57'	S 81°43'03" E
R455	535.33'	007°55'33"	74.05'	37.09	73.99'	S 89°37'15" E
R456	535.33'	007°45'04"	72.42'	36.26	72.36'	N 82°32'27" E
R457	535.33'	007°50'57"	73.34'	36.73	73.28'	N 74°44'26" E
R458	535.33'	007°45'43"	72.52'	36.32	72.47'	N 66°56'06" E
R459	535.33'	007°46'30"	72.64'	36.38	72.59'	N 59°10'00" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R580	187.50'	016°15'22"	53.20'	26.78	53.02'	N 55°17'51" E
R581	187.50'	016°14'07"	53.13'	26.74	52.95'	N 71°32'36" E
R582	187.50'	020°23'55"	66.75'	33.73	66.40'	N 89°51'37" E
R583	187.50'	139°53'45"	457.81'	513.70	352.27'	N 30°06'42" E
R584	12.00'	079°22'04"	16.62'	9.96	15.33'	N 60°22'32" E
R585	1104.40'	005°58'17"	115.10'	57.60	115.05'	N 17°36'01" E
R586	1067.03'	002°51'36"	53.26'	26.64	53.26'	N 13°04'43" E
R587	1066.67'	006°04'43"	113.16'	56.63	113.11'	N 08°36'31" E
R588	1066.67'	015°07'21"	281.53'	141.59	280.71'	N 13°07'50" E
R589	12.00'	095°34'10"	20.02'	13.23	17.77'	N 42°12'55" W
R590	400.52'	002°15'05"	15.74'	7.87	15.74'	S 88°51'58" W
R591	400.52'	011°29'39"	80.35'	40.31	80.21'	S 81°59'36" W
R592	400.52'	010°40'13"	74.59'	37.40	74.48'	S 70°54'40" W
R593	487.50'	000°52'11"	7.40'	3.70	7.40'	S 64°51'46" W
R594	400.52'	024°24'57"	170.67'	86.65	169.39'	S 77°47'01" W
R595	487.50'	009°29'39"	80.78'	40.48	80.69'	S 59°40'51" W
R596	487.50'	009°17'02"	78.99'	39.58	78.91'	S 50°17'30" W
R597	487.50'	009°38'02"	81.97'	41.08	81.87'	S 40°49'58" W
R598	487.50'	009°33'55"	81.39'	40.79	81.29'	S 31°14'00" W
R599	487.50'	009°29'39"	80.78'	40.48	80.69'	S 21°42'13" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R460	535.33'	007°48'59"	73.03'	36.57	72.97'	N 51°22'15" E
R461	535.33'	007°53'15"	73.69'	36.91	73.64'	N 43°31'08" E
R462	535.33'	007°59'56"	74.74'	37.43	74.68'	N 35°34'33" E
R463	535.33'	008°07'33"	75.92'	38.02	75.86'	N 27°30'48" E
R464	535.33'	007°58'20"	74.49'	37.30	74.43'	N 19°27'52" E
R465	535.33'	123°58'56"	1158.39'	1006.43	945.25'	N 54°28'41" E
R466	12.00'	093°40'49"	19.62'	12.80	17.51'	N 56°24'15" W
R467	714.07'	004°40'12"	58.20'	29.12	58.18'	S 79°06'21" W
R468	976.11'	003°26'48"	58.72'	29.37	58.71'	S 82°52'14" W
R469	976.11'	003°27'19"	58.86'	29.44	58.85'	N 86°19'18" E
R470	976.11'	003°25'50"	58.44'	29.23	58.43'	N 89°45'52" E
R471	976.11'	003°27'04"	58.80'	29.41	58.79'	S 86°47'41" E
R472	976.11'	003°27'03"	58.79'	29.40	58.78'	S 83°20'38" E
R473	976.11'	003°26'05"	58.51'	29.27	58.50'	S 79°54'04" E
R474	976.11'	003°26'03"	58.51'	29.26	58.50'	N 76°28'00" W
R475	976.11'	003°26'05"	58.52'	29.27	58.51'	S 73°01'55" E
R476	976.11'	004°36'59"	78.65'	39.35	78.63'	S 69°00'23" E
R477	976.11'	034°45'00"	592.01'	305.43	582.98'	N 84°04'23" W
R478	12.00'	086°32'58"	18.13'	11.30	16.45'	S 70°01'46" W
R479	534.76'	010°42'15"	99.91'	50.10	99.76'	N 10°07'45" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R480	111.96'	045°26'18"	88.79'	46.88	86.48'	S 53°38'51" E
R481	20.00'	073°56'46"	25.81'	15.06	24.06'	S 00°53'29" E
R482	926.22'	025°13'44"	407.84'	207.28	404.55'	S 50°28'43" E
R483	926.22'	004°20'49"	70.27'	35.15	70.26'	S 65°16'00" E
R484	926.22'	004°19'47"	69.99'	35.01	69.98'	S 69°36'18" E
R485	926.22'	004°21'18"	70.40'	35.22	70.39'	S 73°56'51" E
R486	926.22'	004°07'58"	66.81'	33.42	66.79'	S 78°11'29" E
R487	926.22'	004°29'55"	72.72'	36.38	72.71'	S 82°30'25" E
R488	926.22'	004°14'15"	68.50'	34.27	68.49'	S 86°52'31" E
R489	926.22'	004°18'46"	69.72'	34.88	69.70'	N 88°50'58" E
R490	925.79'	004°16'06"	68.97'	34.50	68.95'	N 84°33'34" E
R491	925.67'	003°48'25"	61.51'	30.76	61.50'	N 80°31'30" E
R492	926.22'	063°30'49"	1026.74'	573.32	974.97'	S 69°37'16" E
R493	12.00'	090°37'59"	18.98'	12.13	17.06'	N 31°26'18" E
R494	175.00'	028°16'21"	86.35'	44.07	85.48'	N 28°00'52" W
R495	175.00'	018°38'39"	56.95'	28.73	56.69'	N 51°28'22" W
R496	175.00'	046°55'00"	143.30'	75.94	139.33'	N 37°20'12" W
R497	12.00'	072°51'34"	15.26'	8.86	14.25'	S 82°46'31" W
R498	12.00'	006°37'19"	1.39'	0.69	1.39'	S 43°02'05" W
R499	12.00'	079°30'10"	16.65'	9.98	15.35'	S 79°28'32" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R500	187.50'	022°35'33"	73.93'	37.45	73.46'	S 51°01'12" W
R501	187.50'	019°35'31"	64.11'	32.37	63.80'	N 72°06'43" E
R502	187.50'	020°25'34"	66.84'	33.78	66.49'	N 87°52'44" W
R503	187.50'	016°22'10"	53.57'	26.97	53.39'	S 69°28'53" E
R504	187.50'	078°58'47"	258.46'	154.51	238.48'	S 79°12'49" W
R505	12.00'	074°23'34"	15.58'	9.11	14.51'	S 81°30'25" W
R506	1140.45'	003°23'21"	67.46'	33.74	67.45'	N 46°00'19" E
R507	1140.45'	003°00'51"	60.00'	30.01	59.99'	N 49°12'25" E
R508	1140.45'	003°13'27"	64.18'	32.10	64.17'	N 52°19'34" E
R509	1140.45'	002°48'19"	55.84'	27.92	55.83'	N 55°20'27" E
R510	1140.45'	003°00'42"	59.95'	29.98	59.94'	N 58°14'58" E
R511	1140.45'	003°01'33"	60.23'	30.12	60.22'	N 61°16'06" E
R512	1116.67'	005°54'59"	115.31'	57.70	115.26'	N 08°09'41" E
R512	1140.45'	003°00'50"	59.99'	30.00	59.98'	N 64°17'17" E
R513	1140.45'	028°28'38"	566.83'	289.40	561.01'	S 58°32'58" W
R515	1276.27'	005°10'11"	115.16'	57.62	115.12'	S 76°29'11" W
R516	20.00'	067°18'00"	23.49'	13.31	22.16'	S 45°25'16" W
R517	112.00'	024°18'37"	47.52'	24.12	47.17'	S 23°55'35" W
R518	20.01'	073°53'43"	25.81'	15.05	24.06'	N 59°31'27" W
R519	112.00'	027°12'05"	53.17'	27.10	52.68'	N 82°52'55" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R600	487.50'	009°30'22"	80.88'	40.53	80.79'	S 12°12'13" W
R601	487.50'	009°29'39"	80.78'	40.48	80.69'	S 02°42'12" W
R602	487.50'	009°29'40"	80.78'	40.48	80.69'	S 06°47'27" E
R603	487.50'	009°29'39"	80.78'	40.48	80.69'	S 16°17'07" E
R604	487.50'	009°29'39"	80.78'	40.48	80.69'	S 25°46'46" E
R605	487.50'	008°14'38"	70.14'	35.13	70.08'	S 34°38'55" E
R606	487.50'	104°04'06"	885.46'	624.74	768.67'	S 13°15'49" W
R607	12.01'	077°45'03"	16.30'	9.68	15.08'	S 21°51'41" E
R608	12.00'	090°00'00"	18.85'	12.00	16.97'	N 74°12'18" E
R609	550.00'	006°39'48"	63.96'	32.02	63.93'	N 25°52'25" E
R610	550.00'	008°08'50"	78.21'	39.17	78.14'	N 18°28'06" E
R611	550.00'	008°09'39"	78.34'	39.24	78.27'	N 10°18'51" E
R612	550.00'	008°05'44"	77.71'	38.92	77.65'	N 02°11'10" E
R613	550.00'	000°37'30"	6.00'	3.00	6.00'	N 02°10'27" W
R614	25.00'	087°16'49"	38.08'	23.84	34.51'	S 49°21'07" E
R615	12.00'	087°31'18"	18.33'	11.49	16.60'	N 46°14'21" W
R616	12.00'	084°47'49"	17.76'	10.96	16.18'	S 47°36'06" W
R617	1116.67'	003°06'13"	60.49'	30.25	60.48'	N 12°40'17" E
R618	1116.67'	003°04'45"	60.01'	30.01	60.00'	S 15°45'46" W
R619	1116.67'	003°23'35"	66.13'	33.07	66.12'	S 18°59'56" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R520	112.00'	019°44'24"	38.59'	19.49	38.40'	N 59°24'40" W
R521	112.31'	021°20'11"	41.82'	21.16	41.58'	S 38°50'34" E
R522	112.00'	068°20'19"	133.59'	76.03	125.81'	N 62°18'50" W
R523	20.00'	072°59'21"	25.48'	14.80	23.79'	S 64°38'20" E
R524	1226.27'	003°47'24"	81.12'	40.57	81.10'	N 76°58'17" E
R525	1226.27'	001°09'08"	24.66'	12.33	24.66'	N 74°30'01" E
R526	1226.27'	004°56'32"	105.77'	52.92	105.74'	S 76°23'43" W
R527	1090.45'	001°51'33"	35.38'	17.69	35.38'	N 71°49'59" E
R528	1090.45'	007°33'52"	143.97'	72.09	143.86'	N 67°07'16" E
R529	1090.45'	009°25'25"	179.35'	89.88	179.15'	S 68°03'02" W
R530	12.00'	100°44'08"	21.10'	14.49	18.48'	N 12°58'16" E
R531	537.50'	007°26'31"	69.81'	34.96	69.76'	N 33°40'32" W
R532	537.50'	006°23'24"	59.95'	30.00	59.91'	N 26°45'35" W
R533	537.50'	006°23'04"	59.89'	29.98	59.86'	N 20°22'21" W
R534	537.50'	006°23'08"	59.90'	29.98	59.87'	N 13°59'15" W
R535	537.50'	006°18'01"	59.10'	29.58	59.07'	N 07°38'40" W
R536	537.50'	006°27'58"	60.66'	30.36	60.63'	N 01°15'41" W
R537	537.50'	006°29'35"	60.91'	30.49	60.88'	N 05°13'06" E
R538	537.50'	006°23'08"	59.90'	29.98	59.87'	N 11°39'27" E
R539	537.50'	006°23'08"	59.90'	29.98	59.87'	N 18°02'36" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R540	537.50'	006°23'10"	59.91'	29.99	59.88'	N 24°25'45" E
R541	537.50'	006°23'32"	59.97'	30.01	59.94'	N 30°49'06" E
R542	537.50'	006°22'41"	59.83'	29.95	59.80'	N 37°12'13" E
R543	537.50'	006°23'08"	59.90'	29.98	59.87'	N 43°35'08" E
R544	537.50'	006°23'09"	59.91'	29.98	59.87'	N 49°58'17" E
R545	537.50'	007°53'02"	73.96'	37.04	73.90'	S 57°06'22" W
R546	537.50'	098°26'41"	923.52'	623.19	814.04'	S 11°49'33" W
R547	12.00'	091°29'12"	19.16'	12.32	17.19'	N 15°18'17" E
R548	12.00'	089°11'16"	18.68'	11.83	16.85'	S 75°01'56" E
R549	926.22'	004°02'10"	65.25'	32.64	65.23'	N 58°21'21" E
R550	926.22'	004°17'31"	69.38'	34.71	69.36'	N 54°11'31" E
R551	926.22'	004°17'29"	69.37'	34.70	69.36'	N 49°54'01" E
R552	926.22'	004°17'28"	69.37'	34.70	69.35'	N 45°36'32" E
R553	926.22'	004°17'27"	69.37'	34.70	69.35'	N 41°19'05" E
R554	926.22'	004°17'26"	69.36'	34.70	69.34'	N 37°01'38" E
R555	926.22'	004°17'25"	69.36'	34.69	69.34'	N 32°44'13" E
R556	926.22'	004°19'08"	69.82'	34.93	69.80'	N 28°25'56" E
R557	926.22'	004°15'40"	68.88'	34.46	68.87'	N 24°08'32" E
R558	926.22'	004°17'24"	69.35'	34.69	69.33'	N 19°52'00" E
R559	926.22'	004°17'24"	69.35'	34.69	69.33'	N 15°34'36" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R560	926.19'	004°17'24"	69.35'	34.69	69.33'	N 11°17'13" E
R561	926.19'	004°17'24"	69.35'	34.69	69.33'	N 06°59'49" E
R562	926.22'	004°36'27"	74.48'	37.26	74.46'	N 02°32'54" E
R563	926.22'	003°56'42"	63.77'	31.90	63.76'	N 01°43'40" W
R564	926.22'	004°17'05"	69.26'	34.65	69.25'	N 05°50'34" W
R565	926.22'	004°17'26"	69.36'	34.70	69.34'	N 10°07'49" W
R566	926.14'	004°17'28"	69.36'	34.70	69.35'	N 14°25'16" W
R567	927.97'	005°57'35"	96.53'	48.31	96.48'	N 19°32'57" W
R568	926.22'	082°54'39"	1340.31'	818.17	1226.39'	N 18°55'06" E
R569	12.00'	081°52'35"	17.15'	10.41	15.73'	S 79°42'31" E
R570	1088.66'	006°05'56"	115.88'	58.00	115.83'	N 56°18'31" E
R571	1090.45'	002°38'08"	50.16'	25.09	50.16'	N 51°56'47" E
R572	1090.45'	005°58'56"	113.86'	56.98	113.80'	N 47°38'15" E
R573	1090.45'	014°42'25"	279.90'	140.72	279.13'	N 51°59'59" E
R574	11.98'	084°40'25"	17.70'	10.91	16.13'	N 02°24'18" E
R575	187.50'	021°47'35"	71.32'	36.10	70.89'	N 28°56'23" W
R576	187.50'	016°30'58"	54.05'	27.21	53.86'	N 09°47'06" W
R577	187.60'	016°13'18"	53.11'	26.74	52.94'	N 06°35'11" E
R578	187.60'	016°13'24"	53.12'	26.74	52.94'	N 22°49'15" E
R579	187.50'	016°14'05"	53.13'	26.74	52.95'	N 39°03'08" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R620	1116.67'	015°29'32"	301.94'	151.89	301.02'	N 12°56'57" E
R621	12.00'	079°15'34"	16.60'	9.94	15.31'	S 18°56'04" E
R622	187.21'	015°52'35"	51.87'	26.10	51.71'	S 50°41'53" E
R623	187.42'	023°42'10"	77.53'	39.33	76.98'	S 30°53'43" E
R624	187.27'	023°25'30"	76.57'	38.83	76.03'	S 07°18'58" E
R625	187.39'	014°05'09"	46.07'	23.15	45.95'	N 11°27'21" E
R626	187.21'	077°08'19"	252.04'	149.28	233.43'	N 20°04'01" W
R627	12.01'	090°18'09"	18.93'	12.07	17.03'	N 44°47'36" W
R628	12.00'	092°28'43"	19.37'	12.53	17.33'	S 43°45'39" W
R629	268.43'	002°28'27"	11.59'	5.80	11.59'	S 04°30'37" E
R630	268.43'	022°44'11"	106.52'	53.97	105.82'	S 17°06'56" E
R631	268.43'	022°42'53"	106.42'	53.92	105.72'	S 39°50'28" E
R632	268.43'	022°47'04"	106.75'	54.09	106.05'	S 62°35'27" E
R633	268.43'	022°33'02"	105.65'	53.52	104.97'	S 85°15'30" E
R634	268.43'	001°23'21"	6.51'	3.25	6.51'	N 82°46'18" E
R635	268.43'	094°38'58"	443.44'	291.15	394.71'	N 50°35'53" W
R636	1784.09'	001°05'43"	34.10'	17.05	34.10'	N 80°16'53" E
R637	1784.09'	003°49'45"	119.24'	59.64	119.22'	N 77°49'09" E
R638	1784.09'	004°55'28"	153.34'	76.72	153.29'	S 78°22'01" W
R639	12.00'	107°51'31"	22.59'	16.47	19.40'	N 23°20'07" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R640	1269.37'	005°05'51"	112.93'	56.50	112.90'	N 28°02'43" W
R641	1269.37'	002°08'22"	47.40'	23.70	47.40'	N 24°25'37" W
R642	1263.06'	002°37'26"	57.84'	28.93	57.84'	N 22°02'52" W
R643	1255.64'	002°36'23"	57.12'	28.57	57.12'	N 19°27'30" W
R644	1266.41'	002°34'54"	57.06'	28.54	57.06'	N 16°53'03" W
R645	1281.25'	002°36'08"	58.19'	29.10	58.18'	N 14°16'58" W
R646	1298.08'	002°44'14"	62.02'	31.01	62.01'	N 11°34'25" W
R647	1293.52'	002°35'56"	58.67'	29.34	58.67'	N 08°49'49" W
R648	1269.37'	002°52'12"	63.59'	31.80	63.58'	N 06°05'01" W
R649	1269.37'	002°38'47"	58.63'	29.32	58.63'	N 03°19'31" W
R650	1269.37'	002°22'37"	52.66'	26.33	52.66'	N 00°48'49" W
R651	1269.37'	030°58'08"	686.11'	351.66	677.79'	S 15°06'35" E
R652	12.00'	079°52'00"	16.73'	10.05	15.41'	S 70°22'18" E
R653	450.00'	006°40'36"	52.44'	26.25	52.41'	N 73°02'00" E
R654	450.00'	007°12'42"	56.64'	28.36	56.60'	N 79°58'38" E
R655	450.00'	006°25'01"	50.40'	25.23	50.37'	N 86°47'30" E
R656	450.00'	020°18'18"	159.48'	80.58	158.64'	S 79°50'51" W
R657	12.02'	088°16'15"	18.52'	11.66	16.74'	N 45°46'13" E
R658	1346.44'	004°28'57"	105.34'	52.70	105.31'	N 02°26'49" W
R659	1219.37'	001°37'21"	34.53'	17.27	34.53'	N 05°43'59" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R660	1219.37'	003°06'53"	66.29'	33.15	66.28'	S 08°06'06" E
R661	1219.37'	003°18'59"	70.58'	35.30	70.57'	S 11°19'02" E
R662	1209.10'	003°22'30"	71.22'	35.62	71.21'	S 14°39'21" E
R663	1186.71'	003°18'39"	68.57'	34.30	68.56'	S 17°56'26" E
R664	1204.52'	003°13'25"	67.77'	33.89	67.76'	S 21°07'18" E
R665	1211.75'	003°16'55"	69.41'	34.71	69.40'	S 24°21'49" E
R666	1215.03'	003°07'04"	66.12'	33.07	66.11'	S 27°32'21" E
R667	1219.37'	002°42'05"	57.49'	28.75	57.48'	S 30°26'51" E
R668	1219.37'	031°49'35"	677.33'	347.65	668.65'	S 15°53'06" E
R669	12.00'	071°51'53"	15.05'	8.70	14.08'	S 67°43'44" E
R670	3336.04'	002°06'58"	123.21'	61.61	123.21'	N 75°16'56" E
R671	3336.04'	000°40'30"	39.30'	19.65	39.30'	S 73°53'12" W
R672	3336.04'	001°04'16"	62.37'	31.18	62.37'	N 73°00'49" E
R673	3336.04'	001°02'56"	61.07'	30.54	61.07'	N 71°57'13" E
R674	3336.04'	001°05'43"	63.77'	31.88	63.77'	N 70°52'53" E
R675	3149.34'	000°35'54"	32.88'	16.44	32.88'	N 70°03'06" E
R676	3336.04'	006°34'16"	382.60'	191.51	382.39'	N 73°03'17" E
R677	75.00'	096°49'13"	126.74'	84.50	112.19'	N 21°21'32" E
R678	318.43'	009°25'13"	52.35'	26.24	52.30'	N 07°59'00" W
R679	318.43'	010°02'30"	55.81'	27.98	55.74'	N 17°42'51" W

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R680	318.43'	010°01'22"	55.70'	27.92	55.63'	N 27°44'47" W
R681	318.42'	010°01'24"	55.70'	27.92	55.63'	N 37°46'08" W
R682	319.95'	009°58'31"	55.70'	27.92	55.63'	N 47°47'30" W
R683	318.43'	010°01'22"	55.70'	27.92	55.63'	N 57°48'52" W
R684	318.43'	010°01'22"	55.70'	27.92	55.63'	N 67°50'13" W
R685	318.43'	010°01'22"	55.70'	27.92	55.63'	N 77°51'35" W
R686	318.43'	010°01'22"	55.70'	27.92	55.63'	N 87°52'56" W
R687	318.43'	005°01'45"	27.95'	13.98	27.94'	S 84°35'30" W
R688	318.43'	094°38'58"	526.04'	345.38	468.23'	S 50°35'53" E
R689	4736.67'	000°03'05"	4.25'	2.12	4.25'	S 80°23'40" W
R690	3391.22'	001°00'41"	59.87'	29.93	59.87'	S 79°50'47" W
R691	3385.78'	000°59'18"	58.41'	29.21	58.41'	S 78°50'45" W
R692	3384.73'	000°56'06"	55.23'	27.62	55.23'	S 77°53'03" W
R693	3385.45'	003°00'30"	177.76'	88.90	177.74'	N 78°55'16" E
R694	25.00'	073°18'54"	31.99'	18.61	29.85'	S 65°55'32" E
R695	1330.30'	004°44'55"	110.26'	55.16	110.22'	S 26°53'36" E
R696	1409.56'	000°10'10"	4.17'	2.09	4.17'	S 24°25'35" E
R697	1330.20'	002°56'23"	68.25'	34.13	68.24'	N 22°52'09" W
R698	1330.20'	004°35'22"	106.55'	53.31	106.52'	N 19°06'16" W
R699	1330.20'	012°27'29"	289.23'	145.19	288.66'	S 23°02'19" E

CURVE DATA

CURVE #	RADIUS	DELTA	ARC LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
R700	12.00'	088°49'40"	18.60'	11.76	16.80'	N 32°23'52" E
R701	63.00'	013°19'32"	14.65'	7.36	14.62'	N 70°08'56" E
R702	63.00'	095°06'48"	104.59'	68.89	92.98'	N 15°55'46" E
R703	63.00'	063°04'15"	69.35'	38.66	65.90'	N 63°09'49" W
R704	63.00'	039°33'21"	43.49'	22.65	42.64'	N 07°32'01" E
R705	63.00'	149°38'51"	164.55'	232.26	121.61'	S 62°34'46" W
R706	1420.89'	002°26'59"	60.75'	30.38	60.74'	S 13°14'36" E
R707	1420.89'	000°25'48"	10.66'	5.33	10.66'	S 14°40'59" E
R708	1420.89'	002°52'46"	71.41'	35.71	71.40'	S 13°27'30" E
R709	1420.89'	001°56'02"	47.96'	23.98	47.96'	S 17°41'44" E
R710	1420.89'	002°22'42"	58.98'	29.49	58.97'	S 19°51'06" E
R711	1420.89'	003°06'09"	76.94'	38.48	76.93'	S 22°35'31" E
R712	1420.89'	004°32'16"	112.54'	56.30	112.51'	N 26°24'43" W
R713	1420.89'	011°57'09"	296.41'	148.75	295.87'	S 22°42'17" E
R714	12.00'	104°53'19"	21.97'	15.61	19.03'	N 23°30'47" E
R715	3386.04'	001°36'01"	94.57'	47.29	94.57'	N 75°09'27" E
R716	3386.04'	001°01'23"	60.47'	30.23	60.46'	N 73°50'44" E
R717	3386.04'	001°01'32"	60.61'	30.30	60.60'	N 72°49'17" E
R718	3385.36'	000°59'32"	58.63'	29.32	58.63'	N 71°48'45" E
R719	3385.41'	001°02'31"	61.57'	30.79	61.57'	N 70°47'44" E

Pennoni

PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

FOUR WINDS FARM

(2021-25)

TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE

PRELIMINARY PLAT PARCEL DATA

RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

DATE	NO.	REVISIONS	BY
2022-03-18	1	REVISED PER P&Z COMMENTS	EOC

PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	LM/EW
APPROVED BY	AMD

PP1012

18072 Davidson Drive
Milton, DE 19968
T: 302-684-8030
F: 302-684-8054

www.pennoni.com

March 18, 2022
RIBER21001

Ms. Lauren DeVore
Sussex County Planning and Zoning
2 The Circle
Georgetown, DE 19947

RE: Revised Preliminary Subdivision Plan Submission (2021-25)
Four Winds Subdivision
Tax Map # 235-25.00-39.00
Broadkill Hundred
Sussex County, DE

Dear Ms. DeVore:

On behalf of the Ribera Development, LLC, Pennoni Associates Inc. (Pennoni) is pleased to submit the revised Preliminary Subdivision Plans for your consideration of review and approval. We have addressed the following comments per your letter received on March 7, 2022.

We have enclosed one (1) copy of the following documents for review and approval of the project.

Item	***Description***	***Dated***
Drawings, Prepared by Pennoni Associates Inc.		
	Revised Preliminary Subdivision Plans	2022-03-18

Revised Preliminary Subdivision Plan

1. *Staff note that the subdivision only contains one-way-in, one-way-out access. The Commission generally desires to see interconnectivity with proposed developments to facilitate ease of access for emergency vehicles in the event that an emergency should occur within the proposed development in the future. This may be shown on the plans as a fully developed interconnection or as an access easement to be fully improved in the future in order to provide this connection.*

   Pennoni Response (March 18, 2022): We have one full entrance and have added a 12' wide paved emergency connection to Shingle Point Road for emergency use adjacent lot 99. In coordination with DelDOT on all land development projects, it has been stated that DelDOT requires entrances to be consolidated and typically requires one entrance to a property as outlined in the Development Coordination Manual. In addition, we have added multiple easements for future interconnection to the adjacent properties. We have added a 50' wide easement for future interconnection in the southern property corner between lots 32 and 33. The easement is connected to both adjacent properties (TM # 235-25.00-45.01 and TM # 235-25.00-46.00) if they are developed in the future. Also, we show a 50' wide easement for a future interconnection from the

cul-de-sac at the end of Azalea Drive to the adjacent property (TM # 235-25.00-38.00) if this property is developed in the future.

2. *The County's Online Mapping Portal indicates that the parcel is approximately 167.20 acres. Please confirm that the Gross Acreage provided (168.9 acres +/- is correct.) If the density calculation is performed using the acreage as provided on the plans, the project proposes a density of 1.99 dwelling units to the acre. If the density calculation is performed using the acreage as provided via County maps, the project proposed a density of 2.01 dwelling units to the acre which is slightly over the permitted density for this property of which a dwelling unit would have to be removed in order to achieve the permitted density of 2 dwelling units to the acre.*

   Pennoni Response (March 18, 2022): Understood but most times we find the online mapping information is incorrect. We have performed a detail boundary and topographic survey of the property along with reviewing public record deeds and plots to display the property information correctly. Our total acreage of 168.90 is correct.

3. *Please ensure that no stormwater management ponds exist within the proposed landscape buffer. Please note that stormwater outfalls are permitted to be included within this area as required to drain surface or stormwater outside of the perimeter of the subdivision, but that this area shall not contain any stormwater management facilities (§99-5 "Forested and/or Landscaped Buffer Strip" (I)).*

   Pennoni Response (March 18, 2022): Correct, we show no stormwater management facilities within the landscape buffer. We have labeled all stormwater areas for clarity.

4. *Please show on the plans the 50-ft buffer required from adjacent properties which are within an Agricultural Easement, or which are being actively farmed. For any new subdivision development located in whole or in part within 50 feet of the boundary of land used primarily for agricultural purposes, no improvement requiring an occupancy approval for a residential type use shall be constructed within 50 feet of the boundary of land used primarily for agricultural purposes (§99-6(G)(1)).*

   Pennoni Response (March 18, 2022): We show the 50' wide agricultural buffer along all sides of the property except for the roadway frontage and have maintained that no lots will be within this buffer.

5. *Please include the Agricultural Use Protection Notice on the Plans and in the proposed deed restrictions and any leases or agreements of sale for any residential lot or dwelling, The notice shall read, "This property is located in the vicinity of land used primarily for agricultural purposes on which normal agricultural uses and activities have been afforded the highest priority use status. It can be anticipated that such agricultural uses and activities may now or in the future involve noise, dust, manure and other odors, the use of agricultural chemicals and nighttime farm operations. The use and enjoyment of this property is expressly*

conditioned on acceptance of any annoyance or inconvenience which may result from such normal agricultural uses and activities." (§99-6(G)(2)).

Pennoni Response (March 18, 2022): We have added the note to the plans. Refer to General Note 42 on Sheet PP1000.

6. *It is noted that a trail system is proposed for the development, which corresponds with the County's Superior Design Criteria requirements. Construction materials for the proposed trail shall be identified and all trail construction materials shall be pervious in nature (§115-25(F)(3)(a)[3][c][vi]. Please also ensure that the trail meets ADA requirements in that the material to be utilized is both durable as well as slip resistant.*

   Pennoni Response (March 18, 2022): We have added a typical walking trail detail to the plans. Refer to the detail 2 located on sheet PP1000.

7. *The Site Data Column and Zoning Data Table indicate that the required Lot Depth is 100-ft. Please note that the Code does not mention a required Lot Depth for subdivisions utilizing the cluster development option. However, with a required minimum lot width of 60-ft, the required minimum lot depth shall be 125-ft to achieve the necessary minimum lot area of 7,500 square feet.*

   Pennoni Response (March 18, 2022): Understood, we have removed the reference to the required minimum lot depth. All lots are shown per required width and size.

8. *Please include the County Project Reference Number for the project on the Cover Sheet. The County Project Reference Number for this project is 2021-25.*

   Pennoni Response (March 18, 2022): We have added it to the cover sheet and title block of the plan set.

9. *Please include the number of lots that are proposed on the plans within the Site Data Column.*

   Pennoni Response (March 18, 2022): We have added the total number of lots into the site data column. Refer to item #7.

10. *Please address the minor typographical error within the Site Data Column which indicates this project is located within an "Existing Developable Area." The project is located within a Low-Density Area according to the Future Land Use Map within Sussex County's 2018 Comprehensive Plan Update.*

    Pennoni Response (March 18, 2022): We have revised it to read Low Density.

11. *Please include on the plans that the project is not located within the Henlopen Transportation Improvement District (TID).*

    Pennoni Response (March 18, 2022): This has been added to the plans. Refer to Site Data Item # 27.

12. *Please note within the Site Data Column that according to the County's Online Mapping System that there are no tax ditches or related tax ditch ROWs on the subject property.*

    Pennoni Response (March 18, 2022): We have added this reference into the Site Data Column stating that the property is not included within state tax ditch areas and ROW limits; refer to Item #28.

13. *Please note in the Site Data Column that the proposed subdivision is not located within a Wellhead Protection Area to comply with Chapter 89 "Source Water Protection" of the Sussex County Code (§89-6).*

    Pennoni Response (March 18, 2022): This information is on the plans, refer to Item # 11.

14. *Please note in the Site Data Column that the proposed subdivision is located within an area of "Poor" Groundwater Recharge Potential to comply with Chapter 89 "Source Water Protection" of the Sussex County Code (§89-7).*

    Pennoni Response (March 18, 2022): This information has been updated on the plans, refer to Item # 11.

15. *Please ensure that the proposed Subdivision Name and all proposed street names are approved by the Geographic Information Office (GIO, formerly known as the "Sussex County Department of Mapping and Addressing.) Please note that the proposed subdivision name shall not duplicate or closely approximate the name of any other subdivision in the county (§99-23(A)).*

    Pennoni Response (March 18, 2022): Understood. We have approval for both the subdivision name and street names.

16. *Please include the designation of parcels of land to be conveyed, reserved, or dedicated for public use or for the common use of all property owners within the subdivision (§99-23(L)).*

    Pennoni Response (March 18, 2022): All open space and/or common areas are identified on the plans.

17. *Please add the proposed sizes for all proposed drainage facilities on the plans (§99-23(M)).*

    Pennoni Response (March 8, 2022): We have added the approximate size of each proposed stormwater facility on the plans. It is noted, the size of these facilities are graphical and are subject to change pending final stormwater compliance with Sussex Conservation District.

18. *Please include a proposed grading plan with the plans when excavation, recontouring or similar work is to occur in conjunction with development of the subdivision (§99-23(N)).*

    Pennoni Response (March 18, 2022): We have provided a concept grading plan identifying key required design elements and is subject to final grading and coordination with delegated agencies.

19. *Please provide text on the plans which clearly delineates the designation of land use primarily for agricultural purposes within 300 feet of the boundary of the proposed subdivision (§99-23(O)). For example, please note that parcel 235-25.00-38.00 to the north of the subject site is actively farmed as is parcel 235-25.00-46.00 to the southeast of the subject site.*

    Pennoni Response (March 18, 2022): All adjacent property labels are identified with their use. All active agricultural lands are identified in this manner.

20. *Please include a breakdown of tidal vs. non-tidal wetland totals in the Site Data Column as well as those wetlands which are under the Delaware Department of Natural Resources and Environmental Control's (DNREC's) (State) jurisdiction and those which are under the Army Corp. of Engineers' (Federal) jurisdiction in order to facilitate compliance with state and federal wetlands requirements (§99-23(Q)).*

    Pennoni Response (March 18, 2022): We have updated the corresponding information in plan view and in the site data table. Refer to Site Data Item #25. All wetlands on site are non-tidal and will not be impacted,

21. *Please add on the plans the designation of all areas proposed as open space (§99-23(S)).*

    Pennoni Response (March 18, 2022): A table is shown on sheet PP1001 displaying the individual open space areas throughout the site. Each area Is labeled on the plan view.

22. *Please include statements concerning any proposed deed restrictions to be imposed by the owner (§99-24(B)).*

    Pennoni Response (March 18, 2022): A letter was sent to Planning and Zoning Director Jamie Whitehouse on January 25, 2022, from Jim Fuqua addressing this comment.

23. *Please include statements explaining how and when the subdivider proposes to provide for the perpetual maintenance of forested buffer strips (§99-24(F)).*

    Pennoni Response (March 18, 2022): A letter was sent to Planning and Zoning Director Jamie Whitehouse on January 25, 2022, from Jim Fuqua addressing this comment.

24. *Please note that for purposes of calculating the permitted density that all tidal wetlands shall be excluded from allowable density calculations (§115-15.1).*

    Pennoni Response (March 18, 2022): Understood, the subject property has no tidal wetlands.

25. *Please include the amount of Open Space being retained on the parcel within the Site Data Column as a percentage. It is noted that approximately 61.85 acres of the site are to be retained as Open Space. This equates to 37% of the project site. This meets the 30% Open Space requirement for cluster subdivisions (§115-25(B)(2)).*

    Pennoni Response (March 18, 2022): We have the total amount of open space noted in the Site Data Table along with the percentage breakdown. We have 86.56+/- acres (51.2% of property) of total open space when counting the existing forested lands remaining. We have the overall breakdown of the open space, refer to Item # 18, 19,

20 within the Site Data Table on the Cover Sheet and the individual open space areas in the table on Sheet PP1001. Open Space Area 'A' which is the largest contiguous area of open space along the rear of the site is 44.14 acres (51% of all open spaces area). This open space area encompasses the existing forested area being maintained and abuts existing wetlands and active farmlands with meeting Code Section 115-25.F.3.a.3.c.

26. *Staff note that sidewalks have been provided on at least one side (in this case, both sides) of the streets within the proposed subdivision, which accords with the Superior Design Criteria (§115-25((F)(3)(a)[a].*

    Pennoni Response (March 18, 2022): Noted.

27. *Please ensure that a minimum of 25-ft of permanent setback is maintained around the outer boundaries of all wetlands except for that of tidal waters (§115-25((F)(4)).*

    Pennoni Response (March 18, 2022): We have added a 25' wetland buffer line to the plans, but the proposed disturbance is kept further away than the minimum requirement.

Final Subdivision Plan

1. *Please ensure that a 30-ft forested/landscape buffer that meets the provisions of §99-5 of the Sussex County Code is shown around the entire perimeter of the site to be developed. Please note that the 30-ft width shall be exclusive of any proposed stormwater management areas or facilities, open space, etc. A Landscape Plan for the buffer shall be designed and certified by a licensed landscape forester or architect designated by the Society of American Foresters as a "certified forester" and shall include a mix of 70% deciduous shade trees and 30% evergreen trees. The certification should be included on any Final Subdivision Plan.*

   Pennoni Response (March 18, 2022): Understood. We will submit a detailed Landscaping Plan meeting all of these requirements.

2. *Please ensure that the Limit of Disturbance is clearly shown on the Final Subdivision Plan as well as hatching or a gradient which clarifies the forested areas to remain on site, forested areas to be preserved and any forested areas to be removed.*

   Pennoni Response (March 18, 2022): Understood. We will include a hatch indicated wooded areas to remain and show LOD outside of these areas.

3. *Please note if a landscape or vegetated buffer will be planted to shield the proposed clubhouse from adjacent Lots nearby for added privacy for these Lots. If any additional landscaping is proposed in these areas, this should be included within any overall Landscaping Plan for the development.*

   Pennoni Response (March 18, 2022): Understood. We will review and address this as part of the Final Landscaping Plan and Detailed Amenity Plan.

4. *Please include a General Note on the plans that all signage will require a separate permit from the County.*

   Pennoni Response (March 18, 2022): Understood. Refer to General Note 31 on Sheet PP1000.

5. *Please include the location of all proposed streetlights on the plans. All street lighting shall be downward screened to minimize glare on adjacent residential areas.*

   Pennoni Response (March 18, 2022): Understood, we show graphically street lights throughout the subdivision but they are subject to review and layout by the electric company. Refer to General Notes 35 & 36 on Sheet PP1000.

6. *Please clarify whether a covered bus stop will be provided for use of the property owners within the subdivision*

   Pennoni Response (March 18, 2022): At this time, a covered bus stop is not being planned and per coordination with the Cape Henlopen School District, one is not required.

7. *Please add hatching which clearly delineates the location of all proposed sidewalks on the plans. Sidewalks shall be required at least on one side of each street (§115-25) (F)(9)).*

   Pennoni Response (March 18, 2022): A hatch is provided to clearly delineate the sidewalk areas.

8. *Please include the location and descriptions of all permanent survey monuments (§99-26(A)(5)).*

   Pennoni Response (March 18, 2022): Understood. We will show property markers on all lots on the Final Record Plans.

9. *Please note that all street names shall be approved by the Sussex County Geographic Information Office prior to final approval of the project (§99-26(A)(7)).*

   Pennoni Response (March 18, 2022): Understood. We have approval for both the subdivision name and street names.

10. *Please include the locations, dimensions and purposes of any other property offered for dedication or to be reserved for acquisition for public use or to be reserved by deed covenant for the common use of property owners in the subdivision (§99-26(A)(11)).*

    Pennoni Response (March 18, 2022): A letter was sent to Planning and Zoning Director Jamie Whitehouse on January 25, 2022, from Jim Fuqua addressing this comment.

11. *Please include the location, bearings and dimensions of all forested buffer strips ((§99-26(A)(16)).*

    Pennoni Response (March 18, 2022): Understood, the forested buffers will include bearings and distances on the Final Record Plans. The lines will run parallel with the

perimeter property boundary.

12. *Please include a breakdown of the open space on the plans (Open Space "A," "B," "C," etc.) and the purpose of all open space areas. Please also add the percentage of impervious surface cover area in the Site Data Column (§99-26(A)(19)).*

    Pennoni Response (March 18, 2022): This information is included in the Site Data Table. A table is shown on sheet PP1001 displaying the individual open space areas throughout the site. Each area Is labeled on the plan view.

13. *Please include a summary of deed restrictions applicable within the subdivision, including agreements for the operation and maintenance by the property owners or agency in the subdivision of street and road improvements, surface drainage facilities, erosion and sedimentation control facilities, water supply facilities, sanitary sewer facilities, forested buffer strips, all areas approved as open space and other improvements" (§99-27(A)).*

    Pennoni Response (March 18, 2022): A letter was sent to Planning and Zoning Director Jamie Whitehouse on January 25, 2022, from Jim Fuqua addressing this comment.

14. *Please include on the Final Subdivision Plan evidence that all conditions related to the preliminary plat (the Conditions of Approval) have been satisfied.*

    Pennoni Response (March 18, 2022): Understood.

15. *If the subdivision receives Final Subdivision Plan approval, a separate Amenities Plan for the subdivision will be required to be submitted to the Office of Planning and Zoning for review. Please add text to the plans which indicates that a separate Amenities Plan will be provided to the Office of Planning and Zoning.*

    Pennoni Response (March 18, 2022): Understood.

16. *Prior to approval of the Final Site Plan, approval letters or letters of no objection from the following agencies shall be submitted to the Sussex County Planning and Zoning Office (Items which appear in bold still require submittal to the Department. Items in which a check mark appears next to them have been received by the Department):*

    a. *Sussex Conservation District*
    b. *Office of State Fire Marshal*
    c. *Delaware Department of Transportation (DelDOT)*
    d. *Sussex County Engineering Department*
    e. *Sussex County Geographic Information Office (formerly known as the Sussex County Department of Mapping and Addressing)*
    f. *Office of Drinking Water (Public Health)*
    g. *The local school district regarding bus stop provisions.*
    h. *Copies of any proposed HOA bylaws or deed restrictions to be imposed on property owners within the subdivision.*

    Pennoni Response (March 18, 2022): Understood

If you have any comments or need additional information, please call us at (302) 684-8030.

Sincerely,

PENNONI ASSOCIATES INC.

Alan Decktor, PE, ENV SP
Senior Engineer

U:\Accounts\RIBER\RIBER21001 - Spring Garden Property\DELIVERABLES\Planning Commission\TAC Comment resubmission\2022-03-08 RIBER21001-P&Z Response Letter.docx

January 24, 2022

Jamie Whitehouse, Director
Sussex County Planning & Zoning Office
2 The Circle
P.O. Box 417
Georgetown, DE 19947

Re: Four Winds / Subdivision 2021-25

Dear Mr. Whitehouse:

In regard to the above subdivision application, the Declaration of Restrictions for the development will contain provisions similar to the following:

1. **ORGANIZATION AND OPERATION OF PROPERTY OWNERS' ASSOCIATION**

A. It is the intension of the party of the first part that a non-profit corporation called the "Four Winds Homeowners Association, Inc." (hereinafter "Homeowners Association") is to be formed, at any time, to control and maintain the entranceway, roads, streets, street lights, sidewalks, stormwater management areas including surface drainage facilities and erosion and sedimentation control facilities, buffer aeras and any community or common areas, maintained for the general good of the development and vacant and unimproved lots in the development, whether or not such lots be owned by the party of the first part, its successors or assigns, and to do any other things and perform any labor necessary or desirable in the judgment of such association to maintain the development in good repair and condition and to landscape any property in the development not owned by private parties.

B. All persons purchasing property (exclusive of the party of the first

part) within the area herein conveyed, by acceptable of their deeds, agree to the formation of the said Homeowners Association and further agree to become members thereof and pay their pro rata share of the funds necessary for the performance of its functions. All lot owners, by accepting title to any lot, automatically become members of said Association and subject to all assessments, regulations and rules thereof. Assessments on private property owners (exclusive of the party of the first part) may be made annually but shall not exceed $_____ per annum, total, per lot unless such assessment over and above this amount is approved by a majority of the property owners, each lot being entitled to one vote regardless of how title hereto may be held or how many lots may be owned by one person, partnership or corporation. The party of the second part, their heirs and assigns, hereby agrees to be contractually liable for said assessment at law if the same is made in accordance herewith.

C. The Homeowners Association shall be managed by the developer until the roads and common areas have been conveyed to the Association or until the last lot is sold by the developer or until such earlier time as the developer deems appropriate, at which time a meeting of all lot owners shall be convened for the purpose of electing directors or officer including but not limited to president, treasurer and secretary of same form the general membership.

D. Upon the first of occur of the events mentioned in the preceding paragraphs, all privileges, rights, powers, duties and authority of the party of the first part contained in these restrictive covenants shall thereupon vest in the Association, and thereafter such privileges, rights, powers, duties and authority shall be exercisable by the Association, and thereafter whenever the expression "party of the first part" is used herein, it shall be taken to mean the Homeowners Association.

2. **USE OF ROADS**

A. All streets and roads shown on the plot of the development are Hereby dedicated for the use of the property owners. Each such property owner, by the acceptance of the conveyance of a lot or lots, hereby agrees to assume the responsibility of maintaining, repairing and replacing all streets and roads in the development. This responsibility shall be shared equally by every lot and shall be binding on the property owners, their heirs and assigns. All deeds to lots shall comply with 9 Delaware Code, Section 9623 by containing a statement that such private streets and roads are not maintained by the State.

B. The party of the first part hereby gives and grants to the party of the second part, their heirs, executors, administrators and assigns, and to all other persons now or hereafter entitled to occupy any lots within the area described above, the right, in common with the party of the first part, its successors and assigns, of free and uninterrupted use of the road, streets, courts and any other ways hereafter laid out and opened in or through said lands for the general use of all lot owners, for convenient ingress, egress and passage to and from various parts of the lands hereby conveyed, and to and from points outside of the area described above.

C. Notwithstanding the above, the developer and/or the Association reserves the right to dedicate all streets to public use and convey said streets to the State of Delaware.

D. The party of the first part reserves unto itself, its successors or assigns, easements for the erection, construction, maintenance and use of underground cables, polies, wires, conduits, culverts, pipes, and the necessary property or desirable attachments in connection therewith for the transmission of electricity for lighting, heating, telephone, cable television, and other purposes; for public and private sewers, storm water drains; pipe lines for supplying as, water and heat; and for any other public or quasi-public utility or function conducted, maintained or performed or to be installed in the future in any manner above or beneath the surface of the ground. The party of the first part, its agents, employees, successors and assigns (and, with the permission of the party of the first part, its successors or assigns), the representatives of utility companies, private or quasi-public, and the representative or public agencies shall have the right to enter upon such strips subject to said easements at any time, for any of the utilitarian purposes for which said easements are reserved.

3. **AGRICULTURAL USES**

This property is located in the vicinity of land uses primarily for agricultural purposes on which normal agricultural uses and activities have been afforded the highest priority use status. It can be anticipated that such agricultural uses and activities may now or in the future involve noise, dust, manure and other odors, the use of agricultural chemicals and nighttime farm operations. The use and enjoyment of this property is expressly conditioned on acceptance of any annoyance or inconvenience which may result from such normal agricultural uses and activities.

Please contact me if you have any questions.

Very truly yours,

FUQUA, WILLARD & SCHAB, P.A.

By:_____
James A. Fuqua, Jr.

JAF/jel
Pc: Vince Robertson, Esquire

TAB 2

PLUS

STATE OF DELAWARE EXECUTIVE DEPARTMENT
OFFICE OF STATE PLANNING COORDINATION

October 20, 2021

March 1, 2022

Alan Decktor, P.E. Pennoni
18072 Davidson Drive
Milton, DE 19968

Mr. David L. Edgell, AICP
Director, Office of State Planning Coordination
122 Martin Luther King, Jr. Blvd. South – Haslet Armory
Dover, Delaware 19901

RE: PLUS review 2021-09-04; Four Winds Farm Subdivision

PLUS review responses for Four Winds Farm Subdivision

Dear Mr. Decktor:

Thank you for meeting with State agency planners on September 22, 2021 to discuss the Four Winds Farm Subdivision project. According to the information received you are seeking review of a proposed 336 unit subdivision on 168.9 acres along Shingle Point Road in Sussex County.

We are in receipt of your comments dated October 20, 2021, as it pertained to our presentation of the above referenced project on September 22, 2021. We thank you for the opportunity to present our client's project on property located on the east side of Shingle Point Road, Sussex County, Delaware. The project presented was for a 336 residential development on approximately 168.9 acres within Sussex County. The proposed residential development lies within the AR-1 zoning district and within the designated Level 4 State Investment Areas.

Please note that changes to the plan, other than those suggested in this letter, could result in additional comments from the State. Additionally, these comments reflect only issues that are the responsibility of the agencies represented at the meeting. **The developers will also need to comply with any Federal, State, and local regulations regarding this property. We also note that as Sussex County is the governing authority over this land, the developers will need to comply with any and all regulations/restrictions set forth by the County.**

Strategies for State Policies and Spending

This project represents a major land development that will result in 336 residential units predominately in an Investment Level 4 area according to the *2020 Strategies for State Policies and Spending.* This project is also located within a Low Density area according to the Sussex County comprehensive plan.

Investment Level 4 indicates where State investments will support agricultural preservation, natural resource protection, and the continuation of the rural nature of these areas. New development activities and suburban development are not supported in Investment Level 4. These areas are comprised of prime agricultural lands and environmentally sensitive wetlands and wildlife habitats, which should be, and in many cases have been preserved.

The proposed subdivision is on a parcel of land that is in an Investment Level 4 according to the 2020 Strategies for State Policies and Spending. The property is immediately adjacent to the Town of Milton future potential expansion area. In a relative short distance to these lands are Investment Level 2 and 3 areas associated with the Town of Milton. The County has commented in the 2019 Comprehensive Plan stating, "It is important to note that the maps contained within the Strategies for State Policies and Spending document are not "parcel-based," so it is still necessary to thoroughly investigate the constraints of particular land parcels, even though they may be contained in one of the growth-oriented investment levels of the Strategies for State Policies and Spending." (Page 4-10). To make the statement that "New development activities and suburban development are not supported in Investment Level 4" when the area shown on the Investment Maps are arbitrary at best. As presented, the project was designed to navigate and remove proposed disturbance from the environmentally sensitive areas with the property. Furthermore, the close proximity to the Town of Milton offers a thoughtful and deliberate expansion of an urban boundary to accommodate future growth and provide interconnectivity to the Town.

From a fiscal responsibility perspective, development of this site is likewise inappropriate. The cost of providing services to development in rural areas is an inefficient and wasteful use of the State's fiscal resources. Over the longer term, the unseen negative ramifications of this development will become even more evident as the community matures and the cost of maintaining infrastructure and providing services increases.

Services are existing within close proximity to this parcel and their expansion are already in discussion. We have been in contact with both Artesian and the Town of Milton, for services to this parcel. Artesian holds the CPCN for both water and sewer for this property. Artesian has sanitary sewer services located north and south of the property. Milton Fire and Ambulance is less than 1.5 miles from the property. Transportation improvements in the form of road widenings, shoulders and Traffic Impact Study Improvements will be part of this application that will not burden the State's fiscal resources. The cost of maintaining infrastructure and providing services will be offset by the additional tax revenue generated by the residents who choose to make Sussex County their home.

In addition, the development of this site may be environmentally inappropriate due to the following:

- There is a high chance for historic archaeological resources on this parcel. The Beers

Map of 1868 shows the parcel owned by a Mrs. A Marshall. The Millsboro 1917 topographic maps show a house in the center of the parcel, which was expanded by 1944 and then demolished by 1954. There is a high potential of archaeological resources in the center of the parcel relating to these historic buildings and a Phase I archaeological survey is recommended prior to any ground disturbance.

With that said, the comments in this letter are technical, and are not intended to suggest that the State supports this development. This letter does not in any way suggest or imply that you may receive or may be entitled to permits or other approvals necessary to build on this property.

Department of Transportation — Contact Bill Brockenbroueh 760-2109

- The site access on Shingle Point Road (Sussex Road 249) must be designed in accordance with DelDOT's Development Coordination Marital, which is available at http://we'.cleldot.gov/Business/stibdiv'isions/index.shtm1'?clc=ch2npes.
  NOTED.

- Pursuant to Section 1.3 of the Manual, a Pre-Submittal Meeting is required before plans are submitted for review. The form needed to request the meeting and guidance on what will be covered there and how to prepare for it is located at https://www.de1dot.gov/Business/subdivisions/pdfs/Meeting Request Form.pdf?080220 17. The Traffic Impact Study Scoping Meeting, held on August 19, is not sufficient for this purpose.
  NOTED.

- Section 1.7 of the Manual addresses fees that are assessed for the review of development proposals. DelDOT anticipates collecting the Initial Stage Fee when the record plan is submitted for review and the Construction Stage Fee when construction plans are submitted for review.
  NOTED.

- Per Section 2.2.2.1 of the Manual, Traffic Impact Studies (TIS) are warranted for developments generating more than 500 vehicle trip ends per day or 50 vehicle trip ends per hour in any hour of the day. From the PLUS application, the total daily trips from the are estimated at 3,171 vehicle trip ends per day. Therefore, the plan meets the warrants for a TIS. As noted above, a scoping meeting was held on August 19, 2021.

  The purpose of a TIS, per DelDOT regulations, is to determine the offsite improvements for which the developer should be responsible to build or contribute toward. In addition to whatever other offsite improvements may be identified, DelDOT anticipates requiring the developer to improve Shingle Point Road, within the limits of their frontage, to meet De1DOT's standards associated with its Functional Classification. Shingle Point Road is a Local Road, for which the standard includes 11-foot lanes and 5-foot shoulders. Frontage, as defined in Section 1.8 of the Manual, includes the length of roadway perpendicular to lines created by the projection of the outside parcel comers to the roadway.

The Four Winds Farm Final TIS has been submitted to DelDOT. The following improvements are proposed as part of the Four Winds Farm Development:

· Provision of a full-movement site access on Shingle Point Road, approximately 0.8 miles north of DE Route 30
o Provision of a 185-foot Southbound Left-Turn Lane with a 100-foot taper.
o Provision of a 290-foot Northbound Right-Turn Lane with a 50-foot taper.
o Two-lane access with a single exit lane.

· Provision of a 5-foot wide bicycle lane along Northbound Shingle Point Road at the site access.
· Provision of a 10-foot wide shared-use path (SUP) along Shingle Point Road along the site frontage.
· Enter into a Signal Agreement or contribute to the Traffic Signal Revolving Fund (TSRF) for the potential future installation of a traffic signal at the intersection of DE Route 30 and Shingle Point Road, whether and when a traffic signal is installed at DelDOT's discretion.

- As necessary, in accordance with Section 3.2.5 and Figure 3.2.5-a of the Manual, DelDOT will require dedication of right-of-way along the site's frontage on Shingle Point Road. By this regulation, this dedication is to provide a minimum of 30 feet of right-of-way from the physical centerline of the road. The following right-of-way dedication note is required, **"An X-foot wide right-of-way is hereby dedicated to the State of Delaware, as per this plat."**

  Dedications are shown on the plans

- In accordance with Section 3.2.5.1.2 of the Manual, DelDOT will require the establishment of a 15-foot-wide permanent easement across the property frontage. The location of the easement shall be outside the limits of the ultimate right-of-way. The easement area can be used as part of the open space calculation for the site. The following note is required, **"A 15-foot-wide permanent easement is hereby established for the State of Delaware, as per this plat."**

  Dedications are shown on the plans

- Referring to Section 3.4.2.1 of the Manual, the following items, among other things, are required on the Record Plan:

  - A Traffic Generation Diagram. See Figure 3.4.2-a for the required format and content.
  - Depiction of all existing entrances within 600 feet of the entrance.
  - Notes identifying the type of off-site improvements, agreements (signal, letter) contributions and when the off-site improvements are warranted.

- Section 3.5 of the Manual provides DelDOT's requirements with regard to connectivity.

The requirements in Sections 3.5.1 through 3.5.3 shall be followed for all development projects having access to state roads or proposing DelDOT maintained public streets for subdivisions. DelDOT anticipates recommending that the County require stub streets for future interconnections to Tax Parcel No. 235-25.00-45.01 near Lot 29, to Tax Parcel No. 235-25.00-46.00 near Lot 42, and to Tax Parcel No. 235-25.00-38.00 at the proposed cul-de-sac bulb.

Future interconnectivity to adjacent roads are shown on the plans.

- Section 3.5.4.2 of the Manual addresses requirements for Shared Use Paths (SUP) and sidewalks. For projects in Level 3 and 4 Investment Areas, installation of paths or sidewalks along the frontage on State-maintained roads is required where there is an existing path with which to connect. There is no existing path near this development and DelDOT does not anticipate requiring an SUP along this development's road frontage.

- Section 3.5.4.4 of the Manual addresses accessways, paved pathways connecting a sidewalk or path along a road frontage to an internal sidewalk or path. DelDOT anticipates requiring an accessway from Shingle Point Road to the internal street system in the general area of the proposed cul-de-sac bulb.

- In accordance with Section 3.8 of the Manual, storm water facilities, excluding filter strips and bioswales, shall be located a minimum of 20 feet from the ultimate State right-of-way along Shingle Point Road.

- In accordance with Section 5.2.9 of the Manual, the Auxiliary Lane Worksheet should be used to determine whether auxiliary lanes are warranted at the site entrances and how long those lanes should be. The worksheet can be found at http://www.deldot.gov/Business/subdivisions/index.shtm1.

- In accordance with Section 5.14 of the Manual, all existing utilities must be shown on the plan and a utility relocation plan will be required for any utilities that need to be relocated.

Department of Natural Resources and Environmental Control Beth Krumrine 735-3480
Concerns Identified Within the Development Footprint

Wetlands

Maps from the Statewide Wetlands Mapping Project indicate the presence of non-tidal wetlands on the site. The application indicates that wetlands have been delineated. The application does not propose direct impacts to the wetlands.

- If the site design changes and dredge or fill of wetlands or subaqueous lands becomes necessary, permitting and/or authorization requirements apply as described below.

  NOTED.

- Federal permits from the U.S. Army Corps of Engineers may be necessary if dredge or

fill is proposed in non-tidal wetlands or streams. A delineation of waterways and wetlands must be completed by a qualified professional hired by the landowner. In certain cases, permits from the US Army Corps of Engineers triggers additional certifications from DNREC (Coastal Zone Federal Consistency Certification and 401 Water Quality Certification). Work with the U.S. Army Corps of Engineers to determine the appropriate permitting requirements.

Federal Contact: U.S. Army Corps of Engineers (Dover Office) at (267) 240-5278.
Website: htttis://www.nap,usace.armv.mil/Missions/Regttlatorv/Contacts/

State Contact: DNREC Wetlands and Subaqueous Lands Section at (302) 739-9943.
Website: Jittps://dnrec.alpha.delaware.gov/water/wetlands-silba0ueous/

Vegetated Buffer Zones

Site plans show a 25-foot vegetated buffer along non-tidal wetlands. Vegetated buffer zones placed adjacent to waterways and wetlands help improve water quality by reducing sediment and pollutants loads. They also provide valuable habitat and can help prevent encroachment of human activities into ecologically sensitive areas. Vegetated buffers are not equivalent to setbacks, as residential lots, walkways, and stormwater management facilities should not be contained within the vegetated bufferzone.

- The applicant must comply with minimum vegetated buffer widths as identified within county and municipal codes.

  NOTED. The Four Winds subdivision will comply with all county and local codes as they relate to vegetated buffers.

Contact: DNREC Wildlife Species Conservation & Research Program at (302) 735-3600.
Website: httns://dnrec.alpha.delaware.gov/fish-wildlife/contact-in(ormation/

Stormwater Management

This application proposes greater than 5000 square feet of land disturbing activities, therefore, this project will be subject to Delaware's *Sediment and Stormwater Regulations.*

- A Sediment and Stormwater Plan must be developed, then approved by the appropriate plan review agency prior to any land disturbing activity taking place on the site. For this project, the plan review agency is the Sussex Conservation District.

  We are finalizing the stormwater assessment study and submission is pending to Sussex Conservation District. The project will propose a series of stormwater management measures including SWM ponds, biofiltration measures, and ephemeral constructed wetlands to handle water quality and quantity requirements for stormwater runoff management. Constructed wetlands are engineered ecosystems designed to treat stormwater runoff. Wetland water treatment systems use plants and naturally occurring microorganisms to reduce nutrients, pathogens and sediments.

- Additionally, to address federal requirements, construction activities that exceed 1.0 acre of land disturbance require Construction General Permit coverage through submittal of an electronic Notice of Intent for Stormwater Discharges Associated with Construction

Activity. This form must be submitted electronically (htttis://apps,dnrec.delaware.gov/enoi/, select Construction Stormwater General Permit) to the DNREC Division of Watershed Stewardship, along with the $195 fee.
NOTED.

- Schedule a project application meeting with the appropriate plan review agency prior to moving forward with the stormwater and site design. As part of this process, you must submit a Stormwater Assessment Study.

  A Stormwater Assessment Study is currently being prepared by Pennoni and submission to Sussex Conservation District is pending.

Plan review agency contact: Sussex Conservation District at (302) 856-2105 or (302) 856-7219.
Website: https://www.sussexconservation.o /

General stormwater contact: DNREC Sediment and Stormwater Program at (302) 739-9921.
E-mail. DNREC.Stormwater@,delaware.gov.
Website: https://dnrec.alyha.de1aware.Nov/watershed-stewardshin/sediment-stormwater/

Wildlife Displacement

Development of this site is anticipated to displace local wildlife. Wildlife displaced by encroaching development may become a nuisance for homeowners.

- Future residents are not permitted to discharge firearms within 100 yards (300 feet) of any occupied dwelling or building to hunt or remove nuisance wildlife.
  NOTED.

Contact: DNREC Division of Fish and Wildlife at (302) 739-9912.
Website: https://dnrec.alpha.delaware.gov/fish-wildlife/wildlife/

Hydrologic Soils Group

Hydrologic Soil Group B/D (poorly drained) soils have been identified in the northeastem portion of the site. These soil types are typically not conducive to utilizing infiltration stormwater Best Management Practices such as bioretention and infiltration basins, which must meet minimum infiltration requirements.

- Any stormwater Best Management Practices that propose the use of infiltration or natural recharge shall include a soils investigation.

  NOTED.

Contact: DNREC Sediment and Stormwater Program at (302) 739-9921.
E-mail: DNRfiC.StormwateW,delaware.gov.
Website: https://dnrec.alpha.de1aware.Nov/watershed-stewardship/sediment-stormwater/

Wastewater permits — Large Systems

Artesian holds existing permits with the DNREC Groundwater Discharges Section's Large Systems Branch for wastewater disposal.

- If additional flows to Sussex County's system will require capacity updates, it is the responsibility of the permitee (Artesian) to notify the Large Systems Branch.

  We have been in contact with Artesian regarding the Four Winds subdivision.

Contact: DNREC Large Systems Branch at (302) 739-9948.
Website: httns://dnrec,aloha.de1aware.gov/water/groundwaters

Nutrient Management Plan

This project proposes open space of 61.85 acres.

- A nutrient management plan is required for all persons or entities who apply nutrients to lands or areas of open space of 10 acres or more.
  NOTED.

Contact: Delaware Department of Agriculture's Nutrient Management Program at (302) 698-4558. Website: httPs://agriculture.delaware.zov/nutrient-manauement/

State Historic Preservation Office — Contact Carlton Hall 736-7400

- The Delaware State Historic Preservation Office does not recommend development in Level 4 areas.

- There are no known archaeological sites on the parcel. However, it has well drained soils and a stream runs through the eastern comer of the parcel. These conditions are known to be favorable for past human activity and thus there is a high potential for prehistoric archaeological resources. The parcel has remained consistently wooded or cultivated, with little disturbance. Based on these conditions, this Office recommends a Phase I archaeological survey prior to any ground disturbance.

- There is a high chance for historic archaeological resources on this parcel. The Beers Map of 1868 shows the parcel owned by a Mrs. A Marshall. The Millsboro 1917 topographic maps show a house in the center of the parcel, which was expanded by 1944 and then demolished by 1954. There is a high potential of archaeological resources in the center of the parcel relating to these historic buildings. This Office recommends a Phase I archaeological survey prior to any ground disturbance.

- If any project or development proceeds, the developer should be aware of the Unmarked Human Burials and Human Skeletal Remains Law (Del. C. Title 7, Ch. 54) which is currently being revised.

- If there is federal involvement, in the form of licenses, permits, or funds, the federal agency, often through its client, is responsible for complying with Section 106 of the National Historic Preservation Act (36 CFR 800) and must consider their project's effects on any known or potential cultural or historic resources. For further information on the Section 106 process please review the Advisory Council on Historic Preservation's website at: www.achp.gov

- If there are any questions, inquiries, or concerns, feel free to contact the Delaware State Historic Preservation Office for assistance at 302-736-7400.

  According to the State Historic Preservation Office, as noted above, there are NO known archaeological sites on the parcel. We acknowledge that historical imagery shows a house on the parcel, which was demolished by 1954. However, it should also be noted that historical imagery also shows this parcel was actively farmed since the second half of the 1900s until present day. This parcel has been continuously disturbed by farming activities, such as tilling, harvesting, crop rotation, etc., so the statement that "there is high potential of archaeological resources" is contradictory to the State's first conclusion.

  We do not agree that this parcel has a high probability rate of archaeological findings. However, if during the rough grading of the site, artifacts are uncovered, the site development contractor will notify the proper authorities.

Delaware State Fire Marshal's Office — Contact John Rudd 323-5365

At the time of formal submittal, the applicant shall provide; completed application, fee, and three sets of plans depicting the following in accordance with the Delaware State Fire Prevention Regulation (DSFPR):

Fire Protection Water Requirements:

- Water distribution system capable of delivering at least 1000 gpm for l-hour duration, at 20-psi residual pressure is required. Fire hydrants with 800 feet spacing on centers. (Assembly)
- Where a water distribution system is proposed for single-family dwellings it shall be capable of delivering at least 500 gpm for 1-hour duration, at 20-psi residual pressure. Fire hydrants with 800 feet spacing on centers are required. (One & Two- Family Dwelling)
- One- and Two-Family dwellings are required by law to offer the homeowner an automatic sprinkler system, therefore infrastructure should accommodate water needs.
- Where a water distribution system is proposed for the site, the infrastructure for fire protection water shall be provided, including the size of water mains for fire hydrants and sprinkler systems.

NOTED

Fire Protection Features:

- All structures over 10,000 sq. ft aggregate will require automatic sprinkler protection installed.
- Buildings greater than 10,000 sq. ft, 3-stories or more, over 35 feet, or classified as High Hazard, are required to meet fire lane marking requirements.
- Show Fire Department Connection location (Must be within 300 feet of fire hydrant), and detail as shown in the DSFPR.
- Show Fire Lanes and Sign Detail as shown in DSFPR

Accessibility

- All premises, which the fire department may be called upon to protect in case of fire, and which are not readily accessible from public roads, shall be provided with suitable gates

and access roads, and fire lanes so that all buildings on the premises are accessible to fire apparatus. This means that the access road to the subdivision from Shingle Point Road must be constructed so fire department apparatus may negotiate it.

- Fire department access shall be provided in such a manner so that fire apparatus will be able to locate within 100 ft. of the front door. Streets designed without parking need to develop a plan for enforcement once HOA takes charge. Fire apparatus still need to negotiate the streets.
- Any dead-end road more than 300 feet in length shall be provided with a turn-around or cul-de-sac arranged such that fire apparatus will be able to turn around by making not more than one backing maneuver. The minimum paved radius of the cul-de-sac shall be 38 feet. The dimensions of the cul-de-sac or turn-around shall be shown on the final plans. Also, please be advised that parking is prohibited in the cul-de-sac or turn around.
- The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements.
- The local Fire Chief, prior to any submission to our Agency, shall approve in writing the use of gates that limit fire department access into and out of the development or property.

A minimum 24' wide paved roadway (in accordance with the Sussex County Code) will be constructed to serve all 336 lots.

Gas Piping and System Information:

- Provide type of fuel proposed and show locations of bulk containers on plan.

NOTED.

Required Notes:

- Provide a note on the final plans submitted for review to read "All fire lanes, fire hydrants, and fire department connections shall be marked in accordance with the Delaware State Fire Prevention Regulations"
- Proposed Use
- Alpha or Numerical Labels for each building/unit for sites with multiple buildings/units
- Square footage of each structure (Total of all Floors)
- National Fire Protection Association (NFPA) Construction Type
- Maximum Height of Buildings (including number of stories)
- Note indicating if building is to be sprinklered
- Name of Water Provider
- Letter from Water Provider approving the system layout
- Provide Lock Box Note (as detailed in DSFPR) if Building is to be sprinklered
- Provide Road Names, even for County Roads

NOTED.

Sussex County Housing — Contact: Brandy Nauman 855-7779

- Sussex County endeavors to promote non-discrimination and affordable housing whenever possible throughout the County. In this regard, the developer and associated financial institutions are encouraged to provide and finance affordable housing opportunities to Sussex County residents in all new developments, and affirmatively market those affordable housing units to diverse populations.

- For questions about opportunities available for affordable housing projects within Sussex County, please consult Sussex County's "Affordable Housing Support Policy". The policy along with other resources are available on the County's Affordable & Fair Housing Resource Center website: www.sussexcountyde.gov/affordable-and-fair-housing-resource-center. The County's Community Development & Housing Department can advise about existing affordable housing opportunities in Sussex County and the appropriate County Department to contact regarding specific development issues concerning future affordable housing projects within Sussex County.

- The Community Development & Housing Department can also explain and assist with any financial support or incentives that may be available to a project from federal, state and county sources, as well as private funding sources that also promote affordable housing in Sussex County.

- Please understand that all residential projects, including Affordable Housing Projects are subject to the applicable provisions of the Sussex County Subdivision and Zoning Codes, and the approval processes set forth in those Codes.

- On behalf of Sussex County, we look forward to cooperating with you and your project as it moves forward.

Sussex County Planning & Zoning — Contact Lauren Devore 855-7878

- The Applicant is required to engage in a Pre-Application Meeting with Department staff prior to the submittal of a formal application to the Department of Planning and Zoning.

- The Department of Planning and Zoning has received an Application for the Four Winds Farm Subdivision and the County Project Reference Number for the project is Subdivision No. 2021-25. The Application was received by the Department on 8/23/21.

- The proposal of 336 single-family units to be located on a parcel containing 168.9 acres translates to a density of 1.98 dwelling units to the acre. This meets the minimum density permitted within the AR-1 Zoning District of 2 dwelling units to the acre.

- Please include a note on the plans which indicates that the proposed project is not located within the Henlopen Transportation Improvement District (TID).

- Staff note that there are no Tax Ditches or Flood Zones present on the property.

- Please note on the plans that the parcels are located within an area of "poor" groundwater recharge potential in order to comply with Chapter 89 "Source Water Protection" of the Sussex County Code (§89-7).

- Staff note that the parcels retain only one-way-in, one-way-out access to the subdivision. The Planning and Zoning Commission often desires more than one entrance or an easement for emergency access purposes in the event of an emergency occurring on the parcel.

  NOTED.

- It is noted that several stormwater management ponds have been provided within the

location of the required landscaped buffer. Please note that while stormwater management outfalls are permitted to be placed within the buffer area, stormwater management ponds are not. Please ensure that all stormwater management ponds are provided in such a way that the required 30-ft landscaped buffer may be installed.

NOTED.

- Please indicate if there will be additional landscaping provided in order to screen the adjacent Lots surrounding the proposed clubhouse and inground pool amenity, specifically Lot Numbers 216, 217-219 and Lot 182.

  NOTED. A Landscape Plan will be provided for the Four Winds subdivision and include all necessary vegetated buffers and screening.

- Please note that these are informal staff comments and do not prejudice any decision that the Sussex County Planning and Zoning Commission may wish to make as part of a formal application.

Sussex County Engineering Department — Contact Chris Calio 855-1299

- The project is within a Tier 3 area for wastewater planning. Sussex County does not currently have a schedule to provide sanitary sewer to these parcels. The Sussex County Engineering Department recommends the project receive wastewater service from a public utility or municipality.

  We have been in contact with Artesian as it relates to utility services to this project as they hold the CPCN for the property.

Following receipt of this letter and upon filing of an application with the local jurisdiction, the applicant shall provide to the local jurisdiction and the Office of State Planning Coordination a written response to comments received as a result of the pre-application process, noting whether comments were incorporated into the project design or not and the reason therefore.

Thank you for the opportunity to review this project. If you have any questions, please contact me at 302-739-3090.

Sincerely,

David L. Edgell, AICP
Director, Office of State Planning Coordination

CC: Sussex County

According to the Office of State Planning and Coordination (OSPC), the Preliminary Land Use Service (PLUS) process *involves reviews by all applicable state agencies at the start of the land development process, adding value and knowledge to the process without taking over the authority of local governments to make land use decisions*. The process according to OSPC is to identify and mitigate potential impacts of development which may affect areas beyond local boundaries. The application we have provided to the State and the County has provided the studies, designs, reports and facts that recognize the States requirements when it comes to proactive planning for a project located within a Low Density (Level 4) Area. The application follows the Agricultural Residential (AR-1) Zoning requirements for Major Subdivisions in accordance with Chapter 115 and 99 whereby the application has been planned to cluster the lots to be outside environmentally sensitive areas and meets the superior design requirements as well as a density that equals low-density standard lot option subdivision. The 2019 Sussex County Comprehensive Plan was also used as a guide for development related decisions when preparing the application. Careful attention was used in the collaborative planning of the project as it pertains to conservation, open space, utilities, housing and density, community design and mobility. The application promotes, in accordance with past, present and future needs, the health, safety, morals, convenience, order, prosperity and general welfare of the community and Sussex County.

Respectfully Submitted,

Mark H. Davidson, VP
Principal Land Planner

Eric W. Wahl, RLA
Senior Landscape Architect

Alan M. Decktor, PE, ENV SP
Senior Engineer

cc. SC Planning and Zoning

Preliminary Land Use Service (PLUS)

Delaware State Planning Coordination
122 Martin Luther King Jr. Blvd., South • Dover, DE 19901 • Phone: 302-739-3090 • Fax: 302-739-5661

Purpose of PLUS - -The PLUS process is intended to provide consolidated State comments regarding the proposed project. The Applicant is encouraged to submit the application during the concept stages of planning as this process often offers recommendations for changes to the plan. The application should be submitted after the pre-application meeting with the local jurisdiction but before formal application is made.

Please complete this PLUS application in its entirety. **All questions must be answered. If a question is unknown at this time or not applicable, please explain.** Unanswered questions on this form could lead to delays in scheduling your review. This form will enable the state staff to review the project before the scheduled meeting and to have beneficial information available for the applicant and/or developer at the time of review. If you need assistance or clarification, please call the State Planning Office at (302) 739-3090.

PLUS Number (to be completed by OSPC): _____
Investment Level Per Strategies for State Policies and Spending (to be determined by OSPC): _____

1. Project Title/Name: Four Winds Farm Subdivision
2. Location (please be specific): On Shingle Point Road, west of Harbeson Road.
3. Parcel Identification #: 235-25.00-39.00
4. County or Local Jurisdiction Name: where project is located: Sussex County
5. If contiguous to a municipality, are you seeking annexation:
6. Owner's Name: Spring Garden, LLC

   Address: 16793 Island Farm Lane

   City: Milton State: DE Zip: 19968

   Phone: Fax: Email:

7. Equitable Owner/Developer **(This Person is required to attend the PLUS meeting)**: Ribera Development, LLC

   Address: 8684 Veteran's Highway, Suite 203

   City: Millersville State: MD Zip: 21108

   Phone: (443) 871-0486 Fax: Email: johnstamato@riberadev.com

8. Project Designer/Engineer: Pennoni - Attn Alan Decktor, PE

   Address: 18072 Davidson Drive

   City: Milton State: DE Zip: 19968

   Phone: (302) 684-8030 Fax: Email: adecktor@pennoni.com

9. **Please Designate a Contact Person, including phone number, for this Project:** Alan Decktor

Information Regarding Site:

10. Type of Review: ☐ Rezoning, if not in compliance with certified comprehensive plan ☐ Site Plan Review ■ Subdivision

11. Brief Explanation of Project being reviewed: 336 Lots Single-Family Detached, Cluster

If this property has been the subject of a previous LUPA or PLUS review, please provide the name(s) and date(s) of those applications. n/a

12. Area of Project (Acres +/-): 168.9 +/- acres Number of Residential Units: 336 Commercial square footage:

13. Present Zoning: AR-1

14. Proposed Zoning: AR-1, Cluster Subdivision

15. Present Use: Farmland/Woods/Wetlands

16. Proposed Use: Single-Family Detached Homes

17. Water: ☐ Central (Community system) ☐ Individual On-Site ■ Public (Utility)
Service Provider Name: Artesian

Will a new public well be located on the site? ☐ Yes ■ No

18. Wastewater: ☐ Central (Community system) ☐ Individual On-Site ■ Public (Utility)
Service Provider Name: Artesian

Will a new community wastewater system be located on this site? ☐ Yes ■ No

19. If residential, describe style and market segment you plan to target (Example- Age restricted):
none

20. Environmental impacts: Stormwater Management

How many forested acres are presently on-site? 31.13+/- AC How many forested acres will be removed? 2.91+/- AC

To your knowledge, are there any wetlands, as defined by the U.S. Army Corps of Engineers or the Department of Natural Resources and Environmental Control, on the site? ■ Yes ☐ No

Are the wetlands: ☐ Tidal Acres:
■ Non-tidal Acres: 2.96+/-

If "Yes", have the wetlands been delineated? ■ Yes ☐ No Kenneth Redinger, Wetland Scientist #2126

Has the Army Corps of Engineers signed off on the delineation? ☐ Yes ■ No

Will the wetlands be directly impacted and/or do you anticipate the need for wetland permits? ☐ Yes ■ No If "Yes", describe the impacts:

How close do you anticipate ground disturbance to wetlands, streams, wells, or waterbodies? 62' +/-

21. Does this activity encroach on or impact any tax ditch, public ditch, or private ditch (ditch that directs water off-site)? ☐ Yes ■ No

22. List the proposed method(s) of stormwater management for the site:
SWM PONDS, BMP PER DNREC APPROVED LIST

23. Is open space proposed? ■ Yes ☐ No If "Yes," how much? Acres: 61.85+/- AC

What is the intended use of the open space (for example, active recreation, passive recreation, stormwater management, wildlife habitat, historical or archeological protection)?
Active, Passive, Stormwater management, Buffer, Non Tidal Wetlands

24. Are you considering dedicating any land for community use (e.g., police, fire, school)? ☐ Yes ■ No

25. Please estimate How many vehicle trips will this project generate on an average weekday? A trip is a vehicle entering or exiting. If traffic is seasonal, assume peak season: 3,171 trips

What percentage of those trips will be trucks, excluding vans and pick-up trucks? 5%

26. Will the project connect to state maintained roads? ☒ Yes ☐ No Shingle Point Road

27. Please list any locations where this project physically could be connected to existing or future development on adjacent lands and indicate your willingness to discuss making these connections.
Yes, CD Carey Farms, LLC property adjacent

28. Are there existing sidewalks? ☐ Yes ☐ No; bike paths ☐ Yes ☒ No
Are there proposed sidewalks? ☒ Yes ☐ No; bike paths ☐ Yes ☒

Is there an opportunity to connect to a larger bike, pedestrian, or transit network? ☐ Yes ☒ No

29. To your knowledge, is this site in the vicinity of any known historic/cultural resources or sites? ☐ Yes ☒ No

Has this site been evaluated for historic and/or cultural resources? ☐ Yes ☒ No

Would you be open to a site evaluation by the State Historic Preservation Office? ☐ Yes ☒ No

30. To promote an accurate review of your parcel's features, would you permit a State agency site visit? ☒ Yes ☐ No
Person to contact to arrange visit: Developer phone number: 443-871-0486

31. Are any federal permits, licensing, or funding anticipated? ☐ Yes ☒ No

I hereby certify that the information on this application is complete, true and correct, to the best of my knowledge.

Signature of property owner — Date: 8/18/21

Signature of Person completing form (If different than property owner) — Date: 4/5/2021 8/18/2021

Signed application must be received before application is scheduled for PLUS review.

This form should be returned to the Office of State Planning **electronically** at plus@state.de.us **along with an electronic copy of any site plans and development plans for this site.** Site Plans, drawings, and location maps should be submitted as image files (JPEG, GIF, TIF, etc.) or as PDF files. GIS data sets and CAD drawings may also be submitted. If electronic copy of the plan is not available, contact The Office of State Planning Coordination at (302) 739-3090 for further instructions. A signed copy should be forwarded to the Office of State Planning, 122 William Penn Street, Dover, DE 19901. Thank you for this input. Your request will be researched thoroughly. **Please be sure to note the contact person** so we may schedule your request in a timely manner.

TAB 3

99-9C CODE REQUIREMENTS

§ 99-9. *C. In addition to the other provisions contained within this article, the approval of a subdivision shall include consideration of the following: [Added 7-8-1997 by Ord. No. 1152]*

(1) Integration of the proposed subdivision into existing terrain and surrounding landscape.

Careful attention was directed at the location of the lots and roadway within the property as well to any environmentally sensitive areas within the property. The project provides for the required buffers along the wetland areas as well as proffered buffers along wetland areas. There are buffers provided along the adjacent residential properties which will be provided with interconnectivity for those lands to connect with Four Winds. The subdivision will be integrated into the existing terrain and surrounding landscape with proposed open space, screening of proposed homes from adjacent state roads and adjacent properties, native trees species retention, and diversely planted buffers.

(2) Minimal use of wetlands and floodplains.

In order to evaluate wetlands, Pennoni reviewed mapped soils data, available wetland inventory maps, FEMA maps and performed an on-site preliminary wetland investigation and delineation. The evaluation indicated approximately 2.96-acres of non-tidal wetlands, refer to Wetland Delineation Plans (V-0201 / V-0202) prepared by Pennoni Associates. Wetlands are regulated under the Federal Clean Water Act, Section 404 as waters of the United States of America. Delaware regulates all its tidal wetlands and non-tidal wetlands that include 400 or more contiguous acres under the Delaware Wetlands Act (7 Del. Code, Chapter 66) and the Wetlands Regulations (7 DE Admin. Code 7502).

The wetlands are restricted to portions of the wooded area on the property and are fragmented into two areas. The remaining lands were classified as uplands. If required, a Jurisdictional Determination of the flagged and located wetland will be submitted to the US Army Corp of Engineers and a JD Letter will be obtained and made part of the final subdivision plan submittal. However, no activities (dredging, draining, filling, construction of any kind, bulkheading, mining, drilling and excavation) are anticipated to take place within wetlands on this project. Therefore, a Delaware Wetlands and Subaqueous Lands Permit Application Form for Subaqueous Lands, Wetlands, Marina, and 401 Water Quality Certification Projects, and USACE Nationwide permit are not required for this project. As such, a jurisdictional determination conducted by DNREC Division of Water Resources or the USACE Philadelphia District is not required for this project.

The proposed Four Winds subdivision does not disturb or encroach into the existing wetlands on the property. In fact, the proposed design was generated with the intent of Sussex County's Comprehensive Plan goals (and proposed ordinance amendment) being applied to Four Winds. The minimum distance between a proposed lot and the edge of wetlands is approximately 65', more than double the currently required as well as recommended buffer from non-tidal wetlands, In addition, Four Winds meets the goals

of the Sussex County Comprehensive Plan, specifically Goal 4.3 where we *considered strategies for preserving environmental areas from development and the protection of wetlands and waterways*; Goal 5.1 by *encouraging development practices and regulations that support natural resource protection;* and Goal 5.3 where we are providing *protection of the natural functions and quality of the County's surface waters, groundwater, wetlands, and floodplains.* By implementing superior design elements and recognizing the County's focus on protecting natural resources, the Four Winds subdivision exhibits environmental stewardship through better design.

Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) dated June 20, 2018, Map Number 10005C0164J, 10005C0325L and 10005C0310L, the subject property is located in a Zone "X" unshaded, which is an area outside the 500-year floodplain, less than 0.2% annual probability of flooding.

(3) Preservation of natural and historical features.

Pennoni reviewed available historical information for indications of past usage that may have had an environmental impact on the site. The historical review included aerial photographs of the site and surrounding vicinity for year 1937, 1954, 1961, 1968, 1992, 1997, 2002, 2007, 2012 and 2017 (see MAPS Tab in hearing booklet). Information depicted on aerial photographs indicates an un-developed area throughout the time this property was documented photographically.

According to the State Historic Preservation Office I the October 2021 PLUS letter, there are no known archaeological sites or known National Register listed or eligible properties on the parcel.

(4) Preservation of open space and scenic views.

The "Preliminary Subdivision Plan" drawings depict open space which adds up to approximately 51.2% of the entire site area which exceeds the minimum open space as required by the County's Code. This open space is provided to the residents of the development for recreation, landscaping, stormwater management, wildlife habitat, and ecosystem services. Expansive open space for scenic views from the back of residential lots are being established throughout the site to create more opportunities for residents to interact with nature.

The overall open space and recreational areas include open spaces for a clubhouse and associated recreational areas, a village green, 28+ acres of existing mature wooded area, and sidewalks along the roadways within the development in addition to a trail and overlook. Passive recreation spaces in the form of improved landscape areas and related amenities are provided throughout the site and will provide opportunities for residents to engage in leisure activities. These amenities will offer opportunities for residents to enjoy the site's landscape features and variety of open spaces.

Areas not planned as landscape beds will be improved and maintained to provide open space to the community and useable lawn area for passive recreation. Stormwater management structures that will provide recreational opportunities as well are included in the passive/active recreation open space since these features act as an attractive landscape element that significantly enhances the park-like setting of the open spaces and the overall passive recreational experience for its users. These stormwater measures, as well as existing wooded areas, will also provide educational opportunities regarding ecosystem services and contribute to the natural functions that sustain our regional biome.

Street lighting will meet a design standard that is similar to all newer projects with downward illumination and spacing for safety along all internal streets. Sidewalks will provide an orientation to pedestrians with the ability to walk and exercise as well as provide a safe mode of pedestrian circulation for the community.

Final plans will include a landscape design that utilizes native species for the buffer areas. Native species will also be utilized in buffer and yard plantings adjacent to existing single-family homes.

(5) Minimization of tree, vegetation and soil removal and grade changes.

It is recognized that forests provide important water quality, air quality and wildlife benefits both for the site and the region as a whole, and as such, great caution will be exercised to preserve the existing forested resources on-site as much as possible.

Four Winds proposed to only impact 3+/- acres of existing mature tress which are primarily along the outer edge of the existing tree line within the property. Thus, leaving approximately 30-acres of forested area within the property.

(6) Screening of objectionable features from neighboring properties and roadways.

A 4 to 6 foot vegetated berm and buffer is proposed along Shingle Point Road; extended setbacks to the back of the residential lots from adjacent properties are proposed along with the require 20-foot forested and/or landscape buffer, as defined in § 99-5, Subsections A through J.

(7) Provision for water supply.

Water service for the proposed residential subdivision will be provided by Artesian.

The property is currently within the CPCN of Artesian and will access water to the project from a 12” water main that is being installed along DE Route 30. Fire Hydrants

will be placed within the subdivision to add an extra level of fire protection to the community. In addition to the subdivision, the main extension we install along Shingle Point Road will have fire hydrants install along the main as well, providing an added level of protection for both domestic and fire water services to the surrounding properties and community.

(8) Provision for sewage disposal.

Sanitary Sewer service for the proposed residential subdivision will be provided by Artesian.

The property is currently within the CPCN of Artesian and sanitary sewer connection is currently available north and south of the project.

(9) Prevention of pollution of surface and groundwater.

The stormwater management designs for Four Winds will reduce runoff, mimic natural watershed hydrologic processes, and cause no adverse impact to property. This shall be accomplished by treating runoff at the source, disconnecting impervious surfaces, preserving or enhancing natural flow paths and vegetative cover, conserving or enhancing natural open spaces and riparian areas, and other measures that simulate natural watershed hydrologic processes. The resource protection event design will provide runoff management measures to reduce the volume of stormwater runoff generated on the property, recharge groundwater, minimize impacts to downstream channels from runoff leaving the property, and reduce pollutant loads discharged into receiving waters.

(10) Minimization of erosion and sedimentation, minimization of changes in groundwater levels, minimization of increased rates of runoff, minimization of potential for flooding and design of drainage so that groundwater recharge is maximized.

The Four Winds project will demonstrate successful management of any increase in stormwater runoff volume from predevelopment land use conditions. Successful management of increased stormwater volume shall include but not be limited to; recharge, infiltration and reuse where soils and site conditions are applicable. For any increase in volume that cannot be recharged, infiltrated or reused, volume management will be achieved by modifying the release rate for the increase in volume so as not to increase the flood elevation for all storms up to and including the 100-year return period.

It is the stated goal of the project to provide in general, all Erosion & Sediment Control (ESC) and Stormwater Management (SWM) Best Management Practices (BMPs) which will comply with DNREC standards and specifications in accordance with current guidance documents and policies. Green Technologies and Pollution Control Strategies will be implemented to reduce nitrogen and phosphorus loads to their mandated levels.

In completing the design for the stormwater conveyance and management system, the designers and the developer have been and will continue to work with the Sussex Conservation District to achieve the best management practice for the development.

(11) Provision for safe vehicular and pedestrian movement within the site and to adjacent ways

Sidewalks have been provided along all roadways within the development. Crosswalks are shown in pertinent locations, and a pedestrian trail has been included within an open space area to take advantage of the views.

There are two potential vehicular connections to adjacent properties, should they be developed in the future. One is the cul-de-sac in the northern corner of the parcel. This cul-de-sac can potentially be converted into a connection to the adjacent property to the northeast. In addition, there is an opportunity for a connection at the southern corner of the property. We have included a potential connection(s) within a 50-foot easement in this area.

(12) Effect on area property values.

Four Winds will create an attractive residential target location for those migrating to Sussex County because of its proximity to the Beach and attractions and its accessibility to the nearby Town. The effect on area property values will only benefit from this style of development.

(13) Preservation and conservation of farmland.

Four Winds subdivision provides a 50-foot-wide buffer around the perimeter of the property, which is more than the minimum requirement. Within this buffer is a landscaped area, planted with a diverse mix of species that are majority native to the region. This planted buffer will help to screen adjacent uses as well as provide ecosystem services to the local area. The required agricultural use notes will be placed on the plans and within the Covenant & Restrictions to notify future residents of the adjacent farming activities that occur on adjacent and surrounding properties.

(14) Effect on schools, public buildings and community facilities.

The project will have a positive benefit on schools by generating economic benefits in the form of increased revenues through property taxes. The applicant shall coordinate and cooperate with the local school district's transportation manager to establish a school bus stop area, if the transportation manager deems a stop area necessary or appropriate. At the same time, the expected demographic of the purchaser and impact on the school system is not expected to create any burden from the number of pupils projected to attend the local school district. The Town of Milton will recognize a positive economic growth through an expansion in new commercial opportunities and employment growth which ultimately benefit the Towns revenue.

(15) Effect on area roadways and public transportation.

This project will provide roadway improvements along its frontage. To allow for future capacity, additional right-of-way dedication along our frontage, permanent easements and additional stormwater management setbacks will be dedicated to the Public. This would increase the aesthetic benefits to the community. The roadways will be widened to their required functional classification of a local road with 11' wide travel lanes and 5' wide shoulders along the property frontage on both sides of the road.

The Four Winds Farm Final TIS has been submitted to DelDOT. The following improvements are proposed as part of the Four Winds Farm Development:

· Provision of a full-movement site access on Shingle Point Road, approximately 0.8 miles north of DE Route 30
o Provision of a 185-foot Southbound Left-Turn Lane with a 100-foot taper.
o Provision of a 290-foot Northbound Right-Turn Lane with a 50-foot taper.
o Two-lane access with a single exit lane.

· Provision of a 5-foot wide bicycle lane along Northbound Shingle Point Road at the site access.
· Provision of a 10-foot wide shared-use path (SUP) along Shingle Point Road along the site frontage.
· Enter into a Signal Agreement or contribute to the Traffic Signal Revolving Fund (TSRF) for the potential future installation of a traffic signal at the intersection of DE Route 30 and Shingle Point Road, whether and when a traffic signal is installed at DelDOT's discretion.

(16) Compatibility with other area land uses.

Ribera Development, LLC has recognized the compatibility between this project and the surrounding area land uses. They also recognize that Four Winds is adjacent to, but not included in the Town of Milton Future Land Use/Potential Expansion Area, according to their 2018 Comprehensive Plan. Milton's residential zoning district allows for 4 units per acre. Four Winds provides for less than 2 units per acre (low density housing) within an area predominantly having low density zoning. Four Winds is a development that will be compatible with the future housing community and growth of the Town of Milton, as well as provide for a transition with the existing and proposed projects in Sussex County. According to Sussex County Zoning Code 115-194.3 C.(3) *The maximum density shall be the allowable density of the underlying zoning district for developments using central water and wastewater collection and treatment systems. "Central sewer system" means centralized treatment and disposal facilities as defined in § 115-194A. Within this Overlay District, clustering of single-family detached lots to a minimum lot size of 7,500 square feet is permitted in all residential zoning districts using a central water and sewer system.* In addition, Four Winds has been designed to minimize any adverse impacts on adjacent properties by providing forested landscape buffers, interconnection to adjacent

undeveloped properties, a single point full-access entrance to the property for controlled vehicular safety, and providing an emergency access entrance along the Shingle Point Road. These design elements interrelate with the County's strategies for preserving the rural environment, conserving more open space, and providing for design ingenuity while protecting existing and future developments.

(17) Effect on area waterways.

Ingram Branch is located to the west of Four Winds, and Round Pole Branch is located to the east. The Four Winds subdivision will have negligible impact on these waterways due to their distance from the property and because of the BMPs proposed on the site.

TAB 4

TIS-DelDOT

Christiana Executive Campus
121 Continental Drive, Suite 207
Newark, DE 19713
T: 302-655-4451
F: 302-654-2895

www.pennoni.com

February 11, 2022

Mr. T. William Brockenbrough, Jr.
County Coordinator
DelDOT Planning
800 Bay Road
P.O. Box 778
Dover, Delaware 19903

RE: Response to DelDOT's Comments for *Submission 2: Preliminary TIS*
Four Winds Farm Development
Traffic Impact Study
Sussex County, Delaware

Dear Mr. Brockenbrough:

Pennoni is in receipt of DelDOT's comments, dated January 18, 2022, regarding *Submission 2: Preliminary TIS* for the Four Winds Farm Development Traffic Impact Study (TIS). Pennoni has prepared this response letter to address DelDOT's comments, and to accompany the submitted *Final Traffic Impact Study (FTIS)*, dated February 11, 2022. Pennoni's responses to DelDOT's comments are as follows:

Comment 1: At the intersection of US Route 9 / Shingle Point Road / French Road, the trip assignment for the westbound approach is inconsistent with the distributions for the Azalea Woods committed development. Please confirm trip assignment and revise accordingly (see enclosed Figure 6B).

Pennoni Response: The trip assignments for the Azalea Woods committed development have been revised at the intersection of US Route 9 / Shingle Point Road / French Road. Refer to Figure 6B in the Final TIS. Figures 14A through 15B have also been revised, accordingly.

Comment 2: At the site entrance please include the background through volumes on the future volume diagrams (see enclosed Figures 14A, 14B, 15A, and 15B).

Pennoni Response: The through volumes along Shingle Point Road at the proposed site access have been revised to include the background traffic. Refer to Figures 14A through 15B in the Final TIS.

If you have any questions or concerns, please call me at 302-351-5232 or email me at tlord@pennoni.com.

Sincerely,

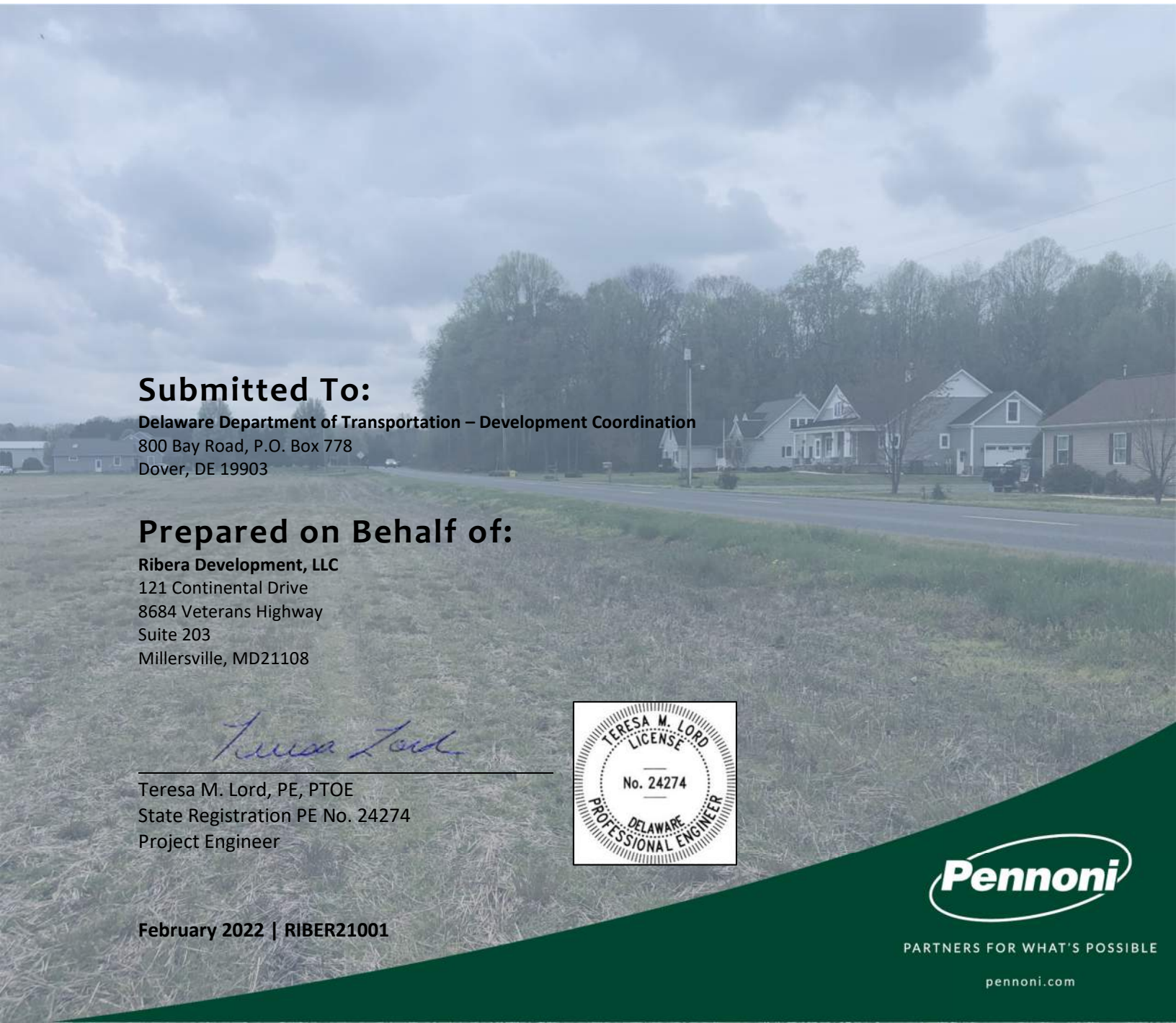
Teresa Lord, PE, PTOE
Pennoni Associates Inc.

Cc Pamela Steinebach, DelDOT Planning
Olayiwola Okesola, DelDOT Planning
Joshua Schwartz, DelDOT Planning
Claudy Joinville, DelDOT Planning
Jamie Whitehouse, Sussex County Department of Planning Services
John Stamato, Ribera Development, LLC
Mark Davidson, Pennoni
Alan Decktor, Pennoni

FINAL TRAFFIC IMPACT STUDY

FOUR WINDS FARM DEVELOPMENT

SUSSEX COUNTY, DE



Submitted To:

Delaware Department of Transportation – Development Coordination
800 Bay Road, P.O. Box 778
Dover, DE 19903

Prepared on Behalf of:

Ribera Development, LLC
121 Continental Drive
8684 Veterans Highway
Suite 203
Millersville, MD21108

Teresa M. Lord, PE, PTOE
State Registration PE No. 24274
Project Engineer

TERESA M. LORD
LICENSE
No. 24274
DELAWARE
PROFESSIONAL ENGINEER

February 2022 | RIBER21001

Pennoni
PARTNERS FOR WHAT'S POSSIBLE
pennoni.com

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Executive Summary

Ribera Development, LLC seeks to develop the Four Winds Farm Development, consisting of 336 single-family detached houses, on an approximate 169.00-acre assemblage of parcels in Sussex County. The proposed development will be located on the east side of Shingle Point Road (S249), between DE Route 30 and DE Route 5. The development will be located on Tax Parcel: 235-25.00-39.00.

The parcels in which the development is proposed to be located are currently zoned as AR-1 (Agricultural Residential). The developer does not plan to rezone the land. Full-movement access to the proposed development will be provided along Shingle Point Road (S249). Construction is anticipated to be complete in 2030.

As requested in the TIS Scoping Meeting Memorandum dated September 24, 2021, provided in **Appendix A,** and shown on Figure 1A, the following intersections will be evaluated as part of this Traffic Impact Study (TIS):

1. Delaware Route 30 / Shingle Point Road (SR 249)
2. Shingle Point Road (SR 249) / Briarwood Road (SR 253)
3. US Route 9 / Shingle Point Road (SR 249)
4. Delaware Route 30 / Prettyman Road (SR 254)
5. Pettyjohn Road (SR 255) / Prettyman Road (SR 254)
6. Delaware Route 5 / Shingle Point Road (SR 249)
7. Delaware Route 5 / Sand Hill Road (SR 319)
8. Delaware Route 5 / Mulberry Street / Atlantic Street (SR 88)
9. Shingle Point Road (SR 249) / Proposed Site Access

The TIS will evaluate the traffic impacts of the proposed development during the weekday morning and weekday afternoon peak hours for the following scenarios:

- Existing Conditions (2021);
- Case 1A: 2030 without development and with Committed Developments only;
- Case 1B: 2030 with development and with Committed Developments only; and
- Case 2A: 2030 without development and with Committed + Pending Developments;
- Case 2B: 2030 with development and with Committed + Pending Developments.

Additionally, it was requested to evaluate the summer Saturday midday peak hour for the intersection of US Route 9 and Shingle Point Road (SR 249).

The weekday manual turning movement (MTMs) traffic counts were conducted on Tuesday, October 5, 2021 during the weekday morning and afternoon peak periods at the study intersections. Additionally, Saturday Midday peak period traffic counts were conducted on Saturday, August 21, 2021 at the intersection of US Route 9 and Shingle Point Road (SR 249). The MTM traffic count data can be found in **Appendix C**.

Automatic Traffic Recorder (ATR) counts were completed along Shingle Point Road (SR 249) in the vicinity of the proposed site access. Volume, Speed, and Classification data were collected from Friday, October 1 through Thursday, October 7, 2021 for both directions along Shingle Point Road (SR 249). The ATR traffic data can be found in **Appendix D**.

Five (5) Committed Developments were requested within the TIS Scoping Meeting Memorandum dated September 24, 2021 to be included as background traffic within the future analyses:

- Hawthorne Phases 1-6 (f.k.a. Paradise Lakes & Landlock Acres): 254 single-family detached houses, with 48 units remaining to be built (as of October 15, 2021)
- Azalea Woods (f.k.a. Wilson Moore): 610 single-family detached houses
- Heritage Creek 1: 58 age-restricted detached houses
- Vines of Sand Hill (f.k.a. The Estates of Sand Hill Valley, Whispering Meadows, Sposato Property): 393 single-family detached houses, with 301 units remaining to be built (as of October 15, 2021)

- Cypress Grove (f.k.a. Clifton Property): 71 units of low-rise multi-family housing, 168 units of mid-rise multi-family housing, and 20,000 square feet of retail space

DelDOT also requested that two (2) additional Pending Developments be included in an additional future case to be evaluated:

- Granary at Draper Farm: 875 single-family detached houses, 475 units of multi-family mid-rise houses, and 60,000 square feet of retail space
- Prettyman Property: 100 single-family detached houses

The study intersections were evaluated utilizing HCS7 capacity analysis software for the existing and future conditions, both without and with the proposed development. Based on the future analysis, the following improvements are assumed to be required in the future **by other developments in Cases 1A and 2A**:

- US Route 9 / Shingle Point Road (SR 249)
  a. *Committed Developments*: Traffic Signal + Eastbound US Route 9 Left-Turn Lane
  b. *Committed + Pending Developments*: Traffic Signal + Eastbound US Route 9 Left-Turn Lane
- Delaware Route 5 / Shingle Point Road (SR 249)
  a. *Committed Developments*: Eastbound Shingle Point Rd Left-Turn Lane
  b. *Committed + Pending Developments*: Traffic Signal + Eastbound Shingle Point Rd Left-Turn Lane
- Delaware Route 5 / Sand Hill Road (SR 319)
  a. *Committed + Pending Developments*: Single-Lane Roundabout
- Delaware Route 5 / Mulberry St / Atlantic St (SR 88)
  a. *Committed Developments*: All-Way Stop-Control
  b. *Committed + Pending Developments*: Traffic Signal

The following improvements are proposed as part of the **Four Winds Farm Development**:

- Provision of a full-movement site access on Shingle Point Road, approximately 0.8 miles north of DE Route 30
  - Provision of a 185-foot Southbound Left-Turn Lane with a 100-foot taper.
  - Provision of a 290-foot Northbound Right-Turn Lane with a 50-foot taper.
  - Two-lane access with a single exit lane.
- Provision of a 5-foot wide bicycle lane along Northbound Shingle Point Road at the site access.
- Provision of a 10-foot wide shared-use path (SUP) along Shingle Point Road along the site frontage.
- Enter into a Signal Agreement or contribute to the Traffic Signal Revolving Fund (TSRF) for the potential future installation of a traffic signal at the intersection of DE Route 30 and Shingle Point Road, whether and when a traffic signal is installed at DelDOT's discretion.

Project Description

Ribera Development, LLC seeks to develop the Four Winds Farm Development, consisting of 336 single-family detached houses, on an approximate 169.00-acre assemblage of parcels in Sussex County. The proposed development will be located on the east side of Shingle Point Road (S249), between DE Route 30 and DE Route 5. The development will be located on Tax Parcel: 235-25.00-39.00.

The parcels in which the development is proposed to be located are currently zoned as AR-1 (Agricultural Residential). The developer does not plan to rezone the land. Full-movement access to the proposed development will be provided along Shingle Point Road (S249). Construction is anticipated to be complete in 2030.

A site location map for the proposed Four Winds Farm Development is provided in **Figure 1A** and the draft site plan, prepared by Pennoni, is provided in **Figure 1B.**

Study Area

As requested in the TIS Scoping Meeting Memorandum dated September 24, 2021, provided in **Appendix A,** and shown on Figure 1A, the following intersections will be evaluated as part of this Traffic Impact Study (TIS):

10. Delaware Route 30 / Shingle Point Road (SR 249)
11. Shingle Point Road (SR 249) / Briarwood Road (SR 253)
12. US Route 9 / Shingle Point Road (SR 249)
13. Delaware Route 30 / Prettyman Road (SR 254)
14. Pettyjohn Road (SR 255) / Prettyman Road (SR 254)
15. Delaware Route 5 / Shingle Point Road (SR 249)
16. Delaware Route 5 / Sand Hill Road (SR 319)
17. Delaware Route 5 / Mulberry Street / Atlantic Street (SR 88)
18. Shingle Point Road (SR 249) / Proposed Site Access

The TIS will evaluate the traffic impacts of the proposed development during the weekday morning and weekday afternoon peak hours for the following scenarios:

- Existing Conditions (2021);
- Case 1A: 2030 without development and with Committed Developments only;
- Case 1B: 2030 with development and with Committed Developments only; and
- Case 2A: 2030 without development and with Committed + Pending Developments;
- Case 2B: 2030 with development and with Committed + Pending Developments.

Additionally, it was requested to evaluate the summer Saturday midday peak hour for the intersection of US Route 9 and Shingle Point Road (SR 249).

Existing lane configuration and traffic control for each study intersection is provided in **Figure 2**. Intersection sketches and photographs (based on aerial imagery) for each intersection are provided in **Appendix B.**

1. DE Route 30 and Shingle Point Road (SR 249)

DE Route 30 is a two-lane major collector with a posted speed limit of 40 mph. Shingle Point Road (SR 249) is a two-lane local road with a posted speed limit of 50 mph. This is a stop-controlled intersection, with free-flow on DE Route 30 and stop-control on Shingle Point Road (SR 249). It is noted that this intersection was recently reconfigured (2019/2020) to create a more defined offset intersection by only permitting left and right-turns out of Shingle Point Road (SR 249). The eastbound Shingle Point Road (SR 249) approach includes a shared left/right-turn lane. The westbound Shingle Point Road (SR 249) approach includes a shared left/right-turn lane. The northbound DE Route 30 approach includes a shared left/through/right-turn lane. The southbound DE Route 30 approach includes a shared left/through/right-turn lane. There are no dedicated crosswalks, sidewalks, bike lanes or other pedestrian/bicycle facilities at this intersection.

2. Shingle Point Road (SR 249) and Briarwood Road (SR 253)

Shingle Point Road (SR 249) and Briarwood Road (SR 253) are two-lane local roads with a posted speed limit of 50 mph. This is a stop-controlled intersection, with free-flow on Shingle Point Road (SR 249) and stop-control on Briarwood Road (SR 253). The eastbound Briarwood Road (SR 253) approach includes a shared left/right-turn lane. The northbound Shingle Point Road (SR 249) approach includes a shared left-turn/through lane. The southbound Shingle Point Road (SR 249) approach includes a shared through/right-turn lane. There are no dedicated crosswalks, sidewalks, bike lanes or other pedestrian/bicycle facilities at this intersection.

3. US Route 9 and Shingle Point Road (SR 249)/French Road

US Route 9 is an other principal arterial with a posted speed limit of 50 mph. Shingle Point Road (SR 249) is a two-lane local road with a posted speed limit of 50 mph. French Road is a private road with no posted speed limit. This is a stop-controlled intersection, with free-flow on US Route 9 and stop-control on Shingle Point Road (SR 249) and French Road.

All four approaches include a shared left/through/right-turn lane. There are no dedicated crosswalks, sidewalks, bike lanes or other pedestrian/bicycle facilities at this intersection.

4. Delaware Route 30 and Prettyman Road (SR 254)

DE Route 30 is a two-lane major collector with a posted speed limit of 40 mph. Prettyman Road (SR 254) is a two-lane local road with a posted speed limit of 50 mph. This is a stop-controlled intersection, with free-flow on DE Route 30 and stop-control on Prettyman Road (SR254). The westbound Prettyman Road (SR 254) approach includes a shared left/right-turn lane. The northbound DE Route 30 approach includes a shared through/right-turn lane. The southbound DE Route 30 approach includes a shared left-turn/through lane. There are no dedicated crosswalks, sidewalks, bike lanes or other pedestrian/bicycle facilities at this intersection.

5. Pettyjohn Road (SR 255) and Prettyman Road (SR 254)

Prettyman Road (SR 254) is a two-lane local road with a posted speed limit of 50 mph. Pettyjohn Road (SR 255) is a two-lane local road with a posted speed limit of 45 mph. This is a stop-controlled intersection, with free-flow on Prettyman Road (SR254) and stop-control on Pettyjohn Road (SR 255). All four approaches include a shared left/through/right-turn lane. There are no dedicated crosswalks, sidewalks, bike lanes or other pedestrian/bicycle facilities at this intersection.

6. Delaware Route 5 and Shingle Point Road (SR 249)

DE Route 5 is a two-lane major collector with a posted speed limit of 35 mph. Shingle Point Road (SR 249) is a two-lane local road with a posted speed limit of 50 mph. Chestnut Street (SR 249) is a two-lane local road with a posted speed limit of 30 mph. This is a stop-controlled intersection, with free-flow on DE Route 5 and stop-control on Shingle Point Road (SR 249). The eastbound and westbound Shingle Point Road (SR 249) approaches includes a shared left/through/right-turn lane. The northbound DE Route 5 approach includes a shared left-turn/through lane and a right-turn lane with 110-ft of storage. The southbound DE Route 5 approach includes a shared left-turn/through lane and a right-turn lane with 225-feet of storage. There are no dedicated crosswalks, sidewalks, bike lanes or other pedestrian/bicycle facilities at this intersection.

7. Delaware Route 5 and Sand Hill Road (SR 319)

DE Route 5 is a two-lane major collector with a posted speed limit of 35 mph. Sand Hill Road (SR 319) is a two-lane major collector with a posted speed limit of 50 mph. This is a stop-controlled intersection, with free-flow on DE Route 5 and stop-control on Sand Hill Road (SR 319). The eastbound Sand Hill Road (SR 319) approach includes a left-turn lane and a channelized right-turn lane with 175-feet of storage. The northbound DE Route 5 approach includes a left-turn lane with 225-feet of storage and a through lane. The southbound DE Route 5 approach includes a through lane and a channelized right-turn lane with 80-feet of storage There are no dedicated crosswalks, sidewalks, bike lanes or other pedestrian/bicycle facilities at this intersection.

8. Delaware Route 5 and Mulberry Street (SR 197) / Atlantic Street (SR 88)

DE Route 5 is a two-lane major collector with a posted speed limit of 25 mph. Mulberry Street (SR 197) is a two-lane local road with a posted speed limit of 25 mph. Atlantic Street (SR 88) is a two-lane minor collector with a posted speed limit of 25 mph. This is a stop-controlled intersection, with free-flow on DE Route 5 and stop-control on Mulberry Street (SR 197) / Atlantic Street (SR 88). All four approaches include a shared left/through/right-turn lane. Pedestrian crossings with curb ramps and sidewalks are present on all four approaches.

Existing Traffic and Transportation Conditions

A. Existing Traffic Volumes

The weekday manual turning movement (MTMs) traffic counts were conducted on Tuesday, October 5, 2021 during the weekday morning (7:00 AM – 9:00 AM) and weekday afternoon (4:00 PM – 6:00 PM) peak periods for the following study intersections:

- Delaware Route 30 / Shingle Point Road (SR 249) (Two-Way Stop-Control)
- Shingle Point Road (SR 249) / Briarwood Road (SR 253) (Two-Way Stop-Control)
- US Route 9 / Shingle Point Road (SR 249) (Two-Way Stop-Control)
- Delaware Route 30 / Prettyman Road (SR 254) (Two-Way Stop-Control)
- Pettyjohn Road (SR 255) / Prettyman Road (SR 254) (Two-Way Stop-Control)
- Delaware Route 5 / Shingle Point Road (SR 249) (Two-Way Stop-Control)
- Delaware Route 5 / Sand Hill Road (SR 319) (Two-Way Stop-Control)
- Delaware Route 5 / Mulberry Street / Atlantic Street (SR 88) (Two-Way Stop-Control)

Additionally, DelDOT requested that the Saturday Midday peak period be included for intersection of US Route 9 and Shingle Point Road (SR 249). Therefore, Saturday Midday peak period traffic counts (10:00 AM – 2:00 PM) were conducted on Saturday, August 21, 2021. The MTM traffic count data can be found in **Appendix C**. The existing 2021 raw peak hour traffic volumes are depicted in **Figure 3A**.

Automatic Traffic Recorder (ATR) counts were completed along Shingle Point Road (SR 249) in the vicinity of the proposed site access. Volume, Speed, and Classification data were collected from Friday, October 1 through Thursday, October 7, 2021 for both directions along Shingle Point Road (SR 249). The ATR traffic data can be found in **Appendix D**. As shown in the ATR data, the average weekday daily volume along Shingle Point Road (SR 249) during the week of October 4, 2021 is 1,623 vehicles per day, with a directional distribution pattern of 52% northbound and 48% southbound. Additionally, the 85th percentile speed along Shingle Point Road (SR 249) is approximately 55 mph southbound and 59 mph northbound.

B. Seasonal Adjustment Factors

Seasonal adjustment factors were provided by DelDOT for all roadways within the study area. Seasonal adjustment factors are applied to traffic count data to determine the average yearly peak hour traffic volume conditions. These factors were applied to the existing raw 2021 peak hour traffic volumes to determine the existing 2021 seasonally adjusted volumes. **Table 1** provides the seasonal adjustment factors for each roadway for the months in which the counts were completed.

Table 1. Seasonal Adjustment Factors

Roads	August	September	October
US Route 9 – TPG 8	0.77	0.92	1.09
Delaware Route 5 – TPG 3 (north of Shingle Point Road)	0.91	0.97	0.96
Delaware Route 5 – TPG 6 (south of Shingle Point Road)	0.87	0.88	0.99
Delaware Route 30 – TPG 6	0.87	0.88	0.99
Sand Hill Road (Sussex Road 319) – TPG 7	0.92	0.96	0.95
Mulberry Street (Sussex Road 197) – TPG 4	0.91	0.97	0.96
Atlantic Street (Sussex Road 88) – TPG 3	0.91	0.97	0.96
Shingle Point Road (Sussex Road 249) – TPG 7	0.92	0.96	0.95
Prettyman Road (Sussex Road 254) – TPG 7	0.92	0.96	0.95
Pettyjohn Road (Sussex Road 255) – TPG 7	0.92	0.96	0.95
All Other Roads	1.00	1.00	1.00

TPG – Traffic Pattern Group

The 2021 existing seasonally adjusted peak hour traffic volumes are depicted in **Figure 3B**. It is noted that seasonal adjustment factors were not applied to the Saturday midday peak hour traffic volumes for the intersection of US Route 9 and Shingle Point Road (SR 249).

C. Transit, Bicycle, and Pedestrian Facilities

There are no existing transit facilities along Shingle Point Road (SR 249). The closest bus routes are along US 9 (Bus Routes 206 and 303) and along DE 5 (Bus Route 303). Through coordination with DTC, no additional facilities are being requested for this project.

There are no existing pedestrian or bicycle facilities along Shingle Point Road (SR 249). Through coordination with DelDOT's Local Systems Section, bike lanes and a shared use path (SUP) are being requested along the site frontage for this project.

D. Crash Data Summary

Pennoni has reviewed recent crash data at the study intersections and along the study roadways. The crash data was obtained from DelDOT for the period of January 1, 2017 to September 28, 2021. Typically, the most recent three years of data would be obtained. However, due to the coronavirus (COVID-19) pandemic, traffic along the study roadways has decreased during the year 2020 and 2021; and therefore, any crash data for the years 2020 and 2021 is not typical of normal traffic conditions. However, crash data for 2020 and 2021 was still reviewed to identify any trends. **Tables 2A through 2C** summarize the crash severities and types at the study intersections and along the study roadways in which access to the proposed development will be provided. Crash data summary reports are provided in **Appendix E.**

Table 2A. Crash Data Summary - Severity

Location	Fatality		Injury		Property Damage Only	
	2017-2019	2020-2021	2017-2019	2020-2021	2017-2019	2020-2021
Intersection						
DE Route 30 / Shingle Point Road (SR 249)	1	0	3	1	8	1
US Route 9 / Shingle Point Road (SR 249)	0	0	0	0	4	2
DE Route 30 / Prettyman Road (SR 254)	0	0	0	0	3	4
Pettyjohn Road (SR 255) / Prettyman Road (SR 254)	0	0	0	0	2	0
DE Route 5 / Shingle Point Road (SR 249)	0	0	0	0	4	2
DE Route 5 / Sand Hill Road (SR 319)	0	0	2	0	4	2
DE Route 5 / Mulberry Street / Atlantic Street (SR 88)	0	0	2	1	0	0
Total	***1***	***0***	***7***	***2***	***25***	***11***
Midblock						
Shingle Point Rd (SR 249), between US9 & Briarwood Rd	0	0	0	0	1	1
Shingle Point Rd (SR 249), between Briarwood Rd & DE 30	0	0	1	1	7	5
Shingle Point Rd (SR 249), between DE 30 & DE 5	0	0	1	0	1	1
DE 30, south of Prettyman Rd	0	0	1	1	0	0
Prettyman Rd (SR 254), between DE 30 & Pettyjohn Rd	0	0	0	0	2	0
Total	***0***	***0***	***3***	***2***	***11***	***7***

Table 2B. Crash Data Summary – Type (January 1, 2017 – December 31, 2019)

Location	Rear End	Head On	Angle	Sideswipe	Hit Fixed Object	Non-Collision / Other	Hit Bike/ Pedestrian	Hit Animal
Intersection								
DE Route 30 / Shingle Point Road (SR 249)	2	3	6	0	1	0	0	0
US Route 9 / Shingle Point Road (SR 249)	0	0	1	1	2	0	0	0
DE Route 30 / Prettyman Road (SR 254)	0	0	1	0	1	1	0	0
Pettyjohn Road (SR 255) / Prettyman Road (SR 254)	0	0	2	0	0	0	0	0
DE Route 5 / Shingle Point Road (SR 249)	0	0	2	0	0	1	0	1
DE Route 5 / Sand Hill Road (SR 319)	0	0	5	0	1	0	0	0
DE Route 5 / Mulberry Street / Atlantic Street (SR 88)	0	0	0	0	0	1	1	0
Total	***2***	***3***	***17***	***1***	***5***	***3***	***1***	***1***
Midblock								
Shingle Point Rd (SR 249), between US 9 & Briarwood Rd	0	0	0	0	0	0	0	1
Shingle Point Rd (SR 249), between Briarwood Rd & DE 30	0	0	1	0	2	0	0	5
Shingle Point Rd (SR 249), between DE 30 & DE 5	0	0	0	0	0	1	0	1
DE 30, south of Prettyman Rd	0	0	0	0	1	0	0	0
Prettyman Rd (SR 254), between DE 30 & Pettyjohn Rd	2	0	0	0	0	0	0	0
Total	***2***	***0***	***1***	***0***	***3***	***1***	***0***	***7***

Table 2C. Crash Data Summary – Type (January 1, 2020 – September 2,2021)

Location	Rear End	Head On	Angle	Sideswipe	Hit Fixed Object	Non-Collision / Other	Hit Bike/ Pedestrian	Hit Animal
Intersection								
DE Route 30 / Shingle Point Road (SR 249)	0	0	1	0	0	0	0	0
US Route 9 / Shingle Point Road (SR 249)	1	0	0	0	0	0	0	1
DE Route 30 / Prettyman Road (SR 254)	0	0	1	0	1	1	0	1
Pettyjohn Road (SR 255) / Prettyman Road (SR 254)	0	0	0	0	0	0	0	0
DE Route 5 / Shingle Point Road (SR 249)	0	0	1	0	2	0	0	0
DE Route 5 / Sand Hill Road (SR 319)	0	1	0	0	1	0	0	0
DE Route 5 / Mulberry Street / Atlantic Street (SR 88)	0	0	1	0	0	0	0	0
Total	***1***	***1***	***4***	***0***	***4***	***1***	***0***	***2***
Midblock								
Shingle Point Rd (SR 249), between US 9 & Briarwood Rd	0	0	0	0	0	0	0	1
Shingle Point Rd (SR 249), between Briarwood Rd & DE 30	1	0	0	0	0	2	0	3
Shingle Point Rd (SR 249), between DE 30 & DE 5	0	0	0	0	0	0	0	1
DE 30, south of Prettyman Rd	0	0	0	0	0	1	0	0
Prettyman Rd (SR 254), between DE 30 & Pettyjohn Rd	0	0	0	0	0	0	0	0
Total	***1***	***0***	***0***	***0***	***0***	***3***	***0***	***5***

As shown in Tables 2A through 2C, one fatality occurred during the study time period at the intersection of DE Route 30 and Shingle Point Road (SR 249) on November 5, 2018 at 1:27 PM. A vehicle along eastbound Shingle Point Road (SR 249) failed to remain stopped at the stop sign. A vehicle along southbound DE Route 30 hit the driver side of the eastbound vehicle. It is noted that this intersection was recently reconfigured (2019/2020) to create a more defined offset intersection by only permitting left and right-turns out of Shingle Point Road (SR 249).

Committed Developments

Five (5) Committed Developments were requested within the TIS Scoping Meeting Memorandum dated September 24, 2021 to be included as background traffic within the future analyses. The five Committed Developments are as follows:

- Hawthorne Phases 1-6 (f.k.a. Paradise Lakes & Landlock Acres) – partially built
  - Development: 254 single-family detached houses, with 48 units remaining to be built (as of October 15, 2021)
    - Total number of units and units remaining to be constructed obtained per coordination with Sussex County
  - Location: DE Route 9, east of DE Route 30, in Sussex County

- Azalea Woods (f.k.a. Wilson Moore) – Final Plans submitted to the County for review on September 3, 2021
  - Development: 610 single-family detached houses
  - Location: north of US Route 9, west of Delaware Route 30 (Gravel Hill Road / SR 248) and east of Shingle Point Road (SR 249), in Sussex County

- Heritage Creek 1 – Currently in design
  - Development: 58 age-restricted detached houses
  - Location: DE Route 8, north of Pettyjohn Rd, in the City of Milton

- Vines of Sand Hill (f.k.a. The Estates of Sand Hill Valley, Whispering Meadows, Sposato Property) – partially built
  - Development: 393 single-family detached houses, with 301 units remaining to be built (as of October 15, 2021)
    - Total number of units and units remaining to be constructed obtained per coordination with Sussex County
  - Location: Huff Road (SR 252), east of Sand Hill Road (SR 319), in Sussex County

- Cypress Grove (f.k.a. Clifton Property) -– Final Plans approved in December 2021
  - Development: 71 units of low-rise multi-family housing, 168 units of mid-rise multi-family housing, and 20,000 square feet of retail space
  - Location: southwest quadrant of DE Route 16 and Country Rd (SR 22A), in the City of Milton

DelDOT also requested that two (2) additional Pending Developments be included in an additional future case to be evaluated. The two Pending Developments are as follows:

- Granary at Draper Farm
  - *Development:* 875 single-family detached houses, 475 units of multi-family mid-rise houses, and 60,000 square feet of retail space
  - *Location:* south of Sand Hill Rd (SR319) and east of DE Route 30, in Sussex County (proposed to be annexed into the Town of Milton)

- Prettyman Property
  - *Development*: 100 single-family detached houses
  - *Location:* Prettyman Rd (SR 254), between Pettyjohn Rd (SR 255) and US Route 9, in Sussex County

Figures 4A through 4D illustrate the location of these Committed and other Pending Developments in relation to the proposed development.

Correspondence with Sussex County can be found in **Appendix A** regarding the size and status of these Committed and other Pending Developments at the time of the traffic counts.

DelDOT provided the trip distribution for the weekday PM peak hour for the proposed Four Winds Farm development. In the review letter for Submission 1: Traffic Counts and Distributions, DelDOT provided trip distributions from previously

approved traffic studies for the Committed and other Pending Developments. **Figures 5A through 12B** illustrate the trip distributions and trip assignments for each of the five (5) Committed and two (2) other Pending Developments listed above. Trip generation estimates, based on data contained within the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*, for these developments are provided in **Appendix F.** The total "new" trip generation estimates for the five (5) Committed and two (2) other Pending Developments is summarized in **Tables 3A and 3B.**

Table 3A. Committed Developments
Total "New" Trip Generation

Committed Development	Weekday Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour			Saturday Midday Peak Hour		
	Total	In	Out	Total	In	Out	Total	In	Out	Total
Hawthorne Phases 1-6	529	10	29	39	31	19	50	31	27	58
Azalea Woods	5,488	109	329	438	363	213	576	286	244	530
Heritage Creek 1	348	9	18	27	19	12	31	6	7	13
Vines of Sand Hill	2,866	55	164	219	184	109	293	146	125	271
Cypress Grove	2,492	122	129	251	112	77	189	111	102	213

Table 3B. Other Pending Developments
Total "New" Trip Generation

Committed Development	Weekday Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour			Saturday Midday Peak Hour		
	Total	In	Out	Total	In	Out	Total	In	Out	Total
Granary at Draper Farm	14,484	300	646	946	683	439	1,122	667	598	1,265
Prettyman Property	1,040	19	57	76	64	38	102	55	47	102

Proposed Development Trip Generation, Distributions, & Assignments

Trip generation estimates, based on the data contained within the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*, have been developed for the proposed development. The total trip generation for the proposed development is summarized in **Table 4.**

DelDOT provided the trip distribution for the weekday PM peak hour for the proposed Four Winds Farm development. Utilizing these distributions, Pennoni has developed the trip assignments for the weekday morning, weekday afternoon, and Saturday midday peak hours. **Figure 13A** illustrates the proposed site trip distributions for the proposed development. **Figure 13B** illustrates the total proposed site trips assignments for the proposed development.

Table 4. Proposed Development
Total Trip Generation

Proposed Land Use	Size	Weekday Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour			Saturday Midday Peak Hour		
		Total	In	Out	Total	In	Out	Total	In	Out	Total
LUC 210 – Single Family Detached Housing	336 units	3,171	60	183	243	205	120	325	162	138	300

Future Traffic Conditions

A volume development spreadsheet has been created that presents the existing and projected traffic volumes for each study intersection, with the inclusion of annual regional growth, trips generated by the Committed Developments, trips generated by the Pending Developments, and trips generated by the proposed development. This spreadsheet can be found in **Appendix G.**

A. Growth Factors

Following DelDOT's review of *Submission 1: Traffic Count and Trip Distribution*, growth factors were provided for all roadways within the study area. These factors were applied to the existing 2021 seasonally adjusted peak hour traffic volumes to account for regional traffic, increased travel, and other area developments that were not evaluated as part of this TIS. **Table 5** summarizes the annual growth factors provided by DelDOT, along with total growth factors. Correspondence with DelDOT regarding their review of Submission 1 and provided growth rates is provided in **Appendix A**.

Table 5. Growth Factors

Road	Growth Factor	Total Growth Factor from 2021 to 2027
US Route 9 – TPG 8	1.015	1.143
Delaware Route 5 – TPG 3 (north of Shingle Point Road)	1.005	1.046
Delaware Route 5 – TPG 6 (south of Shingle Point Road)	1.005	1.046
Delaware Route 30 – TPG 6	1.005	1.046
Sand Hill Road (Sussex Road 319) – TPG 7	1.005	1.046
Mulberry Street (Sussex Road 197) – TPG 4	1.005	1.046
Atlantic Street (Sussex Road 88) – TPG 3	1.005	1.046
Shingle Point Road (Sussex Road 249) – TPG 7	1.005	1.046
Prettyman Road (Sussex Road 254) – TPG 7	1.005	1.046
Pettyjohn Road (Sussex Road 255) – TPG 7	1.005	1.046
All Other Roads	1.00	1.00

B. Case 1A: Future 2030 without Development & with Committed Developments Only Traffic Volumes

To estimate the future 2030 without development and with Committed Developments only (Case 1A) peak hour traffic volumes, the growth factors in Table 5 were applied to the existing 2021 seasonally adjusted peak hour traffic volumes (Figure 3B) to determine the future 2030 base peak hour traffic volumes. Additionally, the estimated peak hour trips generated by the five (5) Committed Developments were added to the future 2030 base peak hour traffic volumes to determine the Case 1A peak hour traffic volumes. The projected Case 1A peak hour traffic volumes are illustrated in **Figure 14A.**

C. Case 1B: Future 2030 with Development & with Committed Developments Only Traffic Volumes

To estimate the future 2030 with development and with Committed Developments only (Case 1B) peak hour traffic volumes, the proposed trip assignments (Figure 13B) were added to the Case 1A peak hour traffic volumes (Figure 14A) to determine the Case 1B peak hour traffic volumes. The Case 1B peak hour traffic volumes are illustrated in **Figure 14B.**

D. Case 2A: Future 2030 without Development & with Committed + Pending Developments Traffic Volumes

To estimate the future 2030 without development and with Committed + Pending Developments (Case 2A) peak hour traffic volumes, the growth factors in Table 5 were applied to the existing 2021 seasonally adjusted peak hour traffic volumes (Figure 3B) to determine the future 2030 base peak hour traffic volumes. Additionally, the estimated peak hour trips generated by the five (5) Committed Developments and two (2) other Pending Developments were added to the future 2030 base peak hour traffic volumes to determine the Case 2A peak hour traffic volumes. The projected Case 2A peak hour traffic volumes are illustrated in **Figure 15A.**

E. Case 2B: Future 2030 with Development & with Committed + Pending Developments Traffic Volumes

To estimate the future 2030 with development and with Committed + Pending Developments (Case 2B) peak hour traffic volumes, the proposed trip assignments (Figure 13B) were added to the Case 2A peak hour traffic volumes (Figure 15A) to determine the Case 2B peak hour traffic volumes. The projected Case 2B peak hour traffic volumes are illustrated in **Figure 15B.**

Level of Service Criteria

Level of Service (LOS) is a term used to describe vehicle operator satisfaction with the driving experience. Research has determined that operator satisfaction is based primarily on travel speed and intersection delay. By utilizing models to simulate the flow of traffic at intersections, the average delay experienced by vehicles can be estimated. These models consider such factors as traffic volumes, roadway geometry, traffic control, and driver behavior. Levels of Service designations are based on a comparison of the average delays calculated by the models with perceived acceptable delays. For the Automobile Mode, the Highway Capacity Manual (HCM) assigns a Level of Service (LOS) designation between "A" and "F" to intersection operations. LOS "A" designates very good operating conditions, while LOS "F" denotes delays of over 80 seconds for signalized intersections and delays of over 50 seconds for unsignalized intersections and roundabouts. Regardless of the control delay a LOS "F" is assigned to movements with volume-to-capacity ratios that exceed 1.0. The following tables illustrate the guidelines used for designating Levels of Service at signalized intersections, unsignalized intersections, and roundabouts based on control delay:

Table 6A. Level of Service Criteria for Signalized Intersections[1]

Level of Service	Control Delay (seconds per vehicle)
A	≤ 10
B	> 10-20
C	> 20-35
D	> 35-55
E	> 55-80
F	> 80
Note: If v/c ratio > 1.0, the LOS is F regardless of delay.	

(1) Level of Service Criteria for signalized intersections (HCM 6th, Exhibit 19-8).

Table 6B. Level of Service Criteria for Unsignalized Intersections[2]

Level of Service	Control Delay (seconds per vehicle)
A	≤ 10
B	> 10-15
C	> 15-25
D	> 25-35
E	> 35-50
F	> 50
Note: If v/c ratio > 1.0, the LOS is F regardless of delay.	

(1) Level of Service Criteria for Two-Way Stop-Controlled intersections (HCM 6th, Exhibit 20-2).

Intersection Capacity Analysis

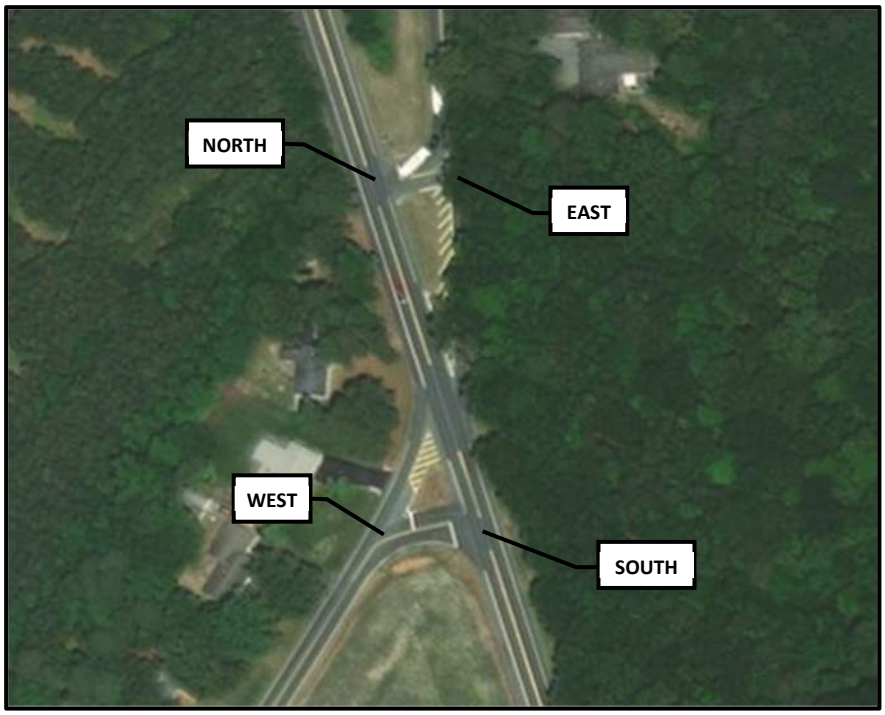
The study intersections were evaluated using the Highway Capacity Software (HCS7), Version 7.9, which implements the capacity and level-of-service methodologies contained within the Highway Capacity Manual, 6th Edition. The HCS7 analysis worksheets are provided in **Appendix H** for the existing and all four 2030 future conditions.

The intersection capacity analysis was conducted in accordance with the guidelines provided in Section 2.2.8.11.6 of DelDOT's *Development Coordination Manual* (DCM). Peak hour factors (PHFs) and heavy vehicle percentages were calculated from the existing traffic count data and were applied to existing and future capacity analysis.

A summary of the level of service (LOS) and corresponding delay for the study intersection are provided in Tables 7A and 7B, and the intersection capacity analysis results for the study intersection is summarized below. The HCS7 capacity analysis inputs and results are provided in **Appendix H**.

1. DE Route 30 and Shingle Point Road (SR 249)

This existing stop-controlled intersection consists of four intersection nodes, as shown in the image below.



Under existing traffic conditions, all four of these intersection nodes operate at acceptable LOS for all movements during both peak hours. Under the future 2030 traffic conditions with Committed Developments only, this intersection is anticipated to operate as follows:

- *Case 1A: Without Development & with Committed Developments Only*
  - Acceptable LOS for all movements for both peak hours
- *Case 1B: With Development & with Committed Developments Only*
  - Weekday AM Peak Hour: LOS E (41.5 seconds) for the westbound approach at the North node
  - Weekday PM Peak Hour: LOS F (55.5 seconds) for the eastbound approach at the South node

A traffic signal might be warranted. However, since this is an unknown and since the future delays are not significant, **no improvements are proposed by the developer under Case 1B.**

Under the future 2030 traffic conditions with Committed + Pending Developments, this intersection is anticipated to operate as follows:

- *Case 2A: Without Development & with Committed + Pending Developments*
  - Weekday AM Peak Hour: LOS E (37.2 seconds) for the eastbound approach at the South node
  - Weekday PM Peak Hour: LOS E (41.3 seconds) for the eastbound approach at the South node
- *Case 2B: With Development & with Committed + Pending Developments*
  - Weekday AM Peak Hour: LOS F (107.2 seconds and 62.3 seconds) for the westbound approach at the North node and at the eastbound approach at the South node, respectively
  - Weekday PM Peak Hour: LOS F (58.8 seconds and 143.7 seconds) for the westbound approach at the North node and at the eastbound approach at the South node, respectively

A traffic signal warrant evaluation was completed using the projected future peak hour traffic volumes (2 hours). The results of the traffic signal warrant evaluation are as follows:

- *Case 2B (2 hours evaluated: AM & PM Peak Hours):*
  - Meets 2 hours of Warrant 1: 8-Hour Vehicular Volume
  - Meets 2 hours of Warrant 2: 4-Hour Vehicular Volume

Based on this evaluation, **a traffic signal is assumed to be warranted for installation under Case 2B**. The traffic signal warrant worksheets are provided in **Appendix I**. Therefore, this intersection was evaluated as a signalized intersection under Case 2B.

For the purposes of traffic modeling and analysis, this intersection was modeled with two signals located at the North and South nodes, as actuated, coordinated 2-phase signals with cycle lengths of 100 seconds. This intersection is anticipated to operate at acceptable LOS for all movements during both peak hours under 2030 future with-development conditions as a signalized intersection.

While traffic from the proposed Four Winds Farm triggers the need for a traffic signal under Case 2B, traffic from the Committed + Pending developments contribute to the need for this signal. Therefore, the developer will agree to enter into a Signal Agreement or contribute to the Traffic Signal Revolving Fund (TSRF) for the potential future installation of a traffic signal at the intersection of DE Route 30 and Shingle Point Road, whether and when a traffic signal is installed at DelDOT's discretion.

2. Shingle Point Road (SR 249) and Briarwood Road (SR 253)

The existing two-way stop-controlled T-intersection currently operates at acceptable LOS for all movements during both peak hours under existing traffic conditions. This intersection is anticipated to continue to operate at acceptable LOS for all movements for both peak hours in Cases 1A through 2B. **No improvements by the developer are required.**

3. US Route 9 and Shingle Point Road (SR 249)/French Road

The existing two-way stop-controlled intersection currently operates at acceptable LOS for all movements during both peak hours under existing traffic conditions.

It is noted that the Azalea Woods committed development is required to construct a 200-foot southbound right-turn lane along Shingle Point Road. Therefore, this improvement has been included in all 2030 future analyses.

Under Case 1A, this intersection is anticipated to operate as follows:

- Weekday AM Peak Hour: LOS E (45.9 seconds) for the northbound approach and LOS F (652.8 seconds) for the southbound shared left/through lane
- Weekday PM Peak Hour: LOS F (89.9 seconds) for the northbound approach and LOS F (1155.8) for the southbound shared left/through lane

A traffic signal warrant evaluation was completed using the projected Case 1A peak hour traffic volumes (2 hours). The results of the traffic signal warrant evaluation are as follows:

- Meets 2 hours of Warrant 1: 8-Hour Vehicular Volume
- Meets 2 hours of Warrant 2: 4-Hour Vehicular Volume

Based on this evaluation, **a traffic signal is assumed to be warranted for installation under Case 1A by others.** The traffic signal warrant worksheets are provided in **Appendix I**. Therefore, this intersection was evaluated as a signalized intersection under all future 2030 conditions, both without and with the proposed development.

For the purposes of traffic modeling and analysis, **improvements by others at this intersection are assumed to be:**

- Actuated, uncoordinated traffic signal with a cycle length of 120 seconds during the weekday AM peak hour and 100 seconds during the weekday afternoon and Saturday midday peak hours.
- Eastbound US 9 left-turn lane with a protected + permitted left-turn phase
- Southbound Shingle Point Road right-turn overlap phase

This intersection is anticipated to operate at acceptable LOS for all movements during both peak hours under all future 2030 conditions as a signalized intersection. Therefore, **no mitigation by the developer is required at this intersection.** Further evaluation of this traffic signal by others is recommended to consider coordinating it with the adjacent signal at US Route 9 and Park Avenue, which currently runs free.

4. Delaware Route 30 and Prettyman Road (SR 254)

The existing two-way stop-controlled T-intersection currently operates at acceptable LOS for all movements during both peak hours under existing traffic conditions. This intersection is anticipated to continue to operate at acceptable LOS for all movements for both peak hours in Cases 1A through 2B. **No improvements by the developer are required.**

5. Pettyjohn Road (SR 255) and Prettyman Road (SR 254)

The existing two-way stop-controlled intersection currently operates at acceptable LOS for all movements during both peak hours under existing traffic conditions. This intersection is anticipated to continue to operate at acceptable LOS for all movements for both peak hours in Cases 1A through 2B. **No improvements by the developer are required.**

6. Delaware Route 5 and Shingle Point Road (SR 249)

The existing two-way stop-controlled intersection currently operates at acceptable LOS for all movements during both peak hours under existing traffic conditions.

Under Case 1A, this intersection is anticipated to operate as follows:

- Weekday AM Peak Hour: LOS E (37.1 seconds) for the eastbound approach
- Weekday PM Peak Hour: Acceptable LOS for all movements

For the purposes of traffic modeling and analysis, an improvement by others at this intersection is assumed to be construction of a separate eastbound left-turn lane along Shingle Point Road. With the provision of this turn lane, the intersection will improve to acceptable LOS for all movements during both peak hours under the future 2030 without Development and with Committed Developments condition.

Under Case 1B with the inclusion of the separate eastbound left-turn lane, this intersection is anticipated to operate as follows:

- Weekday AM Peak Hour: LOS F (53.1 seconds) for the eastbound left-turn lane
- Weekday PM Peak Hour: Acceptable LOS for all movements

Based on signal warrant analysis of Case 1B, a traffic signal is not anticipated to be warranted; and therefore, **no improvements are proposed at this time by the developer.**

Under Case 2A, this intersection is anticipated to operate as follows:

- Weekday AM Peak Hour: LOS F (61.2 seconds) for the eastbound approach
- Weekday PM Peak Hour: LOS E (43.6 seconds) for the eastbound approach

A traffic signal warrant evaluation was completed using the projected Case 2A peak hour traffic volumes (2 hours). The results of the traffic signal warrant evaluation are as follows:

- Meets 2 hours of Warrant 1: 8-Hour Vehicular Volume
- Meets 2 hours of Warrant 2: 4-Hour Vehicular Volume

Based on this evaluation, **a traffic signal is assumed to be warranted for installation under Case 2A by others.** The traffic signal warrant worksheets are provided in **Appendix I**. Therefore, this intersection was evaluated as a signalized intersection under the future 2030 conditions with Committed + Pending Developments Conditions, both without and with the proposed development.

For the purposes of traffic modeling and analysis, this traffic signal was modeled as an actuated, uncoordinated 2-phase signal with a cycle length of 90 seconds. This intersection is anticipated to operate at acceptable LOS for all movements during both peak hours under 2030 future without-development conditions as a signalized intersection.

Under Case 2B, this intersection is anticipated to continue to operate at acceptable LOS for all movements during both peak hours. **Therefore, no mitigation by the developer is required at this intersection.**

7. Delaware Route 5 and Sand Hill Road (SR 319)

The existing two-way stop-controlled T-intersection currently operates at acceptable LOS for all movements during both peak hours under existing traffic conditions. This intersection is anticipated to continue to operate at acceptable LOS for all movements for both peak hours in Case 1B, with one exception. During the weekday morning peak hour, the eastbound Sand Hill Road left-turn lane will operate with delay at LOS E (or 44.5 seconds). A traffic signal is not anticipated to be warranted; and therefore, **no improvements are proposed at this time by the developer.**

Under Case 2A, the eastbound Sand Hill Road left-turn lane will operate with significant delay at LOS F (greater than 200 seconds) during both peak hours. Since all movements at this intersection have relatively high volumes, a single-lane roundabout was evaluated under Case 2A. With the provision of a single-lane roundabout, all movements will operate at LOS C or better during both peak hours.

Under Case 2B, the roundabout will continue to operate at acceptable LOS C or better during both peak hours; and therefore, **no mitigation by the developer is required.**

8. Delaware Route 5 and Mulberry Street (SR 197) / Atlantic Street (SR 88)

The existing two-way stop-controlled intersection currently operates at acceptable LOS for all movements during both peak hours under existing traffic conditions, with one exception. During the weekday afternoon peak hour, the westbound approach operates with delay at LOS F (53.7 seconds).

Under Case 1A, this intersection is anticipated to operate as follows:

- Weekday AM Peak Hour: LOS E (35.1 seconds) for the westbound approach
- Weekday PM Peak Hour: LOS F (199.5 seconds) for the westbound approach

Based on signal warrant analysis of Case 1A, a traffic signal is not anticipated to be warranted. However, an all-way stop-controlled (AWSC) intersection may be warranted. With the provision of AWSC intersection, this intersection is anticipated to operate at acceptable LOS for all movements during both peak hours under Cases 1A and 1B, with one exception. During the weekday afternoon peak hour, the northbound approach is anticipated to operate with some delay at LOS E (41.7 seconds). A traffic signal is not anticipated to be warranted; and therefore, **no improvements are proposed at this time by the developer.**

Under Case 2A, this intersection is anticipated to operate as follows:

- Weekday AM Peak Hour:
    - LOS F (51.1 seconds) for the eastbound approach
    - LOS F (432.8 seconds) for the westbound approach
- Weekday PM Peak Hour: LOS F (199.5 seconds) for the westbound approach

- LOS F (1036 seconds) for the eastbound approach
- LOS F (2206.4 seconds) for the westbound approach

A traffic signal warrant evaluation was completed using the projected Case 2A peak hour traffic volumes (2 hours). The results of the traffic signal warrant evaluation are as follows:

- Meets 2 hours of Warrant 1: 8-Hour Vehicular Volume
- Meets 2 hours of Warrant 2: 4-Hour Vehicular Volume

Based on this evaluation, a traffic signal is assumed to be warranted for installation under Case 2A. The traffic signal warrant worksheets are provided in **Appendix I**. Therefore, this intersection was evaluated as a signalized intersection under Cases 2A and 2B.

For the purposes of traffic modeling and analysis, this traffic signal was modeled as an actuated, uncoordinated 2-phase signal with a cycle length of 90 seconds. This intersection is anticipated to operate at acceptable LOS for all movements during both peak hours under Cases 2A and 2B as a signalized intersection. Therefore, **no mitigation by the developer is required at this intersection.**

9. Shingle Point Road (SR 249) and Proposed Site Access

Auxiliary turn lane analysis was completed for the site access along Shingle Point Road. Based on this analysis, a left-turn lane and a right-turn lane are both warranted at the site access. The auxiliary turn lane worksheets are provided in **Appendix J.** The required turn lane lengths are as follows:

- Northbound Right-Turn Lane (Case 1B & 2B):
  - 290-foot turn lane with a 50-ft taper
- Southbound Left-Turn Lane (Case 1B & 2B):
  - 185-foot turn lane with a 100-ft taper

Under Cases 1B and 2B with the required turn lanes, the proposed site access is anticipated to operate at acceptable conditions. It is noted that the required turn lane lengths will be determined during the Plan Review process.

Table 7A. Intersection Capacity Analysis Results: Level-of-Service (LOS) and Delay (Sec) - Committed Developments Only
HCM 6th Edition

Intersection		Traffic Control	Approach	Movement	Weekday AM Peak Hour					Weekday PM Peak Hour					Saturday Midday Peak Hour				
					2021	2030 Committed Developments Only				2021	2030 Committed Developments Only				2021	2030 Committed Developments Only			
					Existing	without Development	without Development with Imprvts by Others	with Development	with Development with Imprvts by Others	Existing	without Development	without Development with Imprvts by Others	with Development	with Development with Imprvts by Others	Existing	without Development	without Development with Imprvts by Others	with Development	with Development with Imprvts by Others
DE Route 30 & Shingle Point Rd (SR 249)	Northern Node DE 30 & Shingle Point Rd	TWSC	DE Route 30	SBL/T	A 7.8	A 8	-	A 8	-	A 7.9	A 8.2	-	A 8.2	-	Not Evaluated				
			Shingle Point Rd	WBL/R	C 15.0	C 20.8	-	E 41.5	-	B 14.3	C 21.5	-	D 32.1	-					
	Southern Node DE 30 & Shingle Point Rd		DE Route 30	NBL/T	A 8.2	A 8.5	-	A 8.6	-	A 7.9	A 8.1	-	A 8.3	-					
			Shingle Point Rd	EBL/R	C 15.3	D 25.5	-	D 33.7	-	C 15.4	C 24.3	-	F 55.5	-					
	Eastern Node DE 30 NBR & Shingle Point Rd		Shingle Point Rd	EBL	A 8.9	A 9.2	-	A 9.4	-	A 8.8	A 9.0	-	A 9.9	-					
	Western Node DE 30 SBR & Shingle Point Rd		Shingle Point Rd	WBL	A 9.2	A 9.4	-	A 9.8	-	A 8.9	A 9.3	-	A 9.5	-					
Shingle Point Rd (SR 249) & Briarwood Rd (SR 253)		TWSC	Briarwood Rd	EBL/R	A 9.5	B 10.1	-	B 10.9	-	A 9.2	A 9.7	-	B 10.7	-	Not Evaluated				
			Shingle Point Rd	NBL/T	A 7.6	A 7.8	-	A 8	-	A 7.4	A 7.5	-	A 7.6	-					
US Route 9 & Shingle Point Rd (SR 249) / French Rd		TWSC	US Route 9	EBL	A	B	C 20.3	B	C 25.1	A	B	C 24.7	B	D 46.0	A	A	A 6.6	A	A 7.9
				EBT/R	9.6	10.8	B 10.8	10.9	B 13.2	9.7	11.8	A 7.5	12.5	A 7.5	8.2	8.9	A 4.4	9.1	A 5.1
				WBL/T/R	A 8.9	A 9.3	C 24.4	A 9.3	C 30.9	A 8.9	A 9.5	C 24.4	A 9.5	D 38.6	A 8.2	A 8.5	B 11.1	A 8.5	B 12.7
			French Rd	NBL/T/R	C 21.9	E 45.9	D 45.2	F 61.5	D 42.3	D 25.3	F 89.9	D 42.6	F 168.6	D 42.6	C 17.9	D 34.9	D 42.0	E 44.2	D 40.2
			Shingle Point Rd	SBL/T	D	F 652.8	D 47.6	F 740.9	D 44.5	D	F 1155.8	D 44.4	F 1856.0	D 44.4	B	F 53.8	D 43.4	F 68.9	D 41.5
				SBR[1]	34.7	D 26.1	D 47.7	D 32.6	D 47.1	32.5	C 22.8	D 45.8	D 25.7	D 38.2	12.9	B 13.4	D 41.6	B 14.0	D 40.7
			Total		-	-	C 21.9	-	C 26.2	-	-	B 19.7	C 22.1	C 28.1	C 33.8	-	B 12.1	-	B 13.4
DE Route 30 & Prettyman Rd (SR 254)		TWSC	Prettyman Rd	WBL/R	B 10.2	B 11.0	-	B 11.3	-	B 10.4	B 11.6	-	B 12.8	-	Not Evaluated				
			DE Route 30	SBL/T	A 7.9	A 8.2	-	A 8.4	-	A 7.8	A 8.1	-	A 8.2	-					
Prettyman Rd (SR 254) & Pettyjohn Rd (SR 255)		TWSC	Prettyman Rd	EBL/T/R	A 7.4	A 7.4	-	A 7.5	-	A 7.5	A 7.5	-	A 7.7	-	Not Evaluated				
				WBL/T/R	A 7.5	A 7.5	-	A 7.6	-	A 7.4	A 7.4	-	A 7.5	-					
			Pettyjohn Rd	NBL/T/R	B 10.5	B 10.2	-	B 10.7	-	B 10.0	B 10.0	-	B 10.5	-					
				SBL/T/R	B 10.0	B 10.4	-	B 10.8	-	A 9.8	B 10.8	-	B 11.4	-					
DE Route 5 & Shingle Point Rd (SR 249)		TWSC	Shingle Point Rd	EBL	C	E	D 31.2	F	F 53.1	C	D	D 25.1	D	D 31.4	Not Evaluated				
				EBT/R	21.0	37.1	C 18.2	82.2	C 18.2	18.6	25.4	C 15.3	33.3	C 15.3					
				WBL/T/R	C 19.4	C 23.4	C 23.4	C 24.0	C 24.0	C 17.7	C 21.0	C 21.0	C 22.5	C 22.5					
			DE Route 5	NBL/T	A 8.5	A 8.7	A 8.7	A 8.8	A 8.8	A 8.2	A 8.4	A 8.4	A 8.7	A 8.7					
				SBL/T	A 8.4	A 8.5	A 8.5	A 8.5	A 8.5	A 8.2	A 8.3	A 8.3	A 8.3	A 8.3					
DE Route 5 & Sand Hill Rd (SR 319)		TWSC	Sand Hill Rd	EBL	C 21.3	D 32.9	-	E 44.5	-	C 20.3	D 28.0	-	D 34.7	-	Not Evaluated				
				EBR	B 11.5	B 12.4	-	B 12.7	-	B 10.7	B 11.6	-	B 12.6	-					
			DE Route 5	NBL	A 8.2	A 8.4	-	A 8.5	-	A 8.8	A 9.2	-	A 9.6	-					
DE Route 5 & Mulberry St (SR 197) / Atlantic St (SR 88)		TWSC	Mulberry St	EBL/T/R	C 17.3	C 23.3	B 12.0	D 26.7	B 12.6	C 19.2	D 30.3	B 14.7	E 41.0	C 17.1	Not Evaluated				
			Atlantic St	WBL/T/R	C 21.7	E 35.1	B 11.4	E 44.9	B 11.8	F 53.7	F 199.5	C 16.5	F 338.0	C 19.0					
			DE Route 5	NBL/T	A 7.6	A 7.8	C 16.5	A 7.8	C 19.9	A 7.8	A 8.1	D 26.7	A 8.3	E 41.7					
				SBL/T	A 7.8	A 8.1	B 12.9	A 8.2	B 13.8	A 7.8	A 8.0	C 20.3	A 8.1	D 30.5					
Shingle Point Road (SR 249) & Proposed Access		TWSC	Proposed Access	WBL/R	-	-	-	B 12.6	-	-	-	-	B 10.7	-	Not Evaluated				
			Shingle Point Rd	SBL	-	-	-	A 7.7	-	-	-	-	A 7.8	-					

1 - A 200-foot southbound right-turn lane is to be constructed by the proposed Azalea Woods committed development as dictated by DelDOT'S Traffic Impact Study review letter dated November 21, 2019 and provided in Appendix F. This lane has been included in all 2030 future traffic analysis.

Table 7B. Intersection Capacity Analysis Results: 95th Percentile Queues - Committed Developments Only
HCM 6th Edition

Intersection		Traffic Control	Approach	Movement	Weekday AM Peak Hour					Weekday PM Peak Hour					Saturday Midday Peak Hour				
					2021	2030 Committed Developments Only				2021	2030 Committed Developments Only				2021	2030 Committed Developments Only			
					Existing	without Development	without Development with Imprvts by Others	with Development	with Development with Imprvts by Others	Existing	without Development	without Development with Imprvts by Others	with Development	with Development with Imprvts by Others	Existing	without Development	without Development with Imprvts by Others	with Development	with Development with Imprvts by Others
DE Route 30 & Shingle Point Rd (SR 249)	Northern Node DE 30 & Shingle Point Rd	TWSC	DE Route 30	SBL/T	0	0	-	0	-	0	0	-	0	-	Not Evaluated				
			Shingle Point Rd	WBL/R	15	35	-	143	-	13	35	-	95	-					
	Southern Node DE 30 & Shingle Point Rd		DE Route 30	NBL/T	3	3	-	3	-	3	3	-	3	-					
			Shingle Point Rd	EBL/R	20	60	-	90	-	23	53	-	155	-					
	Eastern Node DE 30 NBR & Shingle Point Rd		Shingle Point Rd	EBL	0	0	-	0	-	0	0	-	0	-					
	Western Node DE 30 SBR & Shingle Point Rd		Shingle Point Rd	WBL	3	3	-	3	-	3	3	-	3	-					
Shingle Point Rd (SR 249) & Briarwood Rd (SR 253)		TWSC	Briarwood Rd	EBL/R	5	10	-	10	-	3	8	-	10	-	Not Evaluated				
			Shingle Point Rd	NBL/T	3	5	-	5	-	0	3	-	3	-					
US Route 9 & Shingle Point Rd (SR 249) / French Rd		TWSC	US Route 9	EBL	8	15	75	15	98	8	28	135	38	269	0	8	15	10	26
				EBT/R			353		409			218		218			94		113
				WBL/T/R	0	0	661	0	755	0	0	616	0	800	3	3	259	3	282
			French Rd	NBL/T/R	5	10	14	13	14	3	15	9	23	9	3	5	9	8	9
			Shingle Point Rd	SBL/T	63	203	90	208	86	43	178	59	193	59	8	43	49	53	47
				SBR[1]		70	218	108	261		43	140	60	155		18	105	25	137
DE Route 30 & Prettyman Rd (SR 254)		TWSC	Prettyman Rd	WBL/R	13	15	-	20	-	23	30	-	45	-	Not Evaluated				
			DE Route 30	SBL/T	8	10	-	13	-	8	8	-	10	-					
Prettyman Rd (SR 254) & Pettyjohn Rd (SR 255)		TWSC	Prettyman Rd	EBL/T/R	0	0	-	0	-	0	0	-	0	-	Not Evaluated				
				WBL/T/R	0	0	-	0	-	0	3	-	3	-					
			Pettyjohn Rd	NBL/T/R	3	8	-	8	-	3	5	-	5	-					
				SBL/T/R	3	3	-	3	-	3	5	-	5	-					
DE Route 5 & Shingle Point Rd (SR 249)		TWSC	Shingle Point Rd	EBL	35	90	43	208	115	18	40	30	75	60	Not Evaluated				
				EBT/R			20		20			5		5					
				WBL/T/R	13	18	18	18	18	18	23	23	25	25					
			DE Route 5	NBL/T	3	3	3	3	3	0	3	8	3	3					
				SBL/T	0	0	0	0	0	0	0	0	0	0					
DE Route 5 & Sand Hill Rd (SR 319)		TWSC	Sand Hill Rd	EBL	40	78	-	98	-	15	30	-	38	-	Not Evaluated				
				EBR	28	33	-	35	-	18	20	-	25	-					
			DE Route 5	NBL	8	10	-	13	-	15	18	-	20	-					
DE Route 5 & Mulberry St (SR 197) / Atlantic St (SR 88)		TWSC	Mulberry St	EBL/T/R	48	73	38	83	40	58	95	50	128	60	Not Evaluated				
			Atlantic St	WBL/T/R	45	78	25	95	25	163	333	65	418	75					
			DE Route 5	NBL/T	3	5	105	5	138	5	8	168	8	248					
				SBL/T	3	3	53	3	60	3	3	110	3	175					
Shingle Point Road (SR 249) & Proposed Access		TWSC	Proposed Access	WBL/R	-	-	-	35	-	-	-	-	18	-	Not Evaluated				
			Shingle Point Rd	SBL	-	-	-	3	-	-	-	-	5	-					

1 - A 200-foot southbound right-turn lane is to be constructed by the proposed Azalea Woods committed development as dictated by DelDOT'S Traffic Impact Study review letter dated November 21, 2019 and provided in Appendix F. This lane has been included in all 2030 future traffic analysis.

Table 8A. Intersection Capacity Analysis Results: Level-of-Service (LOS) and Delay (Sec) - Committed + Pending Developments
HCM 6th Edition

Intersection		Traffic Control	Approach	Movement	Weekday AM Peak Hour						Weekday PM Peak Hour						Saturday Midday Peak Hour				
					2021	2030 Committed + Pending Developments					2021	2030 Committed + Pending Developments					2021	2030 Committed + Pending Developments			
					Existing	without Development	without Development with Imprvts by Others	with Development	with Development with Imprvts by Others	with Development with Imprvts by Developer	Existing	without Development	without Development with Imprvts by Others	with Development	with Development with Imprvts by Others	with Development with Imprvts by Developer	Existing	without Development	without Development with Imprvts by Others	with Development	with Development with Imprvts by Others
DE Route 30 & Shingle Point Rd (SR 249)	Northern Node DE 30 & Shingle Point Rd	TWSC	DE Route 30	NBT/R	N/A	N/A	N/A	N/A	N/A	B 13.5	N/A	N/A	N/A	N/A	N/A	A 9.7	Not Evaluated				
				SBL/T	A 7.8	A 8.1	-	A 8.2	-	B 10.2	A 7.9	A 8.4	-	A 8.4	-	A 7.3					
			Shingle Point Rd	WBL/R	C 15.0	D 30.7	-	F 107.2	-	D 53.5	B 14.3	D 30.4	-	F 58.8	-	D 54.7					
	Southern Node DE 30 & Shingle Point Rd		DE Route 30	NBL/T	A 8.2	A 8.8	-	A 9.0	-	A 7.7	A 7.9	A 8.3	-	A 8.4	-	A 9.9					
				SBT/R	N/A	N/A	N/A	N/A	N/A	B 14.9	N/A	N/A	N/A	N/A	N/A	B 18.2					
			Shingle Point Rd	EBL/R	C 15.3	E 37.2	-	F 62.3	-	D 45.7	C 15.4	E 41.3	-	F 143.7	-	D 47.5					
	Eastern Node DE 30 NBR & Shingle Point Rd		Shingle Point Rd	EBL	A 8.9	A 9.3	-	A 9.5	-	N/A	A 8.8	A 9.2	-	B 10.2	-	N/A					
	Western Node DE 30 SBR & Shingle Point Rd		Shingle Point Rd	WBL	A 9.2	A 9.6	-	B 10.0	-	N/A	A 8.9	A 9.4	-	A 9.7	-	N/A					
Shingle Point Rd (SR 249) & Briarwood Rd (SR 253)		TWSC	Briarwood Rd	EBL/R	A 9.5	B 10.4	-	B 11.2	-	-	A 9.2	A 9.9	-	B 10.9	-	-	Not Evaluated				
			Shingle Point Rd	NBL/T	A 7.6	A 7.9	-	A 8.1	-	-	A 7.4	A 7.6	-	A 7.7	-	-					
US Route 9 & Shingle Point Rd (SR 249) / French Rd		TWSC	US Route 9	EBL	A	B	C 23.6	B	C 28.8	-	A	B	C 30.3	B	D 52.5	-	A	A	A 7.6	A	A 9.0
				EBT/R	9.6	10.9	B 12.3	11.0	B 14.8	-	9.7	12.3	A 7.5	13.0	A 7.5	-	8.2	9.0	A 5.0	9.2	A 5.7
				WBL/T/R	A 8.9	A 9.3	C 28.6	A 9.3	D 37	-	A 8.9	A 9.5	C 28.0	A 9.5	D 50.0	-	A 8.2	A 8.5	B 12.4	A 8.5	B 13.9
			French Rd	NBL/T/R	C 21.9	F 55.9	D 43.3	F 83.2	D 40.6	-	D 25.3	F 129.8	D 42.6	F 299.3	D 42.6	-	C 17.9	E 41.8	D 40.6	F 54.1	D 38.8
			Shingle Point Rd	SBL/T	D	F 733.7	D 45.5	F 831.4	D 42.6	-	D	F 1545.0	D 44.4	F 2566.5	D 44.4	-	B	F 64.6	D 41.9	F 84.5	D 40.0
				SBR[1]	34.7	D 29.9	D 46.6	E 38.9	D 47.2	-	32.5	C 24.6	D 45.0	D 28.1	D 36.1	-	12.9	B 13.9	D 40.6	B 14.6	D 41.9
			Total		-	-	C 24.6	-	C 29.7	-	-	-	C 22.1	-	C 33.8	-	-	-	B 13.2	-	B 14.7
DE Route 30 & Prettyman Rd (SR 254)		TWSC	Prettyman Rd	WBL/R	B 10.2	B 11.5	-	B 11.8	-	-	B 10.4	B 12.9	-	B 14.6	-	-	Not Evaluated				
			DE Route 30	SBL/T	A 7.9	A 8.3	-	A 8.5	-	-	A 7.8	A 8.4	-	A 8.5	-	-					
Prettyman Rd (SR 254) & Pettyjohn Rd (SR 255)		TWSC	Prettyman Rd	EBL/T/R	A 7.4	A 7.5	-	A 7.5	-	-	A 7.5	A 7.6	-	A 7.7	-	-	Not Evaluated				
				WBL/T/R	A 7.5	A 7.5	-	A 7.6	-	-	A 7.4	A 7.5	-	A 7.5	-	-					
			Pettyjohn Rd	NBL/T/R	B 10.5	B 10.4	-	B 10.9	-	-	B 10.0	B 10.0	-	B 10.5	-	-					
				SBL/T/R	B 10.0	B 10.8	-	B 11.3	-	-	A 9.8	B 11.4	-	B 12.2	-	-					
DE Route 5 & Shingle Point Rd (SR 249)		TWSC	Shingle Point Rd	EBL	C	F	D 39.5	F	D 37.5	-	C	E	D 39.6	F	D 38.4	-	Not Evaluated				
				EBT/R	21.0	61.2	C 33.9	155.5	C 30.1	-	18.6	43.6	C 33.2	69.2	C 31	-					
				WBL/T/R	C 19.4	D 27.4	C 32.8	D 28.2	C 29.3	-	C 17.7	C 24.4	C 34.1	D 26.4	C 31.8	-					
			DE Route 5	NBL/T	A	A	A 6.9	A	A 9	-	A	A	A 6.8	A	A 8.0	-					
				NBR	8.5	9.0	A 4.7	9.1	A 6.2	-	8.2	8.6	A 4.4	8.9	A 5.2	-					
				SBL/T	A	A	A 7.9	A	B 10.2	-	A 8.2	A 8.5	A 6.3	A 8.5	A 7.5	-					
				SBR	8.4	8.6	A 5.3	8.6	A 7.1	-	8.2	8.5	A 5.0	8.5	A 6.6	-					
			Total		-	-	B 12.0	-	B 14.4	-	-	-	B 11.7	-	B 12.9	-					
DE Route 5 & Sand Hill Rd (SR 319)		TWSC	Sand Hill Rd	EBL	C 21.3	F 280.8	C 18.4	F 401.5	C 19.8	-	C 20.3	F 277.3	A 9.3	F 420.2	B 10.7	-	Not Evaluated				
				EBR	B 11.5	B 13.9	B 11.4	B 14.4	B 13.4	-	B 10.7	B 12.5	A 9.9	B 13.8	B 10.8	-					
			DE Route 5	NBL	A 8.2	A 8.9	A 7.6	A 9.0	A 8.1	-	A 8.8	B 11.2	C 15.7	B 11.8	C 19.3	-					
DE Route 5 & Mulberry St (SR 197) / Atlantic St (SR 88)		TWSC	Mulberry St	EBL/T/R	C 17.3	F 51.1	C 34.7	F 65.9	C 34.6	-	C 19.2	F 103.6	C 24.8	F 229.1	C 26.8	-	Not Evaluated				
			Atlantic St	WBL/T/R	C 21.7	F 432.8	D 36.7	F 636.8	D 36.7	-	F 53.7	F 2206.4	D 45.5	F 3791	D 38.8	-					
			DE Route 5	NBL/T	A 7.6	A 8.0	B 11	A 8.1	B 11.9	-	A 7.8	A 8.6	C 21.6	A 8.8	B 15.9	-					
				SBL/T	A 7.8	A 8.4	A 7.1	A 8.5	A 7.3	-	A 7.8	A 8.3	B 14.6	A 8.4	B 12.4	-					
			Total		-	-	B 17.8	-	B 18.0	-	-	-	C 25.8	-	C 21.5	-					
Shingle Point Road (SR 249) & Proposed Access		TWSC	Proposed Access	WBL/R	-	-	-	B 13.6	-	-	-	-	-	B 11.5	-	-	Not Evaluated				
			Shingle Point Rd	SBL	-	-	-	A 7.8	-	-	-	-	-	A 8.0	-	-					

1 - A 200-foot southbound right-turn lane is to be constructed by the proposed Azalea Woods committed development as dictated by DelDOT'S Traffic Impact Study review letter dated November 21, 2019 and provided in Appendix F. This lane has been included in all 2030 future traffic analysis.

Table 8B. Intersection Capacity Analysis Results: 95th Percentile Queues - Committed + Pending Developments
HCM 6th Edition

Intersection		Traffic Control	Approach	Movement	Weekday AM Peak Hour						Weekday PM Peak Hour						Saturday Midday Peak Hour				
					2021	2030 Committed + Pending Developments					2021	2030 Committed + Pending Developments					2021	2030 Committed + Pending Developments			
					Existing	without Development	without Development with Imprvts by Others	with Development	with Development with Imprvts by Others	with Development with Imprvts by Developer	Existing	without Development	without Development with Imprvts by Others	with Development	with Development with Imprvts by Others	with Development with Imprvts by Developer	Existing	without Development	without Development with Imprvts by Others	with Development	with Development with Imprvts by Others
DE Route 30 & Shingle Point Rd (SR 249)	Northern Node DE 30 & Shingle Point Rd	TWSC	DE Route 30	NBT/R	N/A	N/A	N/A	N/A	N/A	332	N/A	N/A	N/A	N/A	N/A	243	Not Evaluated				
				SBL/T	0	0	-	0	-	244	0	0	-	0	-	168					
			Shingle Point Rd	WBL/R	15	73	-	285	-	331	13	65	-	168	-	274					
	Southern Node DE 30 & Shingle Point Rd		DE Route 30	NBL/T	3	3	-	3	-	175	3	3	-	3	-	255					
				SBT/R	N/A	N/A	N/A	N/A	N/A	450	N/A	N/A	N/A	N/A	N/A	455					
			Shingle Point Rd	EBL/R	20	95	-	150	-	214	23	105	-	285	-	263					
	Eastern Node DE 30 NBR & Shingle Point Rd		Shingle Point Rd	EBL	0	0	-	0	-	N/A	0	0	-	0	-	N/A					
	Western Node DE 30 SBR & Shingle Point Rd		Shingle Point Rd	WBL	3	3	-	3	-	N/A	3	3	-	3	-	N/A					
Shingle Point Rd (SR 249) & Briarwood Rd (SR 253)		TWSC	Briarwood Rd	EBL/R	5	10	-	13	-	-	3	8	-	13	-	-	Not Evaluated				
			Shingle Point Rd	NBL/T	3	5	-	5	-	-	0	3	-	3	-	-					
US Route 9 & Shingle Point Rd (SR 249) / French Rd		TWSC	US Route 9	EBL	8	15	93	18	116	-	8	33	159	45	309	-	0	10	23	13	36
				EBT/R			389		443	-			218		218	-			109		127
				WBL/T/R	0	0	722	0	827	-	0	0	670	0	918	-	3	3	278	3	299
			French Rd	NBL/T/R	5	10	14	15	13	-	3	20	9	33	9	-	3	8	9	8	8
			Shingle Point Rd	SBL/T	63	208	88	215	84	-	43	188	59	200	59	-	8	50	48	60	46
				SBR[1]		93	245	138	290	-		53	161	73	170	-		23	3	33	168
DE Route 30 & Prettyman Rd (SR 254)		TWSC	Prettyman Rd	WBL/R	13	20	-	23	-	-	23	35	-	55	-	-	Not Evaluated				
			DE Route 30	SBL/T	8	10	-	15	-	-	8	10	-	13	-	-					
Prettyman Rd (SR 254) & Pettyjohn Rd (SR 255)		TWSC	Prettyman Rd	EBL/T/R	0	0	-	0	-	-	0	0	-	0	-	-	Not Evaluated				
				WBL/T/R	0	3	-	3	-	-	0	3	-	3	-	-					
			Pettyjohn Rd	NBL/T/R	3	8	-	8	-	-	3	5	-	5	-	-					
				SBL/T/R	3	3	-	3	-	-	3	8	-	8	-	-					
DE Route 5 & Shingle Point Rd (SR 249)		TWSC	Shingle Point Rd	EBL/T/R	35	145	100	305	164	-	18	98	115	163	154	-	Not Evaluated				
				EBT/R			69		64	-			22		21	-					
				WBL/T/R	13	20	39	20	36	-	18	28	61	30	58	-					
			DE Route 5	NBL/T	3	3	145	3	178	-	3	3	151	3	173	-					
				NBR			12		15	-			9		10	-					
				SBL/T	0	0	193	0	233	-	0	0	126	0	145	-					
				SBR			37		54	-			35		67	-					
DE Route 5 & Sand Hill Rd (SR 319)		TWSC	Sand Hill Rd	EBL	40	510	170	598	183	-	15	318	58	375	68	-	Not Evaluated				
				EBR	28	53	88	58	113	-	18	33	83	40	95	-					
			DE Route 5	NBL	8	15	50	15	55	-	15	35	155	40	200	-					
DE Route 5 & Mulberry St (SR 197) / Atlantic St (SR 88)		TWSC	Mulberry St	EBL/T/R	48	140	201	168	202	-	58	215	165	323	154	-	Not Evaluated				
			Atlantic St	WBL/T/R	45	378	196	430	196	-	163	1063	382	1135	312	-					
			DE Route 5	NBL/T	3	8	268	8	299	-	5	10	381	13	299	-					
				SBL/T	3	3	108	3	114	-	3	3	242	3	218	-					
Shingle Point Road (SR 249) & Proposed Access		TWSC	Proposed Access	WBL/R	-	-	-	40	-	-	-	-	-	20	-	-	Not Evaluated				
			Shingle Point Rd	SBL	-	-	-	3	-	-	-	-	-	5	-	-					

1 - A 200-foot southbound right-turn lane is to be constructed by the proposed Azalea Woods committed development as dictated by DelDOT'S Traffic Impact Study review letter dated November 21, 2019 and provided in Appendix F. This lane has been included in all 2030 future traffic analysis.

Recommendations and Conclusion

The study intersections were evaluated utilizing HCS7 capacity analysis software for the existing and future conditions, both without and with the proposed development.

Based on the future analysis, the following improvements are assumed to be required in the future **by other developments in Cases 1A and 2A**:

- US Route 9 / Shingle Point Road (SR 249)
  a. Committed Developments: Traffic Signal + Eastbound US Route 9 Left-Turn Lane
  b. Committed + Pending Developments: Traffic Signal + Eastbound US Route 9 Left-Turn Lane
- Delaware Route 5 / Shingle Point Road (SR 249)
  a. Committed Developments: Eastbound Shingle Point Rd Left-Turn Lane
  b. Committed + Pending Developments: Traffic Signal + Eastbound Shingle Point Rd Left-Turn Lane
- Delaware Route 5 / Sand Hill Road (SR 319)
  a. Committed + Pending Developments: Single-Lane Roundabout
- Delaware Route 5 / Mulberry St / Atlantic St (SR 88)
  a. Committed Developments: All-Way Stop-Control
  b. Committed + Pending Developments: Traffic Signal

The following improvements are proposed as part of the **Four Winds Farm Development**:

- Provision of a full-movement site access on Shingle Point Road, approximately 0.8 miles north of DE Route 30
  - Provision of a 185-foot Southbound Left-Turn Lane with a 100-foot taper.
  - Provision of a 290-foot Northbound Right-Turn Lane with a 50-foot taper.
  - Two-lane access with a single exit lane.
- Provision of a 5-foot wide bicycle lane along Northbound Shingle Point Road at the site access.
- Provision of a 10-foot wide shared-use path (SUP) along Shingle Point Road along the site frontage.
- Enter into a Signal Agreement or contribute to the Traffic Signal Revolving Fund (TSRF) for the potential future installation of a traffic signal at the intersection of DE Route 30 and Shingle Point Road, whether and when a traffic signal is installed at DelDOT's discretion.

FIGURE 1A - SITE LOCATION MAP

FOUR WINDS FARM DEVELOPMENT
RIBERA DEVELOPMENT, LLC

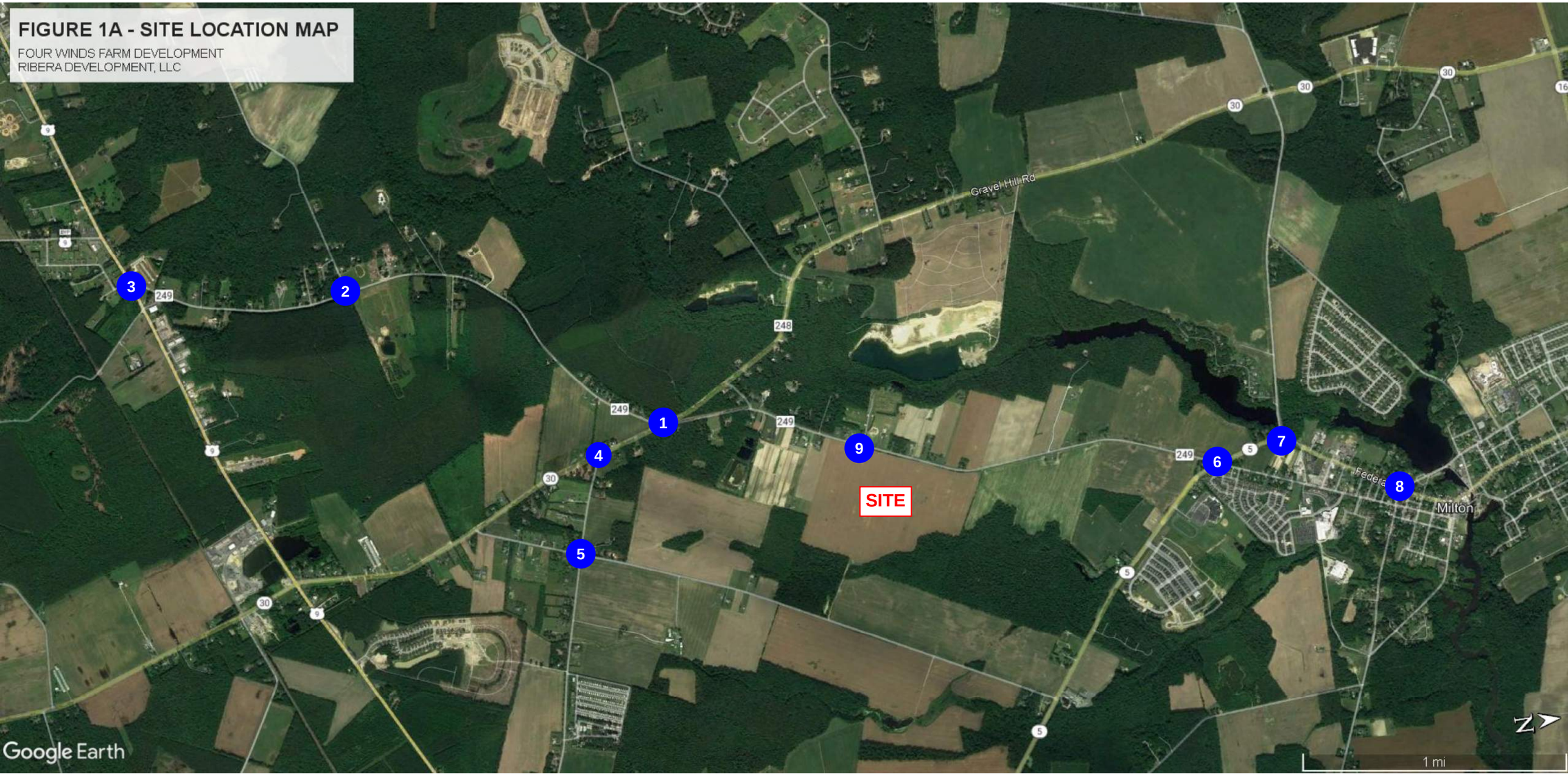
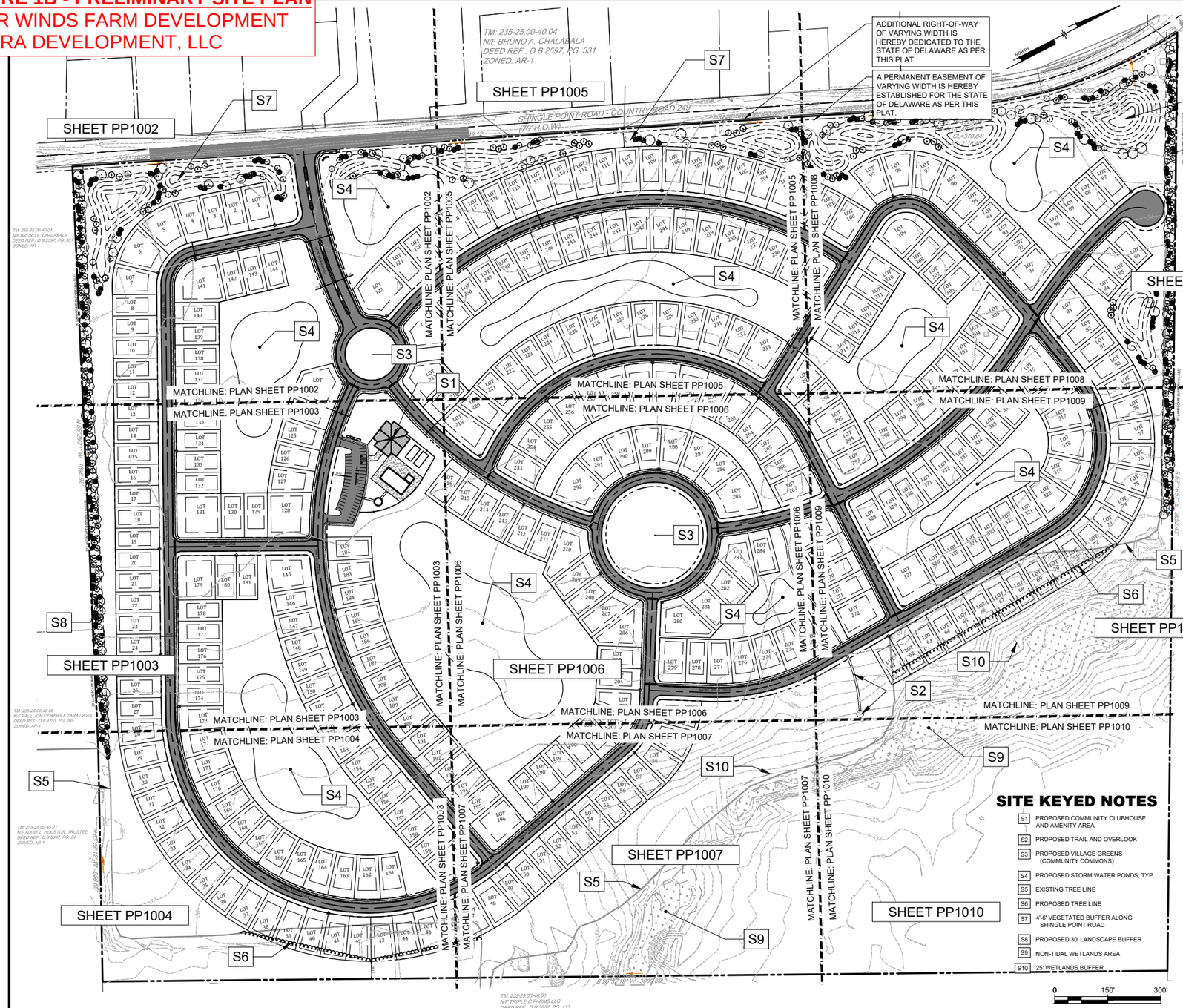


FIGURE 1B - PRELIMINARY SITE PLAN
FOUR WINDS FARM DEVELOPMENT
RIBERA DEVELOPMENT, LLC



SITE KEYED NOTES

S1	PROPOSED COMMUNITY CLUBHOUSE AND AMENITY AREA
S2	PROPOSED TRAIL AND OVERLOOK
S3	PROPOSED VILLAGE GREENS (COMMUNITY COMMONS)
S4	PROPOSED STORM WATER PONDS, TYP.
S5	EXISTING TREE LINE
S6	PROPOSED TREE LINE
S7	4'-6' VEGETATED BUFFER ALONG SHINGLE POINT ROAD
S8	PROPOSED 30' LANDSCAPE BUFFER
S9	NON-TIDAL WETLANDS AREA
S10	25' WETLANDS BUFFER

0 150' 300'

GENERAL NOTES:

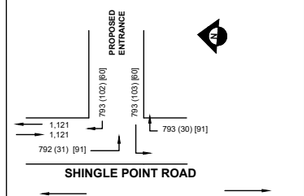
1. THIS PLAN DOES NOT VERIFY THE EXISTENCE, OR NONEXISTENCE, OF EASEMENT OR RIGHT OF WAYS CROSSING THE SUBJECT PROPERTY.
2. BASED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) NUMBERS 10005C0335L, 10005C0315L, AND 10005C0164J, EFFECTIVE DATE MARCH 16, 2015, THE ENTIRE PROPERTY IS LOCATED IN AN AREA DESIGNATED AS FLOOD ZONE "X" (UNSHADED).
3. 2.966 +/- ACRES NON-TIDAL WETLANDS - DELINEATED BYKENNETH W. REDINGER, PROFESSIONAL WETLANDS SCIENTIST #2126.
4. THE BOUNDARY INFORMATION & TOPOGRAPHY SHOWN ON THIS PLAN WAS TAKEN FROM DOCUMENTS OF PUBLIC RECORD AND IS ALSO THE RESULT OF AN ACTUAL FIELD SURVEY BY PENNONI ASSOCIATES, INC. IN 2021.
5. DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL WORK MUST BE PERFORMED IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, AS AMENDED AND ALL RULES AND REGULATIONS THERETO APPURTENANT.
6. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO LOCATE PROPERTY LINES AND RIGHT OF WAY LINES PRIOR TO CONSTRUCTION AND AVOID CONSTRUCTION ACTIVITIES ON PRIVATE PROPERTY AND/OR RIGHTS OF WAYS WHERE SAID CONSTRUCTION IS PROHIBITED. THE CONTRACTOR MAY CONDUCT CONSTRUCTION ACTIVITIES ON PRIVATE PROPERTY ONLY IF HE HAS OBTAINED PRIOR WRITTEN PERMISSION FROM THE PROPERTY OWNER AND HAS SUBMITTED A COPY OF SAID WRITTEN PERMISSION TO THE OWNER.
7. FINAL SET OF APPROVED CONSTRUCTION PLANS AND SPECIFICATIONS SHALL BE MAINTAINED ON THE JOB SITE AT ALL TIMES. FAILURE TO COMPLY WITH THIS PROVISION SHALL BE CONSIDERED CAUSE TO STOP THE WORK.
8. THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF CONTRACT DRAWINGS ON WHICH HE SHALL NOTE, IN RED, THE ALIGNMENTS AND INVERTS OF ALL UNDERGROUND UTILITIES INSTALLED OR ENCOUNTERED DURING THE PROSECUTION OF THE WORK. ALL DISCREPANCIES BETWEEN THE PLAN LOCATIONS AND ELEVATIONS OF BOTH THE EXISTING AND PROPOSED UTILITIES SHALL BE SHOWN ON THE AS-BUILT DRAWINGS TO BE MAINTAINED BY THE CONTRACTOR IN THE FIELD.
9. THE CONTRACTOR SHALL OPEN ONLY THAT SECTION OF TRENCH OR ACCESS PITS WHICH CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKING DAY. STEEL PLATES SHALL BE USED ON ANY TRENCH OR ACCESS PITS WHICH MUST REMAIN OPEN OVERNIGHT. THIS REQUIREMENT DOES NOT APPLY TO AREAS COMPLETELY CLOSED AND SECURE FROM VEHICULAR OR PEDESTRIAN TRAFFIC.
10. THE CONTRACTOR SHALL USE ONLY NEW MATERIALS, PARTS, AND PRODUCTS. ALL MATERIALS SHALL BE STORED SO AS TO ASSURE THE PRESERVATION OF THEIR QUALITY AND FITNESS FOR THE INTENDED WORK.
11. ROUTINE, PERIODIC INSPECTIONS DURING CONSTRUCTION WILL BE PROVIDED BY THE OWNER. THESE INSPECTIONS DO NOT RELIEVE THE CONTRACTOR FROM HIS OBLIGATION AND RESPONSIBILITY FOR CONSTRUCTING ALL WORK IN STRICT ACCORDANCE WITH ALL STANDARDS AND SPECIFICATIONS AND CONSTRUCTION DOCUMENTS.
12. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS AND ORDERS OF ANY PUBLIC BODY HAVING JURISDICTION. THE CONTRACTOR SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR SAFETY AND PROTECTION.
13. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING, TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION:
    - THE OWNER
    - SUSSEX CONSERVATION DISTRICT
    - DELDOT
14. THE CONTRACTOR SHALL PROVIDE SEDIMENT CONTROL MEASURES TO PROTECT STOCKPILE AREAS AND STORAGE AREAS. ALL AREAS USED BY THE CONTRACTOR FOR STAGING OPERATIONS SHALL BE FULLY RESTORED BY THE CONTRACTOR UPON COMPLETION OF THE PROJECT. IF THE STAGING AREA IS PAVED, IT SHALL BE RESTORED TO ITS ORIGINAL CONDITION. IF THE STAGING AREA IS UNPAVED, IT SHALL BE RE-GRADED, TOPSOILED, SEEDED AND MULCHED TO THE SATISFACTION OF THE ENGINEER. ALL COSTS ASSOCIATED WITH RESTORATION OF THE STAGING AREA SHALL BE AT THE CONTRACTOR'S EXPENSE. IF THE ENGINEER DETERMINES THAT A SATISFACTORY STAND OF GRASS DOES NOT EXIST AT THE TIME OF FINAL INSPECTION, ALL COSTS ASSOCIATED WITH RE-ESTABLISHING A SATISFACTORY STAND OF GRASS SHALL BE AT THE CONTRACTOR'S EXPENSE.
15. EQUIPMENT AND STOCKPILE MATERIAL SHALL NOT BE STORED IN THE DRIPLINE AREA OF ANY TREE.
16. THE CONTRACTOR SHALL PROVIDE TEMPORARY SEED AND MULCH FOR ALL AREAS WHERE SOIL IS EXPOSED AND SILT FENCE IS NOT SPECIFIED, BY THE CLOSE OF EACH BUSINESS DAY.
17. THE CONTRACTOR SHALL MAINTAIN PUBLIC ROADS AND STREETS IN A BROOM SWEPT CONDITION AT ALL TIMES.
18. DELAWARE REGULATIONS PROHIBIT THE BURIAL OF CONSTRUCTION DEMOLITION DEBRIS, INCLUDING TREES AND STUMPS ON CONSTRUCTION SITES. ANY SOLID WASTE FOUND DURING THE EXCAVATION FOR STRUCTURES AND UTILITY LINES ON AND OFF SITE MUST BE REMOVED AND PROPERLY DISCARDED. ANY REMEDIAL ACTION REQUIRED IS THE RESPONSIBILITY OF THE CONTRACTOR.
19. THE CONTRACTOR SHALL REMOVE AND IMMEDIATELY REPLACE, RELOCATE, RESET OR RECONSTRUCT ALL OBSTRUCTIONS IN THE WORK AREA, INCLUDING, BUT NOT LIMITED TO, MAILBOXES, SIGNS, LANDSCAPING, LIGHT POLES, FENCES, CULVERTS, DRIVEWAYS, PARKING AREAS, CURBS, GUTTERS, FENCES, OR OTHER NATURAL OR MAN-MADE OBSTRUCTIONS. TRAFFIC CONTROL REGULATORY, WARNING AND INFORMATION SIGNS SHALL REMAIN FUNCTIONAL AND VISIBLE TO THE APPROPRIATE LANES OF TRAFFIC AT ALL TIMES, WITH THEIR RELOCATION KEPT TO A MINIMUM DISTANCE.

DELDOT RECORD/SITE PLAN NOTES (REVISED 3/21/2019):

1. ALL ENTRANCES SHALL CONFORM TO THE DELAWARE DEPARTMENT OF TRANSPORTATION'S (DELDOT'S) CURRENT DEVELOPMENT COORDINATION MANUAL AND SHALL BE SUBJECT TO ITS APPROVAL.
2. NO LANDSCAPING SHALL BE ALLOWED WITHIN THE RIGHT-OF-WAY UNLESS THE PLANS ARE COMPLIANT WITH SECTION 3.7 OF THE DEVELOPMENT COORDINATION MANUAL.
3. SHRUBBERY, PLANTINGS, SIGNS AND/OR OTHER VISUAL BARRIERS THAT COULD OBSTRUCT THE SIGHT DISTANCE OF A DRIVER PREPARING TO ENTER THE ROADWAY ARE PROHIBITED WITHIN THE DEFINED DEPARTURE SIGHT TRIANGLE AREA ESTABLISHED ON THIS PLAN. IF THE ESTABLISHED DEPARTURE SIGHT TRIANGLE AREA IS OUTSIDE THE RIGHT-OF-WAY OR PROJECTS ONTO AN ADJACENT PROPERTY OWNER'S LAND, A SIGHT EASEMENT SHOULD BE ESTABLISHED AND RECORDED WITH ALL AFFECTED PROPERTY OWNERS TO MAINTAIN THE REQUIRED SIGHT DISTANCE.
4. UPON COMPLETION OF THE CONSTRUCTION OF THE SIDEWALK OR SHARED-USE PATH ACROSS THIS PROJECT'S FRONTAGE AND PHYSICAL CONNECTION TO ADJACENT EXISTING FACILITIES, THE DEVELOPER, THE PROPERTY OWNERS OR BOTH ASSOCIATED WITH THIS PROJECT, SHALL BE RESPONSIBLE TO REMOVE ANY EXISTING ROAD TIE-IN CONNECTIONS LOCATED ALONG ADJACENT PROPERTIES, AND RESTORE THE AREA TO GRASS. SUCH ACTIONS SHALL BE COMPLETED AT DELDOT'S DISCRETION, AND IN CONFORMANCE WITH DELDOT'S DEVELOPMENT COORDINATION MANUAL.
5. PRIVATE STREETS CONSTRUCTED WITHIN THIS SUBDIVISION SHALL BE MAINTAINED BY THE DEVELOPER, THE PROPERTY OWNERS WITHIN THIS SUBDIVISION OR BOTH (TITLE 17 §131). DELDOT ASSUMES NO RESPONSIBILITIES FOR THE FUTURE MAINTENANCE OF THESE STREETS.
6. THE SIDEWALK SHALL BE THE RESPONSIBILITY OF THE DEVELOPER, THE PROPERTY OWNERS OR BOTH WITHIN THIS SUBDIVISION. THE STATE OF DELAWARE ASSUMES NO RESPONSIBILITY FOR THE FUTURE MAINTENANCE FOR THE SIDEWALK.
7. ALL LOTS SHALL HAVE ACCESS FROM THE INTERNAL SUBDIVISION STREET.
8. DRIVEWAYS WILL NOT BE PERMITTED TO BE PLACED AT CATCH BASIN LOCATIONS.
9. TO MINIMIZE RUTTING AND EROSION OF THE ROADSIDE DUE TO ON-STREET PARKING, DRIVEWAY AND BUILDING LAYOUTS MUST BE CONFIGURED TO ALLOW FOR VEHICLES TO BE STORED IN THE DRIVEWAY BEYOND THE RIGHT-OF-WAY, WITHOUT INTERFERING WITH SIDEWALK ACCESS AND CLARENCE.
10. THE DEVELOPER SHALL BE REQUIRED TO FURNISH AND PLACE RIGHT-OF-WAY MONUMENTS IN ACCORDANCE WITH DELDOT'S DEVELOPMENT COORDINATION MANUAL.
11. THE DEVELOPER SHALL BE REQUIRED TO FURNISH AND PLACE RIGHT-OF-WAY MARKERS TO PROVIDE A PERMANENT REFERENCE FOR RE-ESTABLISHING THE RIGHT-OF-WAY AND PROPERTY CORNERS ON LOCAL AND HIGHER ORDER FRONTAGE ROADS. RIGHT-OF-WAY MARKERS SHALL BE SET AND/OR PLACED ALONG THE FRONTAGE ROAD RIGHT-OF-WAY AT PROPERTY CORNERS AND AT EACH CHANGE IN RIGHT-OF-WAY ALIGNMENT IN ACCORDANCE WITH SECTION 3.2.4.2 OF THE DEVELOPMENT COORDINATION MANUAL.

TRAFFIC GENERATION - SHINGLE POINT RD (SCR 249)

(FULL MOVEMENT)



ROAD TRAFFIC DATA:

FUNCTIONAL CLASSIFICATION - S249 (SHINGLE POINT RD.) - LOCAL
POSTED SPEED LIMIT - 50 MPH
AADT = 1,264 TRIPS (FROM 2019 DELDOT TRAFFIC SUMMARY)
10 YEAR PROJECTED AADT= 1,16 x 1,264 TRIPS = 1,466 TRIPS
10 YEAR PROJECTED AADT + SITE ADT = 4,637 TRIPS
TRAFFIC PATTERN GROUP = 7 (FROM 2019 DELDOT TRAFFIC SUMMARY)
PEAK HOUR - 17.89% x 4,637 TRIPS = 830 TRIPS
TRUCK VOLUME - 12.69% X 4,637 TRIPS = 588 TRIPS
DIRECTIONAL DISTRIBUTION = 62.32% / 37.68%

SITE TRAFFIC DATA:

SOURCE: ITE TRIP GENERATION MANUAL 10TH EDITION[2]

EXISTING LAND USE: VACANT FIELD
VACANT LAND - FARM FIELD
PROPOSED LAND USE:
336 DWELLINGS - SINGLE FAMILY DETACHED HOUSING (ITE 210)
Ln(T)=0.92 Ln(X) +2.71 = 3,171 TRIPS (WEEKDAY) (1,585 ENTER / 1,586 EXIT)

PEAK HOUR OF ADJACENT STREET TRAFFIC:
AM: T=0.71(X)+4.80 = 243 TRIPS (WEEKDAY) [25% / 75%] (61 / 182)
PM: Ln(T)=0.96Ln(X)+0.20 = 325 TRIPS (WEEKDAY) [63% / 37%] (205 / 120)

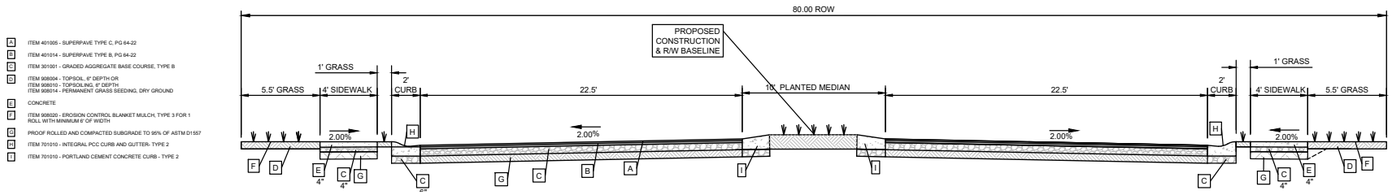
DIRECTIONAL DISTRIBUTION:
50% TO AND FROM THE NORTH (1,585 TRIPS) (31)[91] ENTER & (102)[60] EXIT
50% TO AND FROM THE SOUTH (1,586 TRIPS) (30)[91] ENTER & (103)[60] EXIT
TOTAL NEW TRIPS = 3,171 ADT
SITE TRUCK TRAFFIC = 159 TRIPS (5%)

TRAFFIC GENERATION DIAGRAM

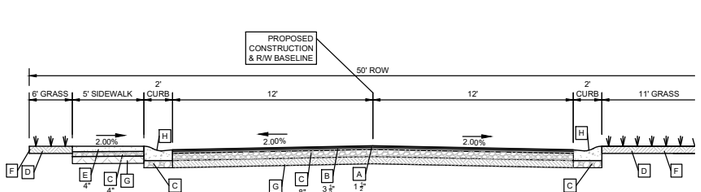
ADT PEAK HOUR (A.M.), ADT PEAK HOUR [P.M.]

[1] DIRECTIONAL DISTRIBUTION PROVIDED BY DELDOT
[2] DIRECTIONAL DISTRIBUTION PROVIDED BY ITE MANUAL

DESIGN VEHICLE = WB-40 & SU-30



1 SECTION - BOULEVARD ENTRY - 80' ROW
NOT TO SCALE



2 SECTION - TYPICAL 50' ROW
NOT TO SCALE

PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

FOUR WINDS FARM
TAX ID 235-25.00-30.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE
PRELIMINARY PLAT KEY SHEET

RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS	BY

PROJECT	RIBER21001
DATE	2021-08-20
DRAWING SCALE	AS SHOWN
DRAWN BY	EW/LM
APPROVED BY	AMD

PP1001
SHEET 2 OF 13

FIGURE 2: EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL

Four Winds Farm Residential Development

Sussex County, Delaware

By: TML Date: 10/15/2021

Ckd By: PV Date: 10/27/2021

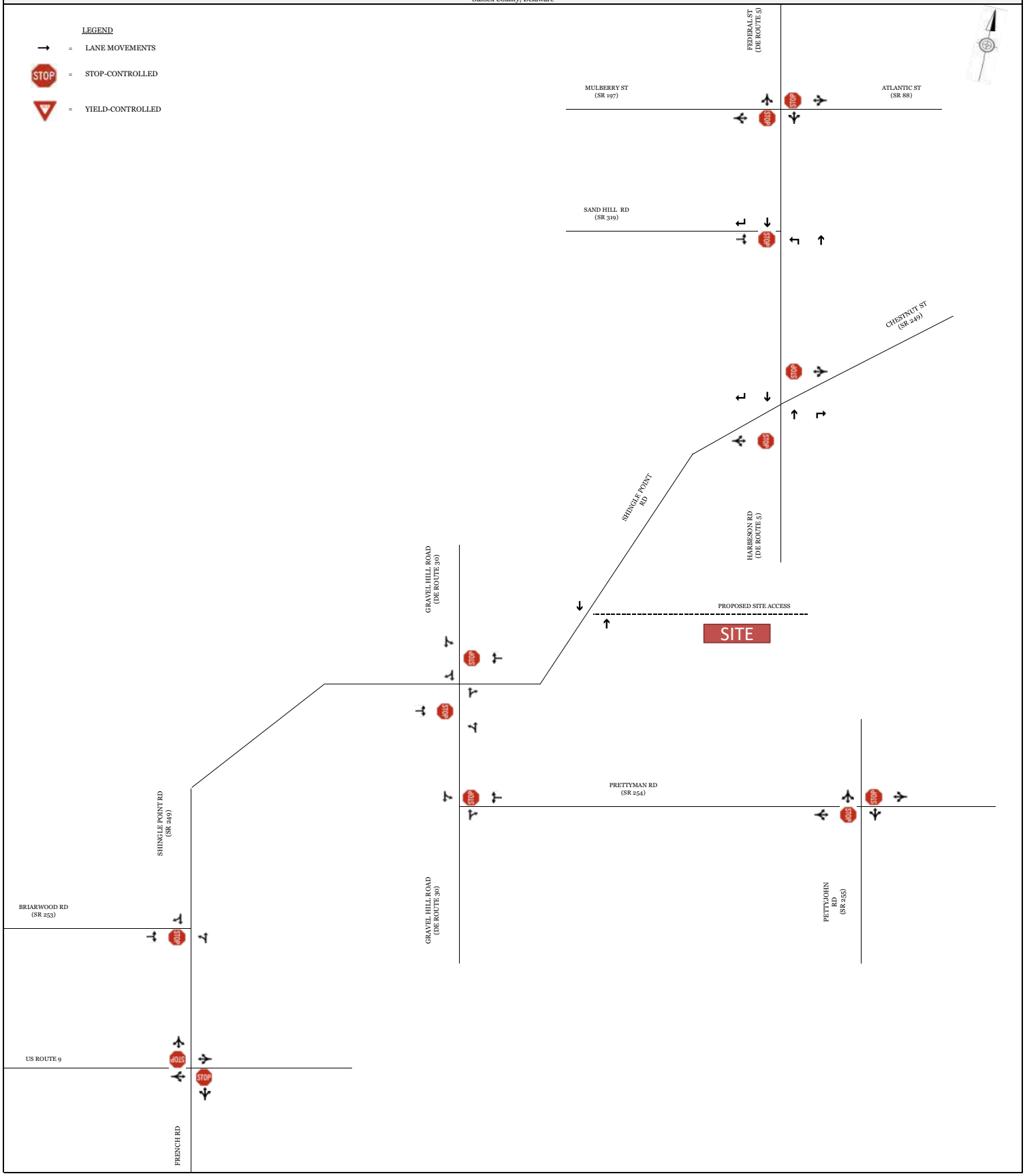


FIGURE 3A: EXISTING (2021) TRAFFIC COUNTS (RAW VOLUMES)

Four Winds Farm Residential Development

Sussex County, Delaware

By: TML Date: 10/15/2021

Ckd By: PV Date: 10/27/2021

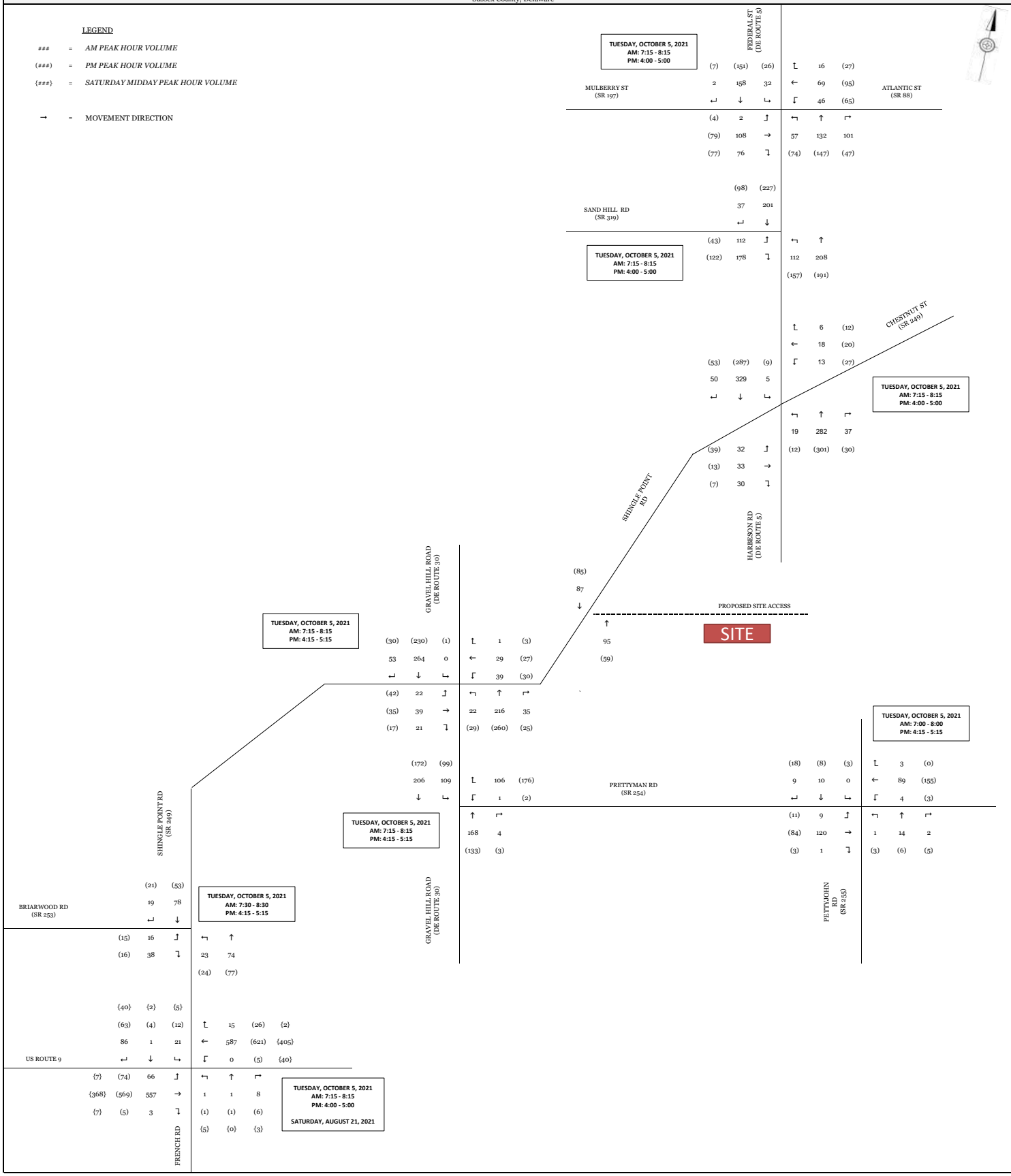


FIGURE 3B: EXISTING (2021) TRAFFIC COUNTS (SEASONALLY ADJUSTED)

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

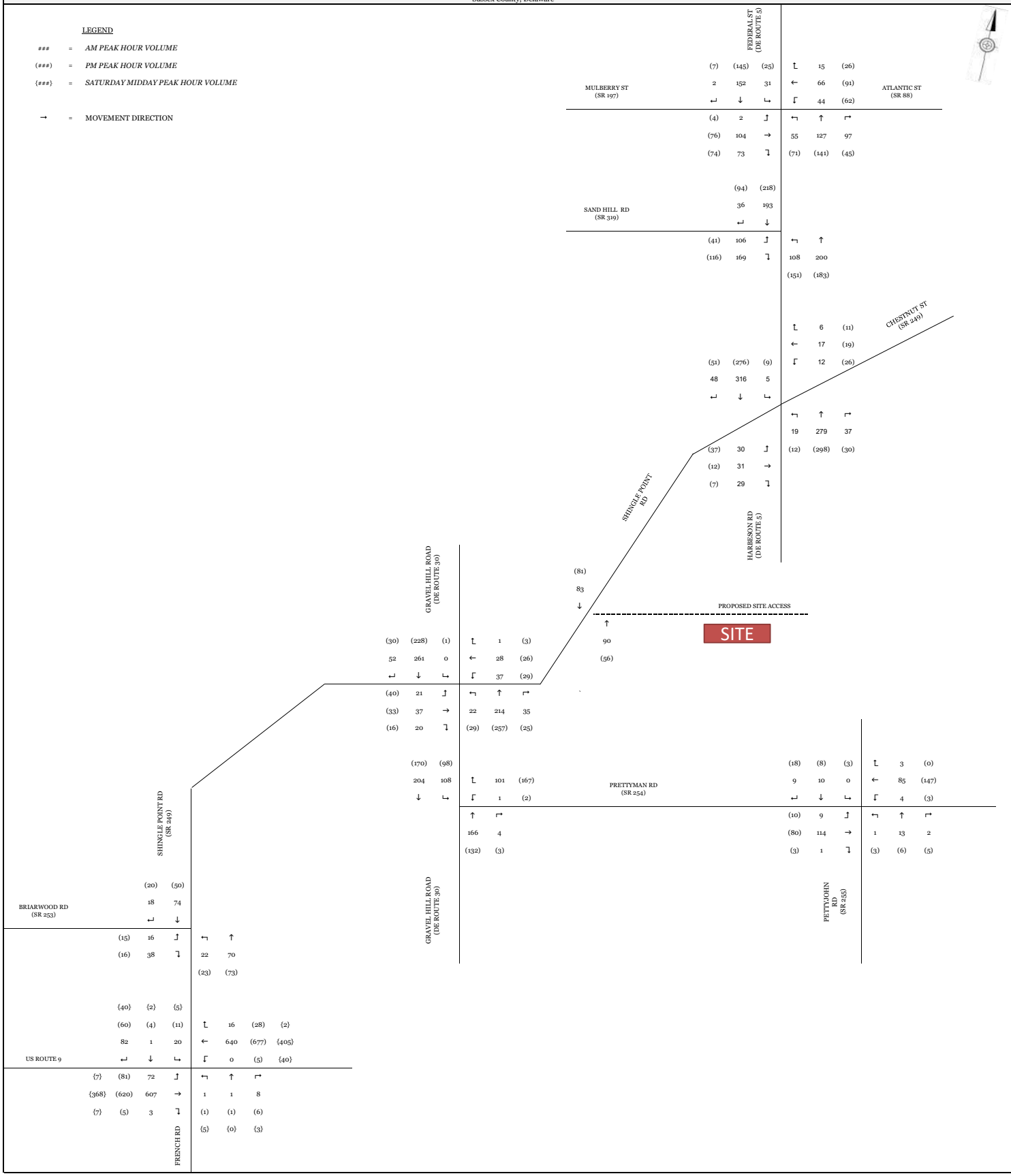


Figure 4A - Other Development Locations

Four Winds Farm Development
Ribera Development, LLC

LEGEND

- 1 HAWTHORNE
- 2 AZALEA WOODS
- 3 HERITAGE CREEK 1
- 4 VINES AT SAND HILL
- 5 CYPRESS GROVE
- 6 GRANARY AT DRAPER FARM
- 7 PRETTYMAN PROPERTY
- SITE PROPOSED SITE LOCATION

Google Earth
© 2021 Google

N

3000 ft

Figure 4B - Other Development Locations

Four Winds Farm Development
Ribera Development, LLC

LEGEND

1. HAWTHORNE
2. AZALEA WOODS
3. HERITAGE CREEK 1
4. VINES AT SAND HILL
5. CYPRESS GROVE
6. GRANARY AT DRAPER FARM
7. PRETTYMAN PROPERTY

SITE PROPOSED SITE LOCATION

6

SITE

4

7

Donovans

Rd 251

Bridlewood Rd

Derby Rd

Preakness Rd

Pimlico Rd

Emma Ln

Black Dr

Red Oak Dr

White Oak Dr

Carriage Spring Run

Rd 248A

30

249

Rd 252

Sand Hill Rd

Arts Ln

Houstin Ln

Carol Dr

Rd 254

Rd 255

Deer Run Ln

N

3000 ft

Google Earth

Figure 4C - Other Development Locations

Four Winds Farm Development
Ribera Development, LLC

LEGEND

- 1 HAWTHORNE
- 2 AZALEA WOODS
- 3 HERITAGE CREEK 1
- 4 VINES AT SAND HILL
- 5 CYPRESS GROVE
- 6 GRANARY AT DRAPER FARM
- 7 PRETTYMAN PROPERTY
- SITE PROPOSED SITE LOCATION

Pond Dr
Isle
Paynter St
Village Center Blvd
Chestnut St
Carlton Cir
Elm Dr
Bangor Ln
Mariners Cir
Vega Way
Robin Ln
Lucas
Sam Lucas Rd
Diamond Farm Rd
Harbeson Rd
Carpenter Rd
Alfreds Way
Shingle Point Rd
Rd 255
30
249
5
6
3
SITE
N
3000 ft
Google Earth
© 2021 Google

Figure 4D - Other Development Locations

Four Winds Farm Development
Ribera Development, LLC

LEGEND

- 1 HAWTHORNE
- 2 AZALEA WOODS
- 3 HERITAGE CREEK 1
- 4 VINES AT SAND HILL
- 5 CYPRESS GROVE
- 6 GRANARY AT DRAPER FARM
- 7 PRETTYMAN PROPERTY
- SITE PROPOSED SITE LOCATION

Russell St
Slim St
Sycamore Ln
S-11-J
Beach Hwy
Clyde's Dr
5
Cedar St
Pine St
Yew St
Rte-22A
Milton
Mill St
Coulter St
Atlantic St
Front St
Paynter St
Pemberton Way
Oysterman Dr
Carriage Dr
Village Center Blvd
Sam Lucas Rd
Cave Neck Rd
Mercury Ln
Gemini Ln
Brickyard Rd
12K-2
N
3000 ft
Google Earth
© 2021 Google

FIGURE 5A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - HAWTHORNE

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

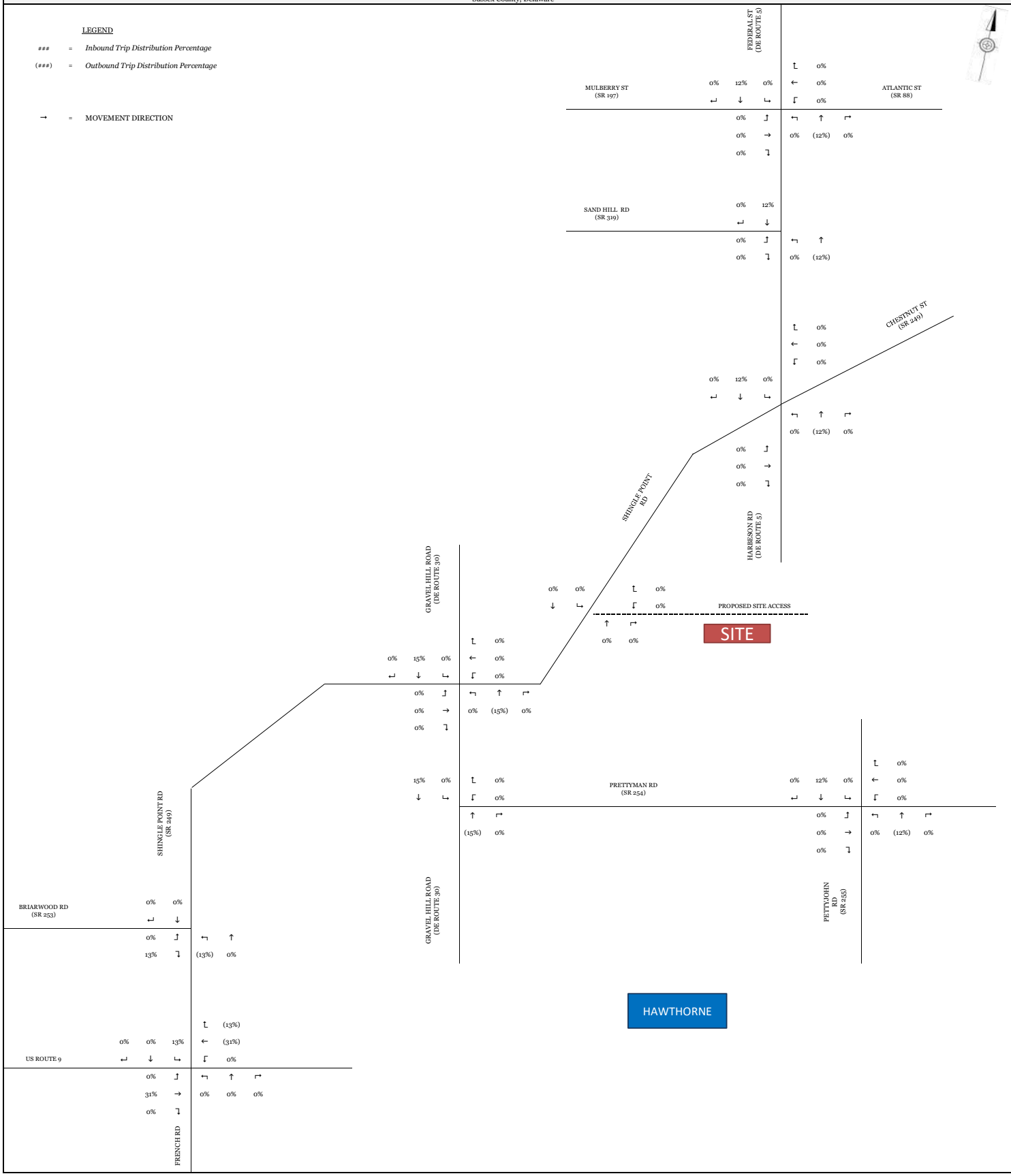


FIGURE 5B: COMMITTED DEVELOPMENT TRIP ASSIGNMENT - HAWTHORNE

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

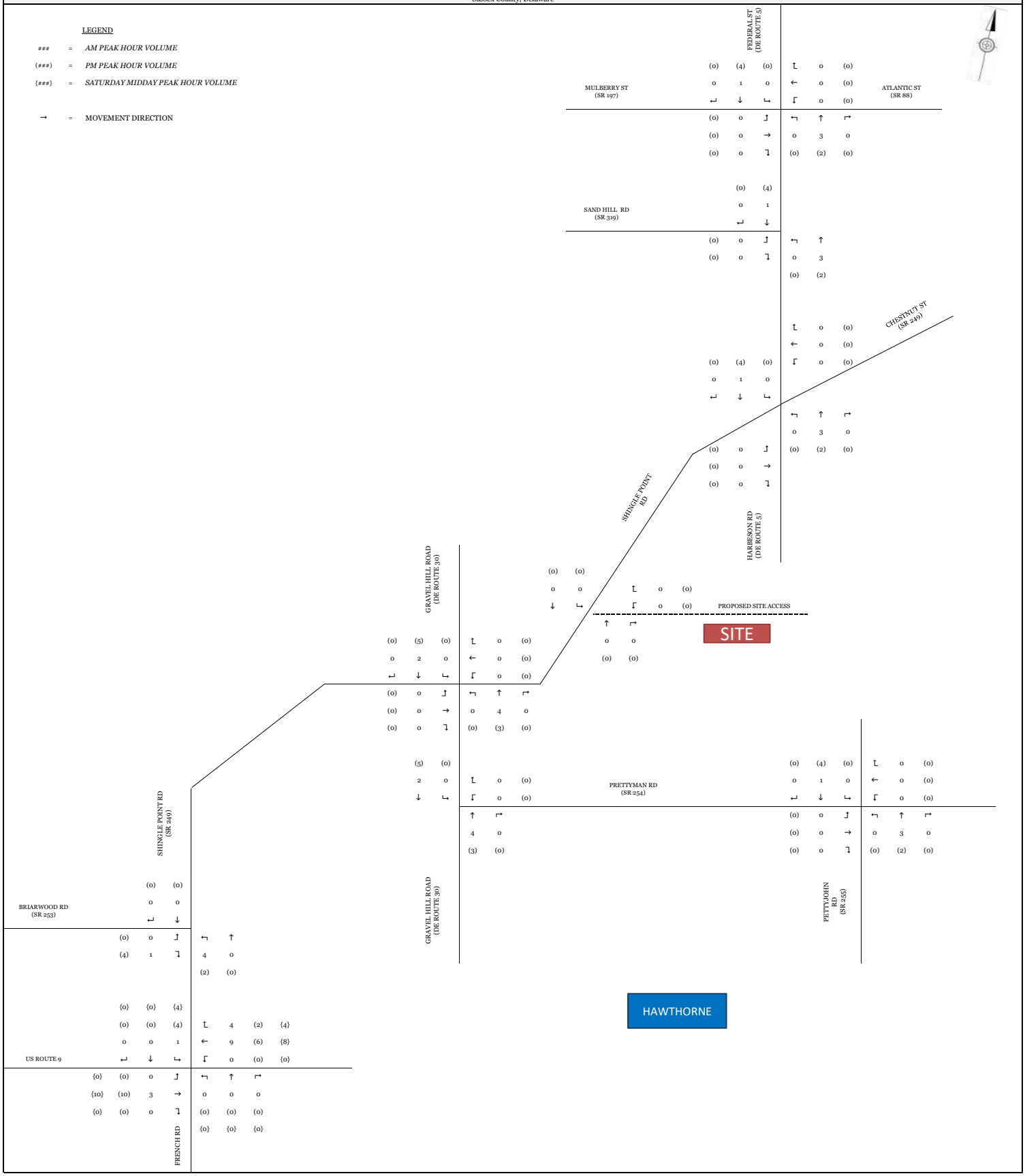


FIGURE 6A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - AZALEA WOODS

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

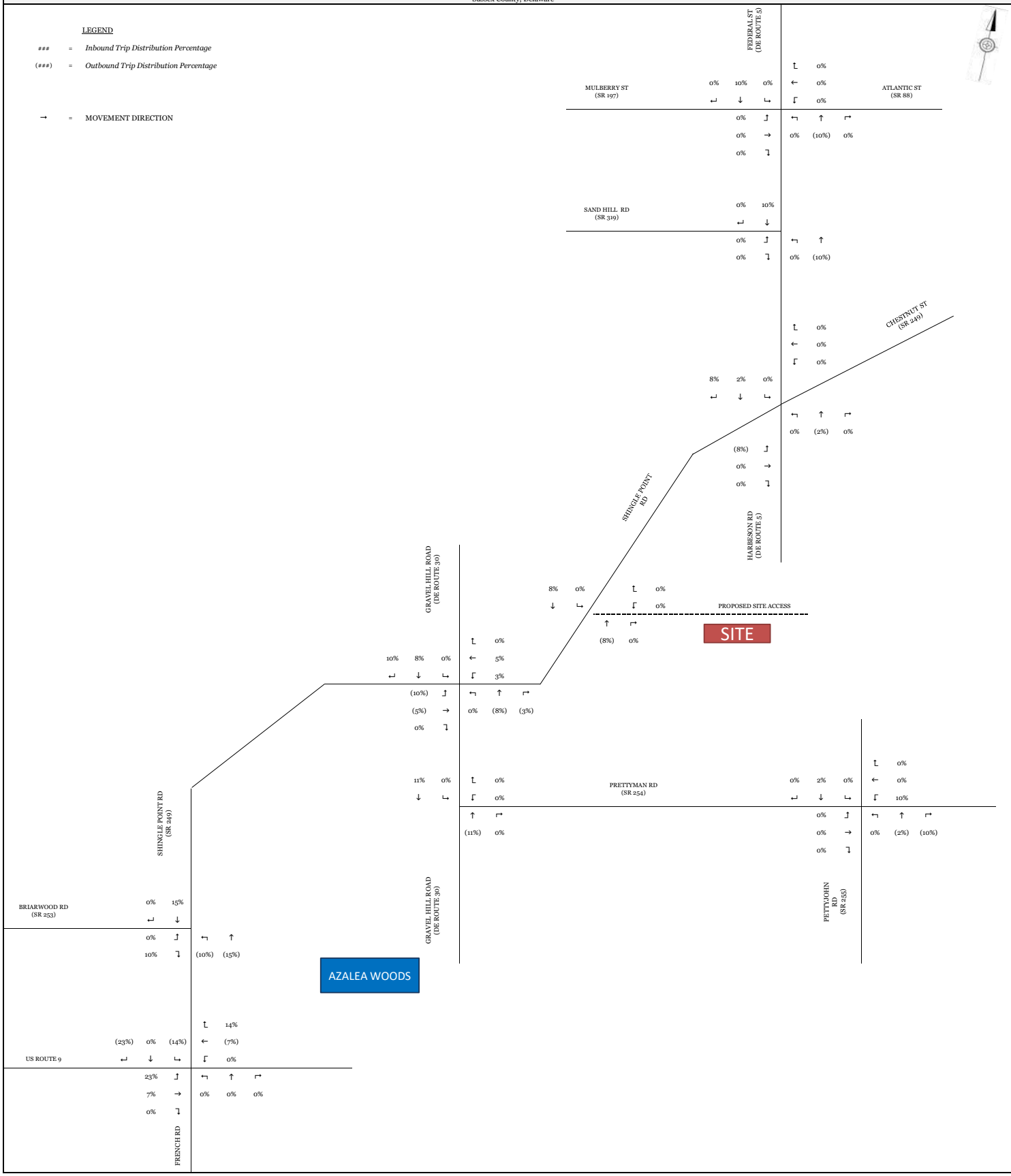


FIGURE 6B: COMMITTED DEVELOPMENT TRIP ASSIGNMENT - AZALEA WOODS

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

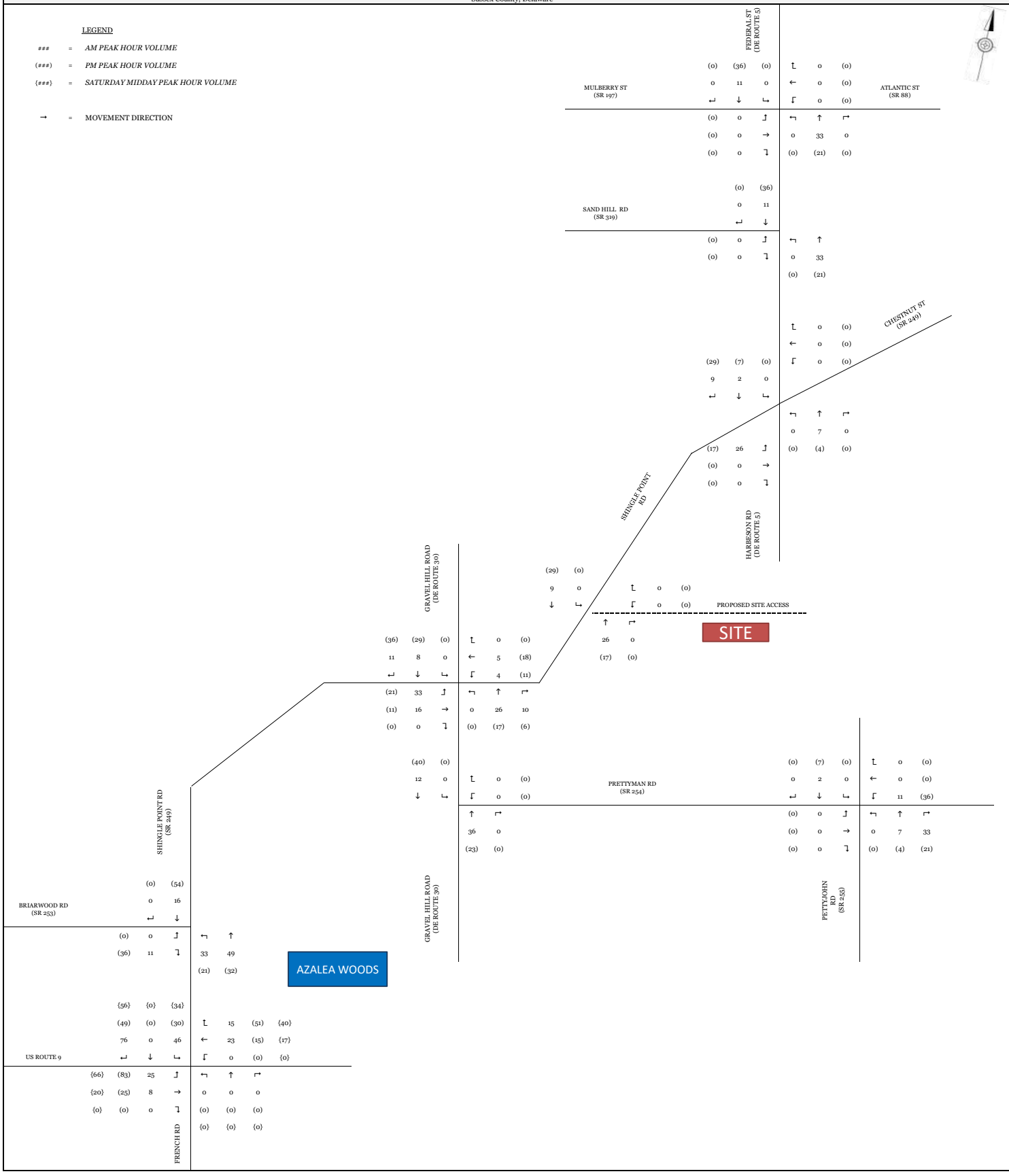


FIGURE 7A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - HERITAGE CREEK

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

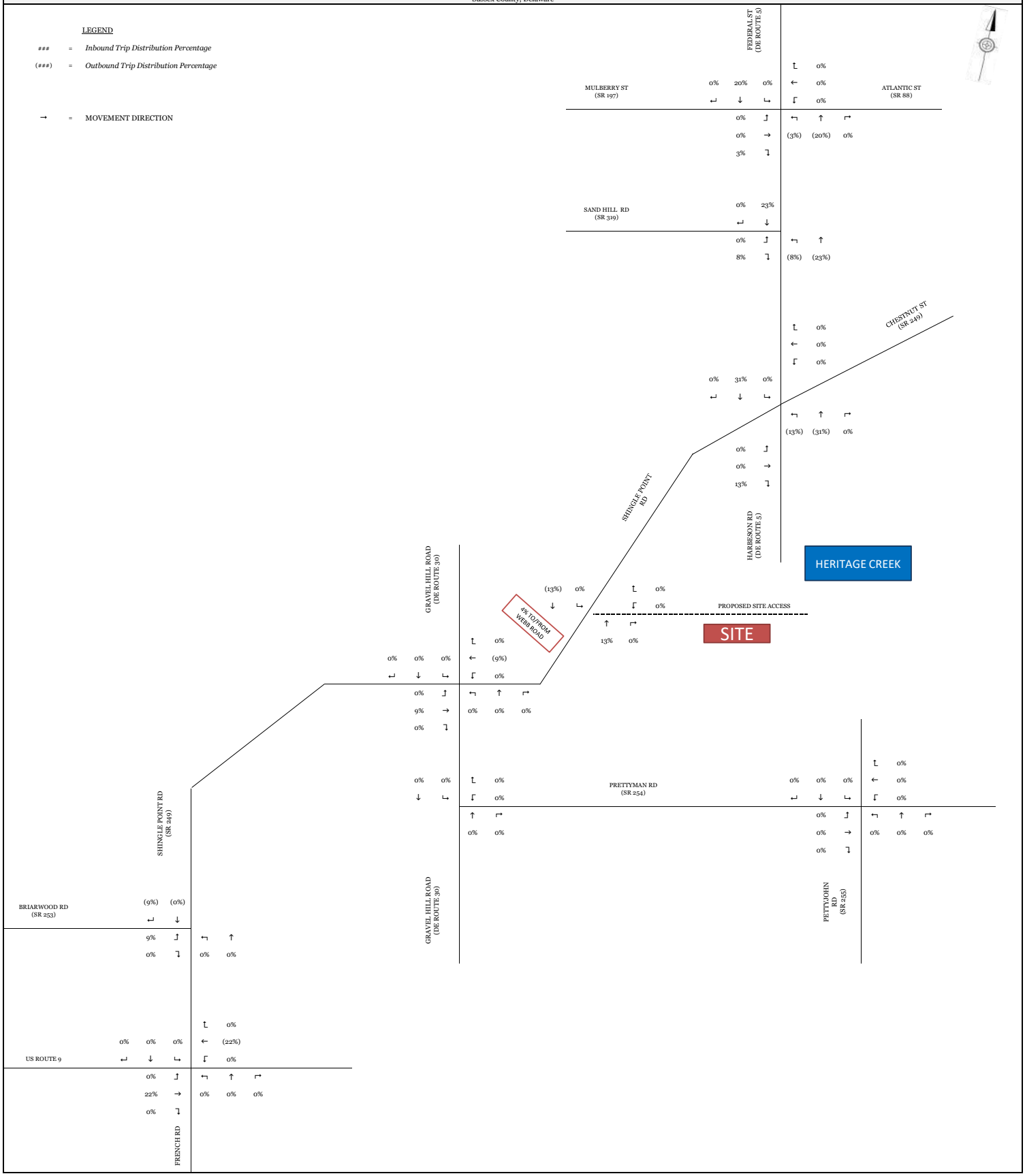


FIGURE 7B: COMMITTED DEVELOPMENT TRIP ASSIGNMENT - HERITAGE CREEK

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

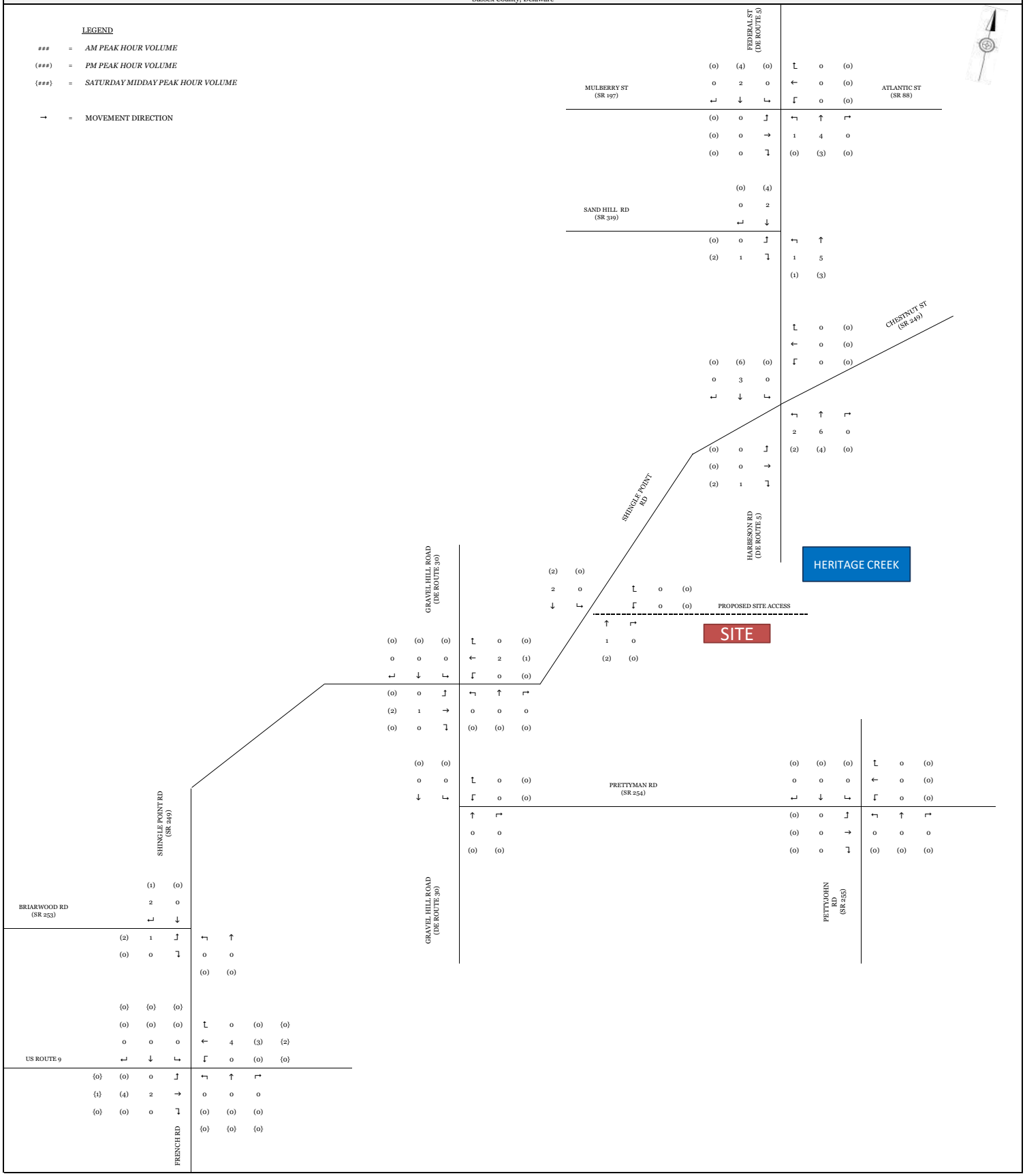


FIGURE 8A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - VINES OF SAND HILL

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

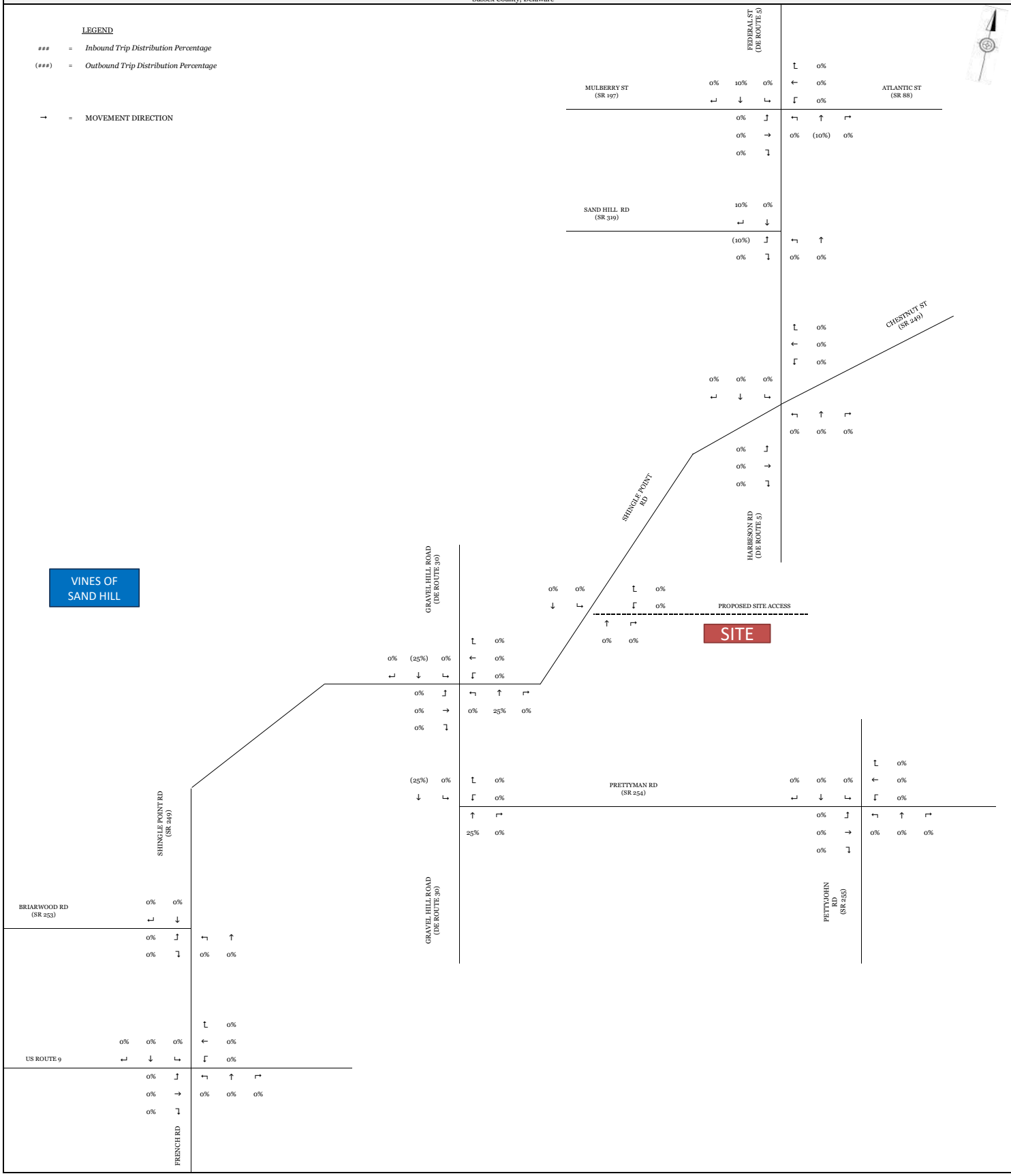


FIGURE 8B: COMMITTED DEVELOPMENT TRIP ASSIGNMENT - VINES OF SAND HILL

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

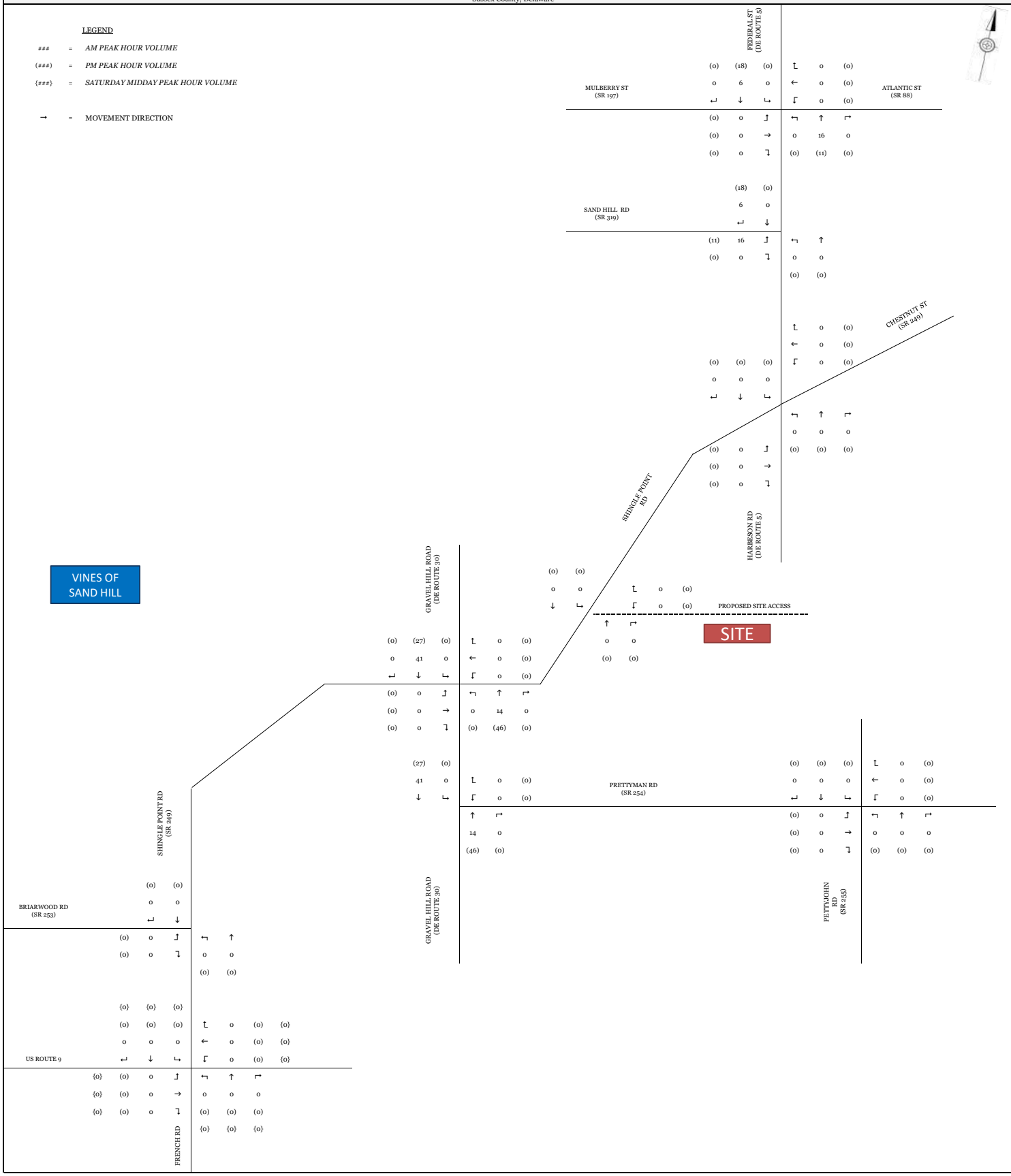


FIGURE 9A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - CYPRESS GROVE (RESIDENTIAL)

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

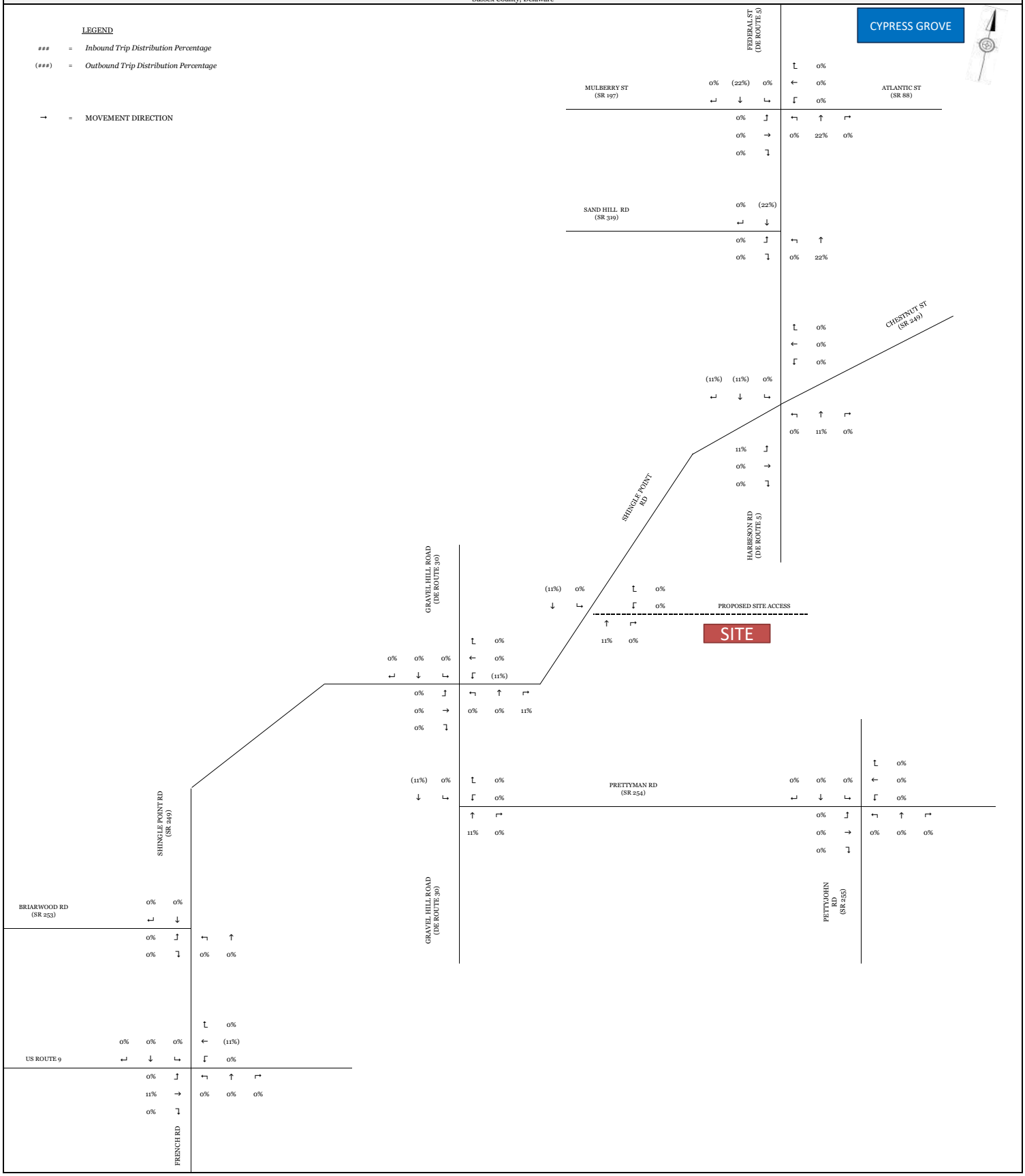


FIGURE 9B: COMMITTED DEVELOPMENT TRIP ASSIGNMENT - CYPRESS GROVE (RESIDENTIAL)

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

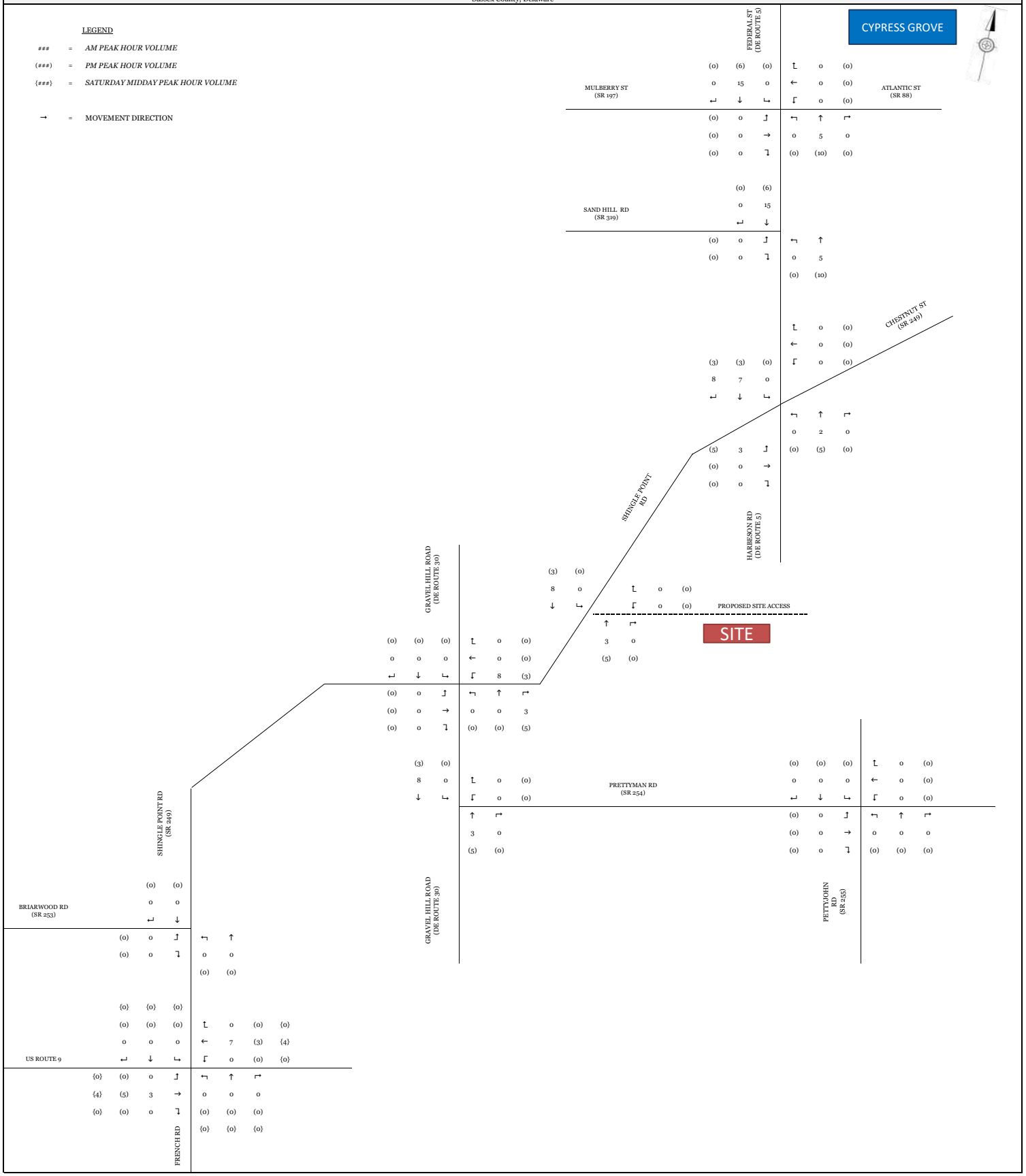


FIGURE 10A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - CYPRESS GROVE (RETAIL)

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

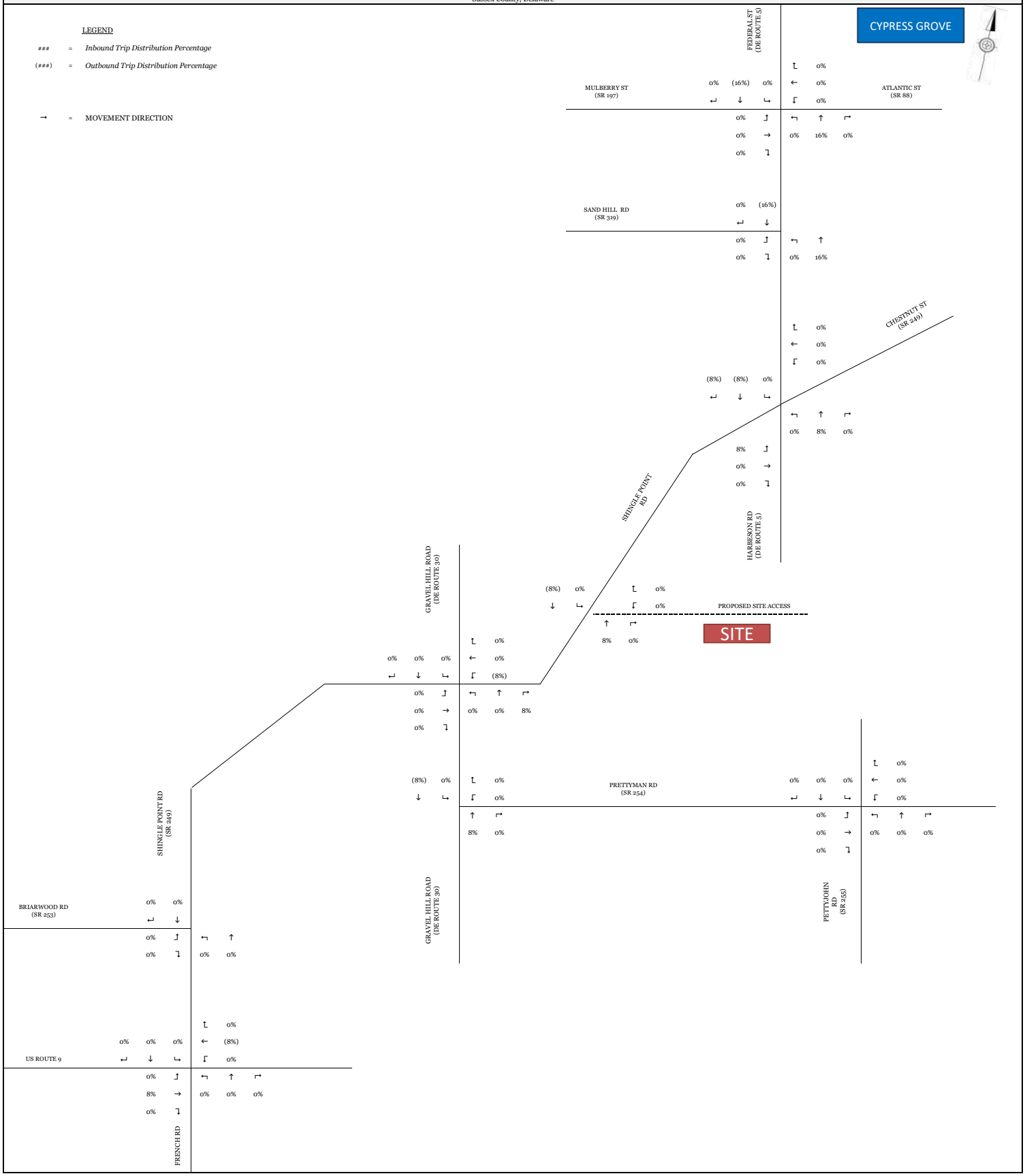


FIGURE 10B: COMMITTED DEVELOPMENT TRIP ASSIGNMENT - CYPRESS GROVE (RETAIL)

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

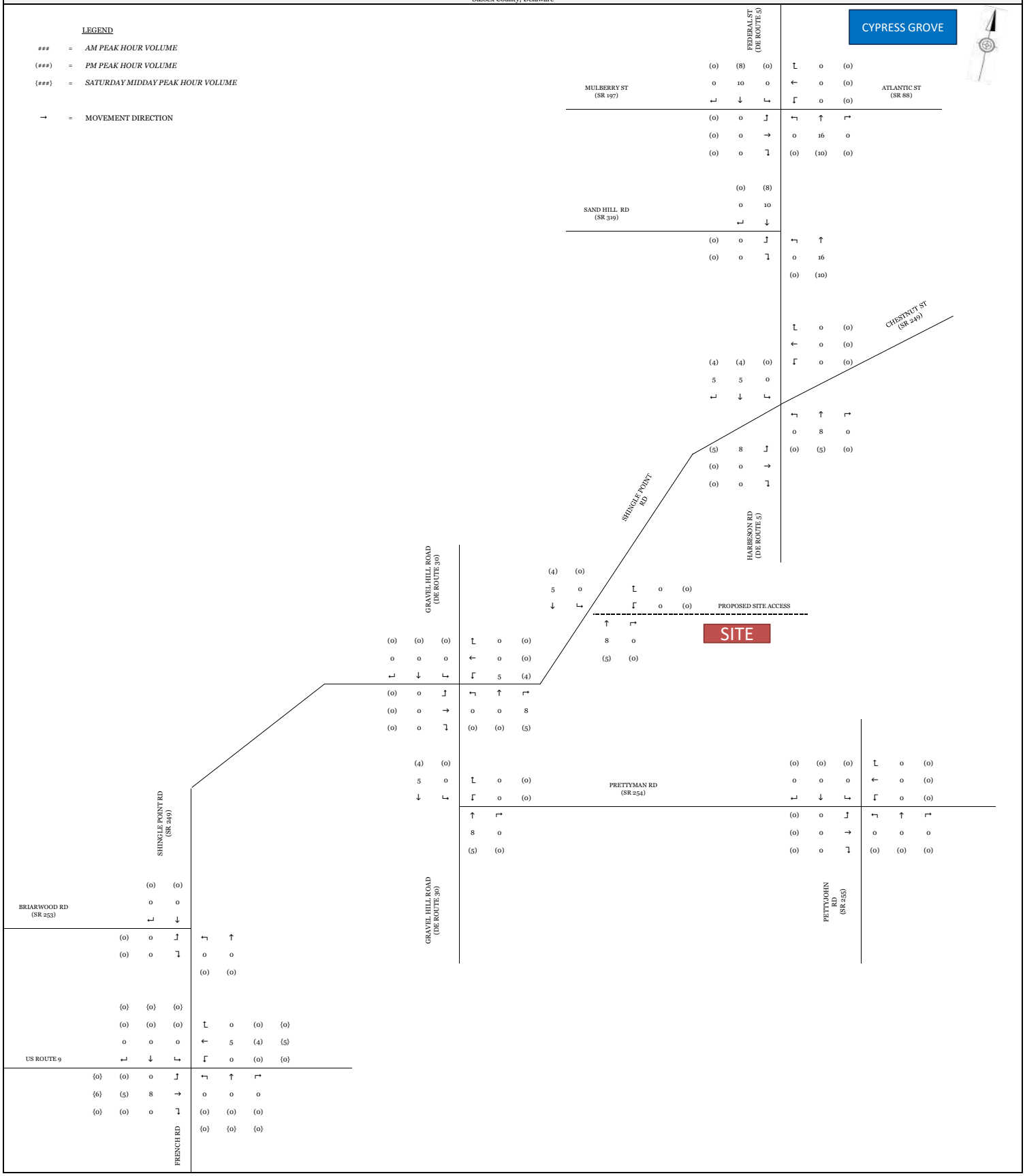


FIGURE 11A: PENDING DEVELOPMENT TRIP DISTRIBUTION - GRANARY AT DRAPER FARM

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

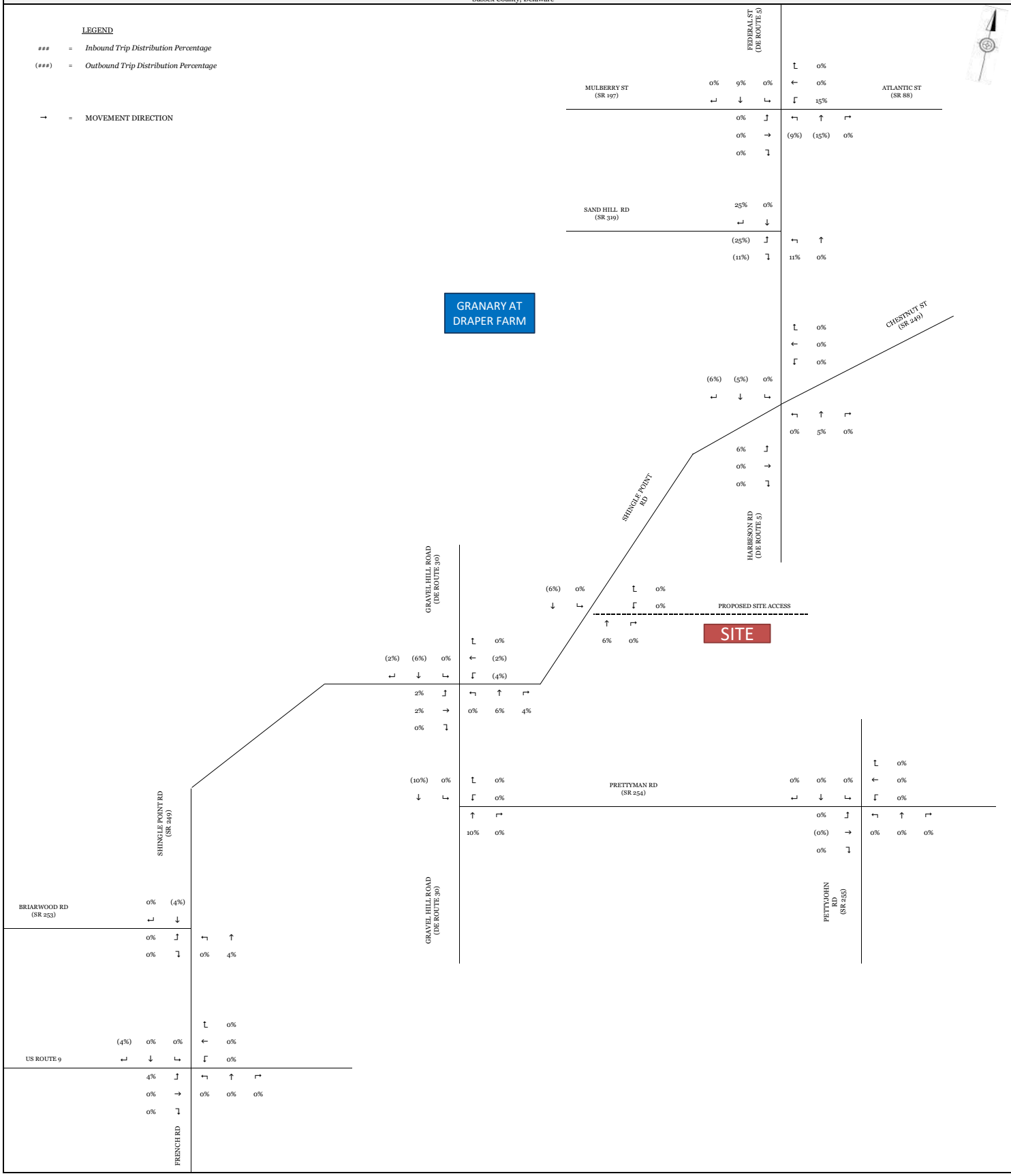


FIGURE 11B: PENDING DEVELOPMENT TRIP ASSIGNMENT - GRANARY AT DRAPER FARM

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

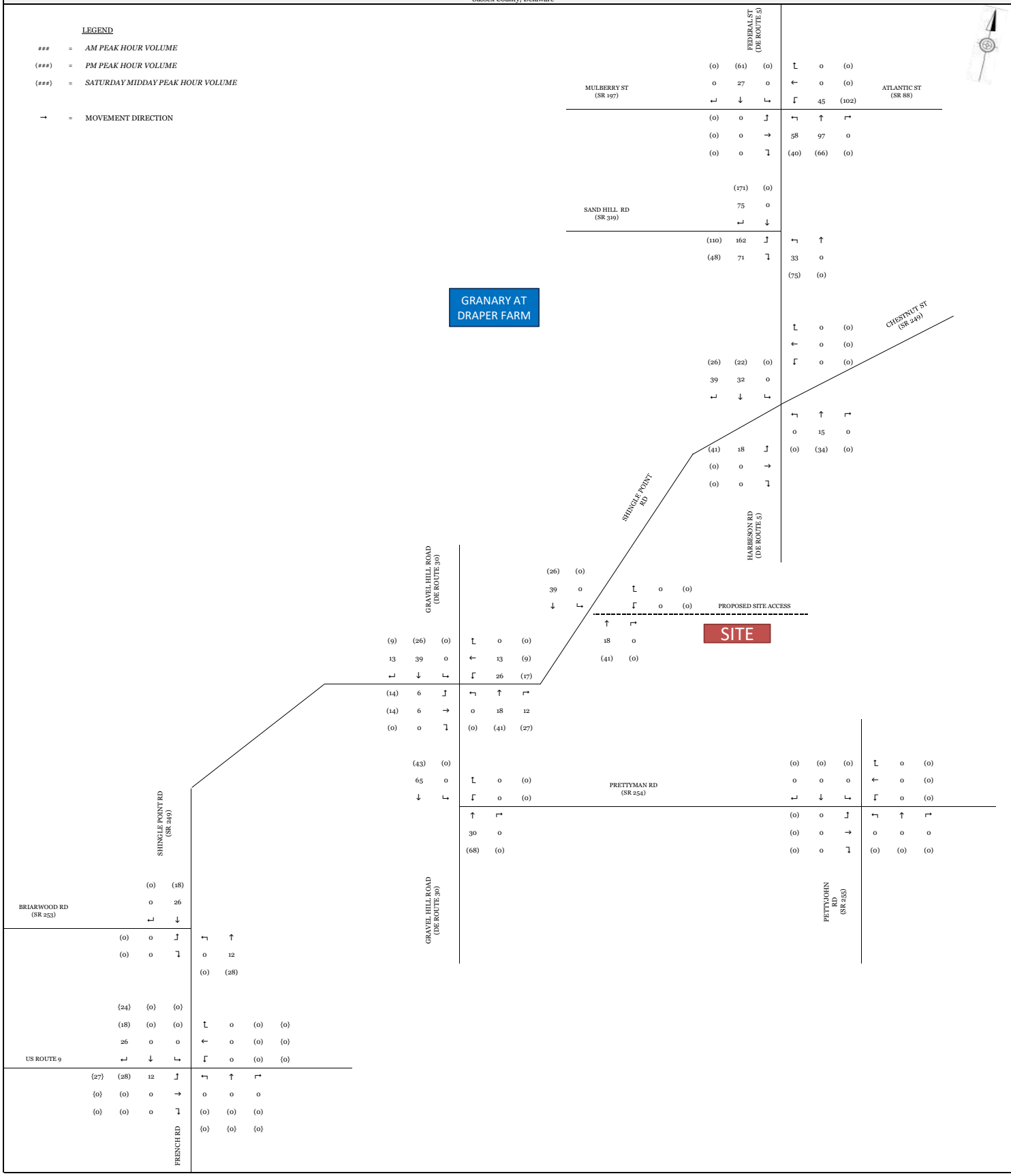


FIGURE 12A: PENDING DEVELOPMENT TRIP DISTRIBUTION - PRETTYMAN PROPERTY

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

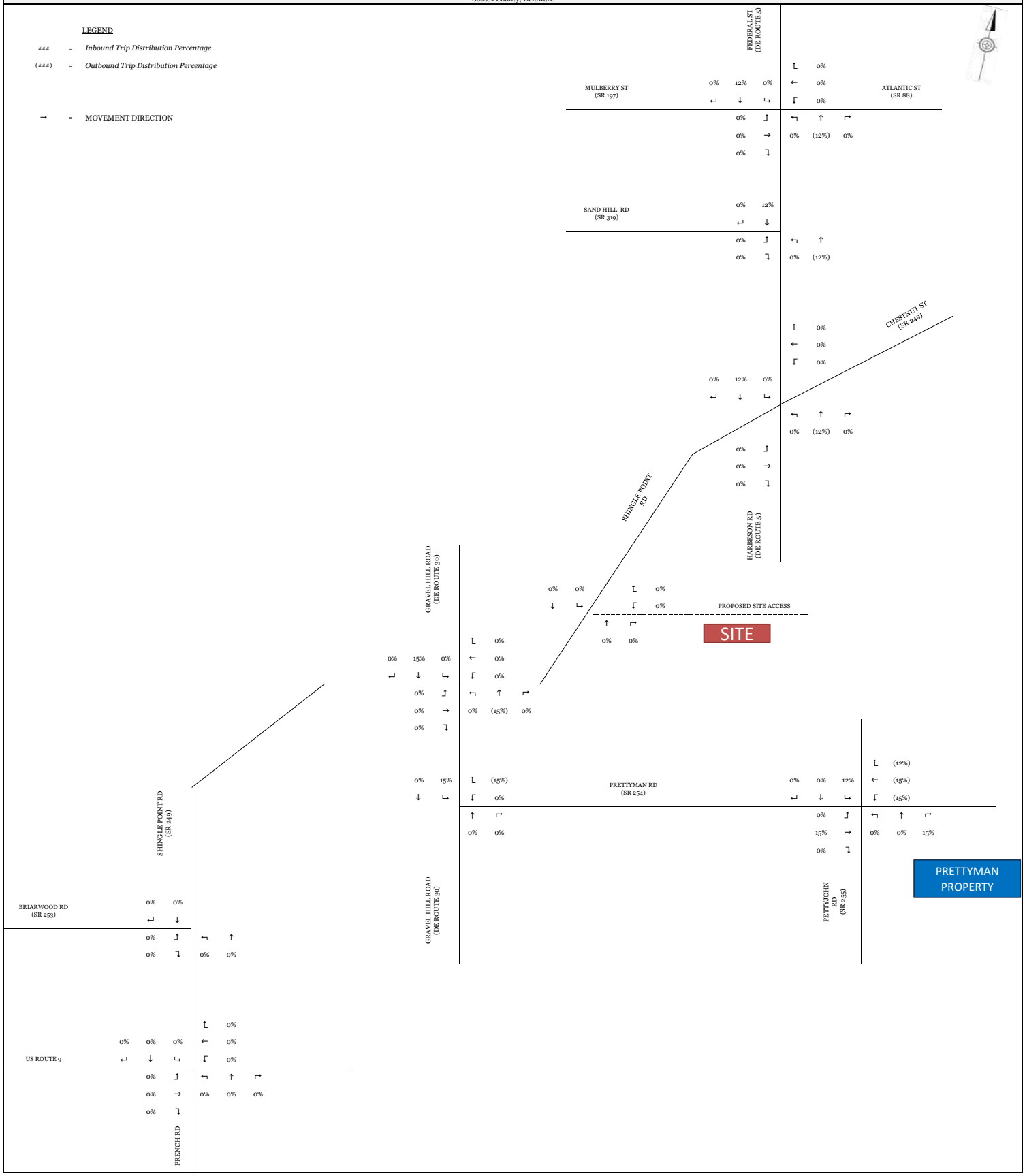


FIGURE 12B: PENDING DEVELOPMENT TRIP ASSIGNMENT - PRETTYMAN PROPERTY

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

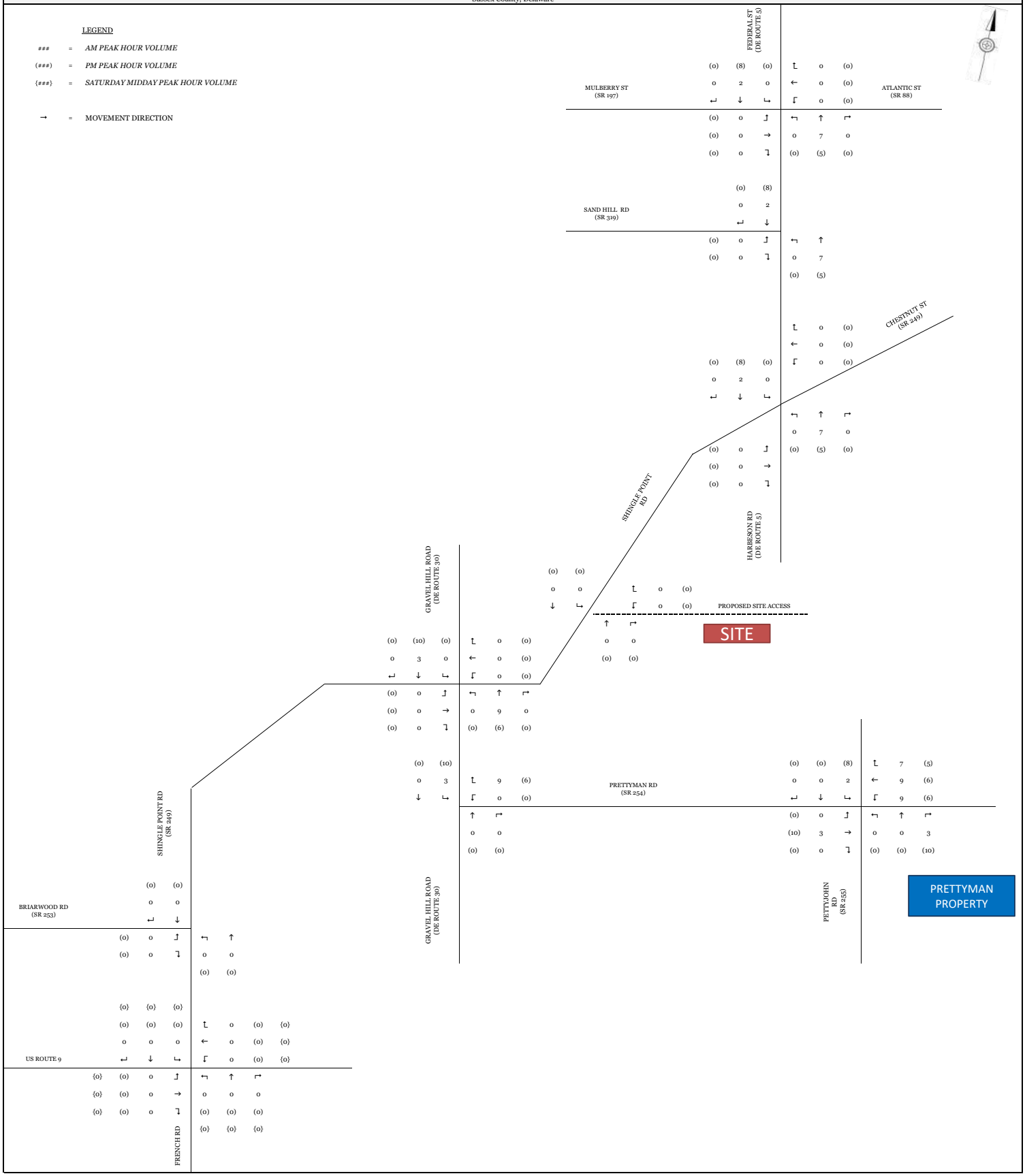


FIGURE 13A: PROPOSED DEVELOPMENT TRIP DISTRIBUTION - FOUR WINDS FARM

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

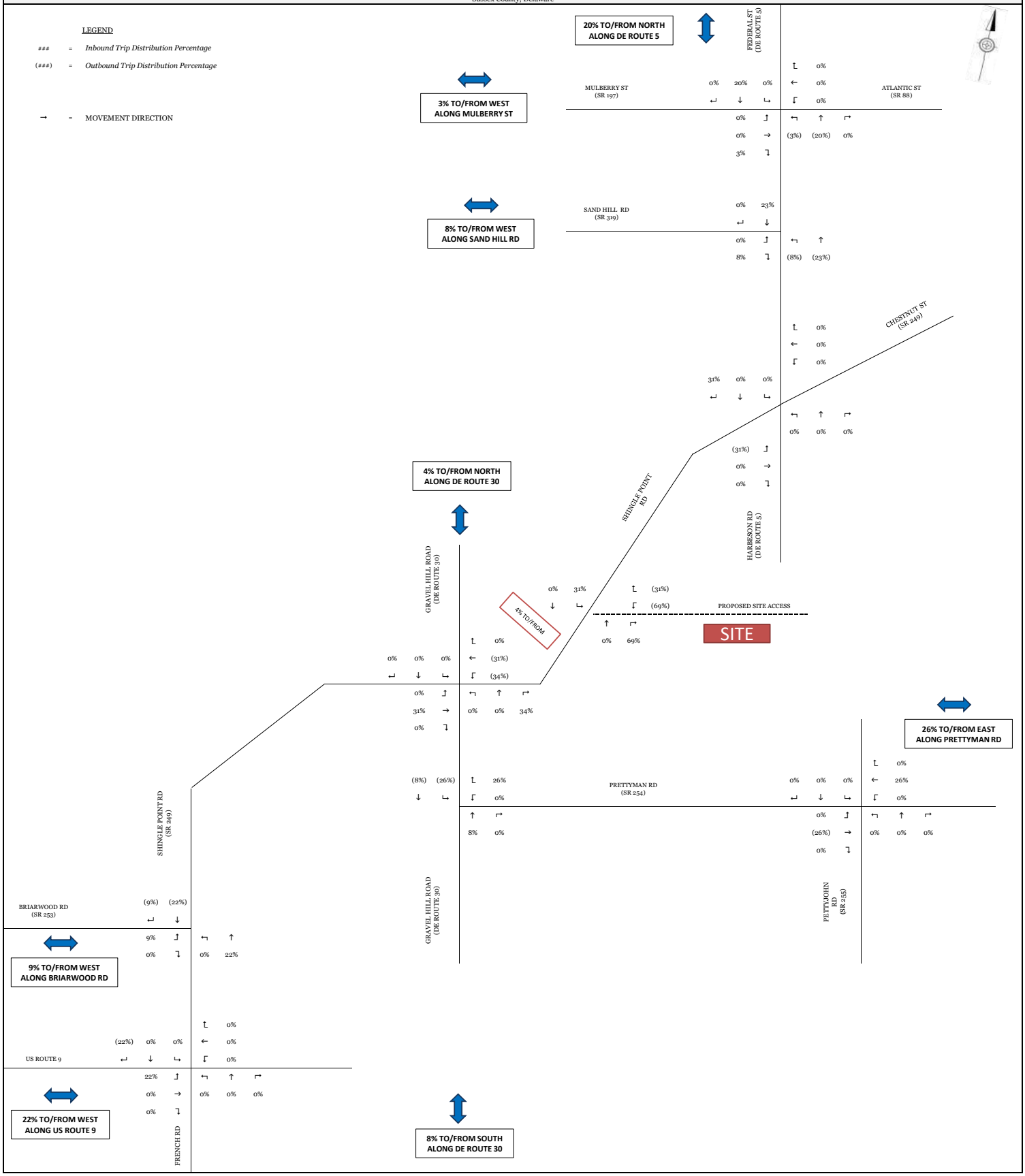


FIGURE 13B: PROPOSED DEVELOPMENT TRIP ASSIGNMENT - FOUR WINDS FARM

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

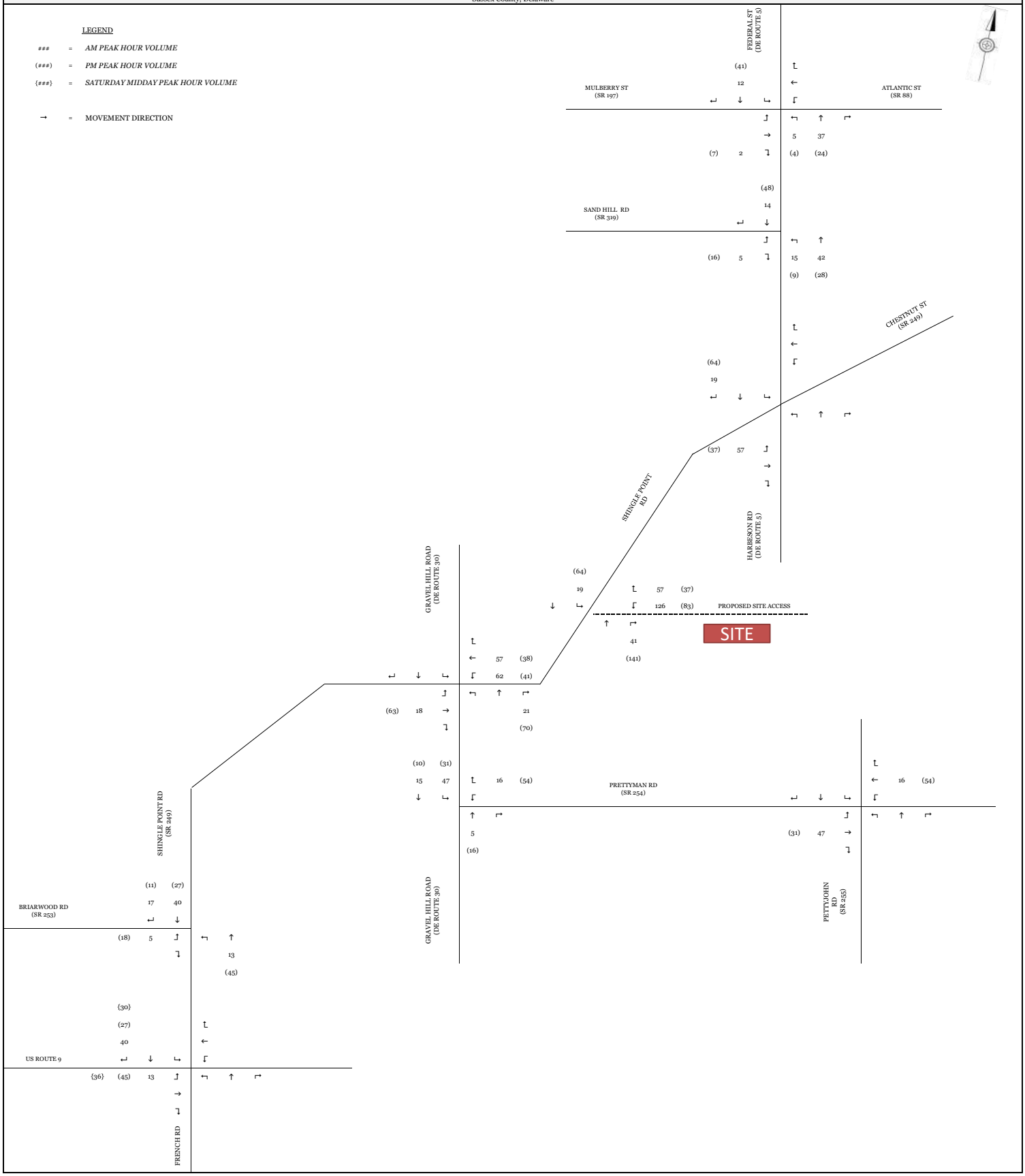


FIGURE 14A: FUTURE 2030 TRAFFIC VOLUMES WITHOUT DEVELOPMENT & WITH COMMITTED DEVELOPMENTS ONLY

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: Date:

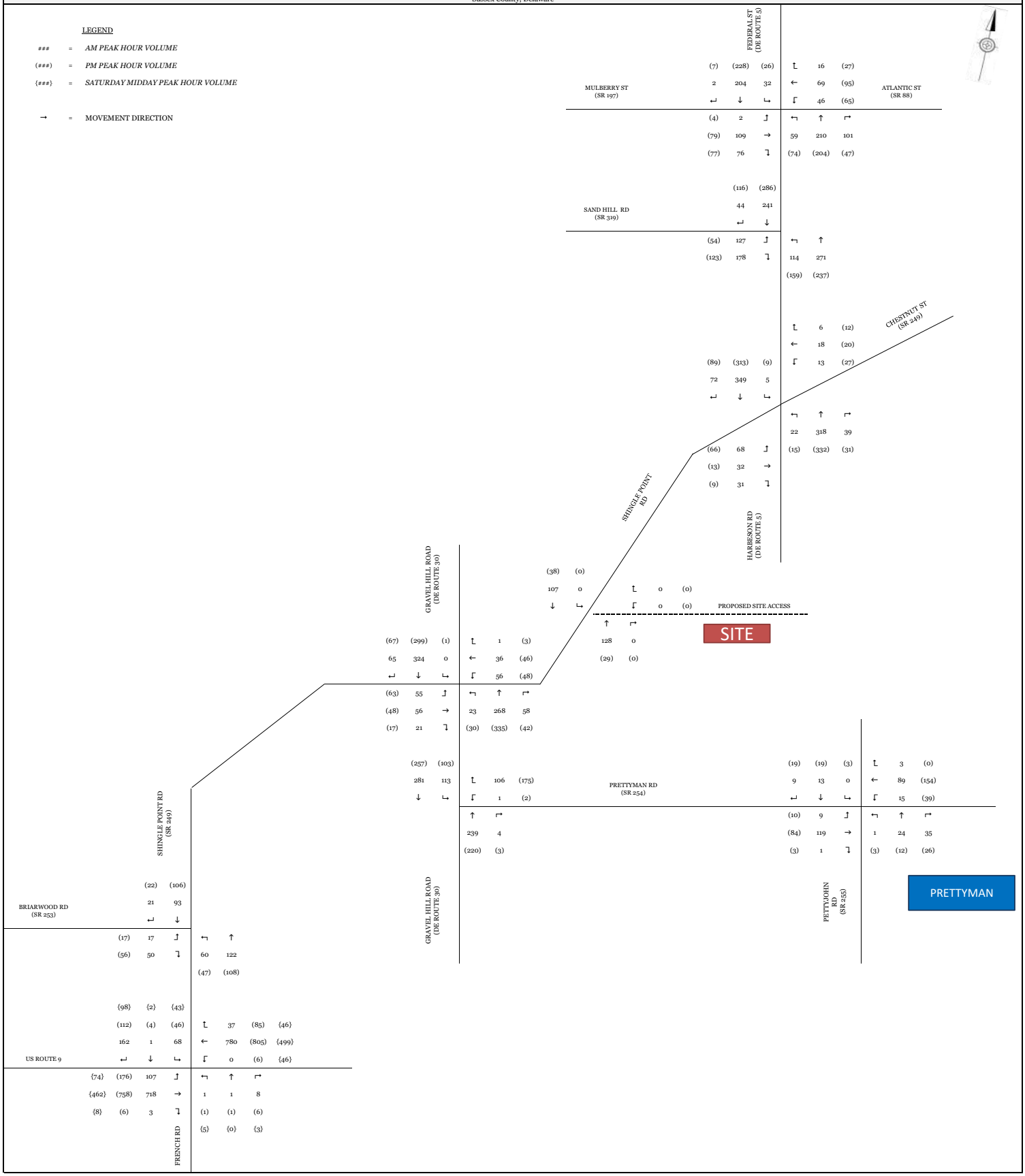


FIGURE 14B: FUTURE 2030 TRAFFIC VOLUMES WITH DEVELOPMENT & WITH COMMITTED DEVELOPMENTS ONLY

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: Date:

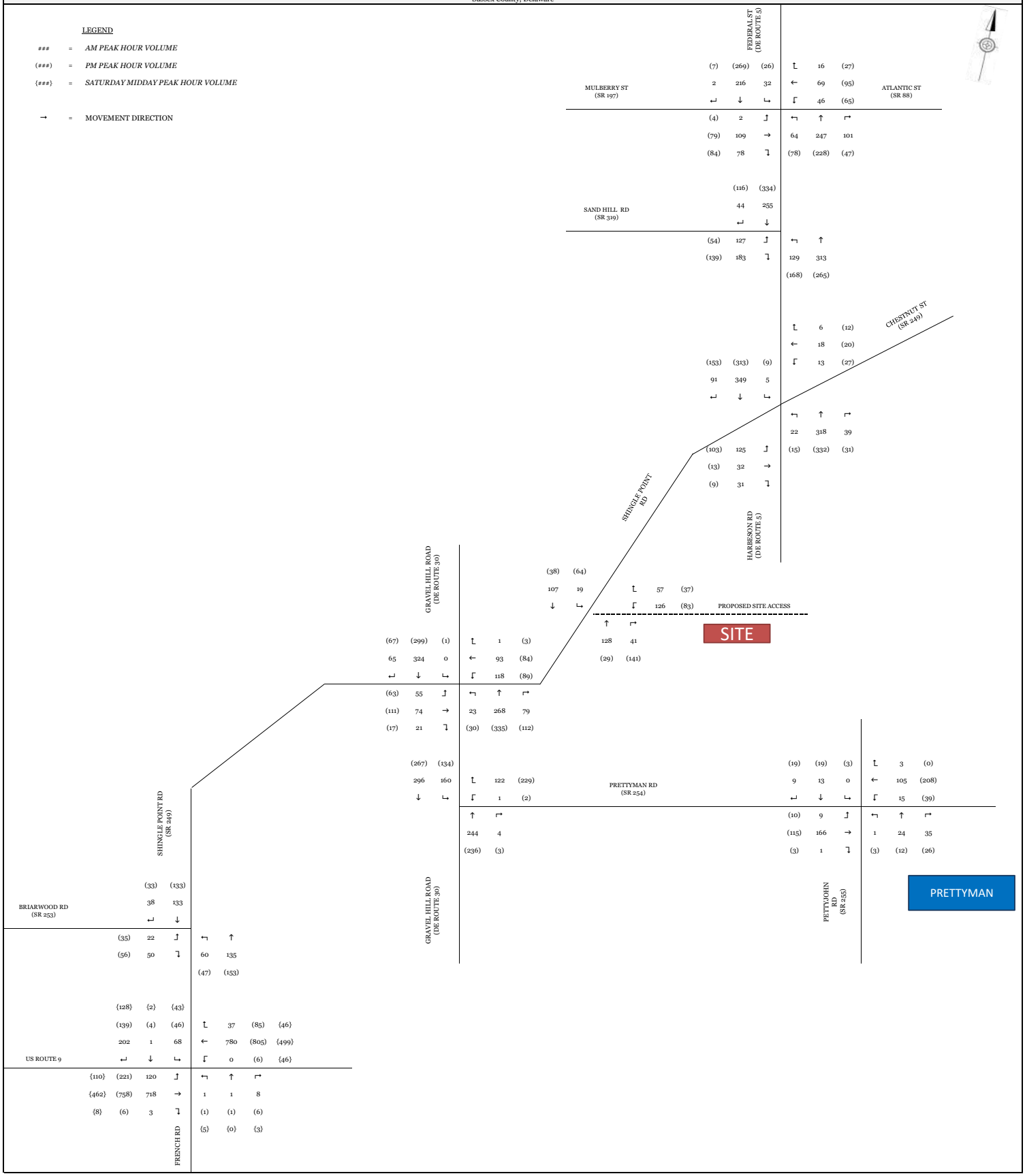


FIGURE 15A: FUTURE 2030 TRAFFIC VOLUMES WITHOUT DEVELOPMENT & WITH COMMITTED + PENDING DEVELOPMENTS

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: Date:

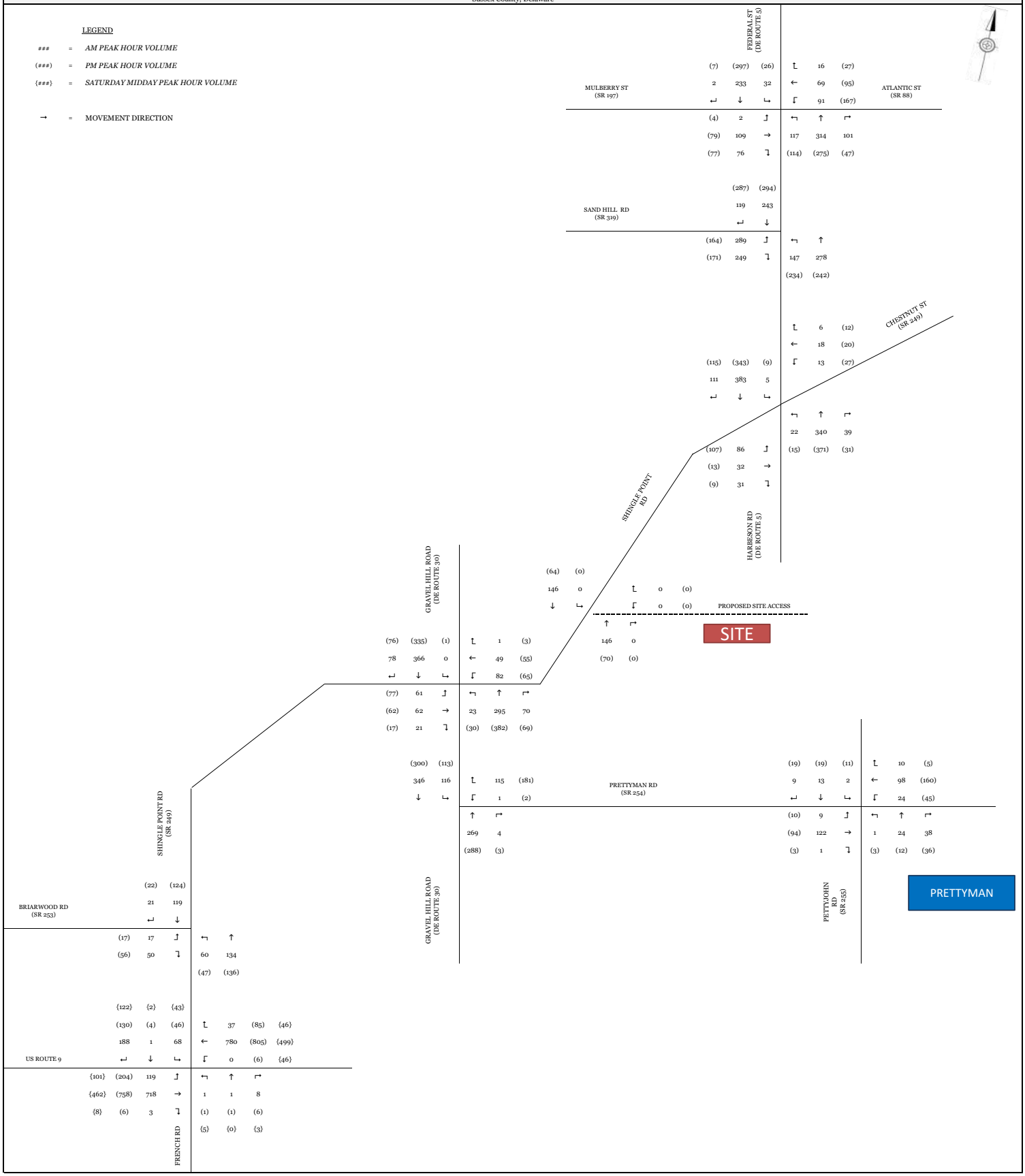
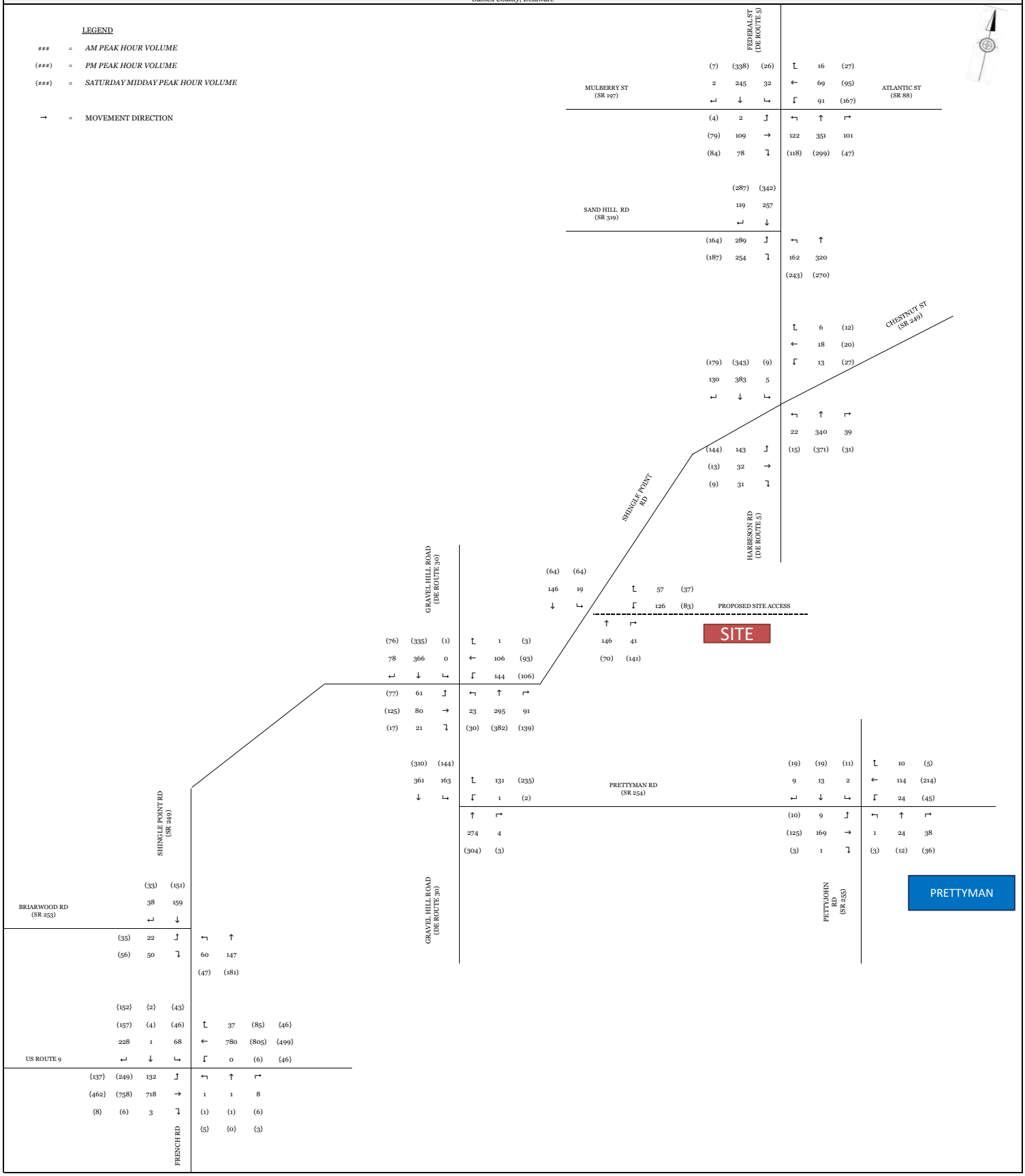


FIGURE 15B: FUTURE 2030 TRAFFIC VOLUMES WITH DEVELOPMENT & WITH COMMITTED + PENDING DEVELOPMENTS

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: Date:



Appendix A

Correspondence

Christiana Executive Campus
121 Continental Drive, Suite 207
Newark, DE 19713
T: 302-655-4451
F: 302-654-2895

www.pennoni.com

February 11, 2022

Mr. T. William Brockenbrough, Jr.
County Coordinator
DelDOT Planning
800 Bay Road
P.O. Box 778
Dover, Delaware 19903

RE: Response to DelDOT's Comments for *Submission 2: Preliminary TIS*
Four Winds Farm Development
Traffic Impact Study
Sussex County, Delaware

Dear Mr. Brockenbrough:

Pennoni is in receipt of DelDOT's comments, dated January 18, 2022, regarding *Submission 2: Preliminary TIS* for the Four Winds Farm Development Traffic Impact Study (TIS). Pennoni has prepared this response letter to address DelDOT's comments, and to accompany the submitted *Final Traffic Impact Study (FTIS)*, dated February 11, 2022. Pennoni's responses to DelDOT's comments are as follows:

Comment 1: At the intersection of US Route 9 / Shingle Point Road / French Road, the trip assignment for the westbound approach is inconsistent with the distributions for the Azalea Woods committed development. Please confirm trip assignment and revise accordingly (see enclosed Figure 6B).

Pennoni Response: The trip assignments for the Azalea Woods committed development have been revised at the intersection of US Route 9 / Shingle Point Road / French Road. Refer to Figure 6B in the Final TIS. Figures 14A through 15B have also been revised, accordingly.

Comment 2: At the site entrance please include the background through volumes on the future volume diagrams (see enclosed Figures 14A, 14B, 15A, and 15B).

Pennoni Response: The through volumes along Shingle Point Road at the proposed site access have been revised to include the background traffic. Refer to Figures 14A through 15B in the Final TIS.

If you have any questions or concerns, please call me at 302-351-5232 or email me at tlord@pennoni.com.

Sincerely,

Teresa Lord, PE, PTOE
Pennoni Associates Inc.

Cc Pamela Steinebach, DelDOT Planning
Olayiwola Okesola, DelDOT Planning
Joshua Schwartz, DelDOT Planning
Claudy Joinville, DelDOT Planning
Jamie Whitehouse, Sussex County Department of Planning Services
John Stamato, Ribera Development, LLC
Mark Davidson, Pennoni
Alan Decktor, Pennoni

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

NICOLE MAJESKI
SECRETARY

January 18, 2022

Ms. Teresa Lord
Pennoni Associates, Inc.
Christiana Executive Campus
121 Continental Dive, Suite 207
Newark, DE 19713

Dear Ms. Lord:

We have reviewed the preliminary Traffic Impact Study (TIS) that we received on December 30, 2021, for the **Four Winds Farms** residential development (Tax Parcel: 235-25.00-39.00). Upon our review, there are some items that need to be addressed. Please address the following items and proceed with the Final TIS.

1) At the intersection of US Route 9 / Shingle Point Road / French Road, the trip assignment for the westbound approach is inconsistent with the distributions for the Azalea Woods committed development. Please confirm trip assignment and revise accordingly (see enclosed Figure 6B).

2) At the site entrance please include the background through volumes on the future volume diagrams (see enclosed Figures 14A, 14B, 15A, and 15B).

You may contact Ms. Joanne Arellano at (302) 533-3969 if you have any questions concerning this correspondence.

Sincerely,

T. William Brockenbrough, Jr.

T. William Brockenbrough, Jr.
County Coordinator

cc: Todd Sammons, Assistant Director, Development Coordination
Claudy Joinville, Project Engineer, Development Coordination
Annamaria Furmato, Project Engineer, Development Coordination
Joanne Arellano, Project Manager, Johnson, Mirmiran & Thompson, Inc.

DelDOT

FIGURE 6B: COMMITTED DEVELOPMENT TRIP ASSIGNMENT - AZALEA WOODS

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: ZMB Date: 12/27/2021

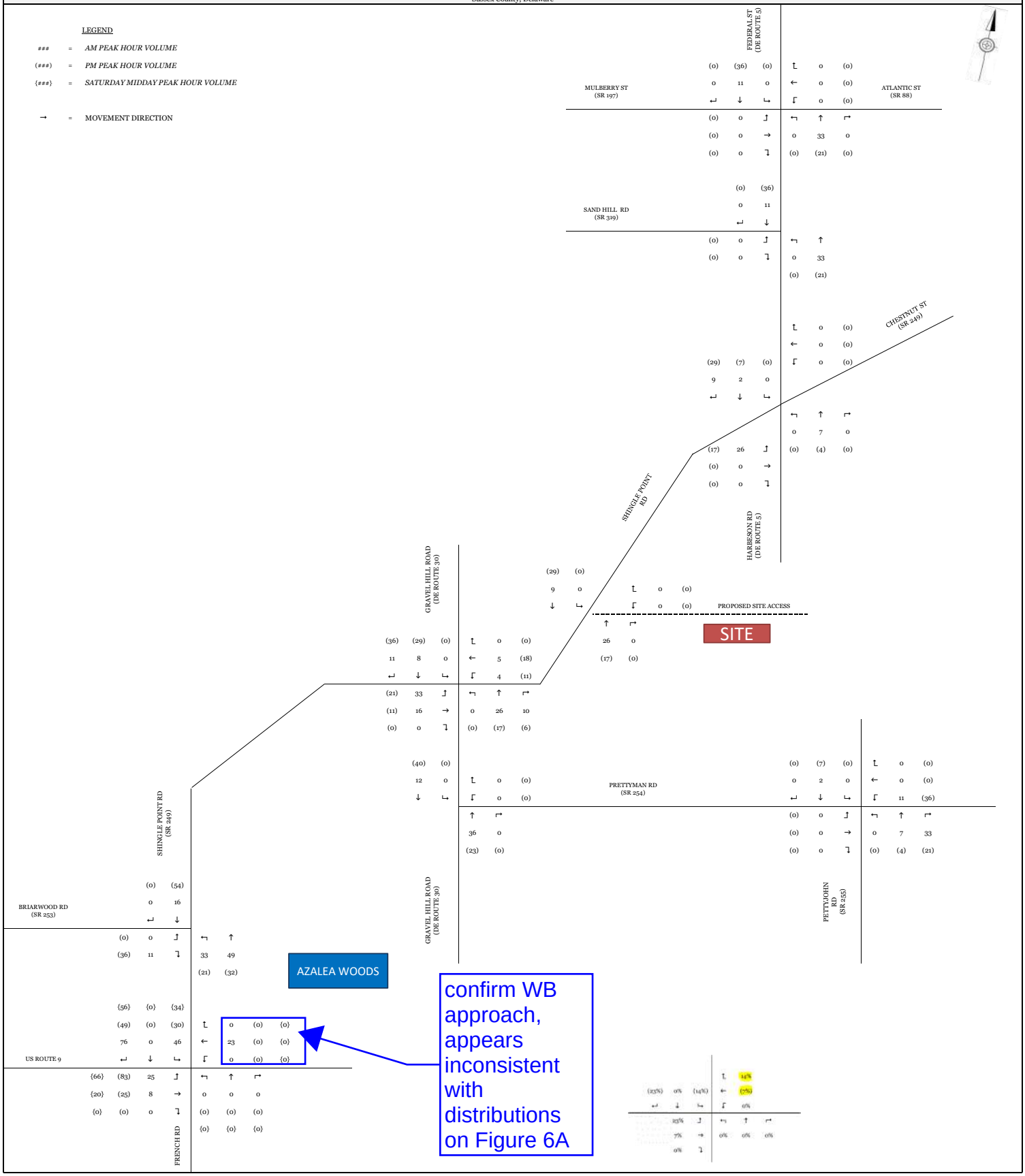


FIGURE 14A: FUTURE 2030 TRAFFIC VOLUMES WITHOUT DEVELOPMENT WITHOUT OTHER PENDING DEVELOPMENTS

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: Date:

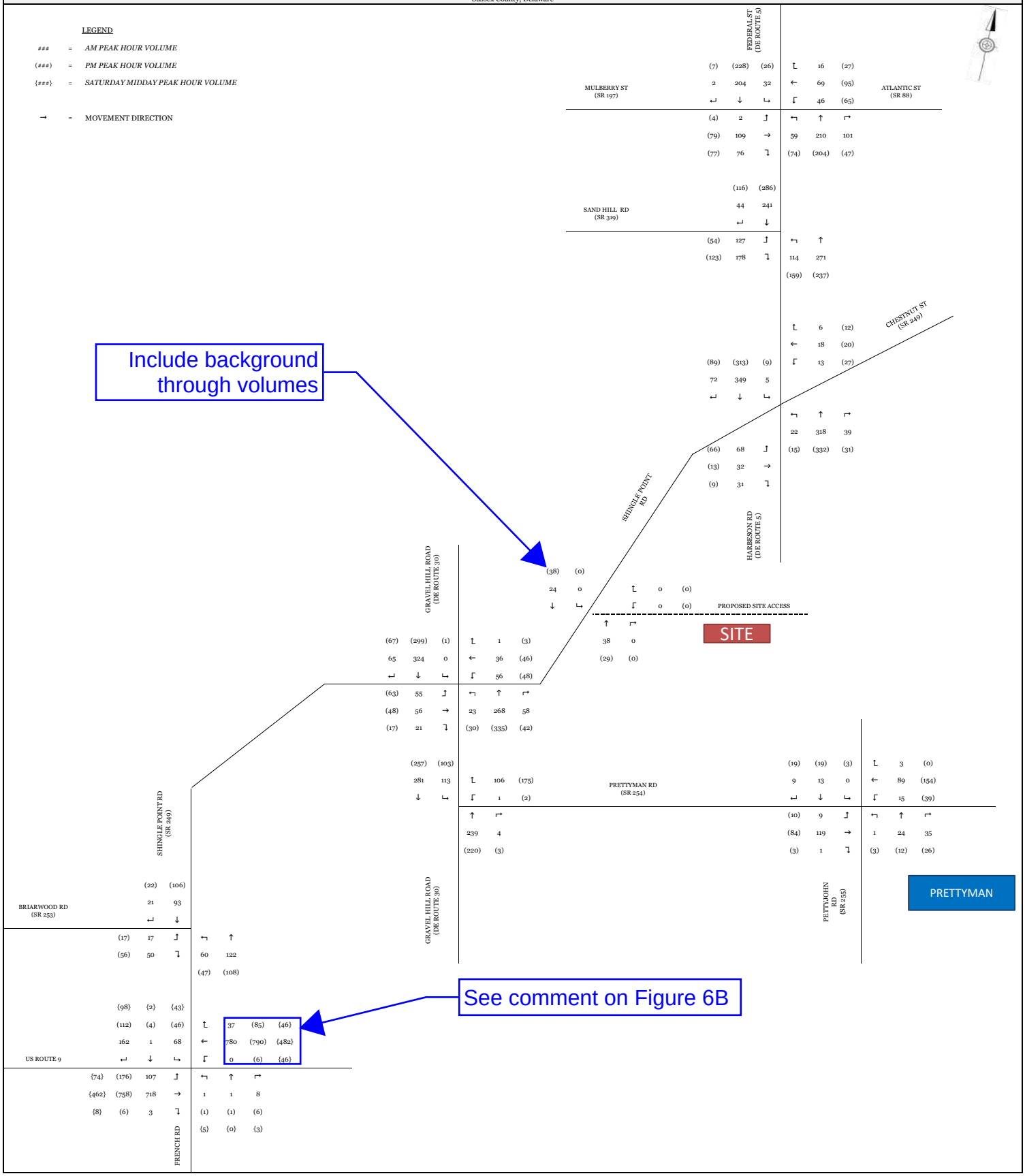


FIGURE 14B: FUTURE 2030 TRAFFIC VOLUMES WITH DEVELOPMENT WITHOUT OTHER PENDING DEVELOPMENTS

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: Date:

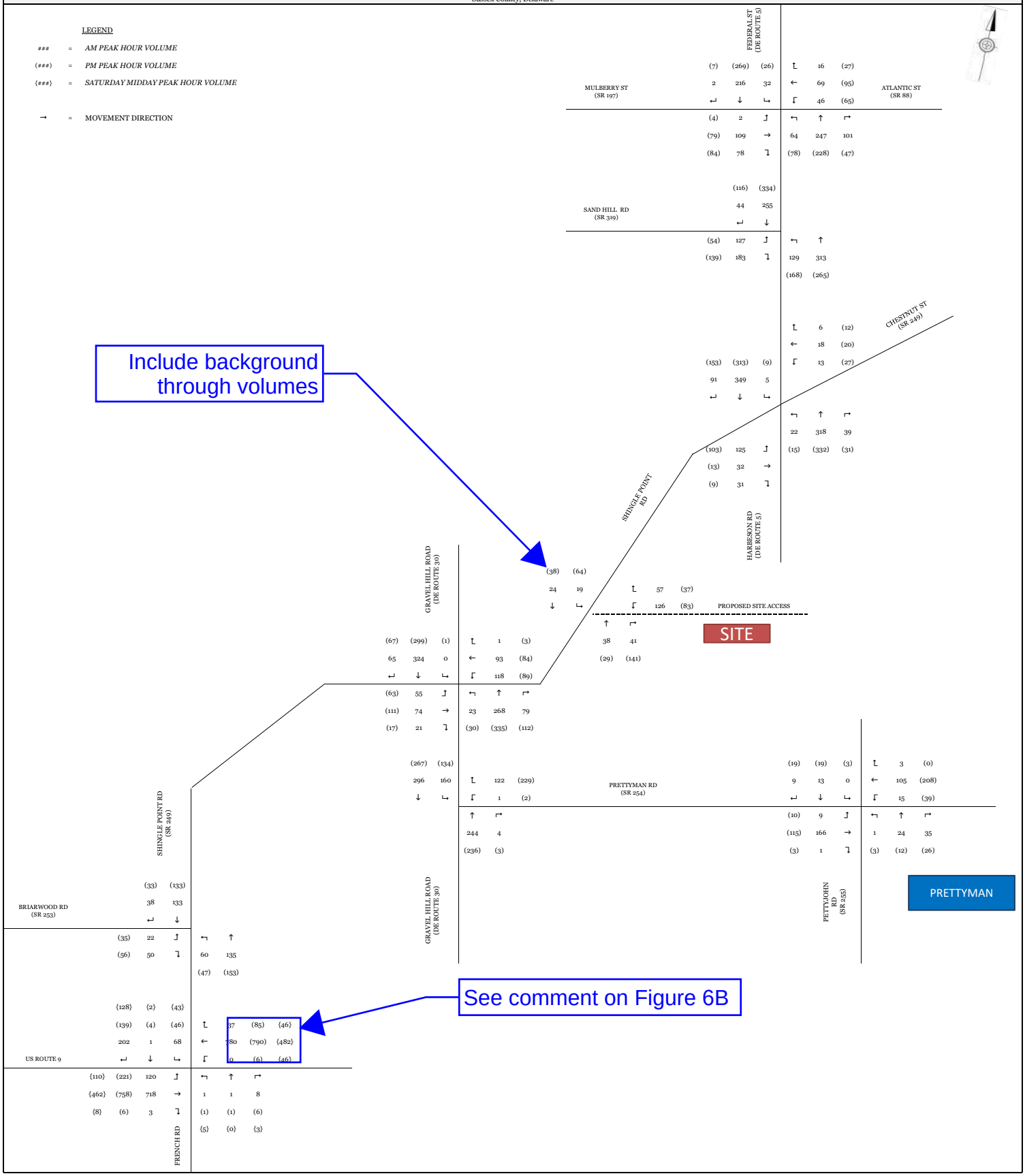


FIGURE 15A: FUTURE 2030 TRAFFIC VOLUMES WITHOUT DEVELOPMENT WITH OTHER PENDING DEVELOPMENTS

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: Date:

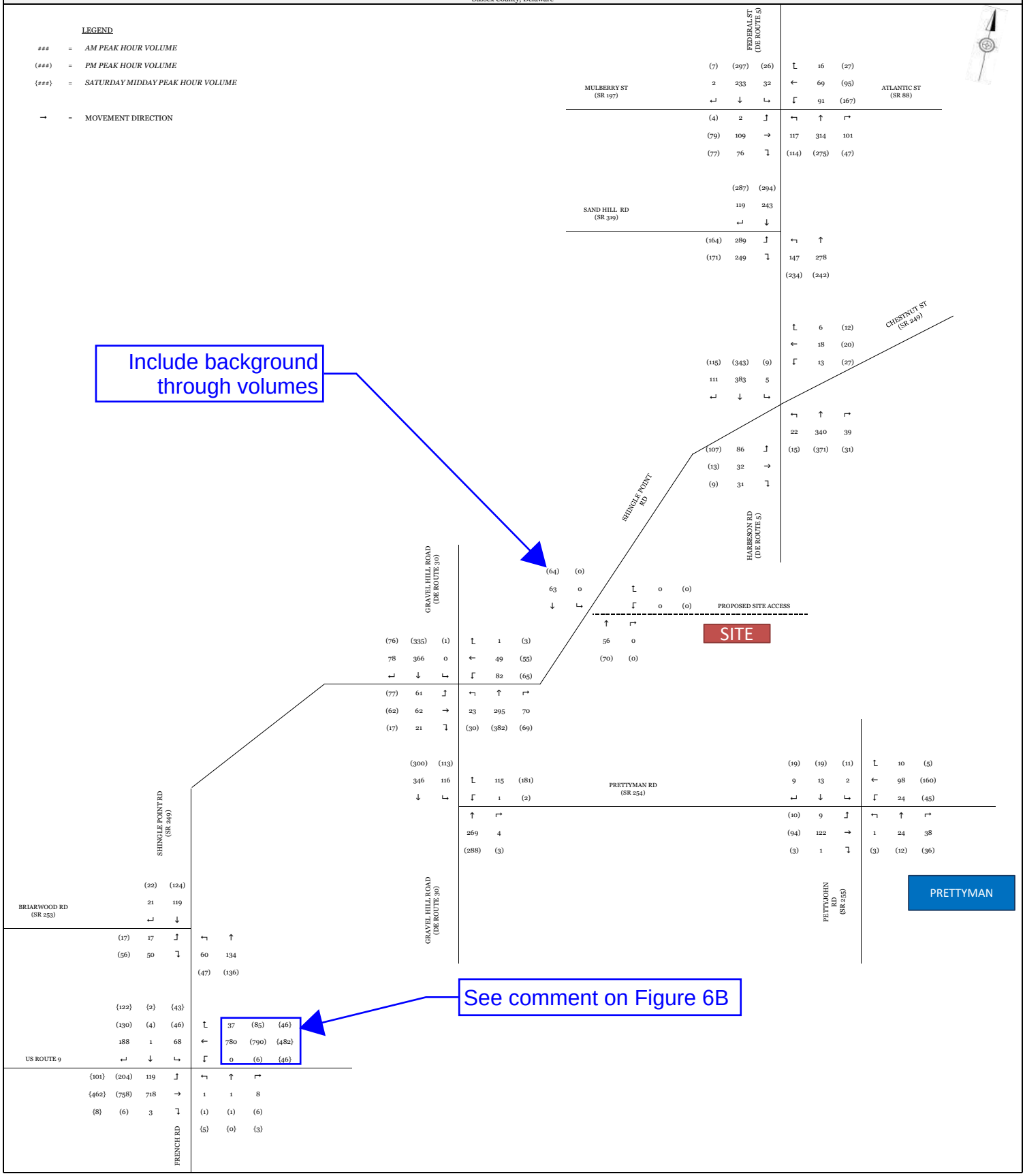
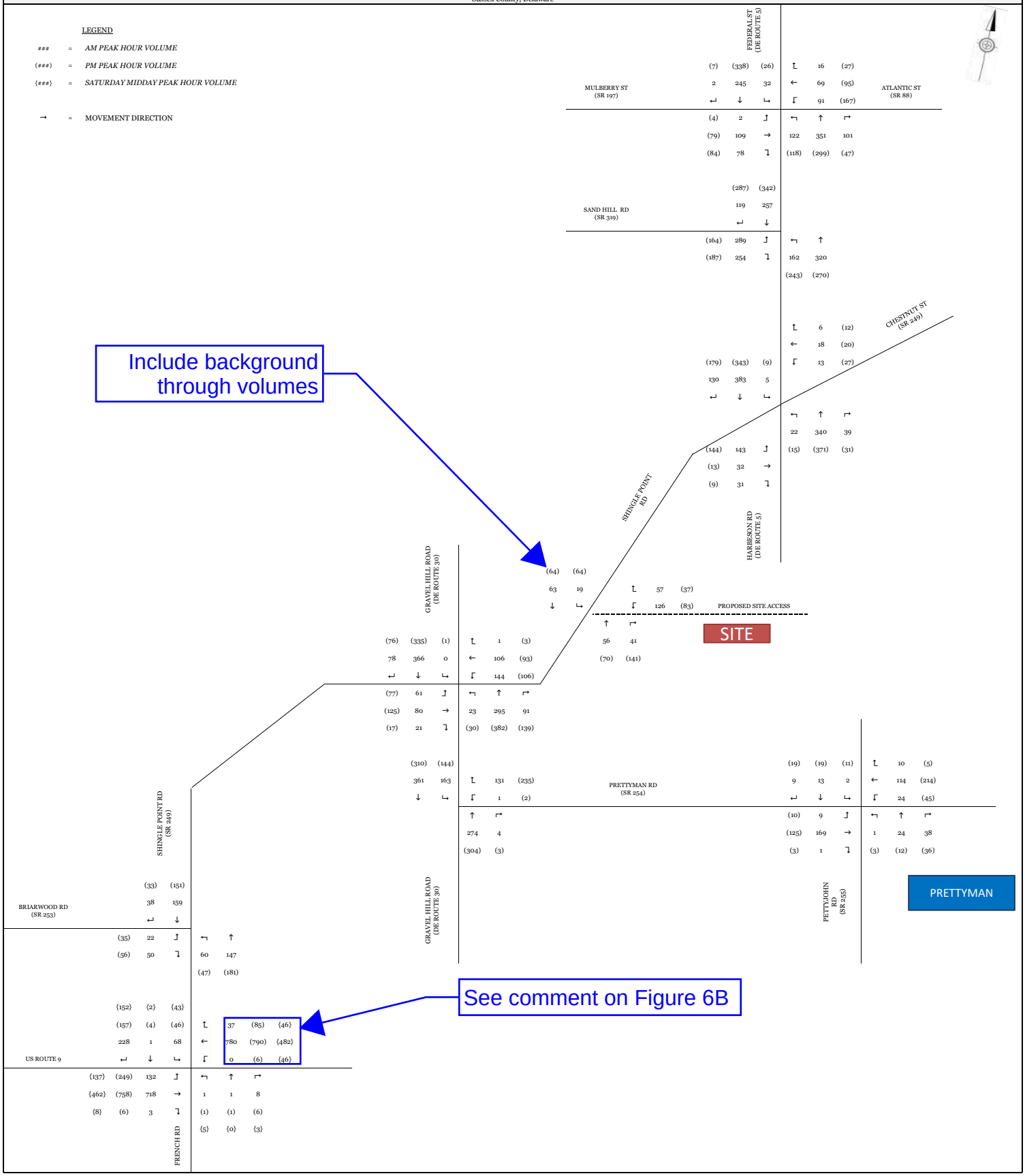


FIGURE 15B: FUTURE 2030 TRAFFIC VOLUMES WITH DEVELOPMENT WITH OTHER PENDING DEVELOPMENTS

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: Date:



Teresa Lord

From: Aglio, Anthony (DelDOT) <Anthony.Aglio@delaware.gov>
Sent: Thursday, December 23, 2021 11:02 AM
To: Teresa Lord
Subject: Re: Request for Information - Proposed Pedestrian/Bicycle Services in Sussex County, DE

I would suggest bike lanes and a MUP across the frontage.

From: Teresa Lord <TLord@Pennoni.com>
Sent: Tuesday, December 14, 2021 1:07 PM
To: Aglio, Anthony (DelDOT) <Anthony.Aglio@delaware.gov>
Subject: Request for Information - Proposed Pedestrian/Bicycle Services in Sussex County, DE

Good Afternoon Anthony,

Pennoni Associates is seeking information regarding any proposed pedestrian/bicycles services in Sussex County, DE. We are working on a TIS for a proposed residential development to be located on Shingle Point Road, between DE 30 and DE 5. As part of this study, we were requested to provide information regarding existing and proposed pedestrian/bicycle services in the vicinity of the proposed development. We know that there are no amenities currently provided for pedestrians/bicycles along Shingle Point Road. I've attached the concept plan for the proposed development for your reference.

Please let me know if you require any additional information for this request. Thank you and have a great day!

Teresa Lord, PE, PTOE

Pennoni
121 Continental Drive, Suite 207 | Newark, DE 19713
Direct: +1 (302) 351-5232
www.pennoni.com | TLord@Pennoni.com

Project Feature: Society Self Storage

Teresa Lord

From: Kauffman, Jared D (DelDOT) <Jared.Kauffman@delaware.gov>
Sent: Thursday, December 16, 2021 1:15 PM
To: Teresa Lord
Cc: Cherry-Wall, Tremica (DelDOT); Ottinger, Stephen (DelDOT); Williamson, William (DelDOT)
Subject: RE: Request for Information - Proposed Transit Services in Sussex County, DE

Hi Teresa,

DART doesn't have any transit specific comments for this project.

Thanks,

Jared Kauffman
DART First State
Fixed-Route Planner
119 Lower Beech St #100
Wilmington, DE 19805
Jared.kauffman@delaware.gov
Office: 302-576-6062

From: Teresa Lord <TLord@Pennoni.com>
Sent: Tuesday, December 14, 2021 1:04 PM
To: Kauffman, Jared D (DelDOT) <Jared.Kauffman@delaware.gov>
Cc: Cherry-Wall, Tremica (DelDOT) <Tremica.Cherry-Wall@delaware.gov>; Ottinger, Stephen (DelDOT) <Stephen.Ottinger@delaware.gov>; Williamson, William (DelDOT) <William.Williamson@delaware.gov>
Subject: Request for Information - Proposed Transit Services in Sussex County, DE

Good Afternoon All,

Pennoni Associates is seeking information regarding any proposed transit services in Sussex County, DE. We are working on a TIS for a proposed residential development to be located on Shingle Point Road, between DE 30 and DE 5. As part of this study, we were requested to provide information regarding existing and proposed transit services in the vicinity of the proposed development.

I've attached the concept plan for the proposed development for your reference.

Please let me know if you require any additional information for this request. Thank you and have a great day!

Teresa Lord, PE, PTOE

Pennoni
121 Continental Drive, Suite 207 | Newark, DE 19713
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Christiana Executive Campus
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Newark, DE 19713
T: 302-655-4451
F: 302-654-2895

www.pennoni.com

December 29, 2021

Mr. T. William Brockenbrough, Jr.
County Coordinator
DelDOT Planning
800 Bay Road
P.O. Box 778
Dover, Delaware 19903

RE: Response to DelDOT's Comments for *Submission 1: Traffic Count and Trip Distribution*
Four Winds Farm Development
Traffic Impact Study
Sussex County, Delaware

Dear Mr. Brockenbrough:

Pennoni is in receipt of DelDOT's comments, dated November 12, 2021, regarding *Submission 1: Traffic Count and Trip Distribution* for the Four Winds Farm Development Traffic Impact Study (TIS). Pennoni has prepared this response letter to address DelDOT's comments, and to accompany the submitted *Preliminary Traffic Impact Study (PTIS)*, dated December 29, 2021. Pennoni's responses to DelDOT's comments are as follows:

Comment 1: The seasonally adjusted volumes submitted for the Prettyman Road and Pettyjohn Road intersection should be updated to utilize a 0.950 seasonal adjustment factor. Please revise the seasonally adjusted volumes per the enclosed Figure 2 and Traffic Volume Development Worksheets.

Pennoni Response: The volumes have been revised and are reflected on Figure 3B in the PTIS, as well as in the Volume Development Spreadsheet in Appendix G.

Comment 2: Please apply the following growth factors to the seasonally adjusted volumes:

Road	Annual Growth Factor	Total Growth Factor from 2021 to 2030
US Route 9	1.015	1.143
Delaware Route 5	1.005	1.046
Delaware Route 30	1.005	1.046
Sand Hill Road (Sussex Road 319)	1.005	1.046
Mulberry Street (Sussex Road 88)	1.005	1.046
Atlantic Street (Sussex Road 88)	1.005	1.046
Shingle Point Road (Sussex Road 249)	1.005	1.046
Pettyjohn Road (Sussex Road 255)	1.005	1.046
Prettyman Road (Sussex Road 254)	1.005	1.046
All Other Road	1.00	1.00

Pennoni Response: The above growth factors have been applied to the 2021 seasonally adjusted volumes. The 2030 volumes are reflected in Figures 14A through 15B in the PTIS, as well as the Volume Development Spreadsheet in Appendix G.

Comment 3: Please revise the distributions utilized for the Hawthorne, Azalea Woods, Heritage Creek, Vines of Sand Hill, Cypress Grove, Granary at Draper Farm, and Prettyman Property committed developments as shown on the enclosed figures (Figures 4A, 5A, 6A, 7A, 8A, 9A, and 10A) and update the trip assignment diagrams accordingly.

Pennoni Response: **The distributions have been revised and are reflected on Figures 5A through 12B in the PTIS, as well as in the Volume Development Spreadsheet in Appendix G.**

Comment 4: Please confirm the volumes and distributions are reasonably balanced along Shingle Point Road between Delaware Route 30 and the site entrance (see enclosed Figures 11A and 11B).

Pennoni Response: Trip distributions for the proposed residential development as based on the distributions provided by DelDOT in the TIS Scoping Meeting Memorandum, dated September 24, 2021. Based on the provided trip distributions, four percent (4%) of the site trips will use Webb Road to travel to/from the north along DE Route 30. Webb Road intersections were not required to be studied. Trips to/from Webb Road account for the imbalance of trips between the site access and DE Route 30.

If you have any questions or concerns, please call me at 302-351-5232 or email me at tlord@pennoni.com.

Sincerely,

Teresa Lord

Teresa Lord, PE, PTOE
Pennoni Associates Inc.

Cc Pamela Steinebach, DelDOT Planning
Olayiwola Okesola, DelDOT Planning
Joshua Schwartz, DelDOT Planning
Claudy Joinville, DelDOT Planning
Jamie Whitehouse, Sussex County Department of Planning Services
John Stamato, Ribera Development, LLC
Mark Davidson, Pennoni
Alan Decktor, Pennoni

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

NICOLE MAJESKI
SECRETARY

November 12, 2021

Ms. Teresa Lord
Pennoni
121 Continental Drive, Suite 207
Newark, DE 19713

Dear Ms. Lord:

We have reviewed the traffic counts that we received on October 29, 2021, for the **Four Winds Farm** residential development (Tax Parcel: 235-25.00-39.00).

Upon our review, the traffic counts and existing volumes are acceptable as submitted. However, the seasonally adjusted volumes submitted for the Prettyman Road and Pettyjohn Road intersection should be updated to utilize a 0.950 seasonal adjustment factor. Please revise the seasonally adjusted volumes per the enclosed Figure 2 and Traffic Volume Development Worksheets.

Once these revisions are completed, please proceed to the Preliminary TIS and take into account the following items.

1. Please apply the following growth factors to the seasonally adjusted volumes:

Road	Annual Growth Factor	Total Growth Factor to 2030
US Route 9	1.015	1.143
Delaware Route 5	1.005	1.046
Delaware Route 30	1.005	1.046
Sand Hill Road (Sussex Road 319)	1.005	1.046
Mulberry Street (Sussex Road 88)	1.005	1.046
Atlantic Street (Sussex Road 88)	1.005	1.046
Shingle Point Road (Sussex Road 249)	1.005	1.046
Pettyjohn Road (Sussex Road 255)	1.005	1.046
Prettyman Road (Sussex Road 254)	1.005	1.046
All Other Roads	1.000	1.000

2. Please revise the distributions utilized for the Hawthorne, Azalea Woods, Heritage Creek, Vines of Sand Hill, Cypress Grove, Granary at Draper Farm, and Prettyman Property committed developments as shown on the enclosed figures (Figures 4A, 5A, 6A, 7A, 8A, 9A, and 10A) and update the trip assignment diagrams accordingly.

3. Please confirm the volumes and distributions are reasonably balanced along Shingle Point Road between Delaware Route 30 and the site entrance (see enclosed Figures 11A and 11B).

You may contact Ms. Joanne Arellano at (302) 533-3969 if you have any questions concerning this correspondence.

Sincerely,

T. William Brockenbrough, Jr.
County Coordinator

TWB:jam
Enclosure
cc: Todd Sammons, Assistant Director, Development Coordination
Claudy Joinville, Project Engineer, Development Coordination
Annamaria Furmato, Project Engineer, Development Coordination
Joanne Arellano, Project Manager, Johnson, Mirmiran & Thompson, Inc.

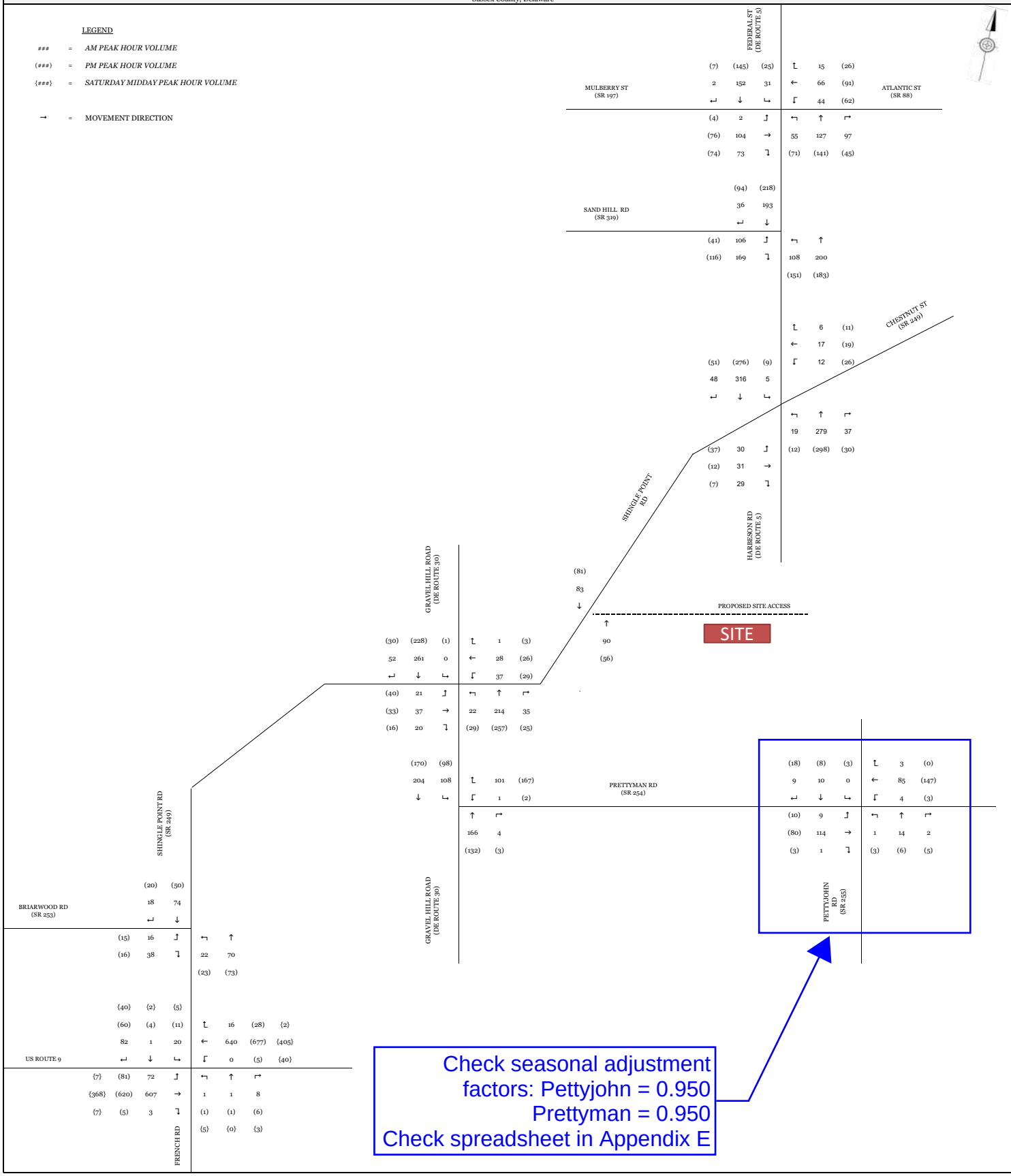
FIGURE 2: EXISTING (2021) TRAFFIC COUNTS (SEASONALLY ADJUSTED)

Four Winds Farm Residential Development

Sussex County, Delaware

By: TML Date: 10/15/2021

Ckd By: PV Date: 10/27/2021



Pennoni

Four Winds Farm Residential Development TIS
Traffic Volume Development Worksheets

Time Period:	Weekday AM Peak Hour	Done By:	TML 10/15/2021
Annual Growth Rate:	DelDOT to provide Growth Rate upon review of Traffic Count & Distribution Submission	Chkd By:	PV 10/27/2021

Prettyman and Pettyjohn factors should both be 0.95

	Intersection	Approach		Direction / Movement	2021 Raw Count Volumes	Seasonal Adjustment Factor	2021 Seasonally Adjusted Volume	Other "Committed" Development Volumes																				Other "Pending" Development Volumes								2030 No Build Volumes		"New" Development Trips				Total Development New Trips	2030 No Build Volumes	
								Hawthorne				Azalea Woods				Heritage Creek				Vines of Sand Hill				Cypress Grove				Granary at Draper Farm				Prettyman Property						Residential						
								Enter	10	Exit	29	Enter	109	Exit	329	Enter	9	Exit	18	Enter	55	Exit	164	Enter	122	Exit	129	Enter	300	Exit	646	Enter	19	Exit	57	Committed	Committed + Pending	Enter	60	Exit	183		Committed	Committed + Pending
								%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume			%	Volume	%	Volume			
4	DE Route 30 & Prettyman Rd (SR 254)	Prettyman Rd (SR 254)	Westbound	Left	1	0.950	1		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
				Right	106	0.950	101		0		0		0		0		0		0	26%	14		0		0		0	26%	78		0		0	13%	7			26%	16			16		
		DE Route 30	Northbound	Through	168	0.990	166		0	35%	10		0	20%	66		0		0	8%	4		0	8%	10		0	8%	24		0		0		0			8%	5			5		
				Right	4	0.990	4		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
			Southbound	Left	109	0.990	108		0		0		0		0		0		0		0	26%	43		0		0		0	26%	168	13%	2		0					26%	47	47		
				Through	206	0.990	204	35%	4		0	20%	22		0		0		0		0	8%	13		0	8%	10		0	8%	52		0		0					8%	15	15		
		Total (Count Date)			**594**	-	**584**																													**0**	**0**		**21**		**62**		**0**	**0**
5	Prettyman Rd (SR 254) & Pettyjohn Rd (SR 255)	Prettyman Rd (SR 254)	Eastbound	Left	9	0.950	9		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
				Through	120	0.950	114		0		0		0		0		0		0		0	26%	43		0		0		0	26%	168	13%	2		0					26%	47	47		
				Right	1	0.950	1		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
			Westbound	Left	4	0.950	4		0		0		0		0		0		0		0		0		0		0		0		0		0	19%	11							0		
				Through	89	0.950	85		0		0		0		0		0		0	26%	14		0		0		0	26%	78		0		0	13%	7			26%	16			16		
				Right	3	0.950	3		0		0		0		0		0		0		0		0		0		0		0		0		0	31%	18							0		
		Pettyjohn Rd (SR 255)	Northbound	Left	1	1.000	1		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
				Through	14	1.000	14		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
				Right	2	1.000	2		0		0		0		0		0		0		0		0		0		0		0		0	19%	4		0							0		
			Southbound	Left	0	1.000	0		0		0		0		0		0		0		0		0		0		0		0		0	31%	6		0							0		
				Through	10	1.000	10		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
				Right	9	1.000	9		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
	Counted: 10/5/21 ; Peak Hour: 7:00	Total (Count Date)			**262**	-	**251**																													**0**	**0**		**16**		**47**		**0**	**0**
6	DE Route 5 & Shingle Point Rd (SR 249)	Shingle Point Rd (SR 249)	Eastbound	Left	32	0.950	30		0	23%	7		0	31%	102		0		0		0		0	11%	13		0		0		0		0		0					31%	57	57		
				Through	33	0.950	31		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
				Right	30	0.950	29		0		0		0		0	35%	3		0		0		0		0		0		0		0		0		0							0		
			Westbound	Left	13	0.950	12		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
				Through	18	0.950	17		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
				Right	6	0.950	6		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
		DE Route 5	Northbound	Left	19	0.990	19		0		0		0		0		0	35%	6		0		0		0		0		0		0		0		0							0		
				Through	282	0.990	279		0		0		0		0		0	31%	6		0		0	26%	32		0		0		0		0	31%	18							0		
				Right	37	0.990	37		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
			Southbound	Left	5	0.960	5		0		0		0		0		0		0		0		0		0		0		0		0		0		0							0		
				Through	329	0.960	316		0		0		0		0	31%	3		0		0		0		0	26%	34		0		0	31%	6		0							0		
				Right	50	0.960	48	23%	2		0	31%	34		0		0		0		0		0		0	11%	14		0		0		0		0			31%	19			19		
	Counted: 10/5/21 ; Peak Hour: 7:15	Total (Count Date)			**854**	-	**829**																													**0**	**0**		**19**		**57**		**0**	**0**

Seasonal Adjustment Factors for the roads in the study area are as follows:

Roads	August	September	October
US Route 9 – TPG 8	0.77	0.92	1.09
Delaware Route 5 – TPG 3 (*north of Shingle Point Road)*	0.91	0.97	0.96
Delaware Route 5 – TPG 6 (*south of Shingle Point Road)*	0.87	0.88	0.99
Delaware Route 30 – TPG 6	0.87	0.88	0.99
Sand Hill Road (Sussex Road 319) – TPG 7	0.92	0.96	0.95
Mulberry Street (Sussex Road 197) – TPG 4	0.91	0.97	0.96
Atlantic Street (Sussex Road 88) – TPG 3	0.91	0.97	0.96
Shingle Point Road (Sussex Road 249) – TPG 7	0.92	0.96	0.95
Pettyjohn Road (Sussex Road 255) – TPG 7	0.92	0.96	0.95
All Other Roads	1.00	1.00	1.00

Pennoni

Four Winds Farm Residential Development TIS
Traffic Volume Development Worksheets

Time Period:	Weekday PM Peak Hour	Done By:	TML 10/15/2021
Annual Growth Rate:	DelDOT to provide Growth Rate upon review of Traffic Count & Distribution Submission	Chkd By:	PV 10/27/2021

Prettyman and Pettyjohn factors should both be 0.95

Int.	Intersection	Approach	Direction	Movement	2021 Raw Count Volumes	Seasonal Adjustment Factor	2021 Seasonally Adjusted Volume	Other "Committed" Development Volumes: Hawthorne Enter %	Hawthorne 31 Volume	Hawthorne Exit %	Hawthorne 19 Volume	Azalea Woods Enter %	Azalea Woods 363 Volume	Azalea Woods Exit %	Azalea Woods 213 Volume
4	DE Route 30 & Prettyman Rd (SR 254)	Prettyman Rd (SR 254)	Westbound	Left	2	0.950	2		0		0		0		0
				Right	176	0.950	167		0		0		0		0
		DE Route 30	Northbound	Through	133	0.990	132		0	35%	7		0	20%	43
				Right	3	0.990	3		0		0		0		0
			Southbound	Left	99	0.990	98		0		0		0		0
				Through	172	0.990	170	35%	11		0	20%	73		0
		Total (Count Date)			**585**	-	**572**								
5	Prettyman Rd (SR 254) & Pettyjohn Rd (SR 255)	Prettyman Rd (SR 254)	Eastbound	Left	11	0.950	10		0		0		0		0
				Through	84	0.950	80		0		0		0		0
				Right	3	0.950	3		0		0		0		0
			Westbound	Left	3	0.950	3		0		0		0		0
				Through	155	0.950	147		0		0		0		0
				Right	0	0.950	0		0		0		0		0
		Pettyjohn Rd (SR 255)	Northbound	Left	3	1.000	3		0		0		0		0
				Through	6	1.000	6		0		0		0		0
				Right	5	1.000	5		0		0		0		0
			Southbound	Left	3	1.000	3		0		0		0		0
				Through	8	1.000	8		0		0		0		0
				Right	18	1.000	18		0		0		0		0
	Counted: 10/5/21 ; Peak Hour: 4:15	Total (Count Date)			**299**	-	**286**								
6	DE Route 5 & Shingle Point Rd (SR 249)	Shingle Point Rd (SR 249)	Eastbound	Left	39	0.950	37		0	23%	4		0	31%	66
				Through	13	0.950	12		0		0		0		0
				Right	7	0.950	7		0		0		0		0
			Westbound	Left	27	0.950	26		0		0		0		0
				Through	20	0.950	19		0		0		0		0
				Right	12	0.950	11		0		0		0		0
		DE Route 5	Northbound	Left	12	0.990	12		0		0		0		0
				Through	301	0.990	298		0		0		0		0
				Right	30	0.990	30		0		0		0		0
			Southbound	Left	9	0.960	9		0		0		0		0
				Through	287	0.960	276		0		0		0		0
				Right	53	0.960	51	23%	7		0	31%	112		0
	Counted: 10/5/21 ; Peak Hour: 4:00	Total (Count Date)			**810**	-	**787**								

Int.	Approach	Direction	Movement	Heritage Creek Enter %	Heritage Creek 19 Volume	Heritage Creek Exit %	Heritage Creek 12 Volume	Vines of Sand Hill Enter %	Vines of Sand Hill 184 Volume	Vines of Sand Hill Exit %	Vines of Sand Hill 109 Volume	Cypress Grove Enter %	Cypress Grove 99 Volume	Cypress Grove Exit %	Cypress Grove 77 Volume
4	Prettyman Rd (SR 254)	Westbound	Left		0		0		0		0		0		0
			Right		0		0	26%	48		0		0		0
	DE Route 30	Northbound	Through		0		0	8%	15		0	8%	8		0
			Right		0		0		0		0		0		0
		Southbound	Left		0		0		0	26%	28		0		0
			Through		0		0		0	8%	9		0	8%	6
	Total (Count Date)														
5	Prettyman Rd (SR 254)	Eastbound	Left		0		0		0		0		0		0
			Through		0		0		0	26%	28		0		0
			Right		0		0		0		0		0		0
		Westbound	Left		0		0		0		0		0		0
			Through		0		0	26%	48		0		0		0
			Right		0		0		0		0		0		0
	Pettyjohn Rd (SR 255)	Northbound	Left		0		0		0		0		0		0
			Through		0		0		0		0		0		0
			Right		0		0		0		0		0		0
		Southbound	Left		0		0		0		0		0		0
			Through		0		0		0		0		0		0
			Right		0		0		0		0		0		0
	Total (Count Date)														
6	Shingle Point Rd (SR 249)	Eastbound	Left		0		0		0		0	11%	11		0
			Through		0		0		0		0		0		0
			Right	35%	7		0		0		0		0		0
		Westbound	Left		0		0		0		0		0		0
			Through		0		0		0		0		0		0
			Right		0		0		0		0		0		0
	DE Route 5	Northbound	Left		0	35%	4		0		0		0		0
			Through		0	31%	4		0		0	26%	26		0
			Right		0		0		0		0		0		0
		Southbound	Left		0		0		0		0		0		0
			Through	31%	6		0		0		0		0	26%	20
			Right		0		0		0		0		0	11%	8
	Total (Count Date)														

Int.	Approach	Direction	Movement	Other "Pending": Granary at Draper Farm Enter %	Granary 683 Volume	Granary Exit %	Granary 439 Volume	Prettyman Property Enter %	Prettyman Property 64 Volume	Prettyman Property Exit %	Prettyman Property 38 Volume	2030 No Build Volumes Committed	2030 No Build Committed + Pending	"New" Development Trips Residential Enter %	Residential 205 Volume	Residential Exit %	Residential 120 Volume	Total Development New Trips	2030 No Build Volumes Committed	2030 No Build Committed + Pending
4	Prettyman Rd (SR 254)	Westbound	Left		0		0		0		0							0		
			Right	26%	177		0		0	13%	5			26%	54			54		
	DE Route 30	Northbound	Through	8%	55		0		0		0			8%	16			16		
			Right		0		0		0		0							0		
		Southbound	Left		0	26%	114	13%	8		0					26%	31	31		
			Through		0	8%	35		0		0					8%	10	10		
	Total (Count Date)											**0**	**0**		**70**		**41**		**0**	**0**
5	Prettyman Rd (SR 254)	Eastbound	Left		0		0		0		0							0		
			Through		0	26%	114	13%	8		0					26%	31	31		
			Right		0		0		0		0							0		
		Westbound	Left		0		0		0	19%	7							0		
			Through	26%	177		0		0	13%	5			26%	54			54		
			Right		0		0		0	31%	12							0		
	Pettyjohn Rd (SR 255)	Northbound	Left		0		0		0		0							0		
			Through		0		0		0		0							0		
			Right		0		0	19%	12		0							0		
		Southbound	Left		0		0	31%	20		0							0		
			Through		0		0		0		0							0		
			Right		0		0		0		0							0		
	Total (Count Date)											**0**	**0**		**54**		**31**		**0**	**0**
6	Shingle Point Rd (SR 249)	Eastbound	Left		0		0		0		0					31%	37	37		
			Through		0		0		0		0							0		
			Right		0		0		0		0							0		
		Westbound	Left		0		0		0		0							0		
			Through		0		0		0		0							0		
			Right		0		0		0		0							0		
	DE Route 5	Northbound	Left		0		0		0		0							0		
			Through		0		0		0	31%	12							0		
			Right		0		0		0		0							0		
		Southbound	Left		0		0		0		0							0		
			Through		0		0	31%	20		0							0		
			Right		0		0		0		0			31%	64			64		
	Total (Count Date)											**0**	**0**		**64**		**37**		**0**	**0**

Seasonal Adjustment Factors for the roads in the study area are as follows:

Roads	August	September	October
US Route 9 – TPG 8	0.77	0.92	1.09
Delaware Route 5 – TPG 3 (*north of Shingle Point Road)*	0.91	0.97	0.96
Delaware Route 5 – TPG 6 (*south of Shingle Point Road)*	0.87	0.88	0.99
Delaware Route 30 – TPG 6	0.87	0.88	0.99
Sand Hill Road (Sussex Road 319) – TPG 7	0.92	0.96	0.95
Mulberry Street (Sussex Road 197) – TPG 4	0.91	0.97	0.96
Atlantic Street (Sussex Road 88) – TPG 3	0.91	0.97	0.96
Shingle Point Road (Sussex Road 249) – TPG 7	0.92	0.96	0.95
Pettyjohn Road (Sussex Road 255) – TPG 7	0.92	0.96	0.95
All Other Roads	1.00	1.00	1.00

FIGURE 4A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - HAWTHORNE

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

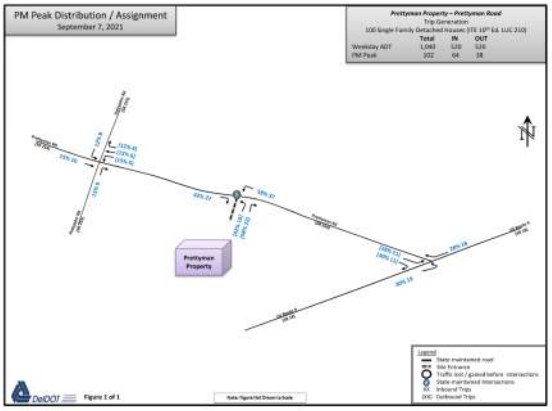
LEGEND

= *Inbound Trip Distribution Percentage*

(###) = *Outbound Trip Distribution Percentage*

→ = MOVEMENT DIRECTION

Consider utilizing a similar distribution based on Prettyman Property



20% TO/FROM NORTH ALONG DE ROUTE 5

3% TO/FROM WEST ALONG MULBERRY ST

12% TO/FROM NORTH ALONG DE ROUTE 30

9% TO/FROM WEST ALONG BRIARWOOD RD

22% TO/FROM WEST ALONG US ROUTE 9

8% TO/FROM SOUTH ALONG DE ROUTE 30

26% TO/FROM EAST ALONG US ROUTE 9

SITE

HAWTHORNE

PM Peak Distribution / Assignment

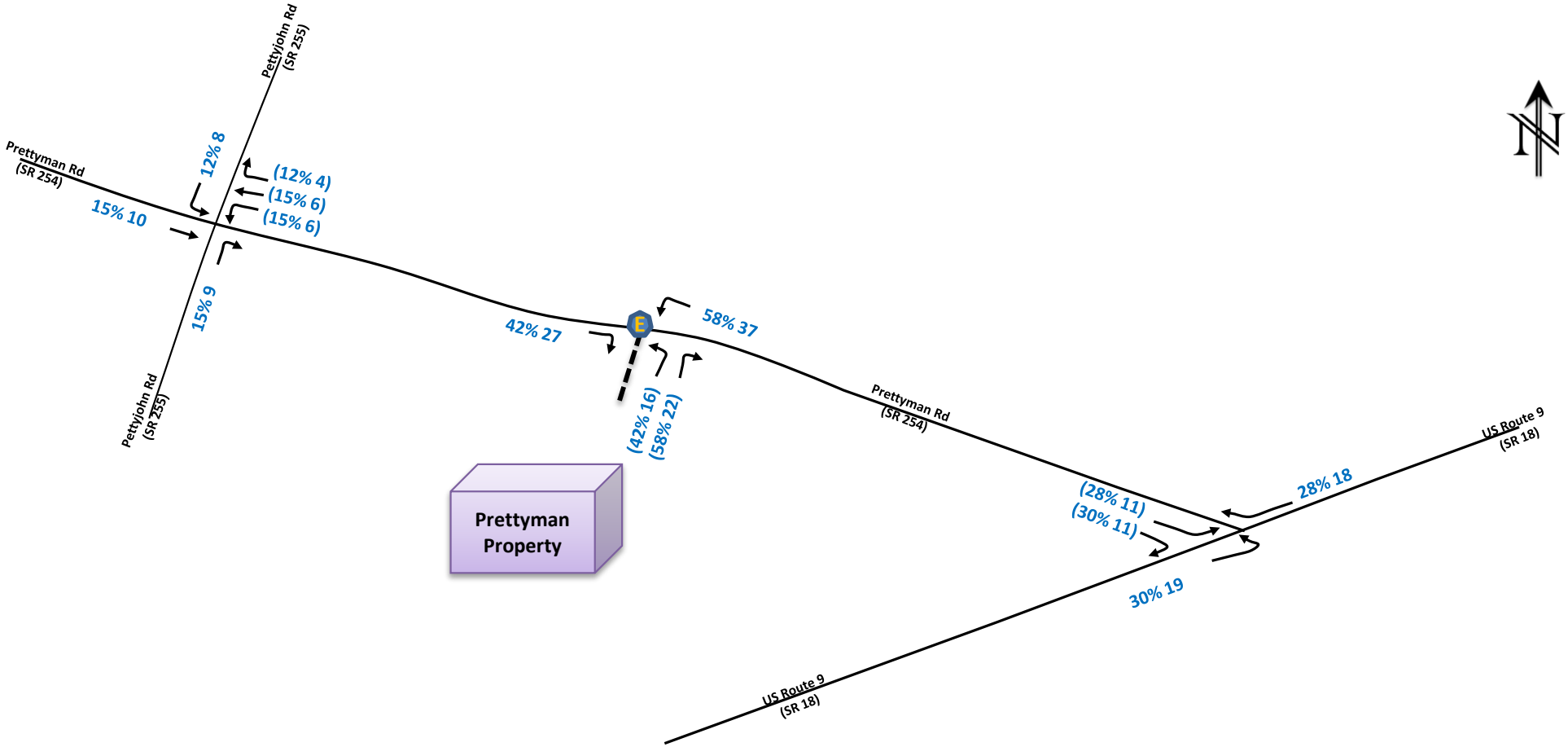
September 7, 2021

Prettyman Property – Prettyman Road

Trip Generation

100 Single Family Detached Houses (ITE 10th Ed. LUC 210)

	Total	IN	OUT
Weekday ADT	1,040	520	520
PM Peak	102	64	38



Legend

- State-maintained road
- Site Entrance
- Traffic lost / gained before intersections
- State-maintained Intersections
- XX Inbound Trips
- (XX) Outbound Trips

DelDOT

Figure 1 of 1

Note: Figure Not Drawn to Scale

FIGURE 5A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - AZALEA WOODS

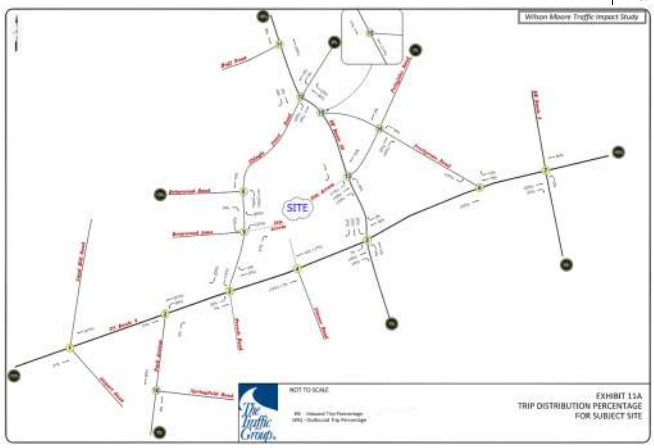
Four Winds Farm Residential Development
Sussex County, Delaware

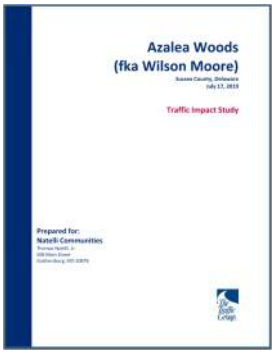
By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

LEGEND

= *Inbound Trip Distribution Percentage*
(###) = *Outbound Trip Distribution Percentage*
→ = MOVEMENT DIRECTION

Use trip distribution from approved TIS for this development





20% TO/FROM NORTH ALONG DE ROUTE 5

3% TO/FROM WEST ALONG MULBERRY ST

8% TO/FROM WEST ALONG SAND HILL RD

OM NORTH E ROUTE 30

9% TO/FROM WEST ALONG BRIARWOOD RD

22% TO/FROM WEST ALONG US ROUTE 9

8% TO/FROM SOUTH ALONG DE ROUTE 30

26% TO/FROM EAST ALONG US ROUTE 9

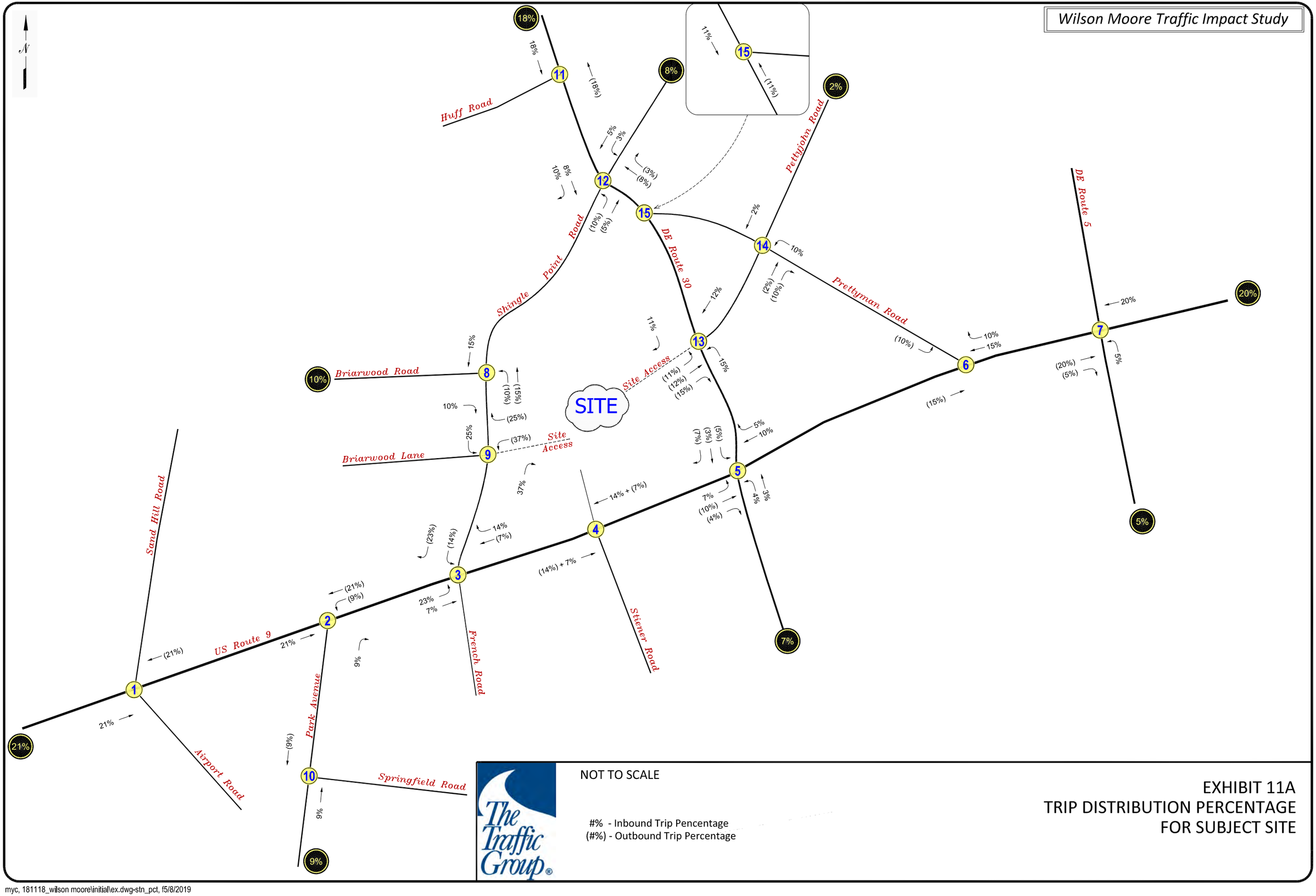
AZALEA WOODS

SITE

PROPOSED SITE ACCESS

AZALEA WOODS ACCESS

FEDERAL ST (DE ROUTE 5)
MULBERRY ST (SR 197)
ATLANTIC ST (SR 88)
SAND HILL RD (SR 319)
CHESTNUT ST (SR 249)
SHINGLE POINT RD
HARRESON RD (DE ROUTE 5)
GRAVEL HILL ROAD (DE ROUTE 30)
PRETTYMAN RD (SR 254)
PETTIJOHN RD (SR 255)
SHINGLE POINT RD (SR 249)
BRIARWOOD RD (SR 253)
US ROUTE 9
FRENCH RD



NOT TO SCALE

#% - Inbound Trip Pencentage
(#%) - Outbound Trip Percentage

The Traffic Group®

EXHIBIT 11A
TRIP DISTRIBUTION PERCENTAGE
FOR SUBJECT SITE

FIGURE 6A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - HERITAGE CREEK

Four Winds Farm Residential Development
Sussex County, Delaware

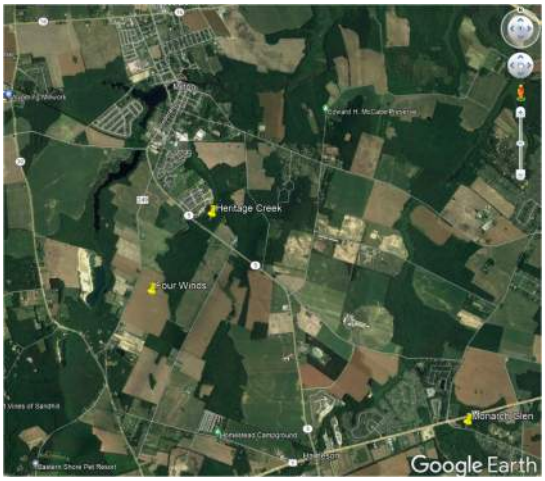
By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

LEGEND

= *Inbound Trip Distribution Percentage*

(###) = *Outbound Trip Distribution Percentage*

→ = MOVEMENT DIRECTION



20% TO/FROM NORTH ALONG DE ROUTE 5

3% TO/FROM WEST ALONG MULBERRY ST

8% TO/FROM WEST ALONG SAND HILL RD

Revise distribution

4% TO/FROM NORTH ALONG DE ROUTE 30

Percentages don't balance

On Rt 5

HERITAGE CREEK

SITE

34% TO/FROM SOUTH ALONG DE ROUTE 5

9% TO/FROM WEST ALONG BRIARWOOD RD

22% TO/FROM WEST ALONG US ROUTE 9

These vehicles may take Rt 9 to NB Rt 5?

FIGURE 7A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - VINES OF SAND HILL

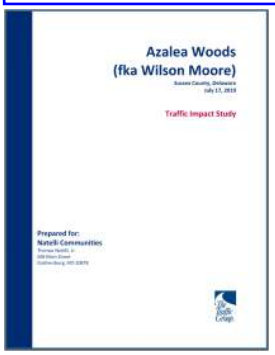
Four Winds Farm Residential Development
Sussex County, Delaware

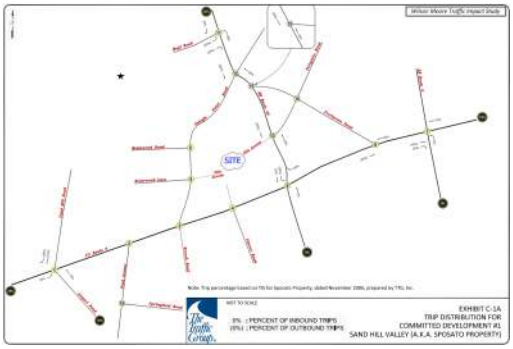
By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

LEGEND

= *Inbound Trip Distribution Percentage*
(###) = *Outbound Trip Distribution Percentage*
→ = MOVEMENT DIRECTION

Use trip distribution from approved TIS for this development





20% TO/FROM NORTH ALONG DE ROUTE 5

3% TO/FROM WEST ALONG MULBERRY ST

12% TO/FROM NORTH ALONG DE ROUTE 30

31% TO/FROM WEST ALONG US ROUTE 9

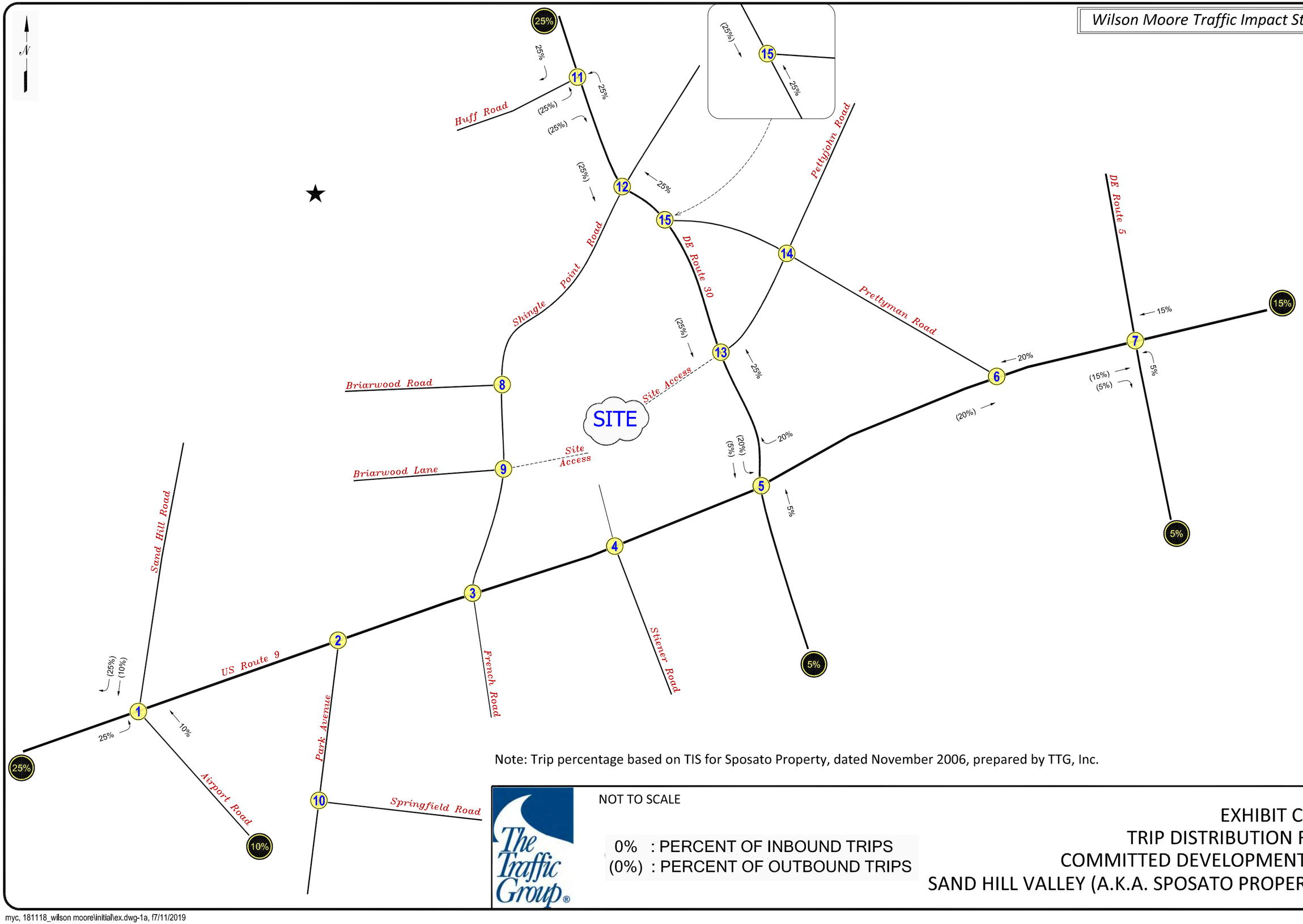
8% TO/FROM SOUTH ALONG DE ROUTE 30

26% TO/FROM SOUTHEAST ALONG PRETTYMAN RD

VINES OF

SITE

FEDERAL ST (DE ROUTE 5)
MULBERRY ST (SR 197)
ATLANTIC ST (SR 88)
SAND HILL RD (SR 319)
CHESTNUT ST (SR 249)
SHINGLE POINT RD
HARBESON RD (DE ROUTE 5)
GRAVEL HILL ROAD (DE ROUTE 30)
PROPOSED SITE ACCESS
PRETTYMAN RD (SR 254)
PETTIJOHN RD (SR 255)
SHINGLE POINT RD (SR 249)
BRIARWOOD RD (SR 253)
AZALEA WOODS ACCESS
US ROUTE 9
FRENCH RD



Note: Trip percentage based on TIS for Sposato Property, dated November 2006, prepared by TTG, Inc.

NOT TO SCALE

0% : PERCENT OF INBOUND TRIPS
(0%) : PERCENT OF OUTBOUND TRIPS

EXHIBIT C-1A
TRIP DISTRIBUTION FOR
COMMITTED DEVELOPMENT #1
SAND HILL VALLEY (A.K.A. SPOSATO PROPERTY)

FIGURE 8A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - CYPRESS GROVE

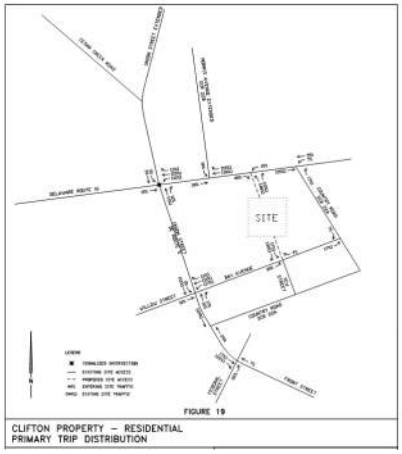
Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

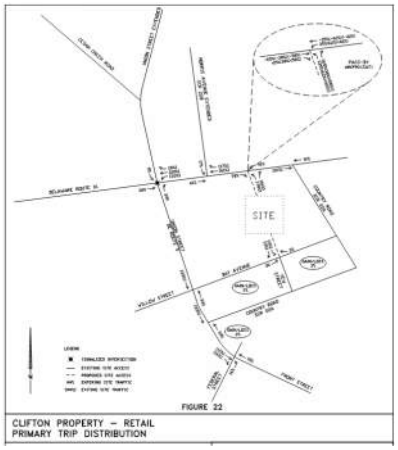
LEGEND

= *Inbound Trip Distribution Percentage*
(###) = *Outbound Trip Distribution Percentage*
→ = MOVEMENT DIRECTION

Use approved Trip Distribution from TIS dated 02/2020



CLIFTON PROPERTY – RESIDENTIAL
PRIMARY TRIP DISTRIBUTION



CLIFTON PROPERTY – RETAIL
PRIMARY TRIP DISTRIBUTION

CYPRESS GROVE

35% TO/FROM NORTH, WEST & WEST VIA DE ROUTE 16

34% TO/FROM SOUTH ALONG DE ROUTE 5

9% TO/FROM WEST ALONG BRIARWOOD RD

22% TO/FROM WEST ALONG US ROUTE 9

SITE

PROPOSED SITE ACCESS

AZALEA WOODS ACCESS

FEDERAL ST (DE ROUTE 5)
MULBERRY ST (SR 197)
ATLANTIC ST (SR 88)
SAND HILL RD (SR 319)
CHESTNUT ST (SR 249)
SHINGLE POINT RD
HARBESON RD (DE ROUTE 5)
GRAVEL HILL ROAD (DE ROUTE 30)
PRETTYMAN RD (SR 254)
PETTIJOHN RD (SR 255)
SHINGLE POINT RD (SR 249)
BRIARWOOD RD (SR 253)
US ROUTE 9
FRENCH RD

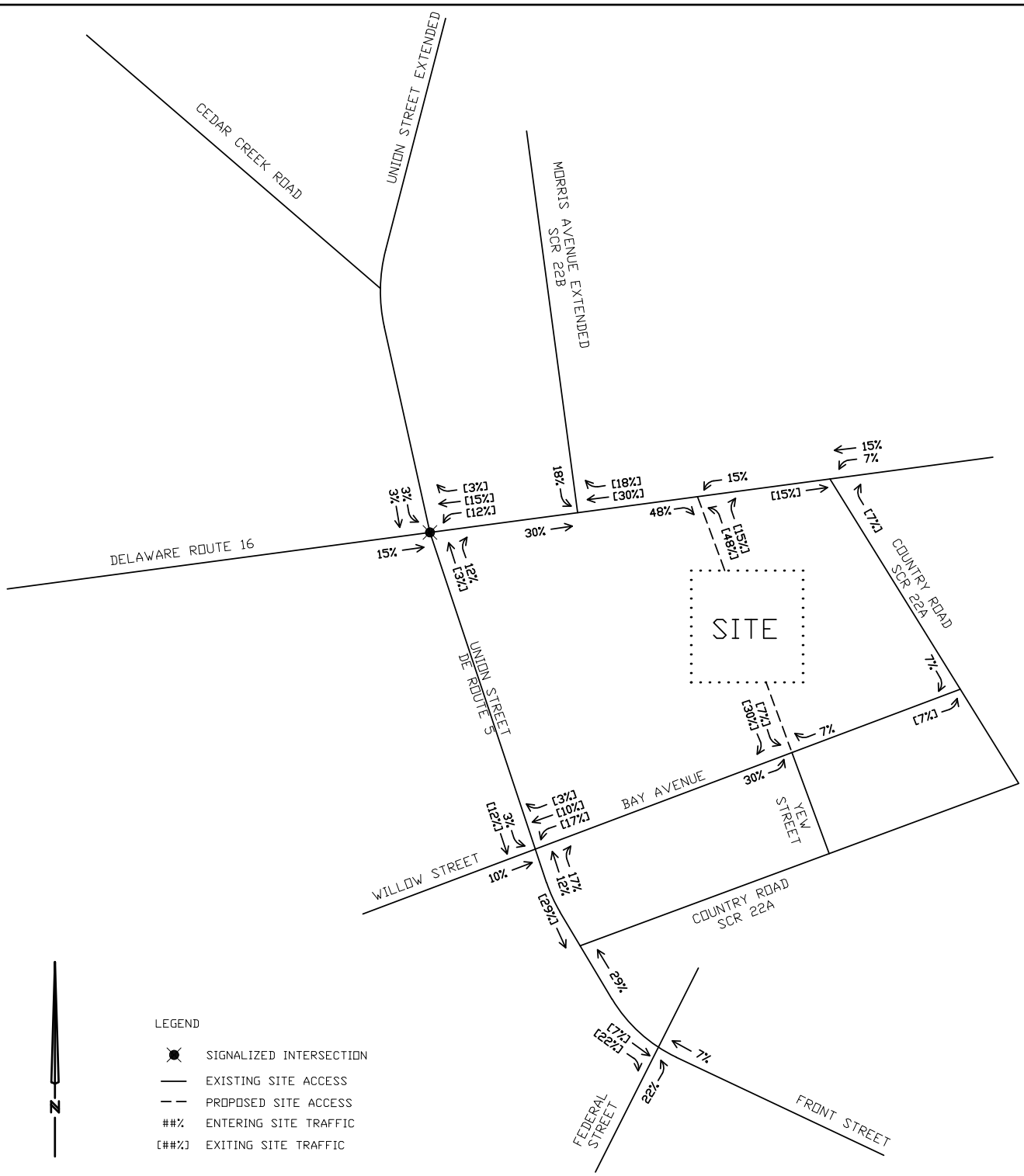


FIGURE 19

CLIFTON PROPERTY – RESIDENTIAL PRIMARY TRIP DISTRIBUTION

DAVIS, BOWEN & FRIEDEL, INC.
ARCHITECTS, ENGINEERS & SURVEYORS

SALISBURY, MARYLAND 410-543-9091
MILFORD, DELAWARE 302-424-1441
EASTON, MARYLAND 410-770-4744

CLIFTON PROPERTY
TRAFFIC IMPACT STUDY
MILTON, DELAWARE

Date:	Scale:	Proj.No.:
10/19	NONE	3311A001.J01

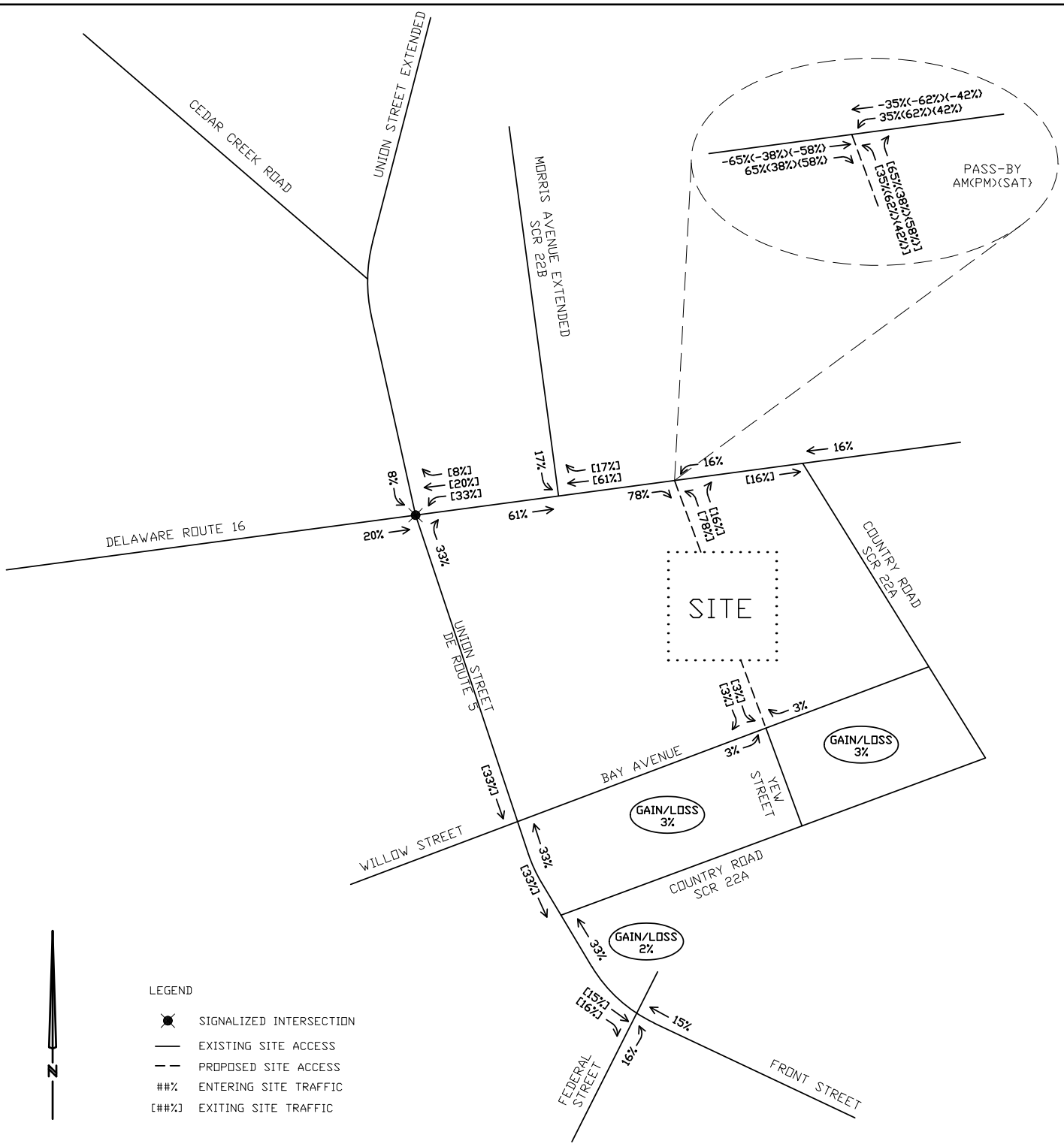


FIGURE 22

CLIFTON PROPERTY – RETAIL
PRIMARY TRIP DISTRIBUTION

DAVIS, BOWEN & FRIEDEL, INC.
ARCHITECTS, ENGINEERS & SURVEYORS

SALISBURY, MARYLAND 410-543-9091
MILFORD, DELAWARE 302-424-1441
EASTON, MARYLAND 410-770-4744

CLIFTON PROPERTY
TRAFFIC IMPACT STUDY
MILTON, DELAWARE

Date:	Scale:	Proj.No.:
10/19	NONE	3311A001.J01

FIGURE 9A: PENDING DEVELOPMENT TRIP DISTRIBUTION - GRANARY AT DRAPER FARM

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

LEGEND

= *Inbound Trip Distribution Percentage*
(###) = *Outbound Trip Distribution Percentage*
→ = MOVEMENT DIRECTION

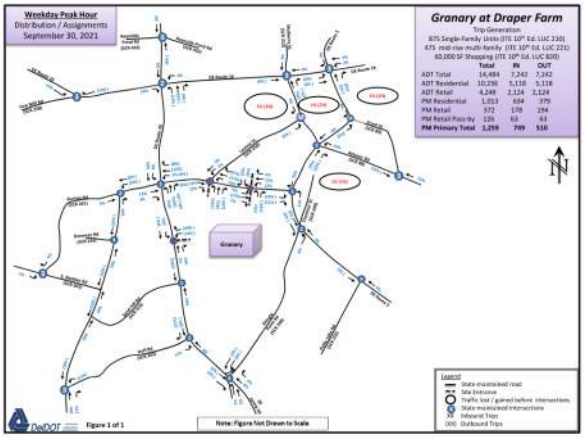
20% TO/FROM NORTH ALONG DE ROUTE 5

3% TO/FROM WEST ALONG MULBERRY ST

12% TO/FROM NORTH & EAST ALONG DE ROUTE 30 & SAND HILL RD

Use approved Trip Distribution from DelDOT letter dated 09/30/2021

GRANARY AT



SITE

PROPOSED SITE ACCESS

AZALEA WOODS ACCESS

26% TO/FROM SOUTHEAST ALONG PRETTYMAN RD

9% TO/FROM WEST ALONG BRIARWOOD RD

22% TO/FROM WEST ALONG US ROUTE 9

8% TO/FROM SOUTH ALONG DE ROUTE 30

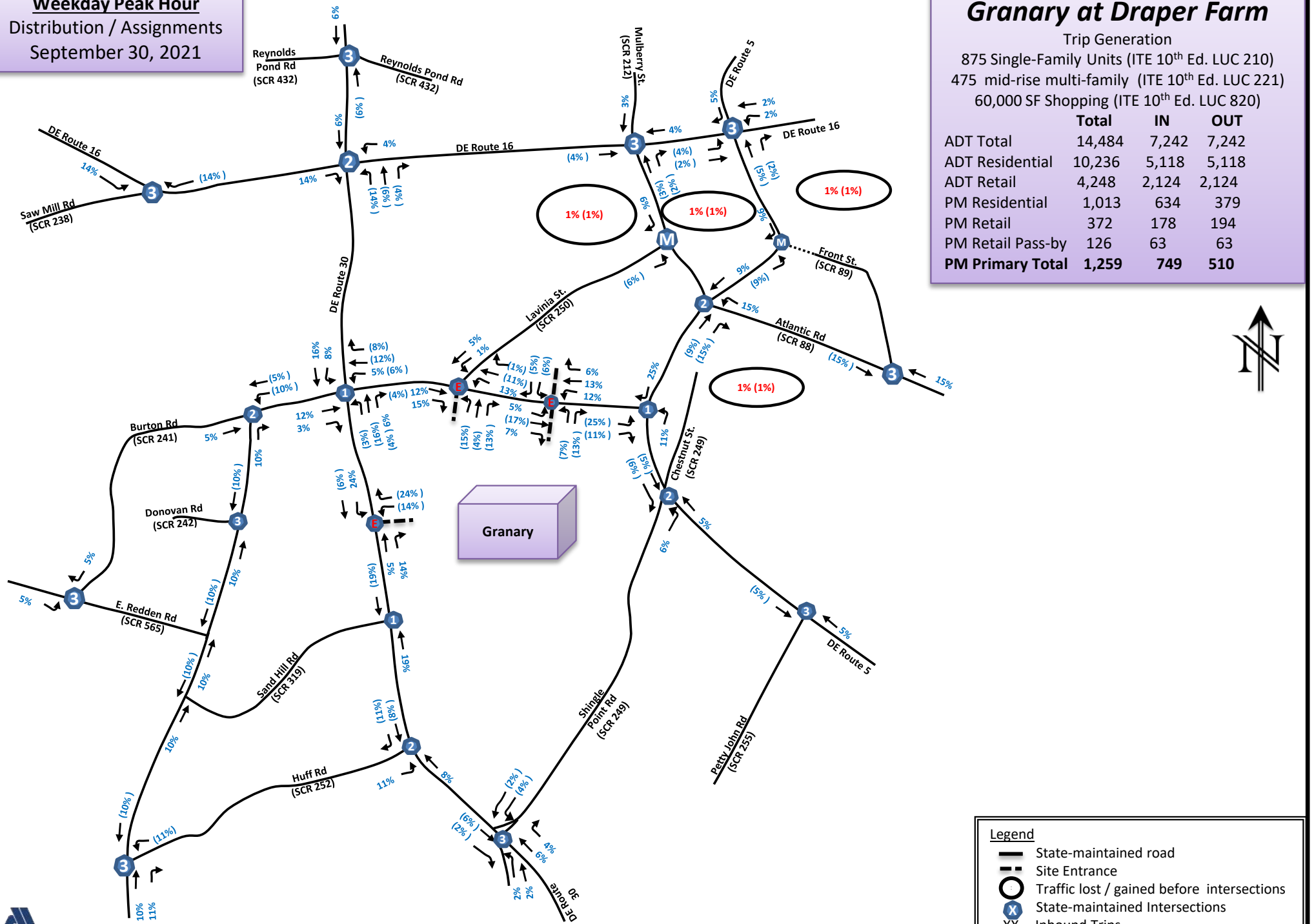
FEDERAL ST (DE ROUTE 5)
MULBERRY ST (SR 197)
ATLANTIC ST (SR 88)
SAND HILL RD (SR 319)
CHESTNUT ST (SR 249)
SHINGLE POINT RD
HARBESON RD (DE ROUTE 5)
GRAVEL HILL ROAD (DE ROUTE 30)
PRETTYMAN RD (SR 254)
PETTIJOHN RD (SR 255)
SHINGLE POINT RD (SR 249)
BRIARWOOD RD (SR 253)
US ROUTE 9
FRENCH RD

Weekday Peak Hour
Distribution / Assignments
September 30, 2021

Granary at Draper Farm

Trip Generation
875 Single-Family Units (ITE 10th Ed. LUC 210)
475 mid-rise multi-family (ITE 10th Ed. LUC 221)
60,000 SF Shopping (ITE 10th Ed. LUC 820)

	Total	IN	OUT
ADT Total	14,484	7,242	7,242
ADT Residential	10,236	5,118	5,118
ADT Retail	4,248	2,124	2,124
PM Residential	1,013	634	379
PM Retail	372	178	194
PM Retail Pass-by	126	63	63
PM Primary Total	**1,259**	**749**	**510**



Legend
- State-maintained road
- Site Entrance
- Traffic lost / gained before intersections
- State-maintained Intersections
- XX Inbound Trips
- (XX) Outbound Trips

DelDOT

Figure 1 of 1

Note: Figure Not Drawn to Scale

FIGURE 10A: PENDING DEVELOPMENT TRIP DISTRIBUTION - PRETTYMAN PROPERTY

Four Winds Farm Residential Development
Sussex County, Delaware

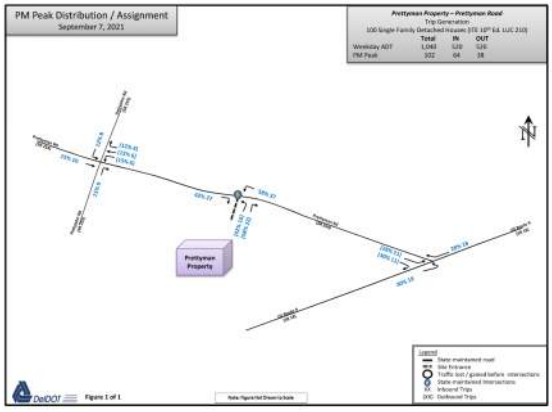
By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

LEGEND

= *Inbound Trip Distribution Percentage*
(###) = *Outbound Trip Distribution Percentage*

→ = MOVEMENT DIRECTION

Use approved Trip Distribution from DelDOT letter dated 09/07/2021



20% TO/FROM NORTH ALONG DE ROUTE 5

3% TO/FROM WEST ALONG MULBERRY ST

8% TO/FROM WEST ALONG SAND HILL RD

4% TO/FROM NORTH ALONG DE ROUTE 30

37% TO/FROM SOUTHEAST ALONG PRETTYMAN RD

9% TO/FROM WEST ALONG BRIARWOOD RD

22% TO/FROM WEST ALONG US ROUTE 9 (11% TO PETTYJOHN RD VIA SR 30 ; 11% TO PRETTYMAN RD VIA US 9)

8% TO/FROM SOUTH ALONG DE ROUTE 30 TO PETTYJOHN RD VIA SR 30

FEDERAL ST (DE ROUTE 5)
MULBERRY ST (SR 197)
ATLANTIC ST (SR 88)
SAND HILL RD (SR 319)
CHESTNUT ST (SR 249)
SHINGLE POINT RD
HARBESON RD (DE ROUTE 5)
GRAVEL HILL ROAD (DE ROUTE 30)
PROPOSED SITE ACCESS
SITE
PRETTYMAN RD (SR 254)
PETTYJOHN RD (SR 255)
PRETTYMAN
SHINGLE POINT RD (SR 249)
BRIARWOOD RD (SR 253)
AZALEA WOODS ACCESS
US ROUTE 9
FRENCH RD

PM Peak Distribution / Assignment

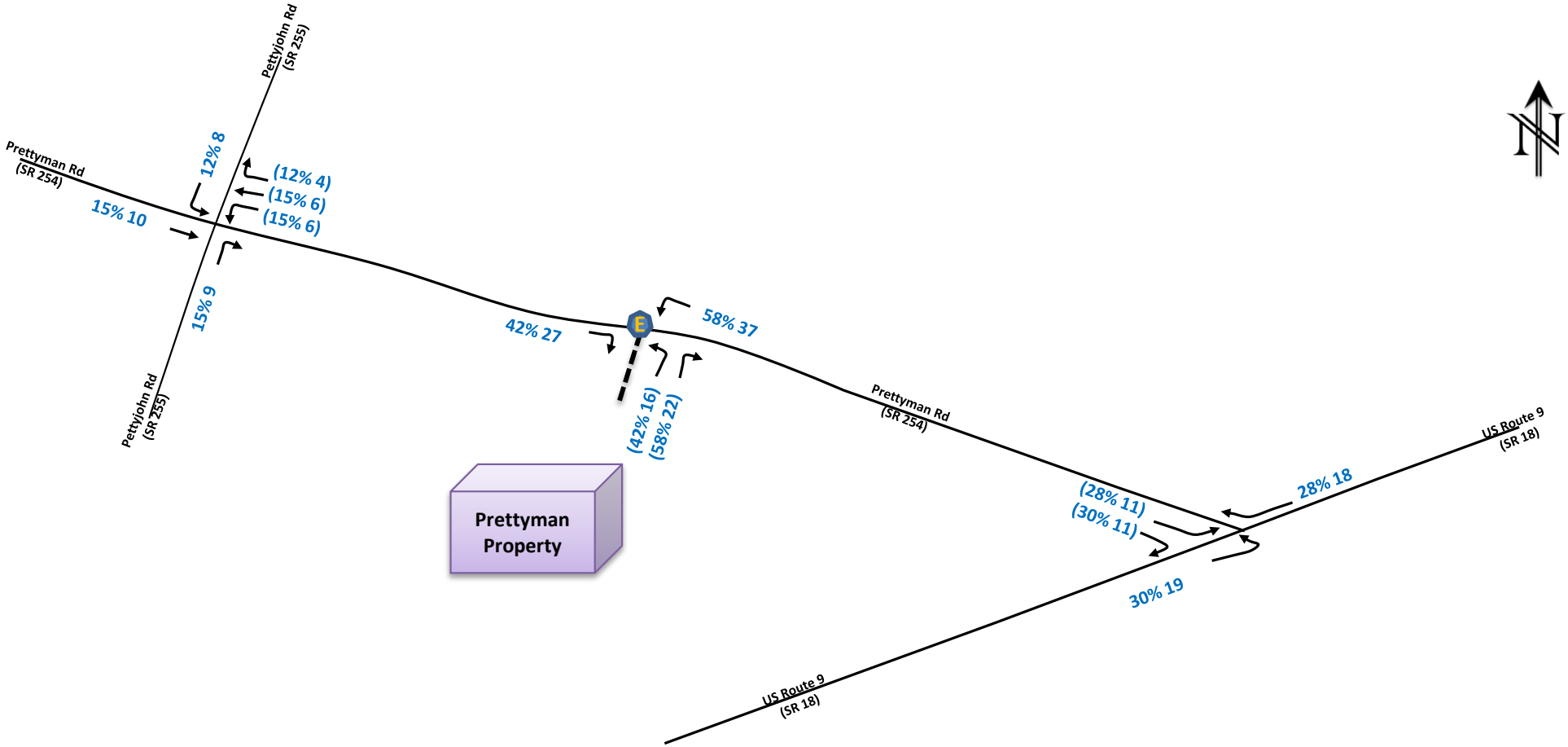
September 7, 2021

Prettyman Property – Prettyman Road

Trip Generation

100 Single Family Detached Houses (ITE 10th Ed. LUC 210)

	Total	IN	OUT
Weekday ADT	1,040	520	520
PM Peak	102	64	38



Legend

- State-maintained road
- Site Entrance
- Traffic lost / gained before intersections
- State-maintained Intersections
- XX Inbound Trips
- (XX) Outbound Trips

DelDOT

Figure 1 of 1

Note: Figure Not Drawn to Scale

FIGURE 11A: PROPOSED DEVELOPMENT TRIP DISTRIBUTION - FOUR WINDS FARM

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

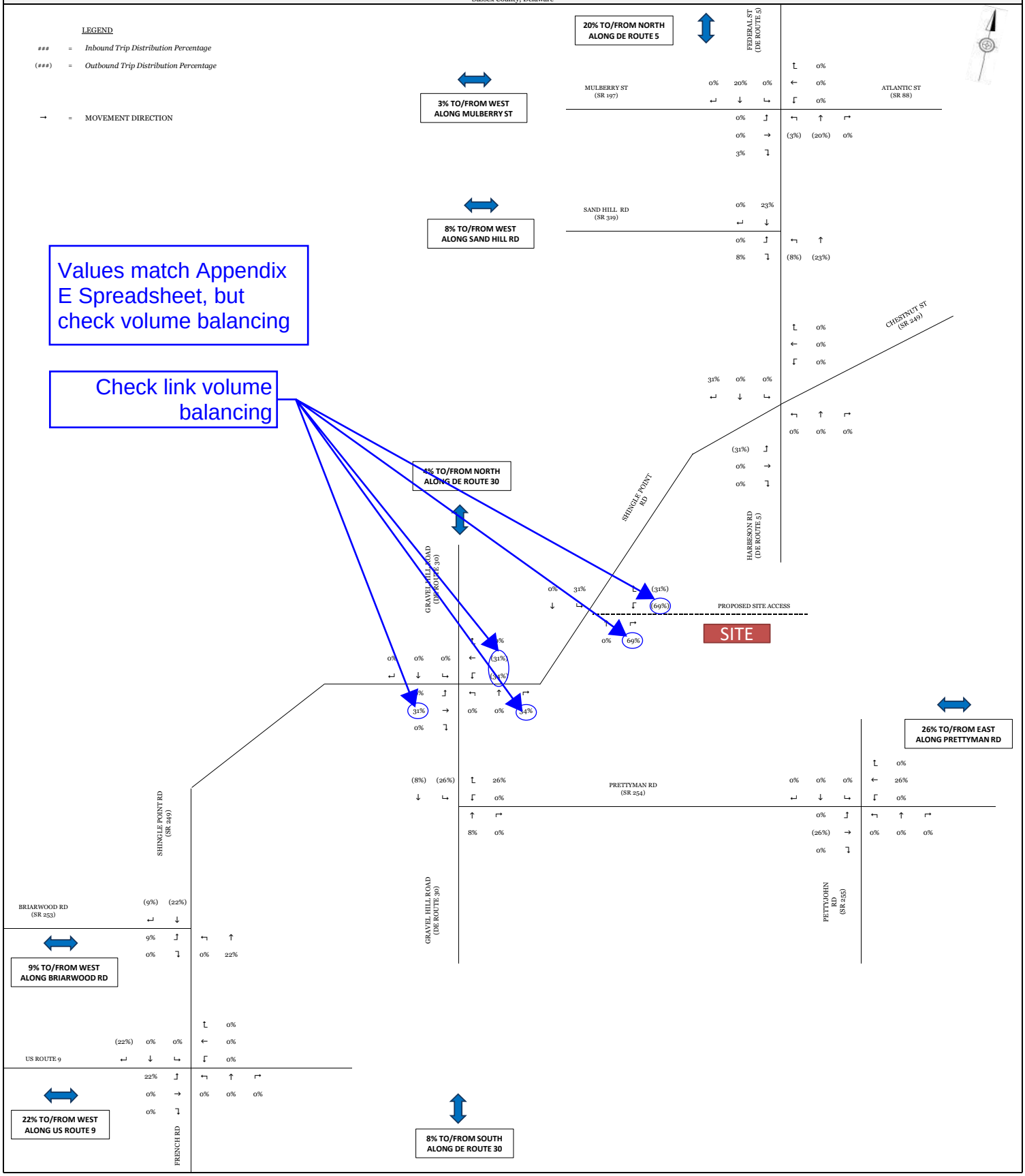
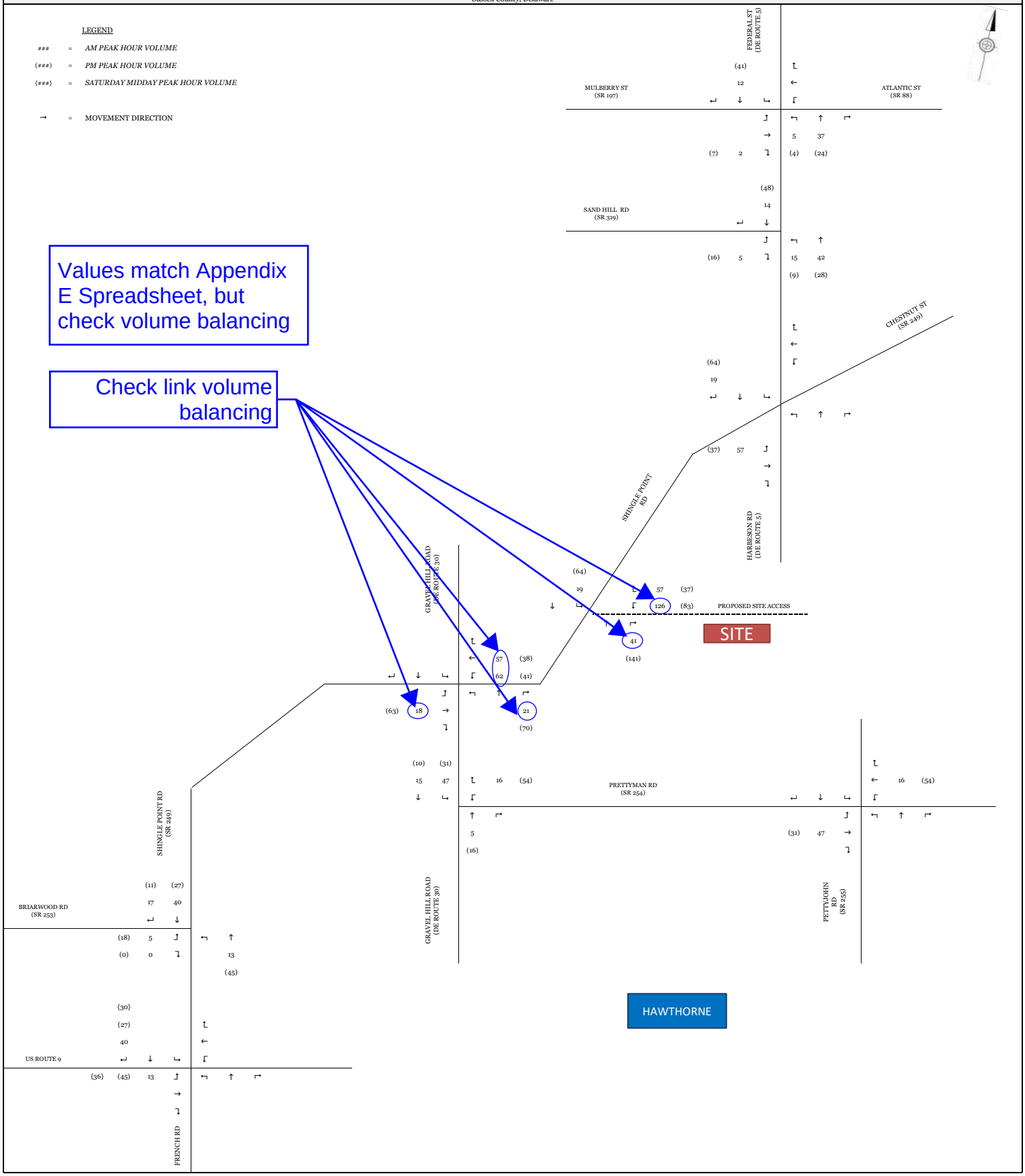


FIGURE 11B: PROPOSED DEVELOPMENT TRIP ASSIGNMENT - FOUR WINDS FARM

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021



Teresa Lord

From: Jamie Whitehouse <jamie.whitehouse@sussexcountyde.gov>
Sent: Friday, October 15, 2021 4:33 PM
To: Teresa Lord; Lauren DeVore
Cc: Alan M. Decktor
Subject: RE: Request for Development Information near Proposed Four Winds Farm Development on Shingle Point Road

Teresa, Good afternoon,

Thank you for your patience. Based upon our records, I have the following information on the number of units built.

Hawthorne Dwelling BP's as of 10.15.2021 – 206

Vines of Sandhill Dwelling BP's as of 10.15.2021 - 92

This data is from the County's Building Permit database and is not based upon aerial data. The numbers used are real-time as of today's date. If you subtract these numbers from the approved unit counts, that should assist in answering your question.

As researching this information request took less than 2 hours, and given that you have waited patiently for us to gather and prepare this data for you, I am providing this information without charge.

I hope that this is of assistance,

Thank you,

Mr. Jamie Whitehouse, AICP, MRTPI
Director, Department of Planning & Zoning
Sussex County
2 The Circle, P.O. Box 417, Georgetown, DE, 19947
Tel: 302-855-7878, Fax: 302-854-5079

Much of the County's Planning and Zoning Information can be found online at:
https://sussexcountyde.gov/sussex-county-mapping-applications

Information on the 2018 Sussex County Comprehensive Plan can be found at:
https://sussexcountyde.gov/2018-comp-plan-documents

From: Teresa Lord <TLord@Pennoni.com>
Sent: Friday, October 15, 2021 1:25 PM
To: Lauren DeVore <lauren.devore@sussexcountyde.gov>
Cc: Jamie Whitehouse <jamie.whitehouse@sussexcountyde.gov>; Alan M. Decktor <ADecktor@Pennoni.com>
Subject: RE: Request for Development Information near Proposed Four Winds Farm Development on Shingle Point Road

Good Afternoon Lauren,

I am just following up on the email I sent to you a few weeks ago. If you can clarify the information below, I would greatly appreciate it.

Thank you and have a great weekend!

Teresa Lord, PE, PTOE

Pennoni
121 Continental Drive, Suite 207 | Newark, DE 19713
Direct: +1 (302) 351-5232
www.pennoni.com | TLord@Pennoni.com

From: Teresa Lord
Sent: Wednesday, September 29, 2021 8:47 AM
To: Lauren DeVore <lauren.devore@sussexcountyde.gov>
Cc: Jamie Whitehouse <jamie.whitehouse@sussexcountyde.gov>; Alan M. Decktor <ADecktor@Pennoni.com>
Subject: RE: Request for Development Information near Proposed Four Winds Farm Development on Shingle Point Road

Lauren – Thank you for the information.

Could you clarify the number of units remaining to be built for the following developments? Aerial imagery shows some homes already constructed for both developments.

- Hawthorne
- Vines of Sand Hill

Regarding the Prettyman Property – This is a project that is still in the early stages. DelDOT has classified it as a Pending Development, not a Planned or Committed Development. Per DelDOT's PDCA, this project was recently created (3/15/2021).

- Due to its proximity to the Proposed Four Winds Farm development, DelDOT asked us to include it within our traffic projections.
- See image below for location. It is located along Prettyman Rd, with the property line adjacent to the Hawthorne (or Paradise Lakes) development, north of US Route 9.

Teresa Lord, PE, PTOE

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www.pennoni.com | TLord@Pennoni.com

From: Lauren DeVore <lauren.devore@sussexcountyde.gov>
Sent: Tuesday, September 28, 2021 4:27 PM
To: Teresa Lord <TLord@Pennoni.com>
Cc: Jamie Whitehouse <jamie.whitehouse@sussexcountyde.gov>; Alan M. Decktor <ADecktor@Pennoni.com>
Subject: RE: Request for Development Information near Proposed Four Winds Farm Development on Shingle Point Road

Good Afternoon, Teresa,

Please find my comments in **red** below:

- Hawthorne F.K.A. Paradise Lakes & Landlock Acres (254 single-family detached houses (which includes the latest phase, Phase 6) – Hawthorne Phases 1-5 received Final Subdivision Plan approval from the P&Z Commission on 10/14/09. Hawthorne Phase 6 received Final Subdivision Plan approval from the P&Z Commission on 8/22/19.

- Azalea Woods F.K.A. Wilson Moore (610 single-family detached houses) – Azalea Woods received Preliminary Subdivision Plan approval from the P&Z Commission on 12/19/19. It has not yet received Final Subdivision Plan approval yet. The Department has received Final Plans for review as of 9/3/21.
- Vines of Sand Hill F.K.A. The Estates of Sand Hill Valley, Whispering Meadows, Sposato Property (393 single-family detached houses) – The Vines of Sand Hill received Final Subdivision Plan approval from the P&Z Commission on 8/11/11.
- Granary at Draper Farm (875 single-family detached houses, 475 units of multi-family mid-rise houses (1,350 units total), and 60,000 square feet of retail space) - pending – This application was considered as an Agenda item at the PLUS Meeting last week. I have confirmed with the Applicant and their desire is to have this proposal annexed into the Town of Milton. However, if the annexation request should prove to be unsuccessful, this Application is likely to be considered by the County as a Residential Planned Community.
- Prettyman Property (100 single-family detached houses) – pending – I do not see this proposal listed in our Application Listing. Is it possible that it may have been submitted to us with additional lots and under an alternate name?

I hope that this helps in providing the further clarity needed.

Best Regards,

-Lauren

Lauren DeVore

Planner III
Department of Planning and Zoning
2 The Circle
P.O. Box 417
Georgetown, DE 19947
Tel: (302)855-7878
8:30AM - 4:30PM

SUSSEX COUNTY
DELAWARE

For more information regarding upcoming development proposals and further Planning and Zoning matters, please see the **Sussex County Official Website.**

From: Jamie Whitehouse <jamie.whitehouse@sussexcountyde.gov>
Sent: Tuesday, September 28, 2021 2:12 PM
To: Lauren DeVore <lauren.devore@sussexcountyde.gov>
Subject: FW: Request for Development Information near Proposed Four Winds Farm Development on Shingle Point Road

Lauren, please could you assist.

Thank you,

Jamie

From: Teresa Lord <TLord@Pennoni.com>
Sent: Tuesday, September 28, 2021 2:02 PM
To: Jamie Whitehouse <jamie.whitehouse@sussexcountyde.gov>
Cc: Alan M. Decktor <ADecktor@Pennoni.com>
Subject: Request for Development Information near Proposed Four Winds Farm Development on Shingle Point Road

Good Afternoon Jamie,

Pennoni is completing a Traffic Impact Study (TIS) for the proposed Four Winds Farm Residential Development, to be located on the east side of Shingle Point Road (SR 249) in Sussex County, DE. We attended a TIS Scoping Meeting with DelDOT on August 19, 2021. As discussed, DelDOT requested that we include the following 3 developments in Sussex County as background traffic in our study:

- Hawthorne f.k.a. Paradise Lakes (213 single-family detached houses)
- Azalea Woods f.k.a. Wilson Moore (610 single-family detached houses)
- Vines at Sand Hill f.k.a. Sand Hill Valley / Sposato Property (393 single-family detached houses)
- Granary at Draper Farm (875 single-family detached houses, 475 units of multi-family mid-rise houses, and 60,000 square feet of retail space) - pending
- Prettyman Property (100 single-family detached houses) – pending

DelDOT also directed us to coordinate with the County on the status of these developments.

- Please confirm the number and type of residential units listed above for each development.
- If the developments are partially built, please provide us with the number of units or square footage remaining the be constructed. We only need to include projected traffic from the remaining units to be constructed.

If you have any questions, please do not hesitate to contact me. Thank you and have a great day!

Teresa Lord, PE, PTOE

Pennoni
121 Continental Drive, Suite 207 | Newark, DE 19713
Direct: +1 (302) 351-5232
www.pennoni.com | TLord@Pennoni.com

Project Feature: Society Self Storage

Teresa Lord

From: Lauren DeVore <lauren.devore@sussexcountyde.gov>
Sent: Tuesday, September 28, 2021 4:27 PM
To: Teresa Lord
Cc: Jamie Whitehouse; Alan M. Decktor
Subject: RE: Request for Development Information near Proposed Four Winds Farm Development on Shingle Point Road

Good Afternoon, Teresa,

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- Hawthorne F.K.A. Paradise Lakes & Landlock Acres (254 single-family detached houses (which includes the latest phase, Phase 6) – Hawthorne Phases 1-5 received Final Subdivision Plan approval from the P&Z Commission on 10/14/09. Hawthorne Phase 6 received Final Subdivision Plan approval from the P&Z Commission on 8/22/19.
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- Prettyman Property (100 single-family detached houses) – pending – I do not see this proposal listed in our Application Listing. Is it possible that it may have been submitted to us with additional lots and under an alternate name?

I hope that this helps in providing the further clarity needed.

Best Regards,

-Lauren

Lauren DeVore

Planner III
Department of Planning and Zoning
2 The Circle
P.O. Box 417
Georgetown, DE 19947

Tel: (302)855-7878
8:30AM - 4:30PM

For more information regarding upcoming development proposals and further Planning and Zoning matters, please see the **Sussex County Official Website.**

From: Jamie Whitehouse <jamie.whitehouse@sussexcountyde.gov>
Sent: Tuesday, September 28, 2021 2:12 PM
To: Lauren DeVore <lauren.devore@sussexcountyde.gov>
Subject: FW: Request for Development Information near Proposed Four Winds Farm Development on Shingle Point Road

Lauren, please could you assist.

Thank you,

Jamie

From: Teresa Lord <TLord@Pennoni.com>
Sent: Tuesday, September 28, 2021 2:02 PM
To: Jamie Whitehouse <jamie.whitehouse@sussexcountyde.gov>
Cc: Alan M. Decktor <ADecktor@Pennoni.com>
Subject: Request for Development Information near Proposed Four Winds Farm Development on Shingle Point Road

Good Afternoon Jamie,

Pennoni is completing a Traffic Impact Study (TIS) for the proposed Four Winds Farm Residential Development, to be located on the east side of Shingle Point Road (SR 249) in Sussex County, DE. We attended a TIS Scoping Meeting with DelDOT on August 19, 2021. As discussed, DelDOT requested that we include the following 3 developments in Sussex County as background traffic in our study:

- Hawthorne f.k.a. Paradise Lakes (213 single-family detached houses)
- Azalea Woods f.k.a. Wilson Moore (610 single-family detached houses)
- Vines at Sand Hill f.k.a. Sand Hill Valley / Sposato Property (393 single-family detached houses)
- Granary at Draper Farm (875 single-family detached houses, 475 units of multi-family mid-rise houses, and 60,000 square feet of retail space) - pending
- Prettyman Property (100 single-family detached houses) – pending

DelDOT also directed us to coordinate with the County on the status of these developments.

- Please confirm the number and type of residential units listed above for each development.
- If the developments are partially built, please provide us with the number of units or square footage remaining the be constructed. We only need to include projected traffic from the remaining units to be constructed.

If you have any questions, please do not hesitate to contact me. Thank you and have a great day!

Teresa Lord, PE, PTOE

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Direct: +1 (302) 351-5232
www.pennoni.com | TLord@Pennoni.com

Project Feature: Society Self Storage

Teresa Lord

From: Tom Quass <TQuass@ci.milton.de.us>
Sent: Tuesday, September 28, 2021 2:58 PM
To: Teresa Lord
Cc: Alan M. Decktor
Subject: RE: Request for Development Information near Proposed Four Winds Farm Development on Shingle Point Road

Ms. Lord,

- Please confirm the number and type of residential units listed above for each development.
  Heritage Creek Phase 1 – 58 detached single family homes (age restricted)
  Cypress Grove – 144 Multi-Family unit and 96 Stacked Townhouse Units, Commercial area is not defined yet, but will be placed on 2 areas that front route 16. Total area dedicated to commercial development is 4.546 acres.
- If the developments are partially built, please provide us with the number of units or square footage remaining the be constructed. We only need to include projected traffic from the remaining units to be constructed.
  The two subdivisions listed above do not have any units built thus far.

Regards

Tom Quass
Project Coordinator

Town of Milton
115 Federal Street
Milton, DE 19968
P: 302-684-4110
F: 302-684-8999

From: Teresa Lord [mailto:TLord@Pennoni.com]
Sent: Tuesday, 28 September, 2021 14:05
To: Tom Quass <TQuass@ci.milton.de.us>
Cc: Alan M. Decktor <ADecktor@Pennoni.com>
Subject: Request for Development Information near Proposed Four Winds Farm Development on Shingle Point Road

Good Afternoon Thomas,

Pennoni is completing a Traffic Impact Study (TIS) for the proposed Four Winds Farm Residential Development, to be located on the east side of Shingle Point Road (SR 249) in Sussex County, DE. We attended a TIS Scoping Meeting with

DelDOT on August 19, 2021. As discussed, DelDOT requested that we include the following 2 developments in the City of Milton as background traffic in our study:

- Heritage Creek 1 (58 age-restricted detached houses)
- Cypress Grove f.k.a. Clifton Property (71 units of low-rise multi-family housing, 168 units of mid-rise multi-family housing, and 20,000 square feet of retail space)

DelDOT also directed us to coordinate with the City on the status of these developments.

- Please confirm the number and type of residential units listed above for each development.
- If the developments are partially built, please provide us with the number of units or square footage remaining the be constructed. We only need to include projected traffic from the remaining units to be constructed.

If you have any questions, please do not hesitate to contact me. Thank you and have a great day!

Teresa Lord, PE, PTOE

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Project Feature: Society Self Storage

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

NICOLE MAJESKI
SECRETARY

MEMORANDUM

TO: File

FROM: Claudy Joinville, Project Engineer C.J.

DATE: September 24, 2021

SUBJECT: **Four Winds Farm**
Traffic Impact Study (TIS) – Scoping Meeting (08/19/21)
Scope of Work

ATTENDANCE: Mark Davidson, Pennoni Associates, Inc.
Alan Decktor, Pennoni Associates, Inc.
Teresa Lord, Pennoni Associates, Inc.
Derek Sapp, DelDOT Planning
T. William Brockenbrough, DelDOT Planning
Annamaria Furmato, DelDOT Planning
Claudy Joinville, DelDOT Planning

Background and Discussion

Ribera Development, LLC seeks to develop 336 single-family detached houses on an approximately 169.00-acre parcel (Tax Parcel: 235-25.00-39.00).

The land is located on the east side of Shingle Point Road (Sussex Road 249), approximately 1/3 of a mile northeast of Webb Road (Sussex Road 248A). The land is currently zoned as AR-1 (Agricultural Residential) in Sussex County, and the developer does not plan to rezone the land.

One full access point is proposed on Shingle Point Road. Construction is anticipated to be complete in 2030.

Cases to be Evaluated

The study shall evaluate the weekday morning, weekday evening, summer Saturday midday peak hours for the following situations:

1) Existing (2021);
2) 2030 without development and without other pending developments;
3) 2030 without development and with other pending developments; and
4) 2030 with development and without other pending developments;
5) 2030 with development and with other pending developments.

Facilities to be Evaluated

The TIS should evaluate conditions at the following intersections for capacity and level of service using the Highway Capacity Software (HCS). It should also evaluate the extent to which they meet the relevant DelDOT, AASHTO and MUTCD standards for geometry and traffic control devices.

1) Site Entrance / Shingle Point Road (Sussex Road 249)
2) Delaware Route 30 / Shingle Point Road
3) Shingle Point Road / Briarwood Road (Sussex Road 253)
4) US Route 9 / Shingle Point Road*
5) Delaware Route 30 / Prettyman Road (Sussex Road 254)
6) Pettyjohn Road / Prettyman Road
7) Delaware Route 5 / Shingle Point Road
8) Delaware Route 5 / Sand Hill Road (Sussex Road 319)
9) Delaware Route 5 / Mulberry Street / Atlanta Street (Sussex Road 88)

** Summer Saturday analysis is only required for Intersection 9.*

Incorrect. Should be Intersection 4.

Traffic Counts

The Consultant should conduct traffic counts for the intersections listed above from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m., on a Tuesday, Wednesday or Thursday, and from 10:00 a.m. to 2:00 p.m. on a Saturday to determine when the peaks occur. The Saturday counts should be conducted at a time when local area schools, as well as schools in the nearby metropolitan areas of Philadelphia, Baltimore, and Washington, D.C., are closed in June, July, or August.

Additionally, Automatic Traffic Recorder (ATR) should be used to collect traffic data on Shingle Point Road near the area of the proposed site entrance. The ATR should be placed for a one-week time period that includes the date(s) of the manual traffic counts. The ATR data will be used to verify the manual counts and determine whether adjustments are required.

Section 2.2.8.5, item 19, under Existing Traffic and Transportation Conditions in the Development Coordination Manual addresses how oversaturated intersections are to be counted.

The traffic counts should be submitted to DelDOT both electronically as Portable Document Format (PDF)/Excel files and as draft report figures showing peak hour volumes (labeled with date and peak hour interval) posted on diagrams of the road network.

The Consultant should include counts of pedestrians, a separate count of right-turn on red (in addition to right-turn movement counts), and a separate count of heavy vehicles.

The Consultant should be alert for events affecting the traffic counts, such as accidents or nearby construction and shall make note of any such events when submitting the counts. As necessary, DelDOT reserves the right to reject the counts or require adjustments to them.

Trip Generation

The Consultant shall use the 10th edition of the ITE Trip Generation Manual in generating trips for this development.

Trip Distributions

A trip distribution to be used for the site is attached.

Growth Factors

The Consultant shall apply growth factors to the traffic counts. DelDOT will develop those factors after we receive the Consultant's traffic counts.

The Consultant should also determine what portions of the following developments were complete at the time of any traffic counts to be used in the study and shall add in projected traffic from any unbuilt portions. The following information on the amount and types of development associated with these projects is tentative and should be verified with the Sussex County and the Town of Milton.

Other Committed Developments:

1) **Hawthorne f.k.a. Paradise Lakes** (213 single-family detached houses)
2) **Azalea Woods f.k.a. Wilson Moore** (610 single-family detached houses) – plan to include it in case it's approved before
3) **Heritage Creek 1** (58 age-restricted detached houses)
4) **Vines at Sand Hill f.k.a. Sand Hill Valley / Sposato Property** (393 single-family detached houses)
5) **Cypress Grove f.k.a. Clifton Property** (71 units of low-rise multi-family housing, 168 units of mid-rise multi-family housing, and 20,000 square feet of retail space)

Other Pending Developments:

6) **Granary at Draper Farm** (875 single-family detached houses, 475 units of multi-family mid-rise houses, and 60,000 square feet of retail space)
7) **Prettyman Property** (100 single-family detached houses)

Highway Capacity Software

The Consultant shall use the most recent version of the Highway Capacity Software (HCS) that implements the 6th Edition of the Highway Capacity Manual (HCM). Presently, that is HCS7.

Seasonal Adjustment Factors for the roads in the study area are as follows:

Roads	August	September	October
US Route 9 – TPG 8	0.77	0.92	1.09
Delaware Route 5 – TPG 3 (*north of Shingle Point Road)*	0.91	0.97	0.96
Delaware Route 5 – TPG 6 (*south of Shingle Point Road)*	0.87	0.88	0.99
Delaware Route 30 – TPG 6	0.87	0.88	0.99
Sand Hill Road (Sussex Road 319) – TPG 7	0.92	0.96	0.95
Mulberry Street (Sussex Road 197) – TPG 4	0.91	0.97	0.96
Atlantic Street (Sussex Road 88) – TPG 3	0.91	0.97	0.96
Shingle Point Road (Sussex Road 249) – TPG 7	0.92	0.96	0.95
Prettyman Road (Sussex Road 254) – TPG 7	0.92	0.96	0.95
All Other Roads	1.00	1.00	1.00

DelDOT Projects

Currently, there are no DelDOT projects within the study area.

DelDOT Studies

The **Coastal Corridors Study** aims to study the east-west travel patterns in Sussex County including, but not limited, Delaware Route 404. Initial efforts in the will identify the east-west routes/corridors in northwestern Sussex County that are currently congested or are at risk for congestion based on anticipated growth in the area. The study will focus on a number of factors including longer trips from the Chesapeake Bay Bridge to the Delaware beaches and Ocean City, Maryland, regional traffic between Maryland's Eastern Shore and Sussex County, and local east-west traffic within the northwestern part of Sussex County. Latest updates indicate that the study in the data collection / public outreach phase. Please visit the following link for the latest updates including a map of the corridors in the study: Coastal Corridors Study - Delaware Department of Transportation (deldot.gov). For more information on this study and affects the development, the Consultant shall contact Ms. Jennifer Cinelli-Miller, Transportation Planner in DelDOT's Regional Systems Planning Section. Ms. Cinelli-Miller may be reached at (302) 760-2549.

Transit, Bicycle, and Pedestrian Facilities

The study should describe the existing and proposed transit service in the project area and should also describe the existing and needed transit, bicycle, and pedestrian facilities on or near

the project site. In determining these items, the Consultant shall contact Mr. Jared Kauffman, a Service Development Planner at the Delaware Transit Corporation (DTC), and Mr. Anthony Aglio, of DelDOT's Local Systems Section. Mr. Kauffman may be reached at (302) 576-6062. Mr. Aglio may be reached at (302) 760-2509.

General Notes

1) All submissions relating to this study should be made electronically via the Planning and Development Coordination Application (PDCA), preferably in Portable Document Format (PDF).

2) The Consultant should e-mail DelDOT's Transportation Management Center (TMC) at tmc1@delaware.gov to obtain advance approval for the use of any signal timings.

3) The Consultant should refer to the attached memorandum from Scott Neidert of DelDOT's Traffic Section for guidance regarding requests for crash data within the study area. The Consultant shall report on this data and make recommendations for improvements if safety problems exist in the study area. Mr. Neidert may be reached at (302) 659-4075.

4) Before deploying temporary unmanned devices, e.g. cameras, radar detectors, or tube counters, in the State maintained right-of-way, the individual or company proposing to do so shall execute and file a Right-of-Way Use Agreement. Before each specific deployment of devices, the individual or company shall email a completed Temporary Data Collection Device Notification Form to TMC1@delaware.gov. Copies of the standard agreement and the form are available from Peter Haag at (302) 659-4084 or Peter.Haag@delaware.gov.

5) Both DelDOT and the Sussex County reserve the right to change this scope of work if the study is not performed within a reasonable time.

6) The developer may choose to have DelDOT's Consultant perform the TIS rather than use their own Consultant. If this option is of interest, the developer should contact Mr. Troy Brestel at (302) 760-2167 to request a cost estimate.

7) By copy of this memorandum I ask those copied to contact me at (302) 760-2124 regarding any significant errors or omissions.

CJ:cjm
Enclosures
cc: Jamie Whitehouse, Director, Sussex County Planning and Zoning
John Stamato, Ribera Development, LLC
Pam Steinebach, Director, DelDOT Planning
Todd Sammons, Assistant Director, Development Coordination
Michael Simmons, Assistant Director for Project Development South, DOTS
Peter Haag, Chief Traffic Engineer, Traffic, DOTS
Chris Sylvester, Traffic Studies Engineer, DOTS
Alastair Probert, South District Engineer, DOTS

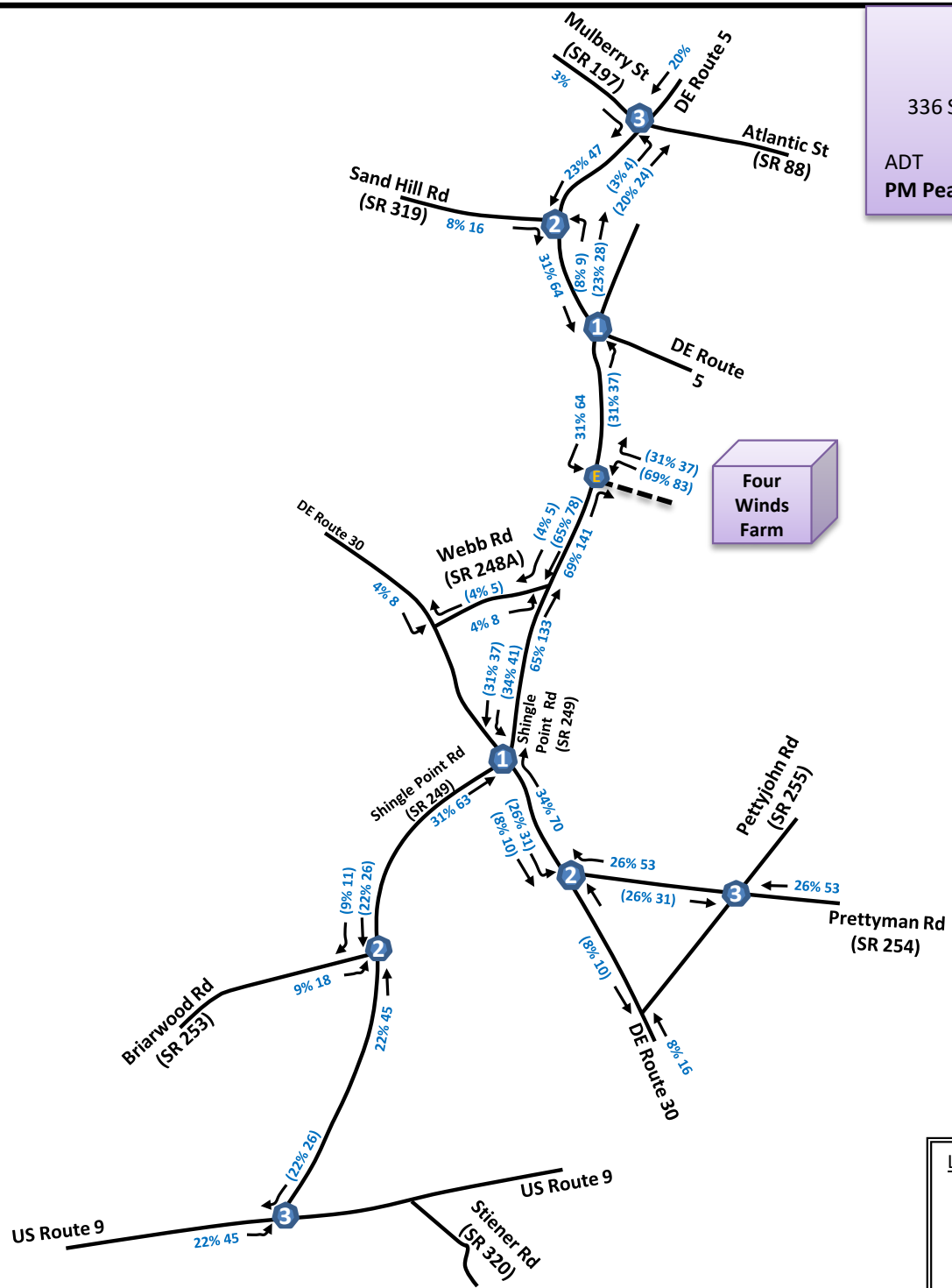
Matt Schlitter, South District Public Works Engineer, Maintenance & Operations
Scott Rust, South District Public Works Supervisor, Maintenance & Operations
James Satterfield, Regional Group Engineer, Project Development South, DOTS
Steve McCabe, Sussex County Review Coordinator, Development Coordination
William Kirsch, South District Permit Supervisor, DOTS
Mark Whiteside, Project Manager in the Project Development – South, DOTS
Olayiwola Okesola, Kent County Review Coordinator, Development Coordination
Mark Galipo, Traffic Engineer, DelDOT Traffic, DOTS
Troy Brestel, Project Manager, Development Coordination
David Dooley, Service Development Planner, Delaware Transit Corporation
Anthony Aglio, Statewide & Regional Planning
Jennifer Cinelli-Miller, Transportation Planner, Regional Systems Planning Section
Scott Neidert, Design Resource Engineer, Traffic Section
Jared Kauffman, Service Development Planner, Delaware Transit Corporation
Kari Glanden, Statistical Information Supervisor, DelDOT Traffic, DOTS
James Argo, South District Project Reviewer, Maintenance & Operations
Andrew Parker, McCormick & Taylor, Inc.
Mir Wahed, Johnson, Mirmiran, & Thompson, Inc.

Weekday Peak Hour
Distribution / Assignments
September 24, 2021

Four Winds Farm

Trip Generation
336 Single-Family Units (ITE 10th Ed. LUC 210)

	Total	IN	OUT
ADT	3,171	1,382	1,382
PM Peak	**325**	**205**	**120**



Note: Figure Not Drawn to Scale

Legend
- State-maintained road
- Site Entrance
- Traffic lost / gained before intersections
- State-maintained Intersections
- XX Inbound Trips
- (XX) Outbound Trips

DelDOT

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

TO: Requestors of Crash Data via DelDOT's Development Coordination Process

FROM: Scott Neidert, Design Resource Engineer, Traffic Section

DATE: **September 5, 2019**

SUBJECT: **Revisions to Crash Data Requests and Releases**

As of July 23, 2019, Governor Carney has signed SB 147 into law containing amendments to the release of crash data, namely permitting DelDOT to release certain de-identified data based on the nature of the requestor. Specifically, newly enacted 21 *Del. C.* §313(c)(1) provides that:

"The Department of Transportation may provide the information under this subsection if the person requesting the information provides proof of identity and a sworn representation that the data will be strictly used for any of the following purposes:

a. To comply with federal, State, or local law or regulations.
b. By a municipality or municipal planning organization in carrying out official functions."

To conform with the "proof of identity and… sworn representation…" clause, requestors will be required to complete an online crash data request as well as provide a notarized release form to be submitted with each crash request prior to being processed. A link to the release form is provided within the online crash request.

Effective immediately, all requests for crash data, when required, must be made at: *https://tmc.deldot.gov/tmcx/app/crashdata/public/info.html*

Requests for crash data will not be processed until all required fields are completed, and the release form has been completed and received.

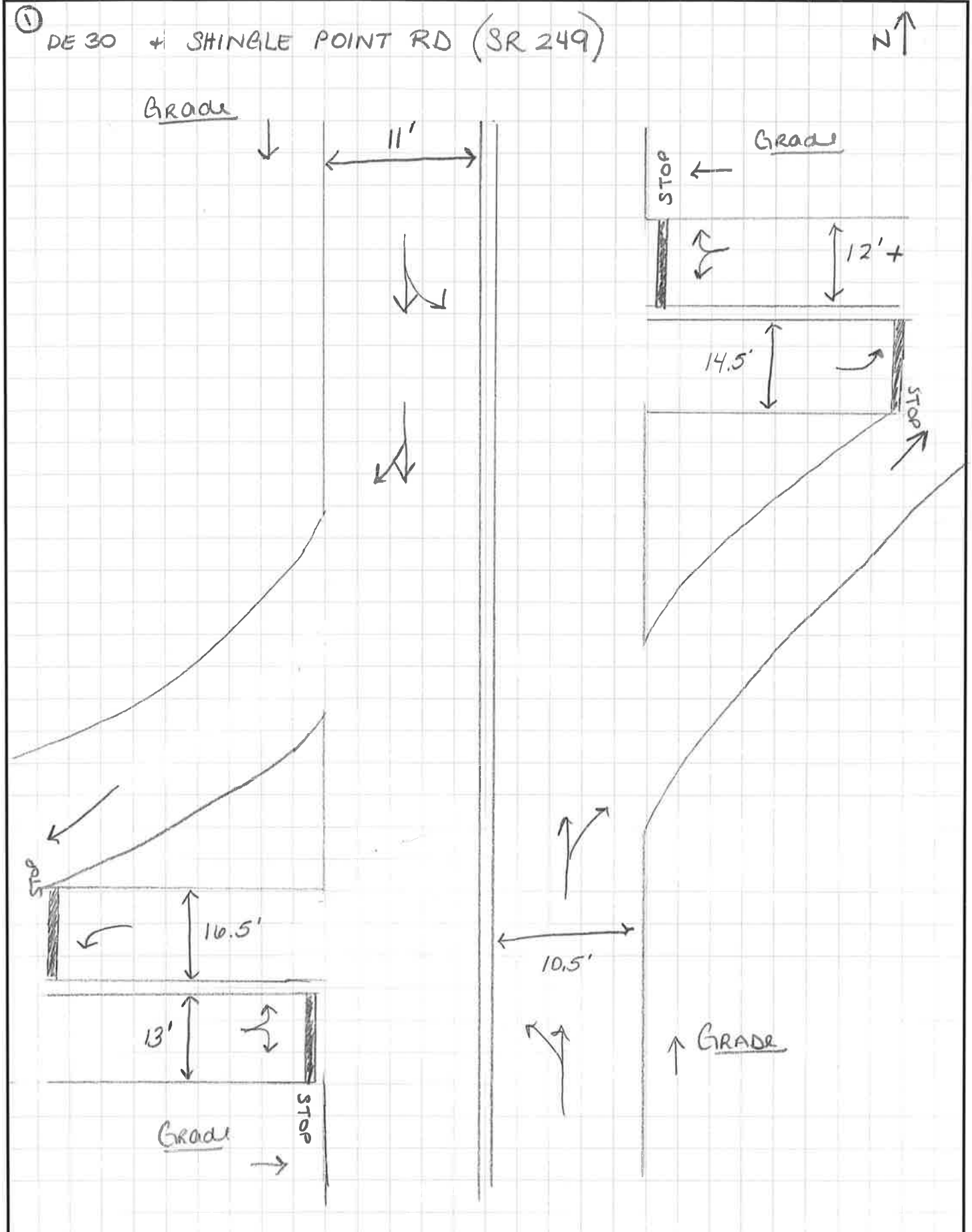
SN
cc: Nicole Majeski, Deputy Secretary
Shanté Hastings, Chief Engineer
Drew Boyce, Director, Planning
Annie Cordo, Deputy Attorney General
Mark Luszcz, Deputy Director, Division of Transportation Solutions
Kari Glanden Thompson, Statistical Information Supervisor, Traffic Section

Appendix B

Intersection Sketches and Photographs

Pennoni	JOB NO.	21001
	SHEET 1 OF 8	DATE
PROJECT Four Winds Farm	BY:	
SUBJECT Intersection Sketches	CHK'D	

① DE 30 + SHINGLE POINT RD (SR 249)



FORM NO. 42

1_Delaware Route 30 and Shingle Point Road (SR 249)
Eastbound Shingle Point Road (SR 249) Approach

1_Delaware Route 30 and Shingle Point Road (SR 249)
Westbound Shingle Point Road (SR 249) Approach

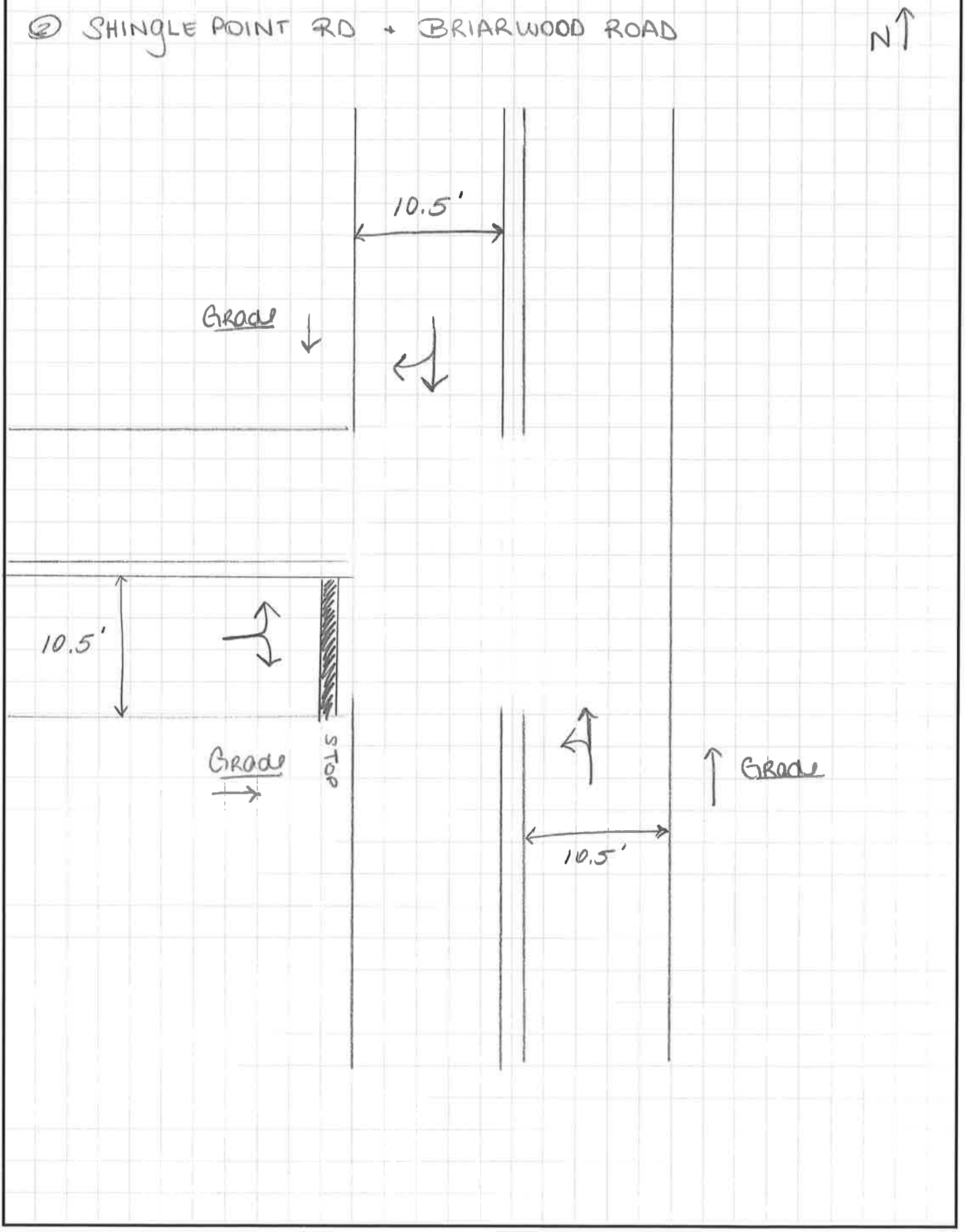
1_Delaware Route 30 and Shingle Point Road (SR 249)
Northbound Delaware Route 30 Approach

1_Delaware Route 30 and Shingle Point Road (SR 249)
Southbound Delaware Route 30 Approach

Pennoni

PROJECT FOUR WINDS FARM	JOB NO.	R1BER21001
	SHEET 2 OF 8	DATE
SUBJECT INTERSECTION SKETCHES	BY:	
	CHK'D	

② SHINGLE POINT RD + BRIARWOOD ROAD



FORM NO. 42

2_Shingle Point Road (SR 249) and Briarwood Road (SR 253)
Eastbound Briarwood Road (SR 253) Approach

2_Shingle Point Road (SR 249) and Briarwood Road (SR 253)
Northbound Shingle Point Road (SR 249) Approach

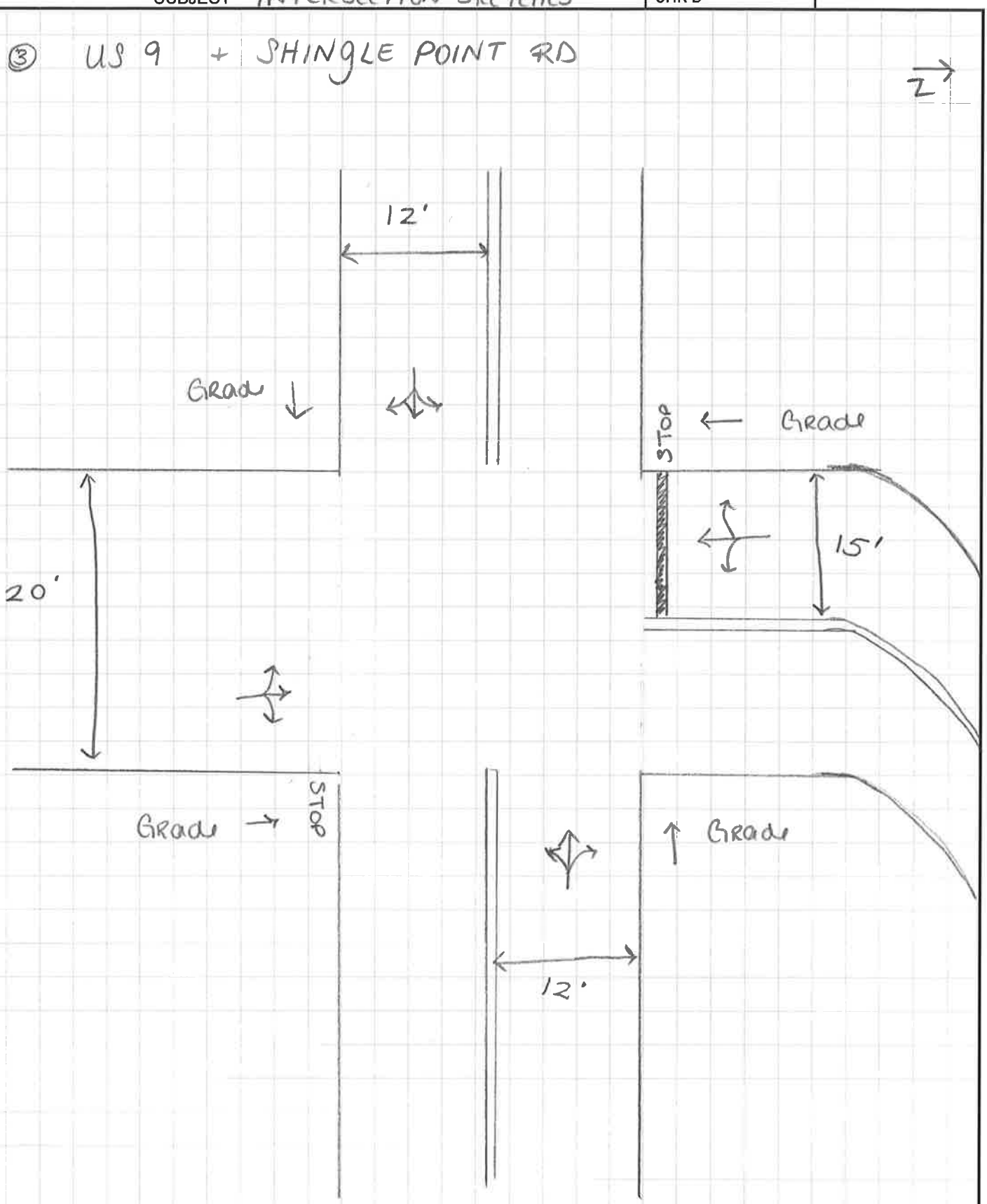
2_Shingle Point Road (SR 249) and Briarwood Road (SR 253)
Southbound Shingle Point Road (SR 249) Approach

Pennoni

JOB NO.	RIBER 21001
SHEET 3 OF 8	DATE
BY:	
CHK'D	

PROJECT FOUR WINDS FARM

SUBJECT INTERSECTION SKETCHES



FORM NO. 42

3_US Route 9 and Shingle Point Road (SR 249)
Eastbound US Route 9 Approach

3_US Route 9 and Shingle Point Road (SR 249)
Westbound US Route 9 Approach

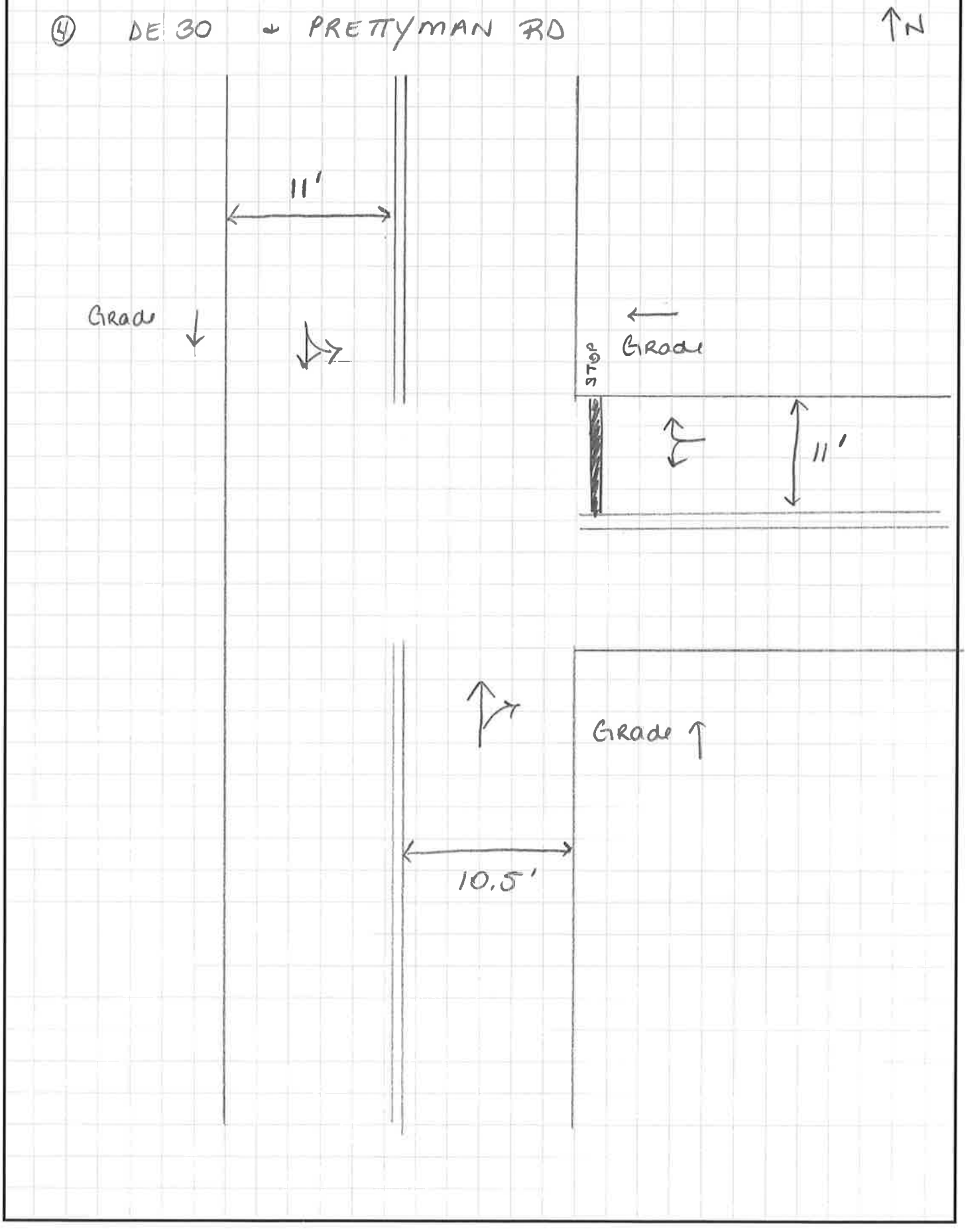
3_US Route 9 and Shingle Point Road (SR 249)
Northbound French Road Approach

3_US Route 9 and Shingle Point Road (SR 249)
Southbound Shingle Point Road (SR 249) Approach

Pennoni

PROJECT	FOUR WINDS FARM	JOB NO.	RIBER 21601
SUBJECT	INTERSECTION SKETCHES	SHEET 4 OF 8	DATE
		BY:	
		CHK'D	

④ DE 30 & PRETTYMAN RD



FORM NO. 42

4_Delaware Route 30 and Prettyman Road (SR 254)
Westbound Prettyman Road (SR 254) Approach

4_Delaware Route 30 and Prettyman Road (SR 254)
Northbound DE Route 30 Approach

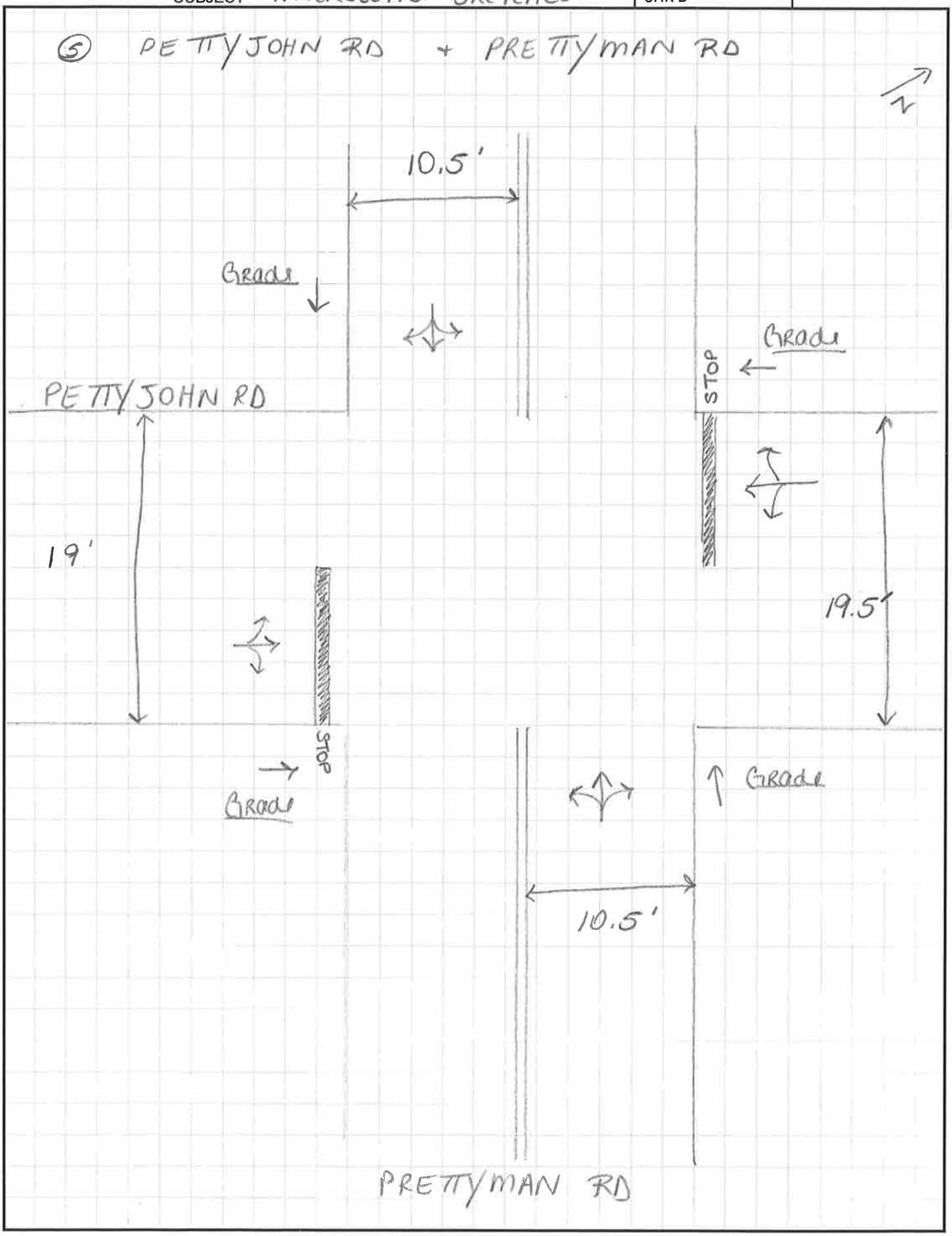
4_Delaware Route 30 and Prettyman Road (SR 254)
Southbound DE Route 30 Approach

Pennoni

JOB NO.	RIBER 21001
SHEET 5 OF 8	DATE
BY:	
CHK'D	

PROJECT FOUR WINDS FARM

SUBJECT INTERSECTION SKETCHES



FORM NO. 42

5_Pettyjohn Road (SR 255) and Prettyman Road (SR 254)
Eastbound Prettyman Road (SR 254) Approach

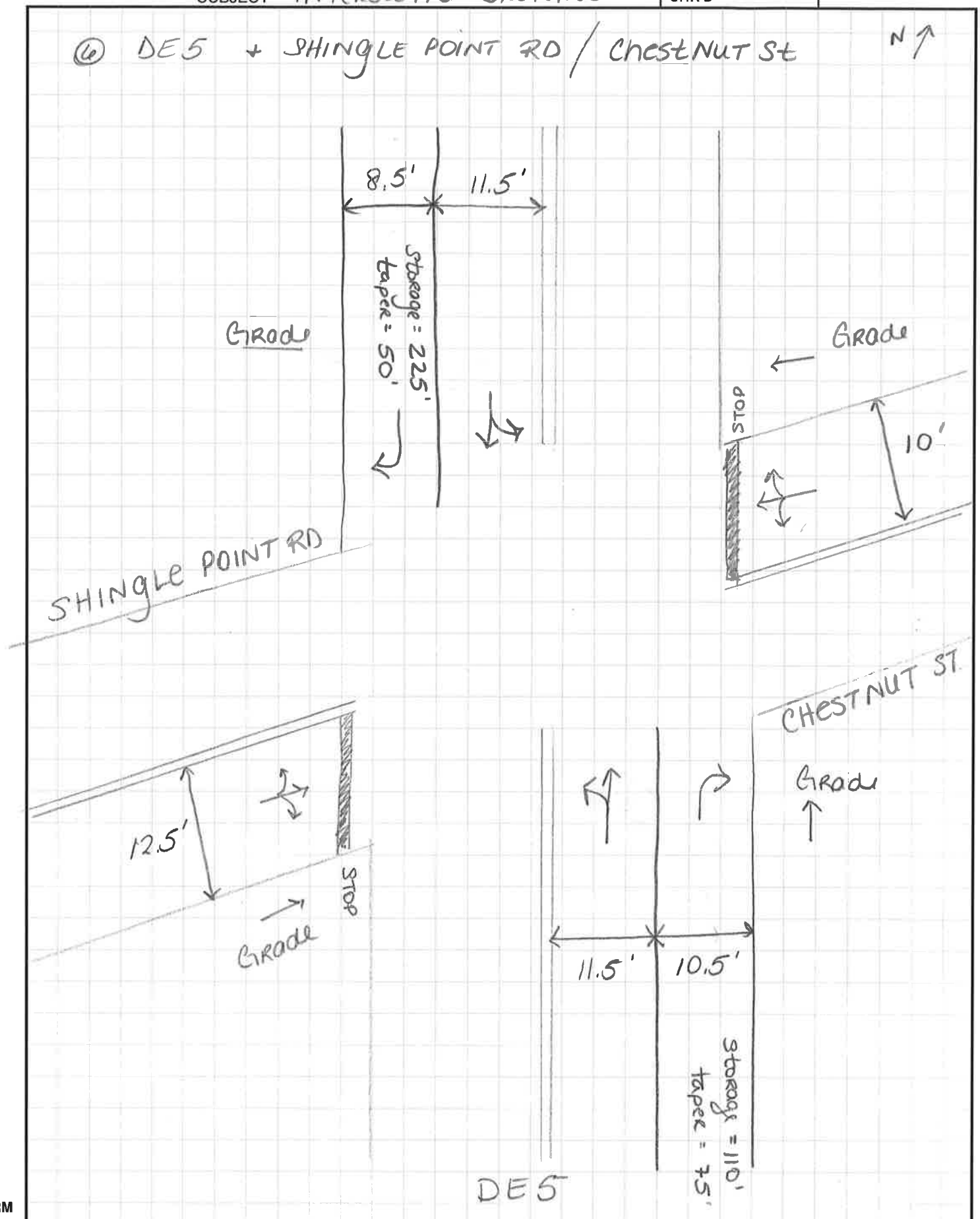
5_Pettyjohn Road (SR 255) and Prettyman Road (SR 254)
Westbound Prettyman Road (SR 254) Approach

5_Pettyjohn Road (SR 255) and Prettyman Road (SR 254)
Northbound Pettyjohn Road (SR 255) Approach

5_Pettyjohn Road (SR 255) and Prettyman Road (SR 254)
Southbound Pettyjohn Road (SR 255) Approach

Pennoni

PROJECT FOUR WINDS FARM	JOB NO.	RIBER 21001
	SHEET 6 OF 8	DATE
SUBJECT INTERSECTION SKETCHES	BY:	
	CHK'D	



FORM NO. 42

6_Delaware Route 5 and Shingle Point Road (SR 249)
Eastbound Shingle Point Road (SR 249) Approach

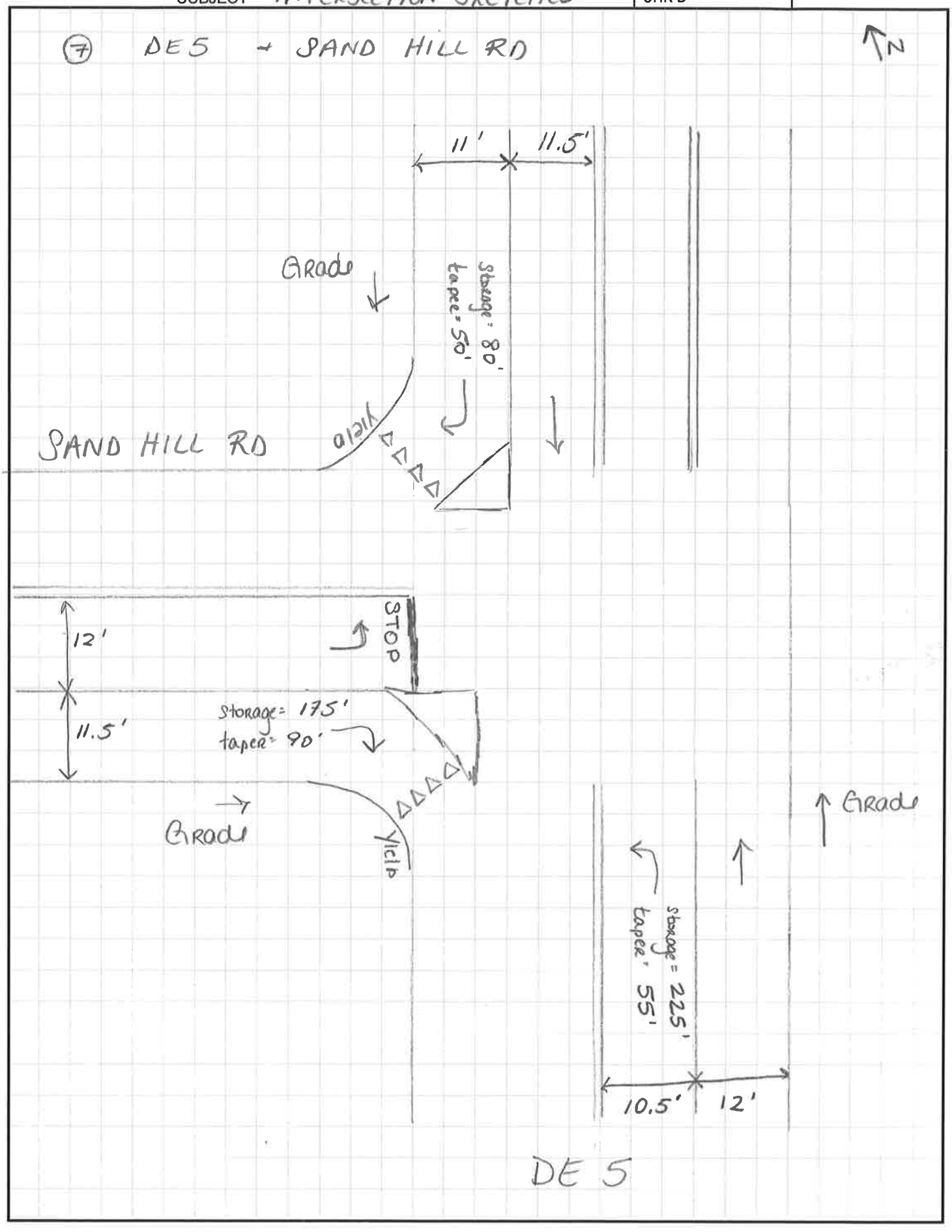
6_Delaware Route 5 and Shingle Point Road (SR 249)
Westbound Shingle Point Road (SR 249) Approach

6_Delaware Route 5 and Shingle Point Road (SR 249)
Northbound DE Route 5 Approach

6_Delaware Route 5 and Shingle Point Road (SR 249)
Southbound DE Route 5 Approach

Pennoni

PROJECT	FOUR WINDS FARM	JOB NO.	RIBER 21001
SUBJECT	INTERSECTION SKETCHES	SHEET 7 OF 8	DATE
		BY:	
		CHK'D	



FORM NO. 42

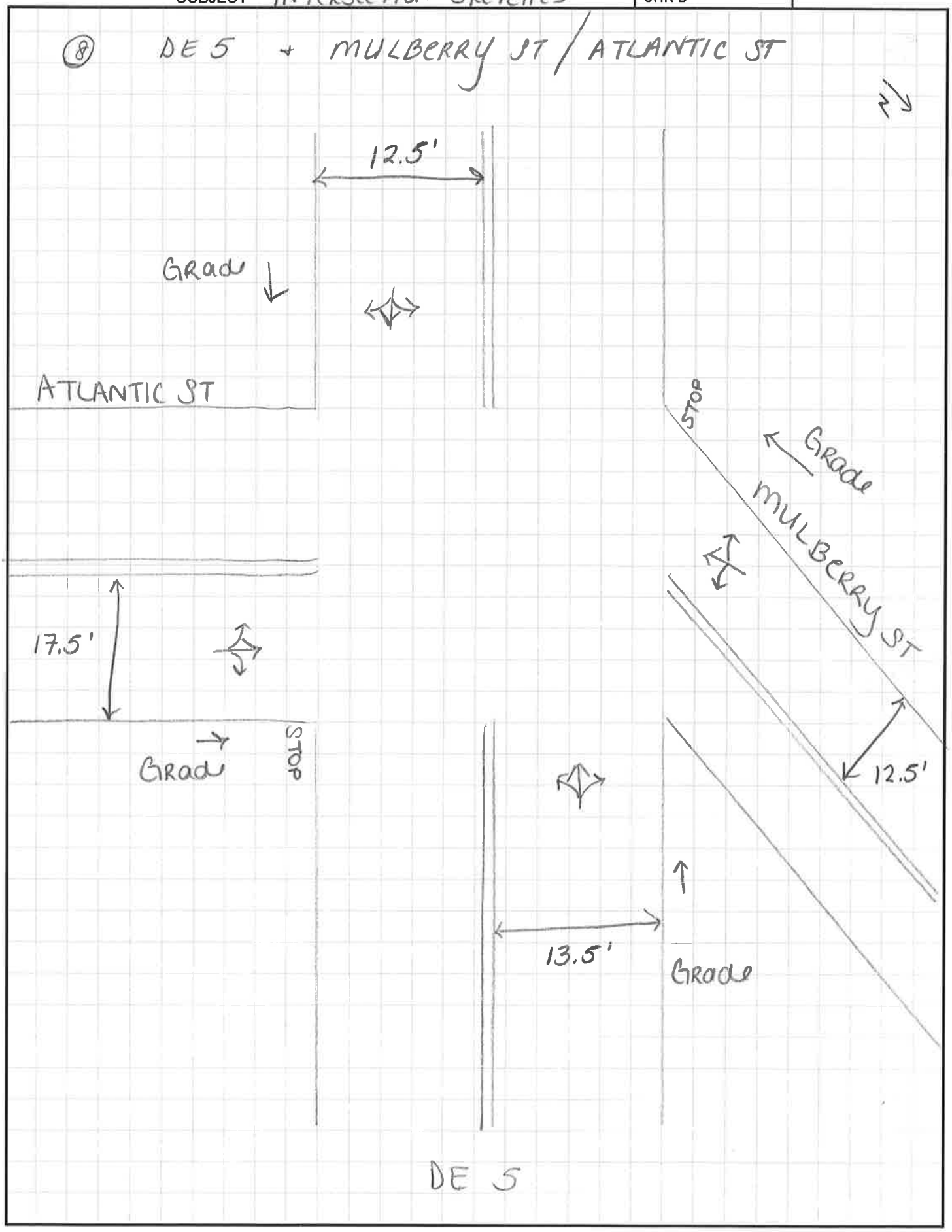
7_ Delaware Route 5 and Sand Hill Road (SR 319)
Eastbound Sand Hill Road (SR 319) Approach

7_ Delaware Route 5 and Sand Hill Road (SR 319)
Northbound DE Route 5 Approach

7_ Delaware Route 5 and Sand Hill Road (SR 319)
Southbound DE Route 5 Approach

Pennoni

PROJECT FOUR WINDS FARM	JOB NO.	RIBER 21001
	SHEET 8 OF 8	DATE
SUBJECT INTERSECTION SKETCHES	BY:	
	CHK'D	



FORM NO. 42

8_Delaware Route 5 and Mulberry Street (SR 197) / Atlantic Street (SR 88)
Eastbound Mulberry Street (SR 197) Approach

8_Delaware Route 5 and Mulberry Street (SR 197) / Atlantic Street (SR 88)
Westbound Atlantic Street (SR 88) Approach

8_Delaware Route 5 and Mulberry Street (SR 197) / Atlantic Street (SR 88)
Northbound DE Route 5 Approach

8_Delaware Route 5 and Mulberry Street (SR 197) / Atlantic Street (SR 88)
Southbound DE Route 5 Approach

Appendix C

Manual Turning Movement (MTMs)

Traffic Count Data

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.735396, -75.323935

Count Name: 1. DE Route 30 & Shingle Point Road
Site Code: 1
Start Date: 10/05/2021

Turning Movement Data

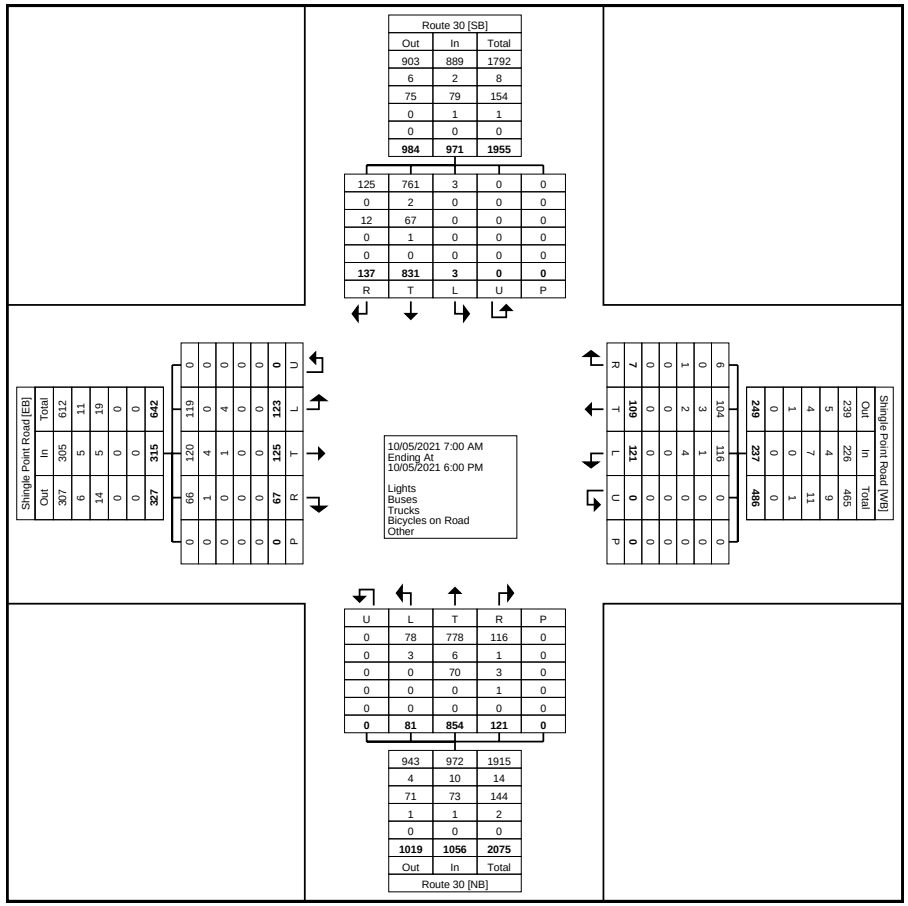
Start Time	Shingle Point Road Eastbound						Shingle Point Road Westbound						Route 30 Northbound						Route 30 Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	6	9	2	0	17	0	11	6	0	0	17	0	0	35	6	0	41	0	0	62	7	0	69	144
7:15 AM	0	4	6	5	0	15	0	8	7	0	0	15	0	3	55	7	0	65	0	0	59	15	0	74	169
7:30 AM	0	4	7	7	0	18	0	14	7	0	0	21	0	8	43	8	0	59	0	0	75	15	0	90	188
7:45 AM	0	6	12	5	0	23	0	8	5	1	0	14	0	9	70	10	0	89	0	0	73	19	0	92	218
Hourly Total	0	20	34	19	0	73	0	41	25	1	0	67	0	20	203	31	0	254	0	0	269	56	0	325	719
8:00 AM	0	8	14	4	0	26	0	9	10	0	0	19	0	2	48	10	0	60	0	0	57	4	0	61	166
8:15 AM	0	10	10	6	0	26	0	7	5	0	0	12	0	3	39	9	0	51	0	1	59	9	0	69	158
8:30 AM	0	7	11	6	0	24	0	4	2	1	0	7	0	3	43	8	0	54	0	0	54	7	0	61	146
8:45 AM	0	2	2	3	0	7	0	7	9	1	0	17	0	5	25	6	0	36	0	0	27	12	0	39	99
Hourly Total	0	27	37	19	0	83	0	27	26	2	0	55	0	13	155	33	0	201	0	1	197	32	0	230	569
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	12	6	1	0	19	0	7	15	1	0	23	0	1	66	6	0	73	0	0	34	10	0	44	159
4:15 PM	0	7	8	2	0	17	0	11	9	0	0	20	0	8	71	8	0	87	0	0	73	8	0	81	205
4:30 PM	0	12	8	4	0	24	0	9	7	1	0	17	0	8	67	6	0	81	0	0	51	4	0	55	177
4:45 PM	0	9	7	6	0	22	0	6	5	1	0	12	0	7	59	7	0	73	0	1	56	10	0	67	174
Hourly Total	0	40	29	13	0	82	0	33	36	3	0	72	0	24	263	27	0	314	0	1	214	32	0	247	715
5:00 PM	0	14	12	5	0	31	0	4	6	1	0	11	0	6	63	4	0	73	0	0	50	8	0	58	173
5:15 PM	0	12	6	2	0	20	0	3	7	0	0	10	0	5	68	11	0	84	0	0	38	7	0	45	159
5:30 PM	0	3	5	4	0	12	0	6	6	0	0	12	0	7	54	6	0	67	0	1	28	1	0	30	121
5:45 PM	0	7	2	5	0	14	0	7	3	0	0	10	0	6	48	9	0	63	0	0	35	1	0	36	123
Hourly Total	0	36	25	16	0	77	0	20	22	1	0	43	0	24	233	30	0	287	0	1	151	17	0	169	576
Grand Total	0	123	125	67	0	315	0	121	109	7	0	237	0	81	854	121	0	1056	0	3	831	137	0	971	2579
Approach %	0.0	39.0	39.7	21.3	-	-	0.0	51.1	46.0	3.0	-	-	0.0	7.7	80.9	11.5	-	-	0.0	0.3	85.6	14.1	-	-	-
Total %	0.0	4.8	4.8	2.6	-	12.2	0.0	4.7	4.2	0.3	-	9.2	0.0	3.1	33.1	4.7	-	40.9	0.0	0.1	32.2	5.3	-	37.7	-
Lights	0	119	120	66	-	305	0	116	104	6	-	226	0	78	778	116	-	972	0	3	761	125	-	889	2392
% Lights	-	96.7	96.0	98.5	-	96.8	-	95.9	95.4	85.7	-	95.4	-	96.3	91.1	95.9	-	92.0	-	100.0	91.6	91.2	-	91.6	92.7
Buses	0	0	4	1	-	5	0	1	3	0	-	4	0	3	6	1	-	10	0	0	2	0	-	2	21
% Buses	-	0.0	3.2	1.5	-	1.6	-	0.8	2.8	0.0	-	1.7	-	3.7	0.7	0.8	-	0.9	-	0.0	0.2	0.0	-	0.2	0.8
Trucks	0	4	1	0	-	5	0	4	2	1	-	7	0	0	70	3	-	73	0	0	67	12	-	79	164
% Trucks	-	3.3	0.8	0.0	-	1.6	-	3.3	1.8	14.3	-	3.0	-	0.0	8.2	2.5	-	6.9	-	0.0	8.1	8.8	-	8.1	6.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	1	-	1	0	0	1	0	-	1	2
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.8	-	0.1	-	0.0	0.1	0.0	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.735396, -75.323935

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Count Name: 1. DE Route 30 & Shingle Point Road
Site Code: 1
Start Date: 10/05/2021



Turning Movement Data Plot

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.735396, -75.323935

Count Name: 1. DE Route 30 & Shingle Point Road
Site Code: 1
Start Date: 10/05/2021

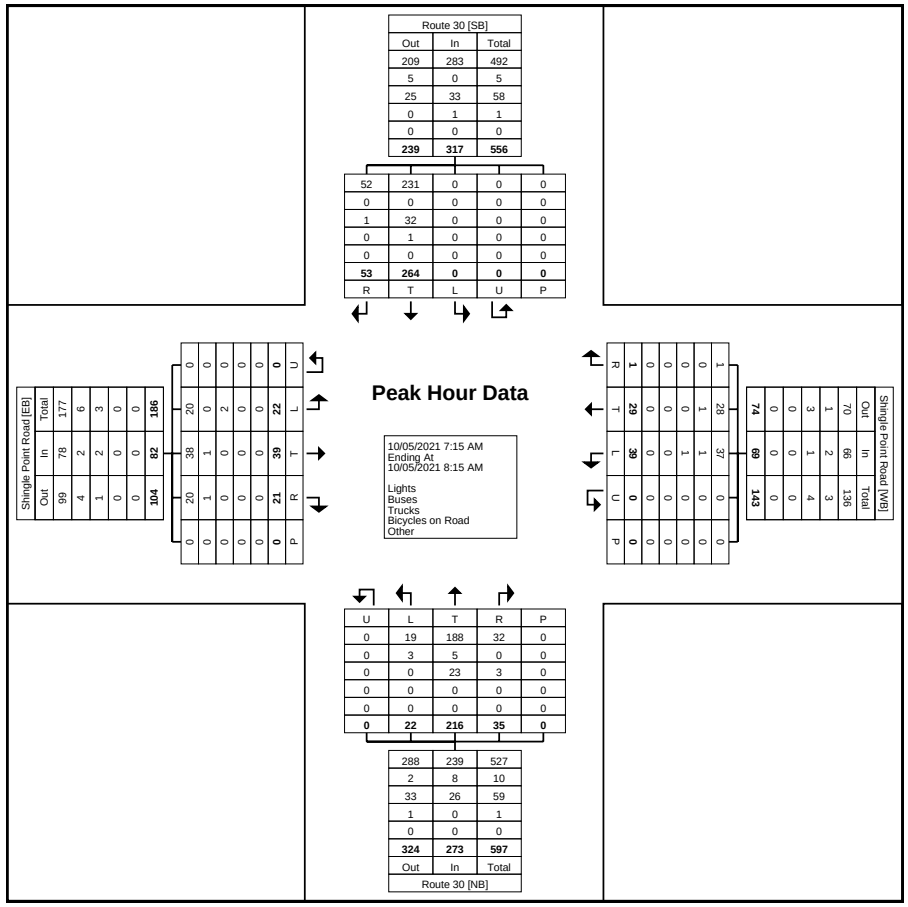
Turning Movement Peak Hour Data (7:15 AM)

Start Time	Shingle Point Road Eastbound						Shingle Point Road Westbound						Route 30 Northbound						Route 30 Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:15 AM	0	4	6	5	0	15	0	8	7	0	0	15	0	3	55	7	0	65	0	0	59	15	0	74	169
7:30 AM	0	4	7	7	0	18	0	14	7	0	0	21	0	8	43	8	0	59	0	0	75	15	0	90	188
7:45 AM	0	6	12	5	0	23	0	8	5	1	0	14	0	9	70	10	0	89	0	0	73	19	0	92	218
8:00 AM	0	8	14	4	0	26	0	9	10	0	0	19	0	2	48	10	0	60	0	0	57	4	0	61	166
Total	0	22	39	21	0	82	0	39	29	1	0	69	0	22	216	35	0	273	0	0	264	53	0	317	741
Approach %	0.0	26.8	47.6	25.6	-	-	0.0	56.5	42.0	1.4	-	-	0.0	8.1	79.1	12.8	-	-	0.0	0.0	83.3	16.7	-	-	-
Total %	0.0	3.0	5.3	2.8	-	11.1	0.0	5.3	3.9	0.1	-	9.3	0.0	3.0	29.1	4.7	-	36.8	0.0	0.0	35.6	7.2	-	42.8	-
PHF	0.000	0.688	0.696	0.750	-	0.788	0.000	0.696	0.725	0.250	-	0.821	0.000	0.611	0.771	0.875	-	0.767	0.000	0.000	0.880	0.697	-	0.861	0.850
Lights	0	20	38	20	-	78	0	37	28	1	-	66	0	19	188	32	-	239	0	0	231	52	-	283	666
% Lights	-	90.9	97.4	95.2	-	95.1	-	94.9	96.6	100.0	-	95.7	-	86.4	87.0	91.4	-	87.5	-	-	87.5	98.1	-	89.3	89.9
Buses	0	0	1	1	-	2	0	1	1	0	-	2	0	3	5	0	-	8	0	0	0	0	-	0	12
% Buses	-	0.0	2.6	4.8	-	2.4	-	2.6	3.4	0.0	-	2.9	-	13.6	2.3	0.0	-	2.9	-	-	0.0	0.0	-	0.0	1.6
Trucks	0	2	0	0	-	2	0	1	0	0	-	1	0	0	23	3	-	26	0	0	32	1	-	33	62
% Trucks	-	9.1	0.0	0.0	-	2.4	-	2.6	0.0	0.0	-	1.4	-	0.0	10.6	8.6	-	9.5	-	-	12.1	1.9	-	10.4	8.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	1
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	-	0.4	0.0	-	0.3	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.735396, -75.323935

Count Name: 1. DE Route 30 & Shingle Point Road
Site Code: 1
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (7:15 AM)

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.735396, -75.323935

Count Name: 1. DE Route 30 & Shingle Point Road
Site Code: 1
Start Date: 10/05/2021

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Shingle Point Road Eastbound						Shingle Point Road Westbound						Route 30 Northbound						Route 30 Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:15 PM	0	7	8	2	0	17	0	11	9	0	0	20	0	8	71	8	0	87	0	0	73	8	0	81	205
4:30 PM	0	12	8	4	0	24	0	9	7	1	0	17	0	8	67	6	0	81	0	0	51	4	0	55	177
4:45 PM	0	9	7	6	0	22	0	6	5	1	0	12	0	7	59	7	0	73	0	1	56	10	0	67	174
5:00 PM	0	14	12	5	0	31	0	4	6	1	0	11	0	6	63	4	0	73	0	0	50	8	0	58	173
Total	0	42	35	17	0	94	0	30	27	3	0	60	0	29	260	25	0	314	0	1	230	30	0	261	729
Approach %	0.0	44.7	37.2	18.1	-	-	0.0	50.0	45.0	5.0	-	-	0.0	9.2	82.8	8.0	-	-	0.0	0.4	88.1	11.5	-	-	-
Total %	0.0	5.8	4.8	2.3	-	12.9	0.0	4.1	3.7	0.4	-	8.2	0.0	4.0	35.7	3.4	-	43.1	0.0	0.1	31.6	4.1	-	35.8	-
PHF	0.000	0.750	0.729	0.708	-	0.758	0.000	0.682	0.750	0.750	-	0.750	0.000	0.906	0.915	0.781	-	0.902	0.000	0.250	0.788	0.750	-	0.806	0.889
Lights	0	41	34	17	-	92	0	30	24	2	-	56	0	29	248	24	-	301	0	1	220	27	-	248	697
% Lights	-	97.6	97.1	100.0	-	97.9	-	100.0	88.9	66.7	-	93.3	-	100.0	95.4	96.0	-	95.9	-	100.0	95.7	90.0	-	95.0	95.6
Buses	0	0	1	0	-	1	0	0	2	0	-	2	0	0	1	1	-	2	0	0	0	0	-	0	5
% Buses	-	0.0	2.9	0.0	-	1.1	-	0.0	7.4	0.0	-	3.3	-	0.0	0.4	4.0	-	0.6	-	0.0	0.0	0.0	-	0.0	0.7
Trucks	0	1	0	0	-	1	0	0	1	1	-	2	0	0	11	0	-	11	0	0	10	3	-	13	27
% Trucks	-	2.4	0.0	0.0	-	1.1	-	0.0	3.7	33.3	-	3.3	-	0.0	4.2	0.0	-	3.5	-	0.0	4.3	10.0	-	5.0	3.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Imperial Traffic & Data Collection
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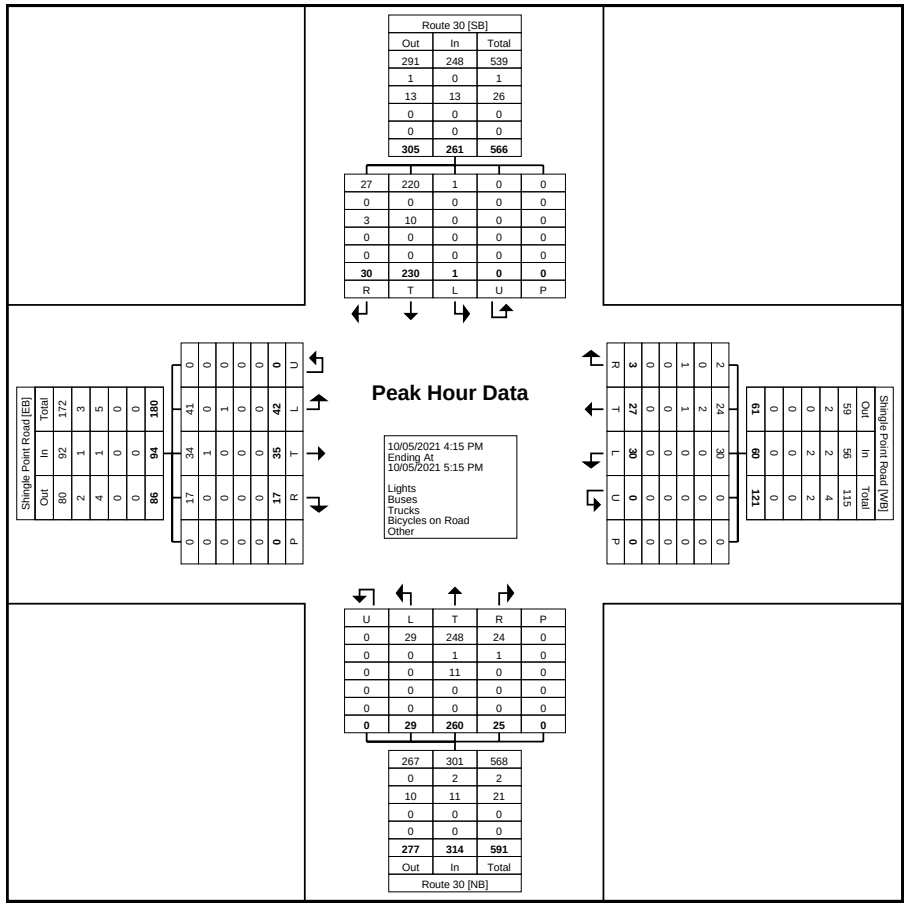
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.735396, -75.323935

Count Name: 1. DE Route 30 & Shingle Point Road
Site Code: 1
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (4:15 PM)

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609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.71926, -75.336408

Count Name: 2. Shingle Point Road & Briarwood Road
Site Code: 2
Start Date: 10/05/2021

Turning Movement Data

Start Time	Briarwood Road Eastbound					Shingle Point Road Northbound					Shingle Point Road Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	Int. Total
7:00 AM	0	2	6	0	8	0	1	14	0	15	0	14	0	0	14	37
7:15 AM	0	4	7	0	11	0	3	9	0	12	0	19	1	0	20	43
7:30 AM	0	5	7	0	12	0	4	14	0	18	0	20	8	0	28	58
7:45 AM	0	4	10	0	14	0	9	20	0	29	0	30	4	0	34	77
Hourly Total	0	15	30	0	45	0	17	57	0	74	0	83	13	0	96	215
8:00 AM	0	4	11	0	15	0	5	18	0	23	0	13	5	0	18	56
8:15 AM	0	3	10	0	13	0	5	22	0	27	0	15	2	0	17	57
8:30 AM	0	2	3	0	5	0	4	16	0	20	0	10	2	0	12	37
8:45 AM	0	2	4	0	6	0	3	4	0	7	0	21	5	0	26	39
Hourly Total	0	11	28	0	39	0	17	60	0	77	0	59	14	0	73	189
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	2	0	2	0	7	16	0	23	0	21	1	0	22	47
4:15 PM	0	3	5	0	8	0	9	14	0	23	0	16	6	0	22	53
4:30 PM	0	2	1	0	3	0	5	26	0	31	0	9	7	0	16	50
4:45 PM	0	7	5	0	12	0	4	14	0	18	0	14	5	0	19	49
Hourly Total	0	12	13	0	25	0	25	70	0	95	0	60	19	0	79	199
5:00 PM	0	3	5	0	8	0	6	23	0	29	0	14	3	0	17	54
5:15 PM	0	0	1	0	1	0	6	12	0	18	0	19	4	0	23	42
5:30 PM	0	0	0	0	0	1	6	9	0	16	1	5	1	0	7	23
5:45 PM	0	4	2	0	6	0	2	8	0	10	0	5	5	0	10	26
Hourly Total	0	7	8	0	15	1	20	52	0	73	1	43	13	0	57	145
Grand Total	0	45	79	0	124	1	79	239	0	319	1	245	59	0	305	748
Approach %	0.0	36.3	63.7	-	-	0.3	24.8	74.9	-	-	0.3	80.3	19.3	-	-	-
Total %	0.0	6.0	10.6	-	16.6	0.1	10.6	32.0	-	42.6	0.1	32.8	7.9	-	40.8	-
Lights	0	44	77	-	121	1	73	230	-	304	1	227	57	-	285	710
% Lights	-	97.8	97.5	-	97.6	100.0	92.4	96.2	-	95.3	100.0	92.7	96.6	-	93.4	94.9
Buses	0	1	2	-	3	0	4	3	-	7	0	4	2	-	6	16
% Buses	-	2.2	2.5	-	2.4	0.0	5.1	1.3	-	2.2	0.0	1.6	3.4	-	2.0	2.1
Trucks	0	0	0	-	0	0	2	6	-	8	0	14	0	-	14	22
% Trucks	-	0.0	0.0	-	0.0	0.0	2.5	2.5	-	2.5	0.0	5.7	0.0	-	4.6	2.9
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Imperial Traffic & Data Collection
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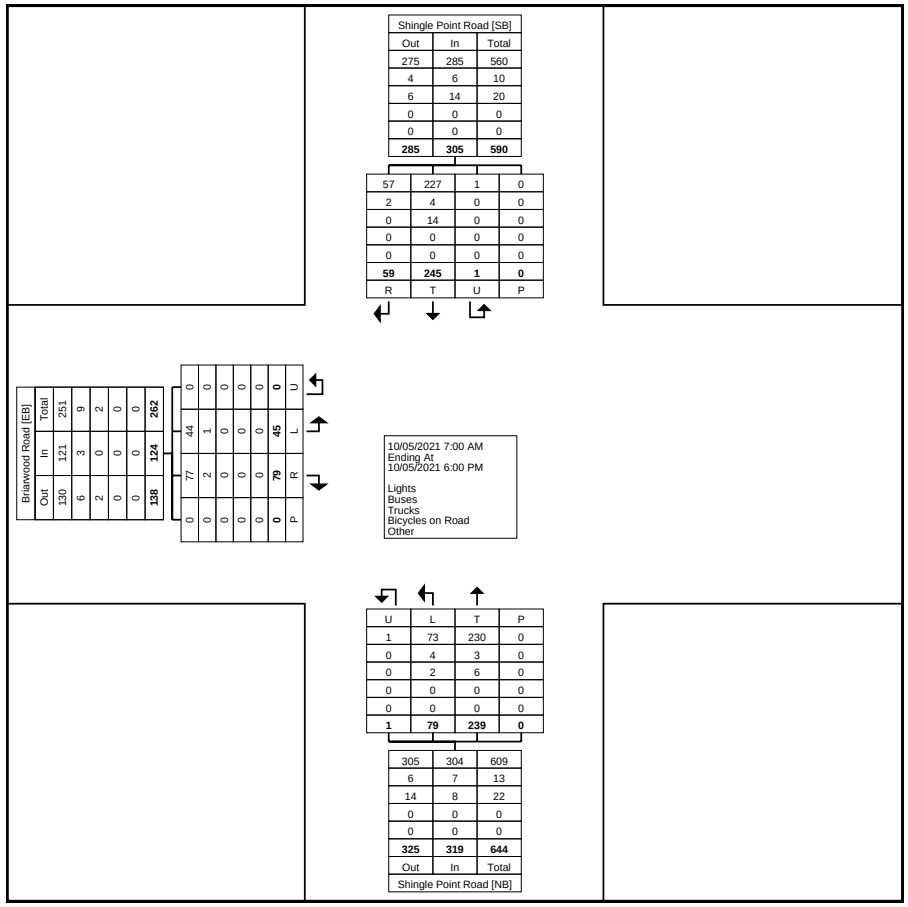
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.71926, -75.336408

Count Name: 2. Shingle Point Road & Briarwood Road
Site Code: 2
Start Date: 10/05/2021



Turning Movement Data Plot

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.71926, -75.336408

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Count Name: 2. Shingle Point Road & Briarwood Road
Site Code: 2
Start Date: 10/05/2021

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Briarwood Road Eastbound					Shingle Point Road Northbound					Shingle Point Road Southbound					Int. Total
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	
7:30 AM	0	5	7	0	12	0	4	14	0	18	0	20	8	0	28	58
7:45 AM	0	4	10	0	14	0	9	20	0	29	0	30	4	0	34	77
8:00 AM	0	4	11	0	15	0	5	18	0	23	0	13	5	0	18	56
8:15 AM	0	3	10	0	13	0	5	22	0	27	0	15	2	0	17	57
Total	0	16	38	0	54	0	23	74	0	97	0	78	19	0	97	248
Approach %	0.0	29.6	70.4	-	-	0.0	23.7	76.3	-	-	0.0	80.4	19.6	-	-	-
Total %	0.0	6.5	15.3	-	21.8	0.0	9.3	29.8	-	39.1	0.0	31.5	7.7	-	39.1	-
PHF	0.000	0.800	0.864	-	0.900	0.000	0.639	0.841	-	0.836	0.000	0.650	0.594	-	0.713	0.805
Lights	0	16	37	-	53	0	19	71	-	90	0	74	17	-	91	234
% Lights	-	100.0	97.4	-	98.1	-	82.6	95.9	-	92.8	-	94.9	89.5	-	93.8	94.4
Buses	0	0	1	-	1	0	3	1	-	4	0	2	2	-	4	9
% Buses	-	0.0	2.6	-	1.9	-	13.0	1.4	-	4.1	-	2.6	10.5	-	4.1	3.6
Trucks	0	0	0	-	0	0	1	2	-	3	0	2	0	-	2	5
% Trucks	-	0.0	0.0	-	0.0	-	4.3	2.7	-	3.1	-	2.6	0.0	-	2.1	2.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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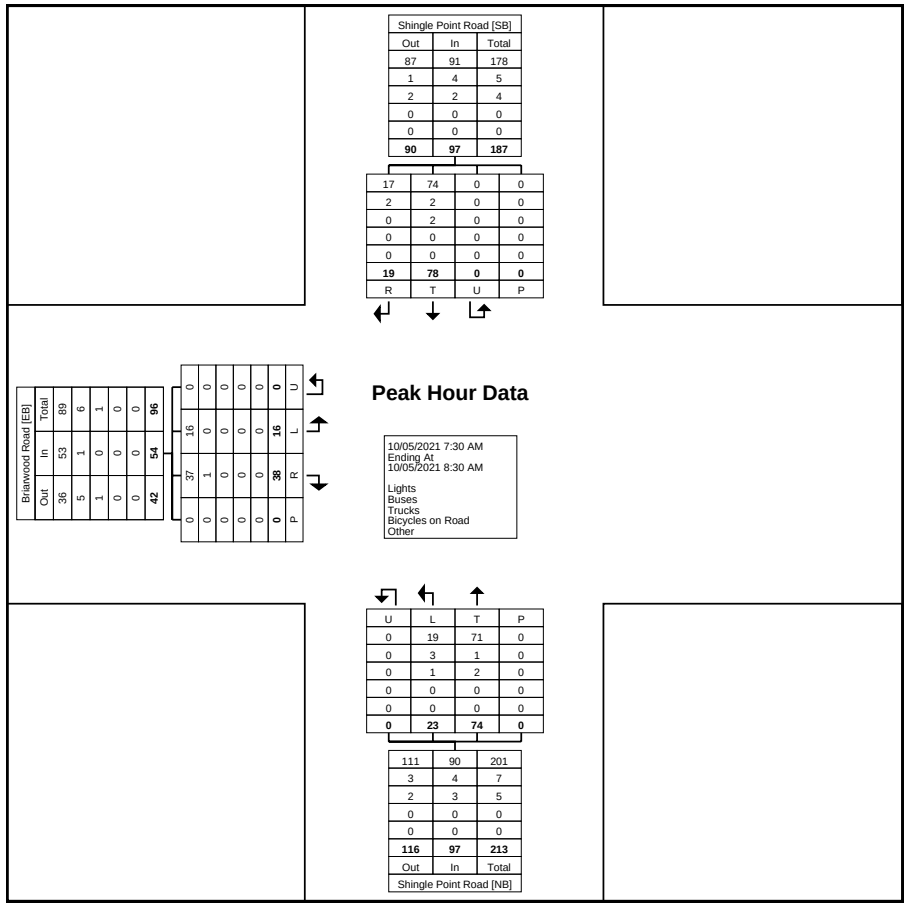
Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.71926, -75.336408

Count Name: 2. Shingle Point Road & Briarwood Road
Site Code: 2
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (7:30 AM)

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.71926, -75.336408

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Count Name: 2. Shingle Point Road & Briarwood Road
Site Code: 2
Start Date: 10/05/2021

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Briarwood Road Eastbound					Shingle Point Road Northbound					Shingle Point Road Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	Int. Total
4:15 PM	0	3	5	0	8	0	9	14	0	23	0	16	6	0	22	53
4:30 PM	0	2	1	0	3	0	5	26	0	31	0	9	7	0	16	50
4:45 PM	0	7	5	0	12	0	4	14	0	18	0	14	5	0	19	49
5:00 PM	0	3	5	0	8	0	6	23	0	29	0	14	3	0	17	54
Total	0	15	16	0	31	0	24	77	0	101	0	53	21	0	74	206
Approach %	0.0	48.4	51.6	-	-	0.0	23.8	76.2	-	-	0.0	71.6	28.4	-	-	-
Total %	0.0	7.3	7.8	-	15.0	0.0	11.7	37.4	-	49.0	0.0	25.7	10.2	-	35.9	-
PHF	0.000	0.536	0.800	-	0.646	0.000	0.667	0.740	-	0.815	0.000	0.828	0.750	-	0.841	0.954
Lights	0	15	15	-	30	0	24	75	-	99	0	48	21	-	69	198
% Lights	-	100.0	93.8	-	96.8	-	100.0	97.4	-	98.0	-	90.6	100.0	-	93.2	96.1
Buses	0	0	1	-	1	0	0	1	-	1	0	1	0	-	1	3
% Buses	-	0.0	6.3	-	3.2	-	0.0	1.3	-	1.0	-	1.9	0.0	-	1.4	1.5
Trucks	0	0	0	-	0	0	0	1	-	1	0	4	0	-	4	5
% Trucks	-	0.0	0.0	-	0.0	-	0.0	1.3	-	1.0	-	7.5	0.0	-	5.4	2.4
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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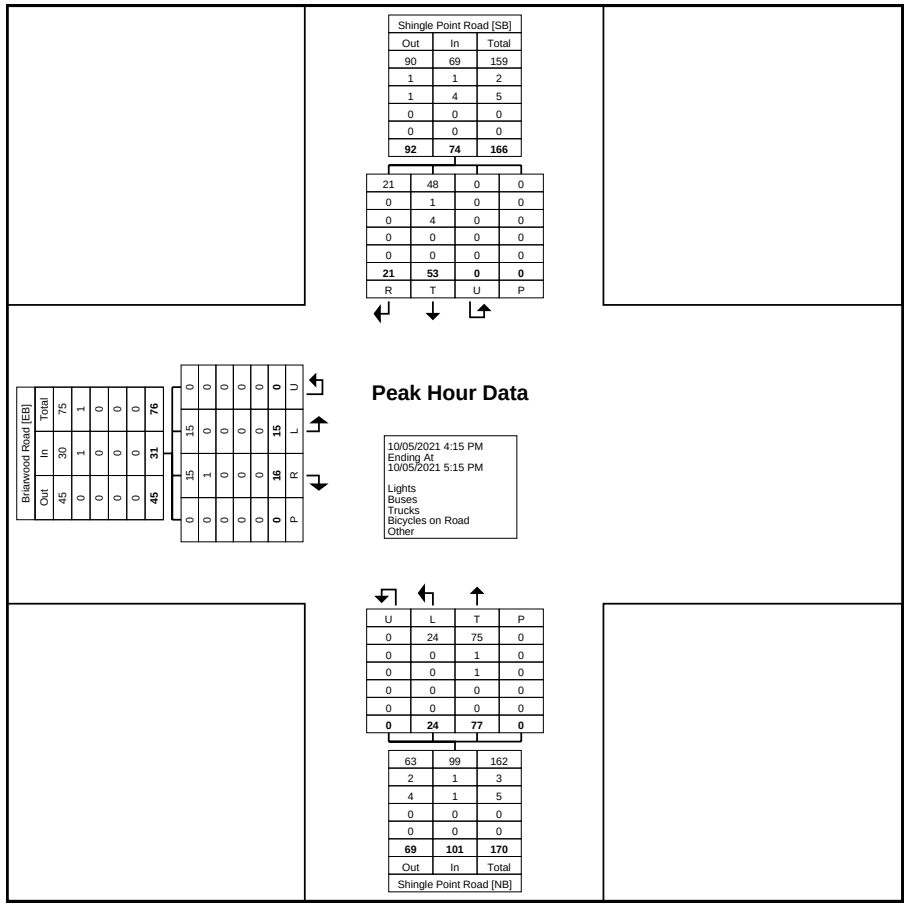
Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.71926, -75.336408

Count Name: 2. Shingle Point Road & Briarwood Road
Site Code: 2
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (4:15 PM)

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Project: Shingle Point
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.707651, -75.339309

Count Name: 3. US Route 9 & Shingle Point Road
Site Code: 3
Start Date: 10/05/2021

Turning Movement Data

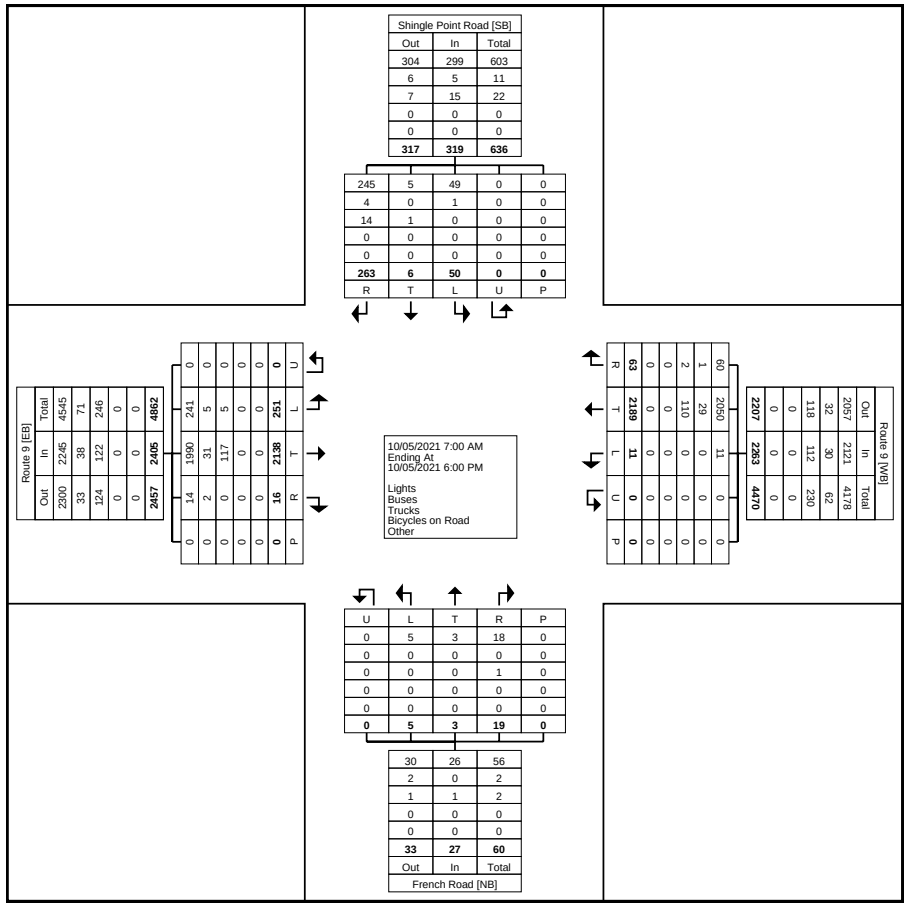
Start Time	Route 9 Eastbound						Route 9 Westbound						French Road Northbound						Shingle Point Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	13	151	1	0	165	0	0	99	0	0	99	0	1	1	2	0	4	0	3	0	15	0	18	286
7:15 AM	0	10	164	1	0	175	0	0	134	3	0	137	0	0	0	4	0	4	0	5	1	17	0	23	339
7:30 AM	0	14	137	0	0	151	0	0	165	1	0	166	0	0	0	1	0	1	0	2	0	25	0	27	345
7:45 AM	0	19	137	0	0	156	0	0	170	7	0	177	0	0	0	0	0	0	0	8	0	30	0	38	371
Hourly Total	0	56	589	2	0	647	0	0	568	11	0	579	0	1	1	7	0	9	0	18	1	87	0	106	1341
8:00 AM	0	23	119	2	0	144	0	0	118	4	0	122	0	1	1	3	0	5	0	6	0	14	0	20	291
8:15 AM	0	24	151	2	0	177	0	0	105	2	0	107	0	0	0	0	0	0	0	7	0	16	0	23	307
8:30 AM	0	15	126	1	0	142	0	0	118	4	0	122	0	0	0	1	0	1	0	2	1	14	0	17	282
8:45 AM	0	3	121	0	0	124	0	1	115	0	0	116	0	0	0	2	0	2	0	3	0	20	0	23	265
Hourly Total	0	65	517	5	0	587	0	1	456	10	0	467	0	1	1	6	0	8	0	18	1	64	0	83	1145
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	15	121	3	0	139	0	3	160	10	0	173	0	1	0	1	0	2	0	3	1	21	0	25	339
4:15 PM	0	14	167	0	0	181	0	1	159	10	0	170	0	0	1	2	0	3	0	3	2	17	0	22	376
4:30 PM	0	30	138	2	0	170	0	0	146	1	0	147	0	0	0	2	0	2	0	1	0	10	0	11	330
4:45 PM	0	15	143	0	0	158	0	1	156	5	0	162	0	0	0	1	0	1	0	5	1	15	0	21	342
Hourly Total	0	74	569	5	0	648	0	5	621	26	0	652	0	1	1	6	0	8	0	12	4	63	0	79	1387
5:00 PM	0	21	131	0	0	152	0	1	152	7	0	160	0	0	0	0	0	0	0	1	0	16	0	17	329
5:15 PM	0	15	101	0	0	116	0	0	138	4	0	142	0	0	0	0	0	0	0	1	0	18	0	19	277
5:30 PM	0	12	119	2	0	133	0	3	146	5	0	154	0	0	0	0	0	0	0	0	0	6	0	6	293
5:45 PM	0	8	112	2	0	122	0	1	108	0	0	109	0	2	0	0	0	2	0	0	0	9	0	9	242
Hourly Total	0	56	463	4	0	523	0	5	544	16	0	565	0	2	0	0	0	2	0	2	0	49	0	51	1141
Grand Total	0	251	2138	16	0	2405	0	11	2189	63	0	2263	0	5	3	19	0	27	0	50	6	263	0	319	5014
Approach %	0.0	10.4	88.9	0.7	-	-	0.0	0.5	96.7	2.8	-	-	0.0	18.5	11.1	70.4	-	-	0.0	15.7	1.9	82.4	-	-	-
Total %	0.0	5.0	42.6	0.3	-	48.0	0.0	0.2	43.7	1.3	-	45.1	0.0	0.1	0.1	0.4	-	0.5	0.0	1.0	0.1	5.2	-	6.4	-
Lights	0	241	1990	14	-	2245	0	11	2050	60	-	2121	0	5	3	18	-	26	0	49	5	245	-	299	4691
% Lights	-	96.0	93.1	87.5	-	93.3	-	100.0	93.7	95.2	-	93.7	-	100.0	100.0	94.7	-	96.3	-	98.0	83.3	93.2	-	93.7	93.6
Buses	0	5	31	2	-	38	0	0	29	1	-	30	0	0	0	0	-	0	0	1	0	4	-	5	73
% Buses	-	2.0	1.4	12.5	-	1.6	-	0.0	1.3	1.6	-	1.3	-	0.0	0.0	0.0	-	0.0	-	2.0	0.0	1.5	-	1.6	1.5
Trucks	0	5	117	0	-	122	0	0	110	2	-	112	0	0	0	1	-	1	0	0	1	14	-	15	250
% Trucks	-	2.0	5.5	0.0	-	5.1	-	0.0	5.0	3.2	-	4.9	-	0.0	0.0	5.3	-	3.7	-	0.0	16.7	5.3	-	4.7	5.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.707651, -75.339309

Count Name: 3. US Route 9 & Shingle Point Road
Site Code: 3
Start Date: 10/05/2021
Page No: 3



Turning Movement Data Plot

Project: Shingle Point
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.707651, -75.339309

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www.imperialtdc.com
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609-706-6100 lklein@imperialtdc.com

Count Name: 3. US Route 9 & Shingle Point Road
Site Code: 3
Start Date: 10/05/2021

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Route 9 Eastbound						Route 9 Westbound						French Road Northbound						Shingle Point Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:15 AM	0	10	164	1	0	175	0	0	134	3	0	137	0	0	0	4	0	4	0	5	1	17	0	23	339
7:30 AM	0	14	137	0	0	151	0	0	165	1	0	166	0	0	0	1	0	1	0	2	0	25	0	27	345
7:45 AM	0	19	137	0	0	156	0	0	170	7	0	177	0	0	0	0	0	0	0	8	0	30	0	38	371
8:00 AM	0	23	119	2	0	144	0	0	118	4	0	122	0	1	1	3	0	5	0	6	0	14	0	20	291
Total	0	66	557	3	0	626	0	0	587	15	0	602	0	1	1	8	0	10	0	21	1	86	0	108	1346
Approach %	0.0	10.5	89.0	0.5	-	-	0.0	0.0	97.5	2.5	-	-	0.0	10.0	10.0	80.0	-	-	0.0	19.4	0.9	79.6	-	-	-
Total %	0.0	4.9	41.4	0.2	-	46.5	0.0	0.0	43.6	1.1	-	44.7	0.0	0.1	0.1	0.6	-	0.7	0.0	1.6	0.1	6.4	-	8.0	-
PHF	0.000	0.717	0.849	0.375	-	0.894	0.000	0.000	0.863	0.536	-	0.850	0.000	0.250	0.250	0.500	-	0.500	0.000	0.656	0.250	0.717	-	0.711	0.907
Lights	0	62	503	2	-	567	0	0	539	13	-	552	0	1	1	7	-	9	0	21	1	83	-	105	1233
% Lights	-	93.9	90.3	66.7	-	90.6	-	-	91.8	86.7	-	91.7	-	100.0	100.0	87.5	-	90.0	-	100.0	100.0	96.5	-	97.2	91.6
Buses	0	2	6	1	-	9	0	0	13	1	-	14	0	0	0	0	-	0	0	0	0	1	-	1	24
% Buses	-	3.0	1.1	33.3	-	1.4	-	-	2.2	6.7	-	2.3	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	1.2	-	0.9	1.8
Trucks	0	2	48	0	-	50	0	0	35	1	-	36	0	0	0	1	-	1	0	0	0	2	-	2	89
% Trucks	-	3.0	8.6	0.0	-	8.0	-	-	6.0	6.7	-	6.0	-	0.0	0.0	12.5	-	10.0	-	0.0	0.0	2.3	-	1.9	6.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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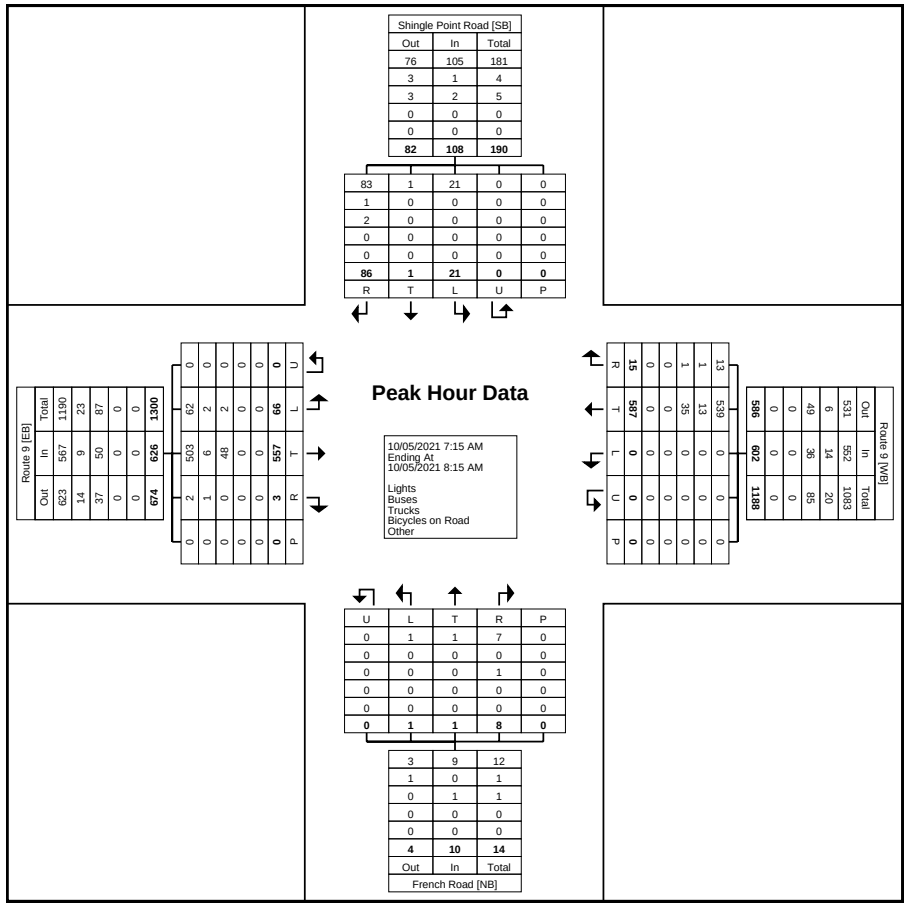
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.707651, -75.339309

Count Name: 3. US Route 9 & Shingle Point Road
Site Code: 3
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (7:15 AM)

Project: Shingle Point
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.707651, -75.339309

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Count Name: 3. US Route 9 & Shingle Point Road
Site Code: 3
Start Date: 10/05/2021

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Route 9 Eastbound						Route 9 Westbound						French Road Northbound						Shingle Point Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:00 PM	0	15	121	3	0	139	0	3	160	10	0	173	0	1	0	1	0	2	0	3	1	21	0	25	339
4:15 PM	0	14	167	0	0	181	0	1	159	10	0	170	0	0	1	2	0	3	0	3	2	17	0	22	376
4:30 PM	0	30	138	2	0	170	0	0	146	1	0	147	0	0	0	2	0	2	0	1	0	10	0	11	330
4:45 PM	0	15	143	0	0	158	0	1	156	5	0	162	0	0	0	1	0	1	0	5	1	15	0	21	342
Total	0	74	569	5	0	648	0	5	621	26	0	652	0	1	1	6	0	8	0	12	4	63	0	79	1387
Approach %	0.0	11.4	87.8	0.8	-	-	0.0	0.8	95.2	4.0	-	-	0.0	12.5	12.5	75.0	-	-	0.0	15.2	5.1	79.7	-	-	-
Total %	0.0	5.3	41.0	0.4	-	46.7	0.0	0.4	44.8	1.9	-	47.0	0.0	0.1	0.1	0.4	-	0.6	0.0	0.9	0.3	4.5	-	5.7	-
PHF	0.000	0.617	0.852	0.417	-	0.895	0.000	0.417	0.970	0.650	-	0.942	0.000	0.250	0.250	0.750	-	0.667	0.000	0.600	0.500	0.750	-	0.790	0.922
Lights	0	73	549	4	-	626	0	5	592	26	-	623	0	1	1	6	-	8	0	12	3	59	-	74	1331
% Lights	-	98.6	96.5	80.0	-	96.6	-	100.0	95.3	100.0	-	95.6	-	100.0	100.0	100.0	-	100.0	-	100.0	75.0	93.7	-	93.7	96.0
Buses	0	0	7	1	-	8	0	0	3	0	-	3	0	0	0	0	-	0	0	0	0	2	-	2	13
% Buses	-	0.0	1.2	20.0	-	1.2	-	0.0	0.5	0.0	-	0.5	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	3.2	-	2.5	0.9
Trucks	0	1	13	0	-	14	0	0	26	0	-	26	0	0	0	0	-	0	0	0	1	2	-	3	43
% Trucks	-	1.4	2.3	0.0	-	2.2	-	0.0	4.2	0.0	-	4.0	-	0.0	0.0	0.0	-	0.0	-	0.0	25.0	3.2	-	3.8	3.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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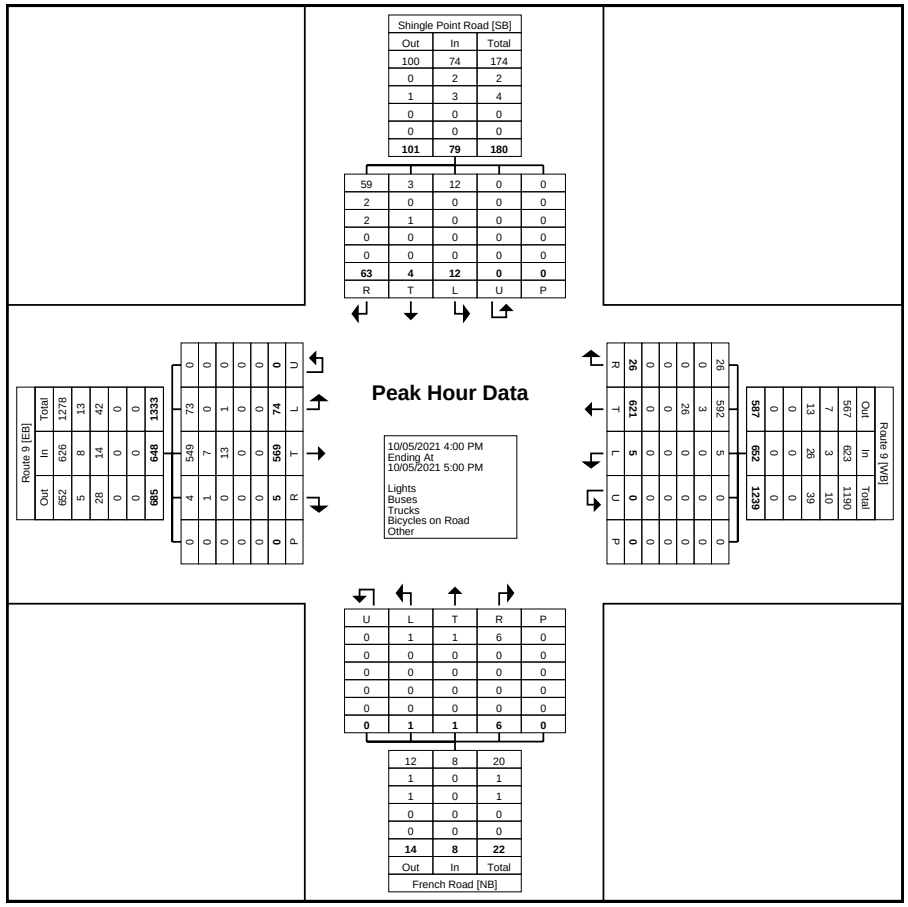
Project: Shingle Point
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.707651, -75.339309

Count Name: 3. US Route 9 & Shingle Point Road
Site Code: 3
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (4:00 PM)

Four Winds Farm - Residential Development

Saturday, August 21, 2021

Saturday Midday Peak Period	Vehicle Type	US Route 9						French Road			Shingle Point Road			*Total (15-minute)*		*Total (Hourly)*	
		EB Left	EB Through	EB Right	WB Left	WB Through	WB Right	NB Left	NB Through	NB Right	SB Left	SB Through	SB Right				
10:00 - 10:15	Cars	2	70	1	10	90	2	0	0	0	0	0	3	***178***	***180***	-	-
	Heavy Vehicles	0	1	0	0	1	0	0	0	0	0	0	0	***2***			
10:15 - 10:30	Cars	0	77	0	5	110	0	0	0	1	2	0	6	***201***	***201***	-	-
	Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	***0***			
10:30 - 10:45	Cars	1	79	1	6	85	0	0	0	0	2	0	9	***183***	***186***	-	-
	Heavy Vehicles	0	1	0	0	1	0	0	0	0	0	0	1	***3***			
10:45 - 11:00	Cars	2	95	0	14	86	1	2	0	1	0	0	5	***206***	***211***	778	10:00 - 11:00
	Heavy Vehicles	0	2	0	0	1	0	0	0	0	0	0	2	***5***			
11:00 - 11:15	Cars	0	75	0	9	108	2	2	0	0	1	0	5	***202***	***204***	802	10:15 - 11:15
	Heavy Vehicles	0	1	0	0	1	0	0	0	0	0	0	0	***2***			
11:15 - 11:30	Cars	0	73	1	4	105	2	1	0	0	1	0	11	***198***	***199***	800	10:30 - 11:30
	Heavy Vehicles	0	0	0	0	1	0	0	0	0	0	0	0	***1***			
11:30 - 11:45	Cars	1	68	2	8	100	1	3	1	1	3	1	13	***202***	***203***	817	10:45 - 11:45
	Heavy Vehicles	0	0	0	0	1	0	0	0	0	0	0	0	***1***			
11:45 - 12:00	Cars	0	76	0	9	89	1	0	0	1	1	0	11	***188***	***190***	796	11:00 - 12:00
	Heavy Vehicles	0	2	0	0	0	0	0	0	0	0	0	0	***2***			
12:00 - 12:15	Cars	1	85	2	19	81	0	2	0	1	0	0	11	***202***	***203***	795	11:15 - 12:15
	Heavy Vehicles	0	0	0	0	1	0	0	0	0	0	0	0	***1***			
12:15 - 12:30	Cars	4	97	2	11	104	2	0	0	0	0	0	9	***229***	***230***	826	11:30 - 12:30
	Heavy Vehicles	0	1	0	0	0	0	0	0	0	0	0	0	***1***			
12:30 - 12:45	Cars	2	95	4	7	105	0	2	0	2	2	0	7	***226***	***228***	851	11:45 - 12:45
	Heavy Vehicles	0	2	0	0	0	0	0	0	0	0	0	0	***2***			
12:45 - 1:00	Cars	0	75	1	9	81	0	1	0	0	1	1	19	***188***	***192***	853	12:00 - 1:00
	Heavy Vehicles	0	4	0	0	0	0	0	0	0	0	0	0	***4***			
1:00 - 1:15	Cars	1	94	0	13	115	0	2	0	1	2	1	5	***234***	***234***	884	12:15 - 1:15
	Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	***0***			
1:15 - 1:30	Cars	0	73	1	5	94	1	0	0	0	0	0	9	***183***	***186***	840	12:30 - 1:30
	Heavy Vehicles	0	3	0	0	0	0	0	0	0	0	0	0	***3***			
1:30 - 1:45	Cars	0	79	0	12	91	4	1	1	1	4	0	6	***199***	***199***	811	12:45 - 1:45
	Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	***0***			
1:45 - 2:00	Cars	0	67	0	7	83	0	2	0	0	1	0	9	***169***	***171***	790	1:00 - 2:00
	Heavy Vehicles	0	0	0	0	1	0	0	0	0	0	0	1	***2***			

Notes:

Pedestrians None

Bicycles:

12:15-12:30 → 2 bikes along US 9 WB

12:30-12:45 → 1 bike along US 9 EB

1:00-1:15 → 1 bike along US 9 WB

1:30-1:45 → 1 bike along US 9 EB

Four Winds Farm - Residential Development

Saturday, August 21, 2021 - Peak Hour: 12:15 - 1:15

Saturday Midday Peak Period	Vehicle Type	US Route 9						French Road			Shingle Point Road			*Total (15-minute)*	
		EB Left	EB Through	EB Right	WB Left	WB Through	WB Right	NB Left	NB Through	NB Right	SB Left	SB Through	SB Right		
12:15 - 12:30	Cars	4	97	2	11	104	2	0	0	0	0	0	9	***229***	***230***
	Heavy Vehicles	0	1	0	0	0	0	0	0	0	0	0	0	***1***	
12:30 - 12:45	Cars	2	95	4	7	105	0	2	0	2	2	0	7	***226***	***228***
	Heavy Vehicles	0	2	0	0	0	0	0	0	0	0	0	0	***2***	
12:45 - 1:00	Cars	0	75	1	9	81	0	1	0	0	1	1	19	***188***	***192***
	Heavy Vehicles	0	4	0	0	0	0	0	0	0	0	0	0	***4***	
1:00 - 1:15	Cars	1	94	0	13	115	0	2	0	1	2	1	5	***234***	***234***
	Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	***0***	
Heavy Vehicle Percentage		0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	***PHF***	***0.94***
Total		***7***	***368***	***7***	***40***	***405***	***2***	***5***	***0***	***3***	***5***	***2***	***40***	***884***	

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Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.724392, -75.318583

Count Name: 4. DE Route 30 & Prettyman Road
Site Code: 4
Start Date: 10/05/2021
Page No: 1

Turning Movement Data

Start Time	Prettyman Road Westbound					Route 30 Northbound					Route 30 Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
7:00 AM	0	0	15	0	15	0	24	0	0	24	0	40	35	0	75	114
7:15 AM	0	0	20	0	20	0	45	0	0	45	0	26	46	0	72	137
7:30 AM	0	0	29	0	29	0	28	1	0	29	0	30	67	0	97	155
7:45 AM	0	1	36	0	37	0	52	2	0	54	0	31	56	0	87	178
Hourly Total	0	1	100	0	101	0	149	3	0	152	0	127	204	0	331	584
8:00 AM	0	0	21	0	21	0	43	1	0	44	0	22	37	0	59	124
8:15 AM	0	1	16	0	17	0	31	0	0	31	0	45	34	0	79	127
8:30 AM	0	0	19	0	19	0	35	0	0	35	0	32	25	0	57	111
8:45 AM	0	0	23	0	23	0	13	0	0	13	0	13	27	0	40	76
Hourly Total	0	1	79	0	80	0	122	1	0	123	0	112	123	0	235	438
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	1	27	0	28	0	42	1	0	43	0	15	28	0	43	114
4:15 PM	0	0	43	0	43	0	46	1	0	47	0	32	54	1	86	176
4:30 PM	0	0	45	0	45	0	29	1	0	30	0	25	42	0	67	142
4:45 PM	0	0	44	0	44	0	31	0	0	31	0	24	37	1	61	136
Hourly Total	0	1	159	0	160	0	148	3	0	151	0	96	161	2	257	568
5:00 PM	0	2	44	0	46	0	27	1	0	28	0	18	39	0	57	131
5:15 PM	0	1	37	0	38	0	43	0	0	43	0	16	25	0	41	122
5:30 PM	0	1	34	0	35	0	33	0	0	33	0	12	27	0	39	107
5:45 PM	0	0	27	0	27	0	36	0	0	36	0	22	26	0	48	111
Hourly Total	0	4	142	0	146	0	139	1	0	140	0	68	117	0	185	471
Grand Total	0	7	480	0	487	0	558	8	0	566	0	403	605	2	1008	2061
Approach %	0.0	1.4	98.6	-	-	0.0	98.6	1.4	-	-	0.0	40.0	60.0	-	-	-
Total %	0.0	0.3	23.3	-	23.6	0.0	27.1	0.4	-	27.5	0.0	19.6	29.4	-	48.9	-
Lights	0	7	456	-	463	0	496	7	-	503	0	390	543	-	933	1899
% Lights	-	100.0	95.0	-	95.1	-	88.9	87.5	-	88.9	-	96.8	89.8	-	92.6	92.1
Buses	0	0	3	-	3	0	8	0	-	8	0	1	3	-	4	15
% Buses	-	0.0	0.6	-	0.6	-	1.4	0.0	-	1.4	-	0.2	0.5	-	0.4	0.7
Trucks	0	0	21	-	21	0	53	1	-	54	0	11	59	-	70	145
% Trucks	-	0.0	4.4	-	4.3	-	9.5	12.5	-	9.5	-	2.7	9.8	-	6.9	7.0
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	0	1	0	-	1	2
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.2	0.0	-	0.2	-	0.2	0.0	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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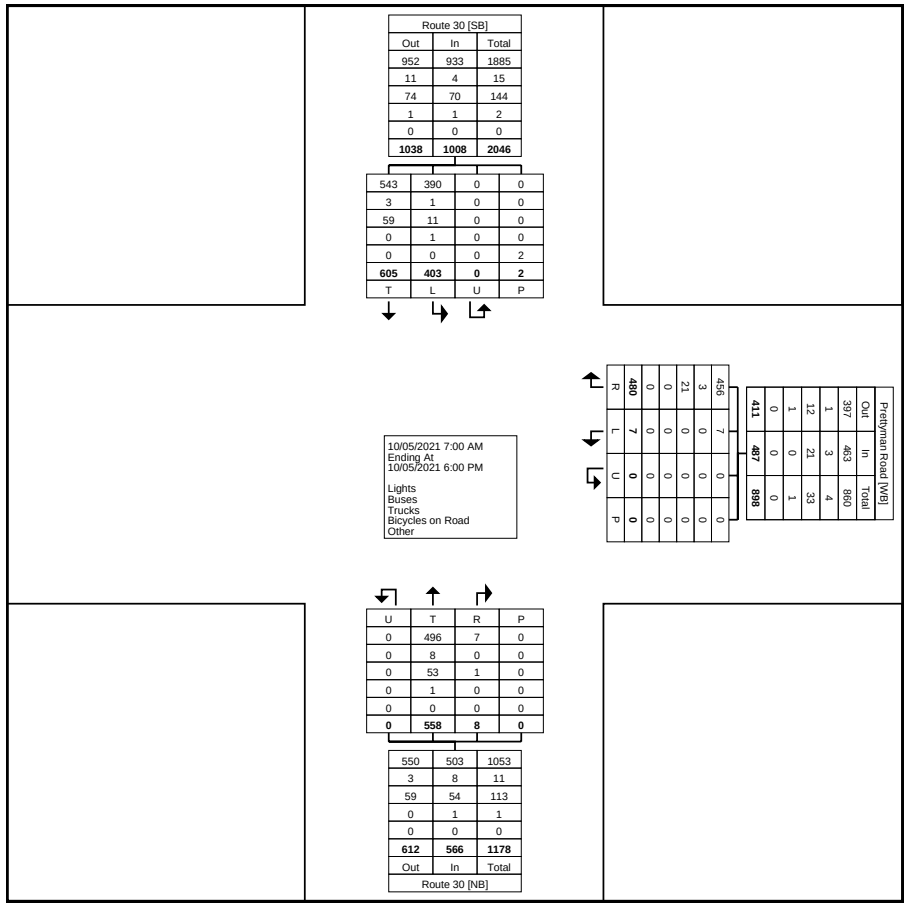
Location: 38.724392, -75.318583

Count Name: 4. DE Route 30 & Prettyman Road
Site Code: 4
Start Date: 10/05/2021



Turning Movement Data Plot

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.724392, -75.318583

Count Name: 4. DE Route 30 & Prettyman Road
Site Code: 4
Start Date: 10/05/2021

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Prettyman Road Westbound					Route 30 Northbound					Route 30 Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
7:15 AM	0	0	20	0	20	0	45	0	0	45	0	26	46	0	72	137
7:30 AM	0	0	29	0	29	0	28	1	0	29	0	30	67	0	97	155
7:45 AM	0	1	36	0	37	0	52	2	0	54	0	31	56	0	87	178
8:00 AM	0	0	21	0	21	0	43	1	0	44	0	22	37	0	59	124
Total	0	1	106	0	107	0	168	4	0	172	0	109	206	0	315	594
Approach %	0.0	0.9	99.1	-	-	0.0	97.7	2.3	-	-	0.0	34.6	65.4	-	-	-
Total %	0.0	0.2	17.8	-	18.0	0.0	28.3	0.7	-	29.0	0.0	18.4	34.7	-	53.0	-
PHF	0.000	0.250	0.736	-	0.723	0.000	0.808	0.500	-	0.796	0.000	0.879	0.769	-	0.812	0.834
Lights	0	1	100	-	101	0	141	3	-	144	0	104	178	-	282	527
% Lights	-	100.0	94.3	-	94.4	-	83.9	75.0	-	83.7	-	95.4	86.4	-	89.5	88.7
Buses	0	0	3	-	3	0	6	0	-	6	0	1	1	-	2	11
% Buses	-	0.0	2.8	-	2.8	-	3.6	0.0	-	3.5	-	0.9	0.5	-	0.6	1.9
Trucks	0	0	3	-	3	0	21	1	-	22	0	3	27	-	30	55
% Trucks	-	0.0	2.8	-	2.8	-	12.5	25.0	-	12.8	-	2.8	13.1	-	9.5	9.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.9	0.0	-	0.3	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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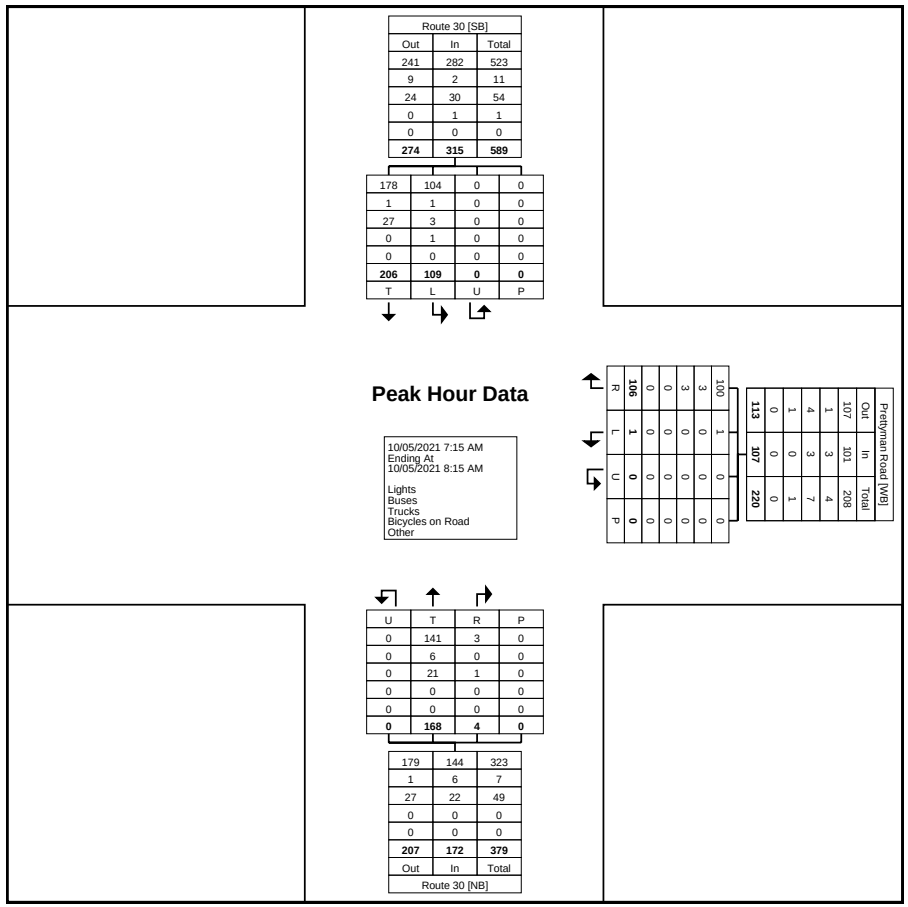
Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.724392, -75.318583

Count Name: 4. DE Route 30 & Prettyman Road
Site Code: 4
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (7:15 AM)

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Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.724392, -75.318583

Count Name: 4. DE Route 30 & Prettyman Road
Site Code: 4
Start Date: 10/05/2021

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Prettyman Road Westbound					Route 30 Northbound					Route 30 Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
4:15 PM	0	0	43	0	43	0	46	1	0	47	0	32	54	1	86	176
4:30 PM	0	0	45	0	45	0	29	1	0	30	0	25	42	0	67	142
4:45 PM	0	0	44	0	44	0	31	0	0	31	0	24	37	1	61	136
5:00 PM	0	2	44	0	46	0	27	1	0	28	0	18	39	0	57	131
Total	0	2	176	0	178	0	133	3	0	136	0	99	172	2	271	585
Approach %	0.0	1.1	98.9	-	-	0.0	97.8	2.2	-	-	0.0	36.5	63.5	-	-	-
Total %	0.0	0.3	30.1	-	30.4	0.0	22.7	0.5	-	23.2	0.0	16.9	29.4	-	46.3	-
PHF	0.000	0.250	0.978	-	0.967	0.000	0.723	0.750	-	0.723	0.000	0.773	0.796	-	0.788	0.831
Lights	0	2	169	-	171	0	126	3	-	129	0	97	162	-	259	559
% Lights	-	100.0	96.0	-	96.1	-	94.7	100.0	-	94.9	-	98.0	94.2	-	95.6	95.6
Buses	0	0	0	-	0	0	2	0	-	2	0	0	0	-	0	2
% Buses	-	0.0	0.0	-	0.0	-	1.5	0.0	-	1.5	-	0.0	0.0	-	0.0	0.3
Trucks	0	0	7	-	7	0	5	0	-	5	0	2	10	-	12	24
% Trucks	-	0.0	4.0	-	3.9	-	3.8	0.0	-	3.7	-	2.0	5.8	-	4.4	4.1
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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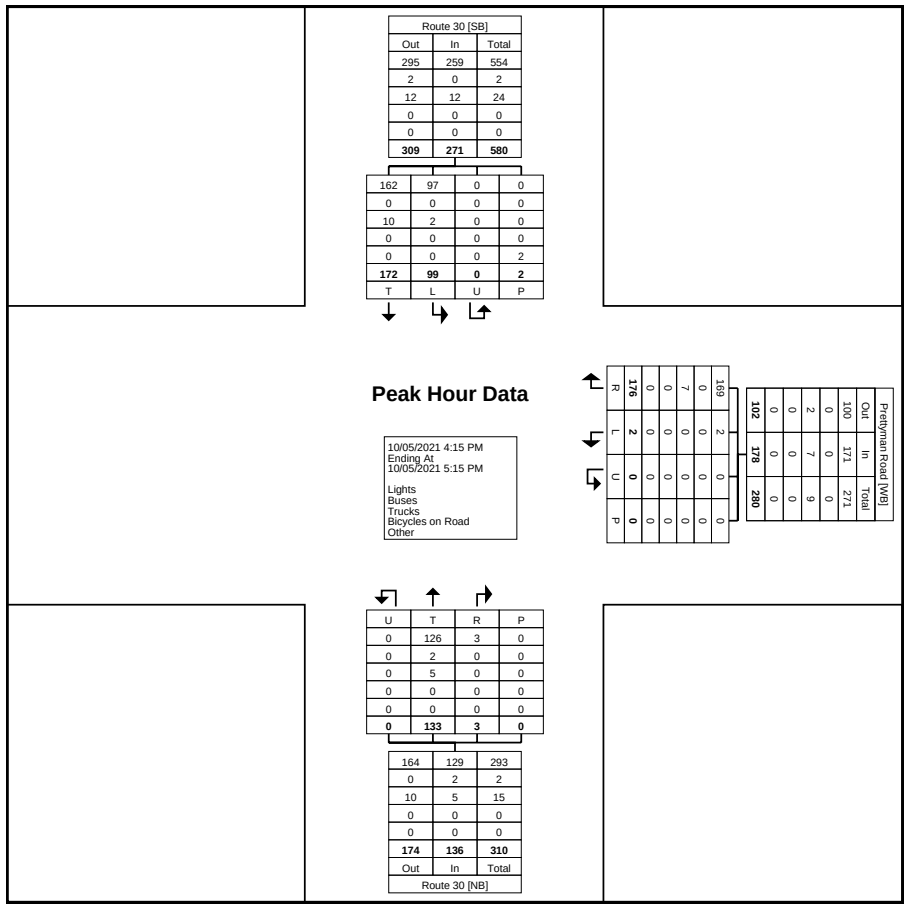
Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.724392, -75.318583

Count Name: 4. DE Route 30 & Prettyman Road
Site Code: 4
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (4:15 PM)

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.72984, -75.315764

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www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Count Name: 5. Prettyjohn Road & Prettyman Road
Site Code: 5
Start Date: 10/05/2021

Turning Movement Data

Start Time	Prettyman Road Eastbound						Prettyman Road Westbound						Prettyjohn Road Northbound						Prettyjohn Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	3	38	0	0	41	0	0	13	0	0	13	0	1	2	1	0	4	0	0	3	2	0	5	63
7:15 AM	0	1	26	0	0	27	0	4	17	2	0	23	0	0	6	0	0	6	0	0	1	3	0	4	60
7:30 AM	0	2	30	0	0	32	0	0	27	0	0	27	0	0	2	1	0	3	0	0	3	0	0	3	65
7:45 AM	0	3	26	1	0	30	0	0	32	1	0	33	0	0	4	0	0	4	0	0	3	4	0	7	74
Hourly Total	0	9	120	1	0	130	0	4	89	3	0	96	0	1	14	2	0	17	0	0	10	9	0	19	262
8:00 AM	0	3	20	1	0	24	0	1	17	0	0	18	0	0	2	0	0	2	0	0	3	3	0	6	50
8:15 AM	0	3	39	0	0	42	0	0	17	1	0	18	0	0	2	0	0	2	0	0	4	0	0	4	66
8:30 AM	0	1	33	0	0	34	0	2	16	1	0	19	0	0	1	2	0	3	0	1	0	1	0	2	58
8:45 AM	0	2	13	0	0	15	0	1	20	0	0	21	0	0	1	0	0	1	0	0	2	3	0	5	42
Hourly Total	0	9	105	1	0	115	0	4	70	2	0	76	0	0	6	2	0	8	0	1	9	7	0	17	216
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	4	13	0	0	17	0	1	25	2	0	28	0	0	0	0	0	0	0	0	4	5	0	9	54
4:15 PM	0	1	28	3	0	32	0	0	40	0	0	40	0	1	0	1	0	2	0	0	1	4	0	5	79
4:30 PM	0	3	21	0	0	24	0	0	36	0	0	36	0	0	1	1	0	2	0	1	5	7	0	13	75
4:45 PM	0	4	19	0	0	23	0	2	37	0	0	39	0	1	2	3	0	6	0	2	1	4	0	7	75
Hourly Total	0	12	81	3	0	96	0	3	138	2	0	143	0	2	3	5	0	10	0	3	11	20	0	34	283
5:00 PM	0	3	16	0	0	19	0	1	42	0	0	43	0	1	3	0	0	4	0	0	1	3	0	4	70
5:15 PM	0	0	16	0	0	16	0	1	29	0	0	30	0	0	6	0	0	6	0	0	0	6	0	6	58
5:30 PM	0	0	10	0	0	10	0	0	31	0	0	31	0	1	1	1	0	3	0	1	3	4	0	8	52
5:45 PM	0	1	21	1	0	23	0	0	29	0	0	29	0	0	2	0	0	2	0	0	4	0	0	4	58
Hourly Total	0	4	63	1	0	68	0	2	131	0	0	133	0	2	12	1	0	15	0	1	8	13	0	22	238
Grand Total	0	34	369	6	0	409	0	13	428	7	0	448	0	5	35	10	0	50	0	5	38	49	0	92	999
Approach %	0.0	8.3	90.2	1.5	-	-	0.0	2.9	95.5	1.6	-	-	0.0	10.0	70.0	20.0	-	-	0.0	5.4	41.3	53.3	-	-	-
Total %	0.0	3.4	36.9	0.6	-	40.9	0.0	1.3	42.8	0.7	-	44.8	0.0	0.5	3.5	1.0	-	5.0	0.0	0.5	3.8	4.9	-	9.2	-
Lights	0	34	357	5	-	396	0	13	407	4	-	424	0	5	34	10	-	49	0	5	32	48	-	85	954
% Lights	-	100.0	96.7	83.3	-	96.8	-	100.0	95.1	57.1	-	94.6	-	100.0	97.1	100.0	-	98.0	-	100.0	84.2	98.0	-	92.4	95.5
Buses	0	0	0	1	-	1	0	0	3	3	-	6	0	0	1	0	-	1	0	0	0	1	-	1	9
% Buses	-	0.0	0.0	16.7	-	0.2	-	0.0	0.7	42.9	-	1.3	-	0.0	2.9	0.0	-	2.0	-	0.0	0.0	2.0	-	1.1	0.9
Trucks	0	0	11	0	-	11	0	0	18	0	-	18	0	0	0	0	-	0	0	0	5	0	-	5	34
% Trucks	-	0.0	3.0	0.0	-	2.7	-	0.0	4.2	0.0	-	4.0	-	0.0	0.0	0.0	-	0.0	-	0.0	13.2	0.0	-	5.4	3.4
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	2
% Bicycles on Road	-	0.0	0.3	0.0	-	0.2	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	2.6	0.0	-	1.1	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Imperial Traffic & Data Collection
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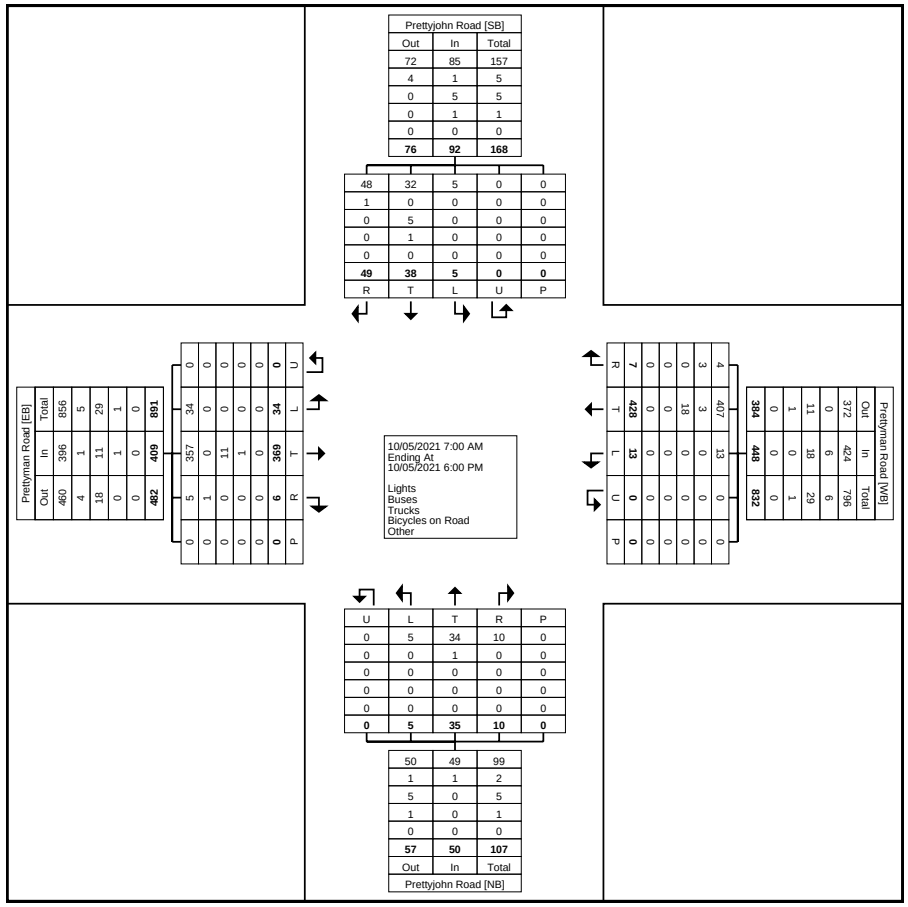
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.72984, -75.315764

Count Name: 5. Prettyjohn Road & Prettyman Road
Site Code: 5
Start Date: 10/05/2021



Turning Movement Data Plot

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.72984, -75.315764

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Count Name: 5. Prettyjohn Road & Prettyman Road
Site Code: 5
Start Date: 10/05/2021

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Prettyman Road Eastbound						Prettyman Road Westbound						Prettyjohn Road Northbound						Prettyjohn Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	3	38	0	0	41	0	0	13	0	0	13	0	1	2	1	0	4	0	0	3	2	0	5	63
7:15 AM	0	1	26	0	0	27	0	4	17	2	0	23	0	0	6	0	0	6	0	0	1	3	0	4	60
7:30 AM	0	2	30	0	0	32	0	0	27	0	0	27	0	0	2	1	0	3	0	0	3	0	0	3	65
7:45 AM	0	3	26	1	0	30	0	0	32	1	0	33	0	0	4	0	0	4	0	0	3	4	0	7	74
Total	0	9	120	1	0	130	0	4	89	3	0	96	0	1	14	2	0	17	0	0	10	9	0	19	262
Approach %	0.0	6.9	92.3	0.8	-	-	0.0	4.2	92.7	3.1	-	-	0.0	5.9	82.4	11.8	-	-	0.0	0.0	52.6	47.4	-	-	-
Total %	0.0	3.4	45.8	0.4	-	49.6	0.0	1.5	34.0	1.1	-	36.6	0.0	0.4	5.3	0.8	-	6.5	0.0	0.0	3.8	3.4	-	7.3	-
PHF	0.000	0.750	0.789	0.250	-	0.793	0.000	0.250	0.695	0.375	-	0.727	0.000	0.250	0.583	0.500	-	0.708	0.000	0.000	0.833	0.563	-	0.679	0.885
Lights	0	9	116	0	-	125	0	4	84	2	-	90	0	1	14	2	-	17	0	0	8	9	-	17	249
% Lights	-	100.0	96.7	0.0	-	96.2	-	100.0	94.4	66.7	-	93.8	-	100.0	100.0	100.0	-	100.0	-	-	80.0	100.0	-	89.5	95.0
Buses	0	0	0	1	-	1	0	0	2	1	-	3	0	0	0	0	-	0	0	0	0	0	-	0	4
% Buses	-	0.0	0.0	100.0	-	0.8	-	0.0	2.2	33.3	-	3.1	-	0.0	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	1.5
Trucks	0	0	3	0	-	3	0	0	3	0	-	3	0	0	0	0	-	0	0	0	2	0	-	2	8
% Trucks	-	0.0	2.5	0.0	-	2.3	-	0.0	3.4	0.0	-	3.1	-	0.0	0.0	0.0	-	0.0	-	-	20.0	0.0	-	10.5	3.1
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	-	0.0	0.8	0.0	-	0.8	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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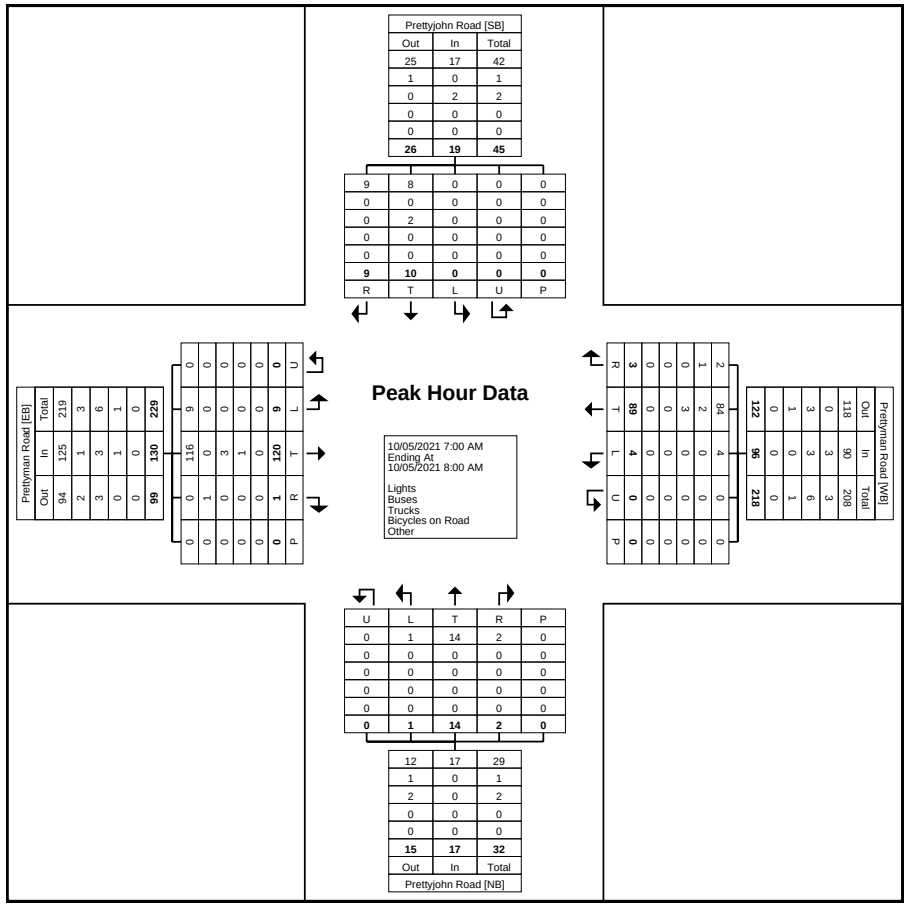
Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.72984, -75.315764

Count Name: 5. Prettyjohn Road & Prettyman Road
Site Code: 5
Start Date: 10/05/2021
Page No: 5



Turning Movement Peak Hour Data Plot (7:00 AM)

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Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.72984, -75.315764

Count Name: 5. Prettyjohn Road & Prettyman Road
Site Code: 5
Start Date: 10/05/2021

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Prettyman Road Eastbound						Prettyman Road Westbound						Prettyjohn Road Northbound						Prettyjohn Road Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:15 PM	0	1	28	3	0	32	0	0	40	0	0	40	0	1	0	1	0	2	0	0	1	4	0	5	79
4:30 PM	0	3	21	0	0	24	0	0	36	0	0	36	0	0	1	1	0	2	0	1	5	7	0	13	75
4:45 PM	0	4	19	0	0	23	0	2	37	0	0	39	0	1	2	3	0	6	0	2	1	4	0	7	75
5:00 PM	0	3	16	0	0	19	0	1	42	0	0	43	0	1	3	0	0	4	0	0	1	3	0	4	70
Total	0	11	84	3	0	98	0	3	155	0	0	158	0	3	6	5	0	14	0	3	8	18	0	29	299
Approach %	0.0	11.2	85.7	3.1	-	-	0.0	1.9	98.1	0.0	-	-	0.0	21.4	42.9	35.7	-	-	0.0	10.3	27.6	62.1	-	-	-
Total %	0.0	3.7	28.1	1.0	-	32.8	0.0	1.0	51.8	0.0	-	52.8	0.0	1.0	2.0	1.7	-	4.7	0.0	1.0	2.7	6.0	-	9.7	-
PHF	0.000	0.688	0.750	0.250	-	0.766	0.000	0.375	0.923	0.000	-	0.919	0.000	0.750	0.500	0.417	-	0.583	0.000	0.375	0.400	0.643	-	0.558	0.946
Lights	0	11	82	3	-	96	0	3	148	0	-	151	0	3	6	5	-	14	0	3	8	18	-	29	290
% Lights	-	100.0	97.6	100.0	-	98.0	-	100.0	95.5	-	-	95.6	-	100.0	100.0	100.0	-	100.0	-	100.0	100.0	100.0	-	100.0	97.0
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Trucks	0	0	2	0	-	2	0	0	7	0	-	7	0	0	0	0	-	0	0	0	0	0	-	0	9
% Trucks	-	0.0	2.4	0.0	-	2.0	-	0.0	4.5	-	-	4.4	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	3.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Imperial Traffic & Data Collection
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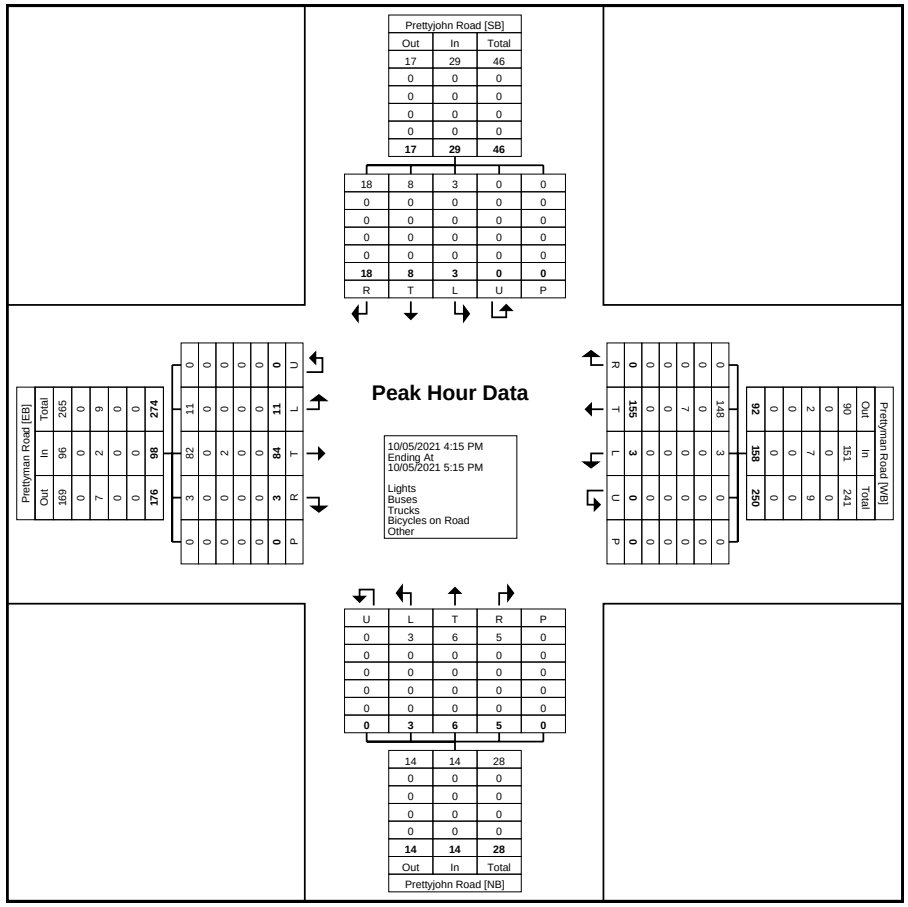
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.72984, -75.315764

Count Name: 5. Prettyjohn Road & Prettyman Road
Site Code: 5
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (4:15 PM)

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609-706-6100 lklein@imperialtdc.com

Project: Single Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.765275, -75.315462

Count Name: 6. DE Route 5 & Shingle Point Road
Site Code: 6
Start Date: 10/05/2021

Turning Movement Data

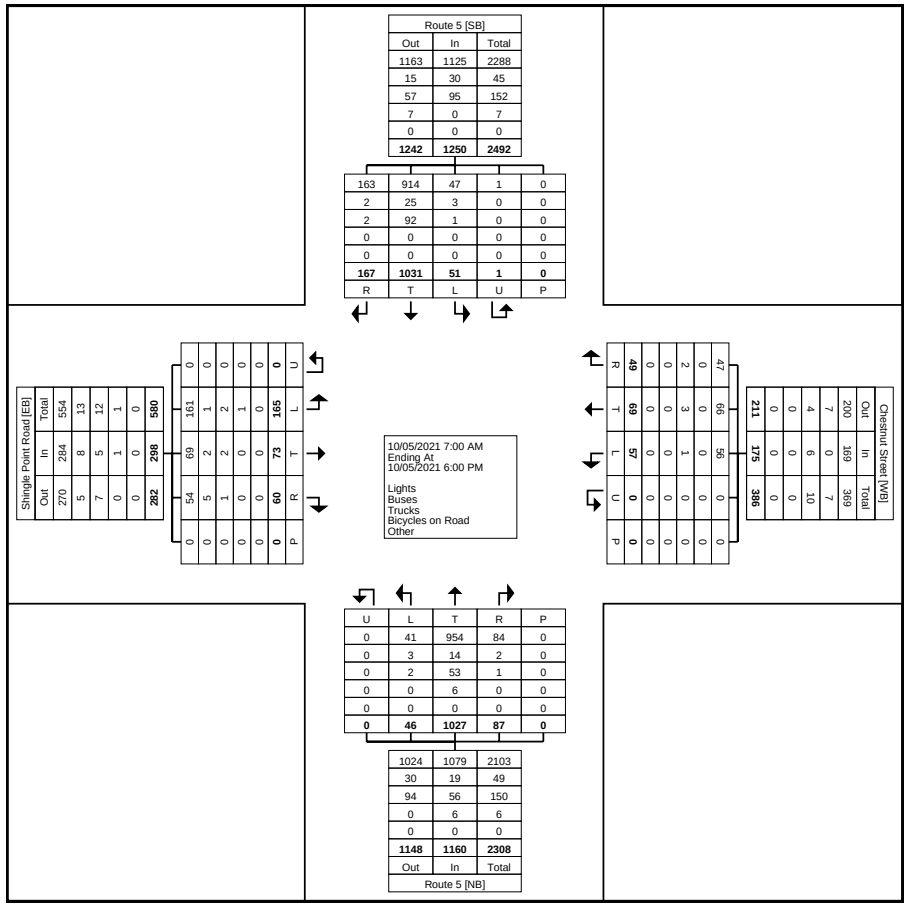
Start Time	Shingle Point Road Eastbound						Chestnut Street Westbound						Route 5 Northbound						Route 5 Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	7	3	10	0	20	0	6	7	6	0	19	0	2	29	2	0	33	0	0	77	10	0	87	159
7:15 AM	0	7	6	13	0	26	0	4	6	1	0	11	0	5	96	13	0	114	0	2	102	10	0	114	265
7:30 AM	0	9	6	4	0	19	0	2	3	1	0	6	0	7	96	13	0	116	0	2	84	16	0	102	243
7:45 AM	0	11	8	8	0	27	0	2	6	2	0	10	0	6	46	5	0	57	0	0	74	10	0	84	178
Hourly Total	0	34	23	35	0	92	0	14	22	10	0	46	0	20	267	33	0	320	0	4	337	46	0	387	845
8:00 AM	0	5	13	5	0	23	0	5	3	2	0	10	0	1	44	6	0	51	0	1	69	14	0	84	168
8:15 AM	0	22	4	2	0	28	0	1	4	6	0	11	0	1	54	3	0	58	0	6	41	5	0	52	149
8:30 AM	0	11	5	1	0	17	0	1	4	7	0	12	0	3	67	3	0	73	0	9	72	8	0	89	191
8:45 AM	0	10	5	1	0	16	0	0	3	4	0	7	0	1	61	3	0	65	0	2	51	8	0	61	149
Hourly Total	0	48	27	9	0	84	0	7	14	19	0	40	0	6	226	15	0	247	0	18	233	35	0	286	657
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	7	1	3	0	11	0	5	3	4	0	12	0	1	86	13	0	100	0	3	88	22	0	113	236
4:15 PM	0	8	3	1	0	12	0	7	8	1	0	16	0	2	51	7	0	60	0	1	64	11	0	76	164
4:30 PM	0	13	8	1	0	22	0	6	7	5	0	18	0	3	81	3	0	87	0	2	71	10	0	83	210
4:45 PM	0	11	1	2	0	14	0	9	2	2	0	13	0	6	83	7	0	96	0	3	64	10	0	77	200
Hourly Total	0	39	13	7	0	59	0	27	20	12	0	59	0	12	301	30	0	343	0	9	287	53	0	349	810
5:00 PM	0	10	2	4	0	16	0	3	4	3	0	10	0	2	61	1	0	64	0	6	46	11	0	63	153
5:15 PM	0	14	3	2	0	19	0	2	3	2	0	7	0	3	64	2	0	69	0	6	46	9	0	61	156
5:30 PM	0	9	2	2	0	13	0	2	3	1	0	6	0	2	66	5	0	73	0	3	38	8	0	49	141
5:45 PM	0	11	3	1	0	15	0	2	3	2	0	7	0	1	42	1	0	44	1	5	44	5	0	55	121
Hourly Total	0	44	10	9	0	63	0	9	13	8	0	30	0	8	233	9	0	250	1	20	174	33	0	228	571
Grand Total	0	165	73	60	0	298	0	57	69	49	0	175	0	46	1027	87	0	1160	1	51	1031	167	0	1250	2883
Approach %	0.0	55.4	24.5	20.1	-	-	0.0	32.6	39.4	28.0	-	-	0.0	4.0	88.5	7.5	-	-	0.1	4.1	82.5	13.4	-	-	-
Total %	0.0	5.7	2.5	2.1	-	10.3	0.0	2.0	2.4	1.7	-	6.1	0.0	1.6	35.6	3.0	-	40.2	0.0	1.8	35.8	5.8	-	43.4	-
Lights	0	161	69	54	-	284	0	56	66	47	-	169	0	41	954	84	-	1079	1	47	914	163	-	1125	2657
% Lights	-	97.6	94.5	90.0	-	95.3	-	98.2	95.7	95.9	-	96.6	-	89.1	92.9	96.6	-	93.0	100.0	92.2	88.7	97.6	-	90.0	92.2
Buses	0	1	2	5	-	8	0	0	0	0	-	0	0	3	14	2	-	19	0	3	25	2	-	30	57
% Buses	-	0.6	2.7	8.3	-	2.7	-	0.0	0.0	0.0	-	0.0	-	6.5	1.4	2.3	-	1.6	0.0	5.9	2.4	1.2	-	2.4	2.0
Trucks	0	2	2	1	-	5	0	1	3	2	-	6	0	2	53	1	-	56	0	1	92	2	-	95	162
% Trucks	-	1.2	2.7	1.7	-	1.7	-	1.8	4.3	4.1	-	3.4	-	4.3	5.2	1.1	-	4.8	0.0	2.0	8.9	1.2	-	7.6	5.6
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	0	6	0	-	6	0	0	0	0	-	0	7
% Bicycles on Road	-	0.6	0.0	0.0	-	0.3	-	0.0	0.0	0.0	-	0.0	-	0.0	0.6	0.0	-	0.5	0.0	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project: Single Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.765275, -75.315462

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Count Name: 6. DE Route 5 & Shingle Point Road
Site Code: 6
Start Date: 10/05/2021



Turning Movement Data Plot

Project: Single Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.765275, -75.315462

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Count Name: 6. DE Route 5 & Shingle Point Road
Site Code: 6
Start Date: 10/05/2021

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Shingle Point Road Eastbound						Chestnut Street Westbound						Route 5 Northbound						Route 5 Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:15 AM	0	7	6	13	0	26	0	4	6	1	0	11	0	5	96	13	0	114	0	2	102	10	0	114	265
7:30 AM	0	9	6	4	0	19	0	2	3	1	0	6	0	7	96	13	0	116	0	2	84	16	0	102	243
7:45 AM	0	11	8	8	0	27	0	2	6	2	0	10	0	6	46	5	0	57	0	0	74	10	0	84	178
8:00 AM	0	5	13	5	0	23	0	5	3	2	0	10	0	1	44	6	0	51	0	1	69	14	0	84	168
Total	0	32	33	30	0	95	0	13	18	6	0	37	0	19	282	37	0	338	0	5	329	50	0	384	854
Approach %	0.0	33.7	34.7	31.6	-	-	0.0	35.1	48.6	16.2	-	-	0.0	5.6	83.4	10.9	-	-	0.0	1.3	85.7	13.0	-	-	-
Total %	0.0	3.7	3.9	3.5	-	11.1	0.0	1.5	2.1	0.7	-	4.3	0.0	2.2	33.0	4.3	-	39.6	0.0	0.6	38.5	5.9	-	45.0	-
PHF	0.000	0.727	0.635	0.577	-	0.880	0.000	0.650	0.750	0.750	-	0.841	0.000	0.679	0.734	0.712	-	0.728	0.000	0.625	0.806	0.781	-	0.842	0.806
Lights	0	31	30	28	-	89	0	13	18	6	-	37	0	17	269	35	-	321	0	4	270	49	-	323	770
% Lights	-	96.9	90.9	93.3	-	93.7	-	100.0	100.0	100.0	-	100.0	-	89.5	95.4	94.6	-	95.0	-	80.0	82.1	98.0	-	84.1	90.2
Buses	0	0	1	2	-	3	0	0	0	0	-	0	0	1	3	2	-	6	0	1	9	1	-	11	20
% Buses	-	0.0	3.0	6.7	-	3.2	-	0.0	0.0	0.0	-	0.0	-	5.3	1.1	5.4	-	1.8	-	20.0	2.7	2.0	-	2.9	2.3
Trucks	0	1	2	0	-	3	0	0	0	0	-	0	0	1	10	0	-	11	0	0	50	0	-	50	64
% Trucks	-	3.1	6.1	0.0	-	3.2	-	0.0	0.0	0.0	-	0.0	-	5.3	3.5	0.0	-	3.3	-	0.0	15.2	0.0	-	13.0	7.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Imperial Traffic & Data Collection
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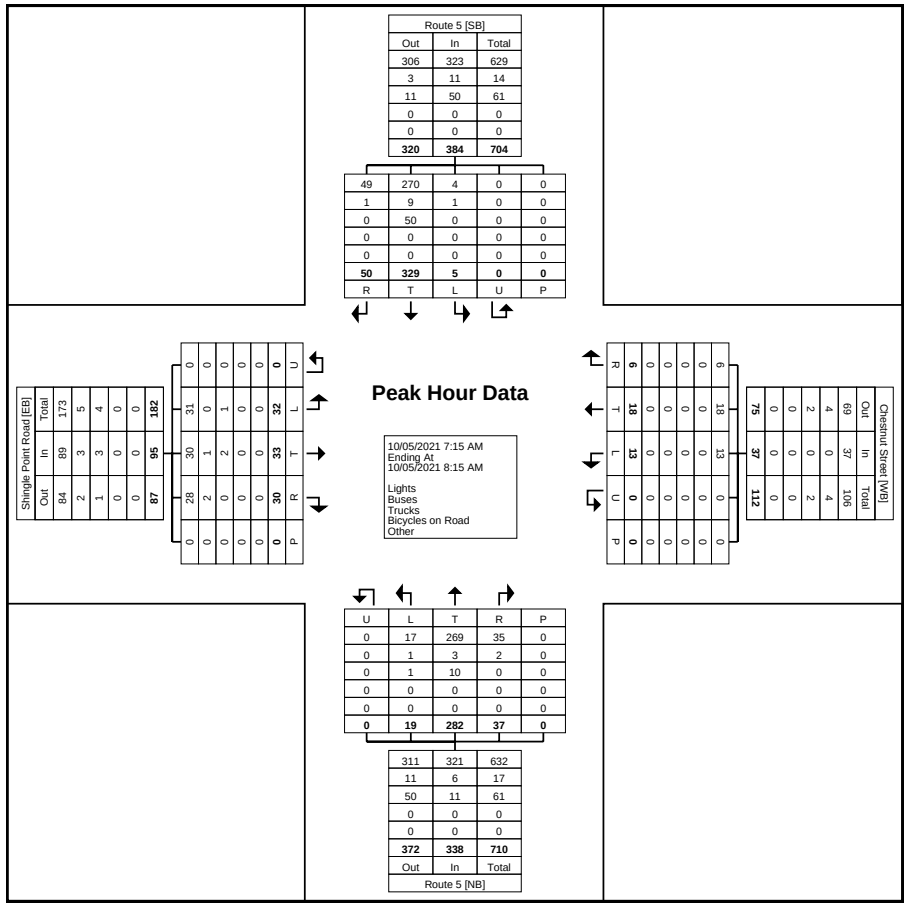
609-706-6100 lklein@imperialtdc.com

Project: Single Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.765275, -75.315462

Count Name: 6. DE Route 5 & Shingle Point Road
Site Code: 6
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (7:15 AM)

Project: Single Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.765275, -75.315462

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Count Name: 6. DE Route 5 & Shingle Point Road
Site Code: 6
Start Date: 10/05/2021

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Shingle Point Road Eastbound						Chestnut Street Westbound						Route 5 Northbound						Route 5 Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:00 PM	0	7	1	3	0	11	0	5	3	4	0	12	0	1	86	13	0	100	0	3	88	22	0	113	236
4:15 PM	0	8	3	1	0	12	0	7	8	1	0	16	0	2	51	7	0	60	0	1	64	11	0	76	164
4:30 PM	0	13	8	1	0	22	0	6	7	5	0	18	0	3	81	3	0	87	0	2	71	10	0	83	210
4:45 PM	0	11	1	2	0	14	0	9	2	2	0	13	0	6	83	7	0	96	0	3	64	10	0	77	200
Total	0	39	13	7	0	59	0	27	20	12	0	59	0	12	301	30	0	343	0	9	287	53	0	349	810
Approach %	0.0	66.1	22.0	11.9	-	-	0.0	45.8	33.9	20.3	-	-	0.0	3.5	87.8	8.7	-	-	0.0	2.6	82.2	15.2	-	-	-
Total %	0.0	4.8	1.6	0.9	-	7.3	0.0	3.3	2.5	1.5	-	7.3	0.0	1.5	37.2	3.7	-	42.3	0.0	1.1	35.4	6.5	-	43.1	-
PHF	0.000	0.750	0.406	0.583	-	0.670	0.000	0.750	0.625	0.600	-	0.819	0.000	0.500	0.875	0.577	-	0.858	0.000	0.750	0.815	0.602	-	0.772	0.858
Lights	0	38	13	5	-	56	0	26	20	12	-	58	0	11	275	29	-	315	0	8	273	51	-	332	761
% Lights	-	97.4	100.0	71.4	-	94.9	-	96.3	100.0	100.0	-	98.3	-	91.7	91.4	96.7	-	91.8	-	88.9	95.1	96.2	-	95.1	94.0
Buses	0	0	0	2	-	2	0	0	0	0	-	0	0	0	4	0	-	4	0	1	5	1	-	7	13
% Buses	-	0.0	0.0	28.6	-	3.4	-	0.0	0.0	0.0	-	0.0	-	0.0	1.3	0.0	-	1.2	-	11.1	1.7	1.9	-	2.0	1.6
Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	1	22	1	-	24	0	0	9	1	-	10	35
% Trucks	-	0.0	0.0	0.0	-	0.0	-	3.7	0.0	0.0	-	1.7	-	8.3	7.3	3.3	-	7.0	-	0.0	3.1	1.9	-	2.9	4.3
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	-	2.6	0.0	0.0	-	1.7	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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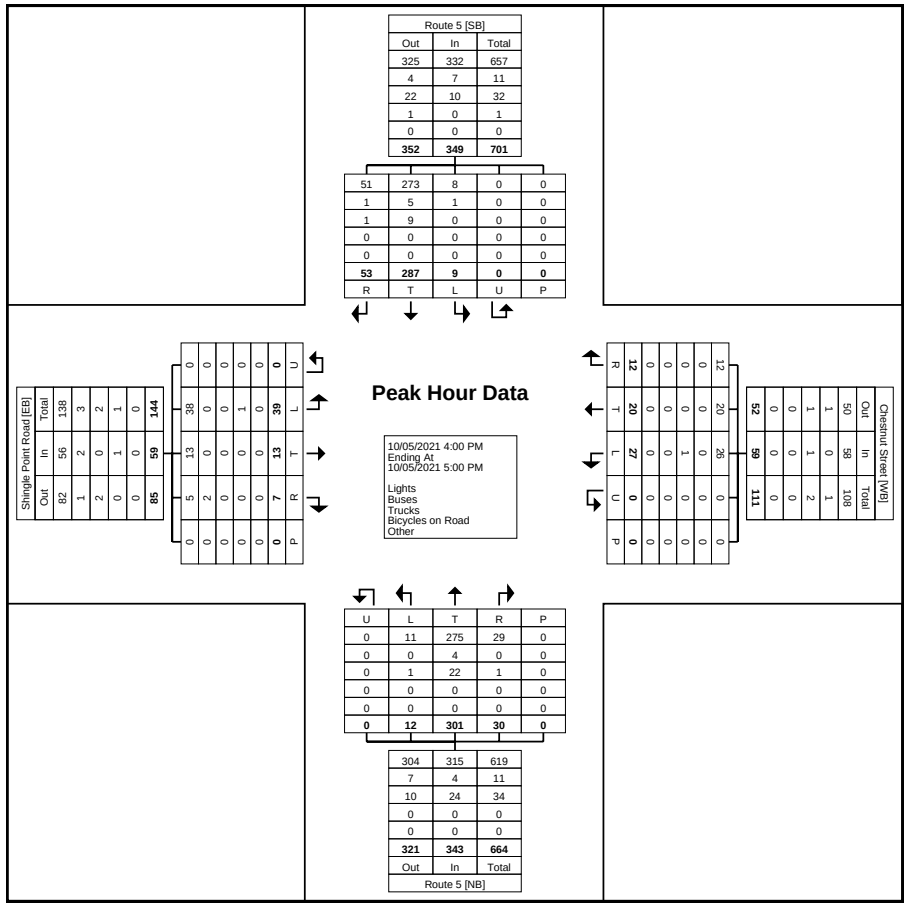
Project: Single Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.765275, -75.315462

Count Name: 6. DE Route 5 & Shingle Point Road
Site Code: 6
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (4:00 PM)

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Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.768767, -75.316522

Count Name: 7. DE Route 5 & Sand Hill Road
Site Code: 7
Start Date: 10/05/2021
Page No: 1

Turning Movement Data

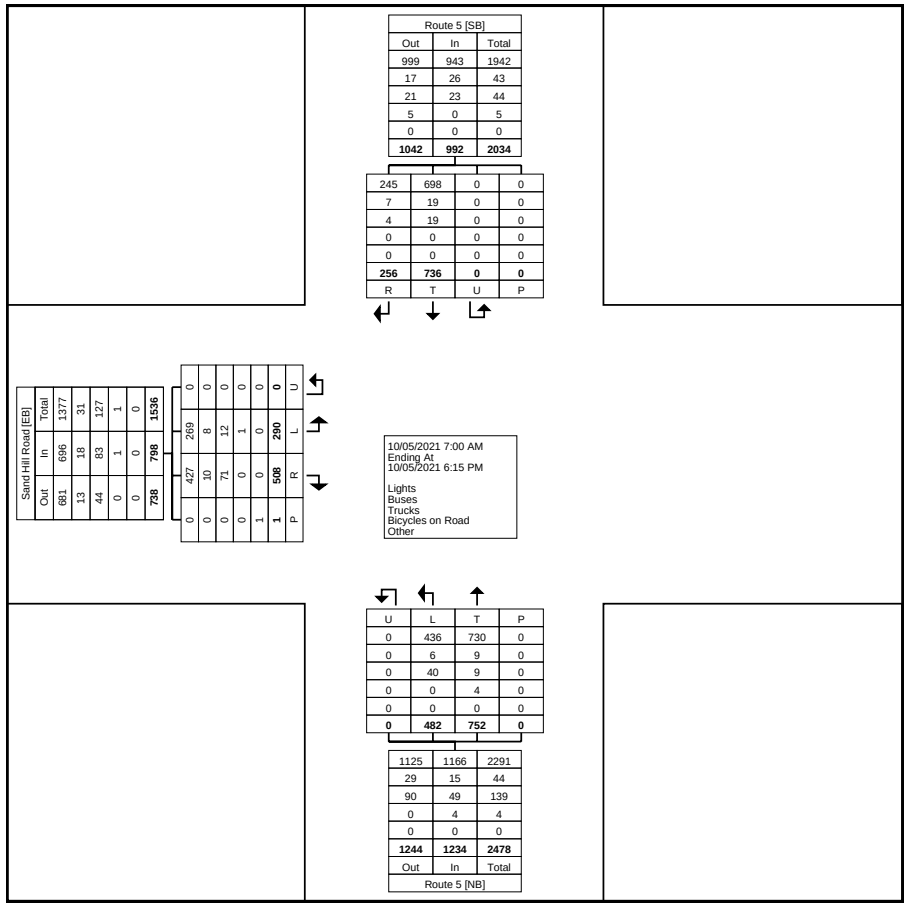
Start Time	Sand Hill Road Eastbound					Route 5 Northbound					Route 5 Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	Int. Total
7:00 AM	0	18	41	0	59	0	12	28	0	40	0	45	7	0	52	151
7:15 AM	0	34	60	0	94	0	36	63	0	99	0	51	5	0	56	249
7:30 AM	0	27	47	0	74	0	37	70	0	107	0	57	14	0	71	252
7:45 AM	0	24	38	0	62	0	23	37	0	60	0	47	6	0	53	175
Hourly Total	0	103	186	0	289	0	108	198	0	306	0	200	32	0	232	827
8:00 AM	0	27	33	0	60	0	16	38	0	54	0	46	12	0	58	172
8:15 AM	0	27	29	0	56	0	22	58	0	80	0	26	13	0	39	175
8:30 AM	0	17	36	0	53	0	27	56	0	83	0	53	15	0	68	204
8:45 AM	0	18	16	0	34	0	26	45	0	71	0	43	10	0	53	158
Hourly Total	0	89	114	0	203	0	91	197	0	288	0	168	50	0	218	709
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	11	27	0	38	0	46	51	0	97	0	86	29	0	115	250
4:15 PM	0	6	28	0	34	0	32	29	0	61	0	51	21	0	72	167
4:30 PM	0	10	31	1	41	0	46	51	0	97	0	48	28	0	76	214
4:45 PM	0	16	36	0	52	0	33	60	0	93	0	42	20	0	62	207
Hourly Total	0	43	122	1	165	0	157	191	0	348	0	227	98	0	325	838
5:00 PM	0	17	21	0	38	0	34	44	0	78	0	42	12	0	54	170
5:15 PM	0	12	24	0	36	0	32	42	0	74	0	37	29	0	66	176
5:30 PM	0	13	16	0	29	0	37	45	0	82	0	31	14	0	45	156
5:45 PM	0	13	25	0	38	0	23	35	0	58	0	31	21	0	52	148
Hourly Total	0	55	86	0	141	0	126	166	0	292	0	141	76	0	217	650
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	290	508	1	798	0	482	752	0	1234	0	736	256	0	992	3024
Approach %	0.0	36.3	63.7	-	-	0.0	39.1	60.9	-	-	0.0	74.2	25.8	-	-	-
Total %	0.0	9.6	16.8	-	26.4	0.0	15.9	24.9	-	40.8	0.0	24.3	8.5	-	32.8	-
Lights	0	269	427	-	696	0	436	730	-	1166	0	698	245	-	943	2805
% Lights	-	92.8	84.1	-	87.2	-	90.5	97.1	-	94.5	-	94.8	95.7	-	95.1	92.8
Buses	0	8	10	-	18	0	6	9	-	15	0	19	7	-	26	59
% Buses	-	2.8	2.0	-	2.3	-	1.2	1.2	-	1.2	-	2.6	2.7	-	2.6	2.0
Trucks	0	12	71	-	83	0	40	9	-	49	0	19	4	-	23	155
% Trucks	-	4.1	14.0	-	10.4	-	8.3	1.2	-	4.0	-	2.6	1.6	-	2.3	5.1
Bicycles on Road	0	1	0	-	1	0	0	4	-	4	0	0	0	-	0	5
% Bicycles on Road	-	0.3	0.0	-	0.1	-	0.0	0.5	-	0.3	-	0.0	0.0	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-

% Bicycles on Crosswalk	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-
% Pedestrians	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.768767, -75.316522

Count Name: 7. DE Route 5 & Sand Hill Road
Site Code: 7
Start Date: 10/05/2021



Turning Movement Data Plot

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Location: 38.768767, -75.316522

Count Name: 7. DE Route 5 & Sand Hill Road
Site Code: 7
Start Date: 10/05/2021

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Sand Hill Road Eastbound					Route 5 Northbound					Route 5 Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	Int. Total
7:15 AM	0	34	60	0	94	0	36	63	0	99	0	51	5	0	56	249
7:30 AM	0	27	47	0	74	0	37	70	0	107	0	57	14	0	71	252
7:45 AM	0	24	38	0	62	0	23	37	0	60	0	47	6	0	53	175
8:00 AM	0	27	33	0	60	0	16	38	0	54	0	46	12	0	58	172
Total	0	112	178	0	290	0	112	208	0	320	0	201	37	0	238	848
Approach %	0.0	38.6	61.4	-	-	0.0	35.0	65.0	-	-	0.0	84.5	15.5	-	-	-
Total %	0.0	13.2	21.0	-	34.2	0.0	13.2	24.5	-	37.7	0.0	23.7	4.4	-	28.1	-
PHF	0.000	0.824	0.742	-	0.771	0.000	0.757	0.743	-	0.748	0.000	0.882	0.661	-	0.838	0.841
Lights	0	104	133	-	237	0	103	206	-	309	0	186	36	-	222	768
% Lights	-	92.9	74.7	-	81.7	-	92.0	99.0	-	96.6	-	92.5	97.3	-	93.3	90.6
Buses	0	3	4	-	7	0	2	1	-	3	0	7	1	-	8	18
% Buses	-	2.7	2.2	-	2.4	-	1.8	0.5	-	0.9	-	3.5	2.7	-	3.4	2.1
Trucks	0	5	41	-	46	0	7	1	-	8	0	8	0	-	8	62
% Trucks	-	4.5	23.0	-	15.9	-	6.3	0.5	-	2.5	-	4.0	0.0	-	3.4	7.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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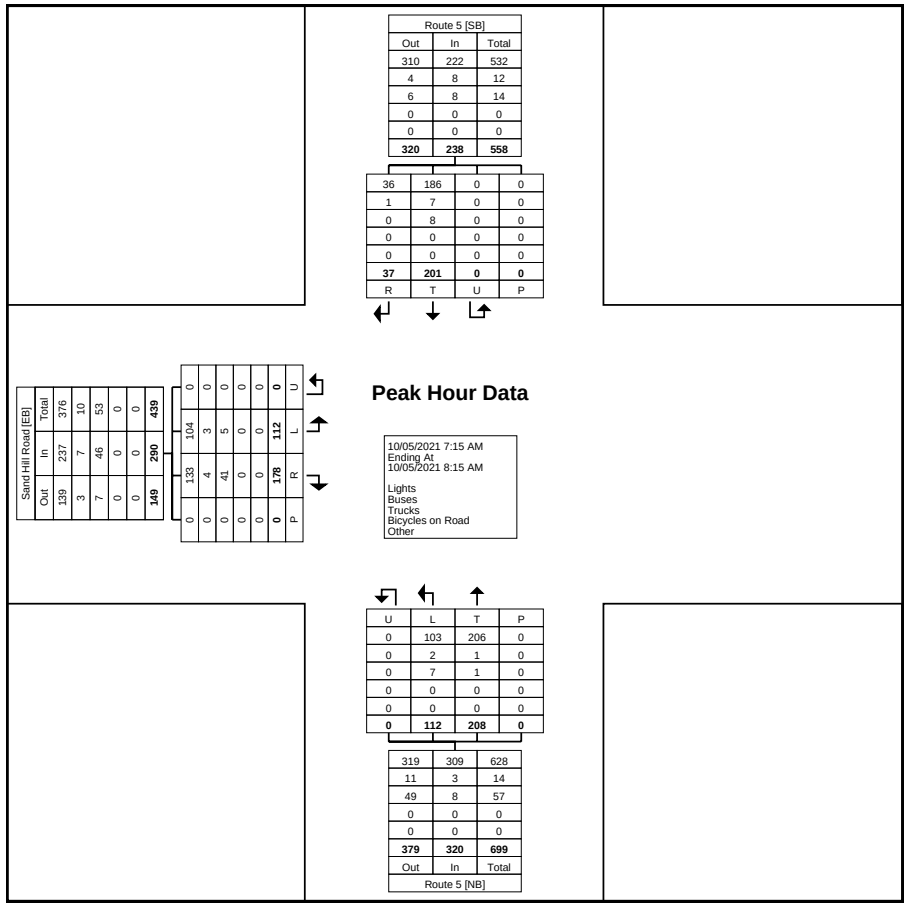
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.768767, -75.316522

Count Name: 7. DE Route 5 & Sand Hill Road
Site Code: 7
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (7:15 AM)

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Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.768767, -75.316522

Count Name: 7. DE Route 5 & Sand Hill Road
Site Code: 7
Start Date: 10/05/2021

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Sand Hill Road Eastbound					Route 5 Northbound					Route 5 Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	Int. Total
4:00 PM	0	11	27	0	38	0	46	51	0	97	0	86	29	0	115	250
4:15 PM	0	6	28	0	34	0	32	29	0	61	0	51	21	0	72	167
4:30 PM	0	10	31	1	41	0	46	51	0	97	0	48	28	0	76	214
4:45 PM	0	16	36	0	52	0	33	60	0	93	0	42	20	0	62	207
Total	0	43	122	1	165	0	157	191	0	348	0	227	98	0	325	838
Approach %	0.0	26.1	73.9	-	-	0.0	45.1	54.9	-	-	0.0	69.8	30.2	-	-	-
Total %	0.0	5.1	14.6	-	19.7	0.0	18.7	22.8	-	41.5	0.0	27.1	11.7	-	38.8	-
PHF	0.000	0.672	0.847	-	0.793	0.000	0.853	0.796	-	0.897	0.000	0.660	0.845	-	0.707	0.838
Lights	0	42	112	-	154	0	141	185	-	326	0	219	95	-	314	794
% Lights	-	97.7	91.8	-	93.3	-	89.8	96.9	-	93.7	-	96.5	96.9	-	96.6	94.7
Buses	0	1	3	-	4	0	1	3	-	4	0	3	1	-	4	12
% Buses	-	2.3	2.5	-	2.4	-	0.6	1.6	-	1.1	-	1.3	1.0	-	1.2	1.4
Trucks	0	0	7	-	7	0	15	3	-	18	0	5	2	-	7	32
% Trucks	-	0.0	5.7	-	4.2	-	9.6	1.6	-	5.2	-	2.2	2.0	-	2.2	3.8
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-

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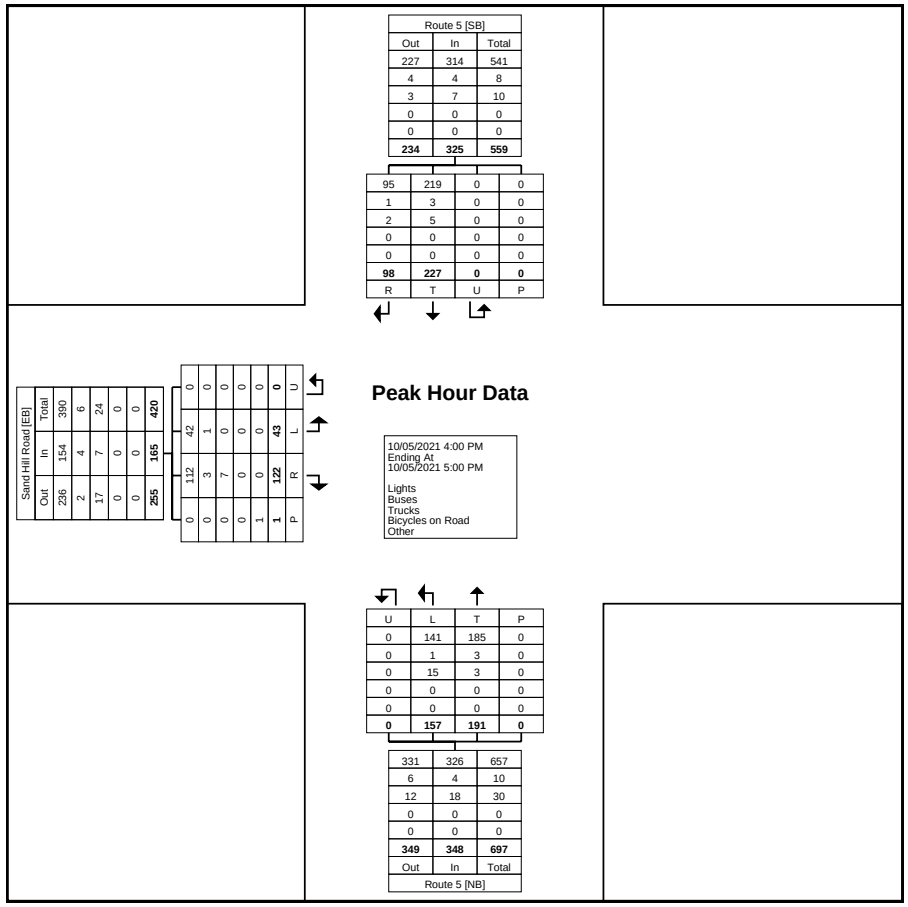
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.768767, -75.316522

Count Name: 7. DE Route 5 & Sand Hill Road
Site Code: 7
Start Date: 10/05/2021
Page No: 7



Turning Movement Peak Hour Data Plot (4:00 PM)

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609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.774814, -75.311806

Count Name: 8. DE Route 5 & Mulberry Street/Atlanta Street
Site Code: 8
Start Date: 10/05/2021

Turning Movement Data

Start Time	Mulberry Street Eastbound						Wharton Street Westbound						Route 5 Northbound						Route 5 Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	0	13	16	0	29	0	7	10	2	0	19	0	8	18	12	0	38	0	5	35	0	0	40	126
7:15 AM	0	0	18	21	0	39	0	12	22	1	1	35	0	19	42	34	0	95	0	5	28	0	0	33	202
7:30 AM	0	1	25	22	1	48	0	8	22	4	1	34	0	19	46	26	0	91	0	6	40	1	0	47	220
7:45 AM	0	1	26	22	0	49	0	12	16	9	0	37	0	11	16	19	0	46	0	9	45	0	0	54	186
Hourly Total	0	2	82	81	1	165	0	39	70	16	2	125	0	57	122	91	0	270	0	25	148	1	0	174	734
8:00 AM	0	0	39	11	0	50	0	14	9	2	0	25	0	8	28	22	0	58	0	12	45	1	0	58	191
8:15 AM	0	0	31	14	1	45	0	16	20	3	0	39	0	18	29	14	0	61	0	12	28	0	0	40	185
8:30 AM	0	0	32	15	2	47	0	22	19	0	4	41	0	23	39	26	1	88	0	6	25	3	1	34	210
8:45 AM	0	0	37	21	2	58	0	8	13	1	0	22	0	13	48	24	0	85	0	6	27	1	0	34	199
Hourly Total	0	0	139	61	5	200	0	60	61	6	4	127	0	62	144	86	1	292	0	36	125	5	1	166	785
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:00 PM	0	1	33	29	0	63	0	16	30	14	1	60	0	22	43	15	0	80	0	6	52	1	1	59	262
4:15 PM	0	0	13	11	0	24	0	18	31	4	0	53	0	11	22	9	0	42	0	7	41	2	0	50	169
4:30 PM	0	1	18	13	0	32	0	22	18	5	0	45	0	21	43	9	0	73	0	5	34	2	2	41	191
4:45 PM	0	2	15	24	0	41	0	9	16	4	0	29	0	20	39	14	0	73	0	8	24	2	0	34	177
Hourly Total	0	4	79	77	0	160	0	65	95	27	1	187	0	74	147	47	0	268	0	26	151	7	3	184	799
5:00 PM	0	1	16	16	0	33	0	18	25	5	0	48	0	20	29	16	0	65	0	6	25	4	0	35	181
5:15 PM	0	0	18	14	0	32	0	27	24	5	0	56	0	19	36	19	0	74	0	7	17	3	0	27	189
5:30 PM	0	0	17	12	1	29	0	9	59	7	0	75	0	18	37	14	0	69	0	7	24	5	0	36	209
5:45 PM	0	1	15	13	0	29	0	14	66	20	0	100	0	16	30	9	0	55	0	7	22	3	0	32	216
Hourly Total	0	2	66	55	1	123	0	68	174	37	0	279	0	73	132	58	0	263	0	27	88	15	0	130	795
6:00 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	8	366	274	7	648	0	233	400	86	7	719	0	266	545	282	1	1093	0	114	513	28	4	655	3115
Approach %	0.0	1.2	56.5	42.3	-	-	0.0	32.4	55.6	12.0	-	-	0.0	24.3	49.9	25.8	-	-	0.0	17.4	78.3	4.3	-	-	-
Total %	0.0	0.3	11.7	8.8	-	20.8	0.0	7.5	12.8	2.8	-	23.1	0.0	8.5	17.5	9.1	-	35.1	0.0	3.7	16.5	0.9	-	21.0	-
Lights	0	8	346	264	-	618	0	222	388	84	-	694	0	258	525	267	-	1050	0	110	493	27	-	630	2992
% Lights	-	100.0	94.5	96.4	-	95.4	-	95.3	97.0	97.7	-	96.5	-	97.0	96.3	94.7	-	96.1	-	96.5	96.1	96.4	-	96.2	96.1
Buses	0	0	9	6	-	15	0	8	6	1	-	15	0	4	5	4	-	13	0	2	9	0	-	11	54
% Buses	-	0.0	2.5	2.2	-	2.3	-	3.4	1.5	1.2	-	2.1	-	1.5	0.9	1.4	-	1.2	-	1.8	1.8	0.0	-	1.7	1.7
Trucks	0	0	10	4	-	14	0	3	6	1	-	10	0	4	8	11	-	23	0	2	11	1	-	14	61
% Trucks	-	0.0	2.7	1.5	-	2.2	-	1.3	1.5	1.2	-	1.4	-	1.5	1.5	3.9	-	2.1	-	1.8	2.1	3.6	-	2.1	2.0
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	7	0	-	7	0	0	0	0	-	0	8
% Bicycles on Road	-	0.0	0.3	0.0	-	0.2	-	0.0	0.0	0.0	-	0.0	-	0.0	1.3	0.0	-	0.6	-	0.0	0.0	0.0	-	0.0	0.3

Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	7	-	-	-	-	-	7	-	-	-	-	-	1	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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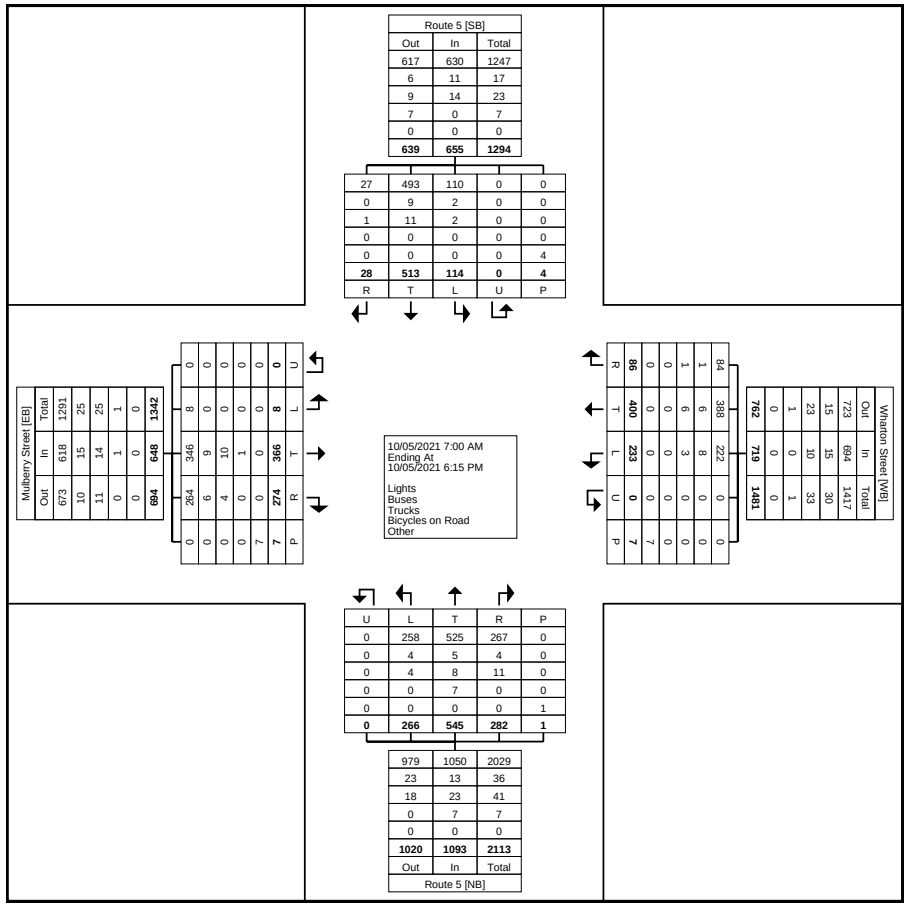
Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.774814, -75.311806

Count Name: 8. DE Route 5 & Mulberry Street/Atlanta Street
Site Code: 8
Start Date: 10/05/2021
Page No: 3



Turning Movement Data Plot

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.774814, -75.311806

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Count Name: 8. DE Route 5 & Mulberry Street/Atlanta Street
Site Code: 8
Start Date: 10/05/2021

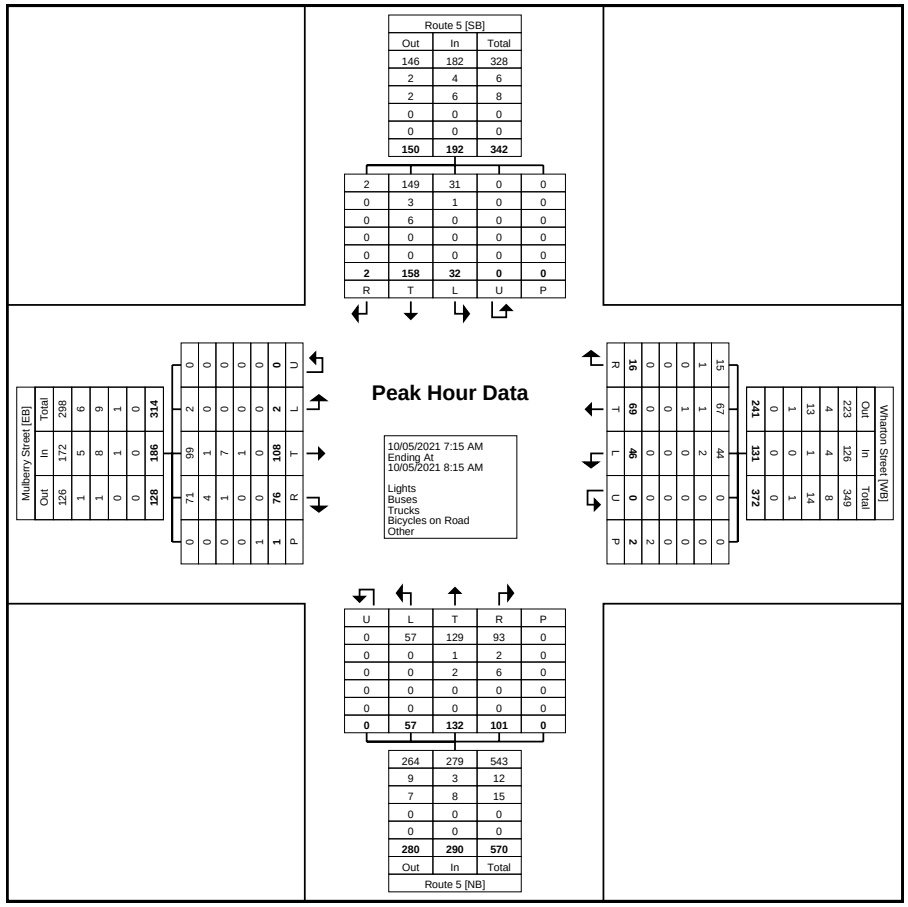
Turning Movement Peak Hour Data (7:15 AM)

Start Time	Mulberry Street Eastbound						Wharton Street Westbound						Route 5 Northbound						Route 5 Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:15 AM	0	0	18	21	0	39	0	12	22	1	1	35	0	19	42	34	0	95	0	5	28	0	0	33	202
7:30 AM	0	1	25	22	1	48	0	8	22	4	1	34	0	19	46	26	0	91	0	6	40	1	0	47	220
7:45 AM	0	1	26	22	0	49	0	12	16	9	0	37	0	11	16	19	0	46	0	9	45	0	0	54	186
8:00 AM	0	0	39	11	0	50	0	14	9	2	0	25	0	8	28	22	0	58	0	12	45	1	0	58	191
Total	0	2	108	76	1	186	0	46	69	16	2	131	0	57	132	101	0	290	0	32	158	2	0	192	799
Approach %	0.0	1.1	58.1	40.9	-	-	0.0	35.1	52.7	12.2	-	-	0.0	19.7	45.5	34.8	-	-	0.0	16.7	82.3	1.0	-	-	-
Total %	0.0	0.3	13.5	9.5	-	23.3	0.0	5.8	8.6	2.0	-	16.4	0.0	7.1	16.5	12.6	-	36.3	0.0	4.0	19.8	0.3	-	24.0	-
PHF	0.000	0.500	0.692	0.864	-	0.930	0.000	0.821	0.784	0.444	-	0.885	0.000	0.750	0.717	0.743	-	0.763	0.000	0.667	0.878	0.500	-	0.828	0.908
Lights	0	2	99	71	-	172	0	44	67	15	-	126	0	57	129	93	-	279	0	31	149	2	-	182	759
% Lights	-	100.0	91.7	93.4	-	92.5	-	95.7	97.1	93.8	-	96.2	-	100.0	97.7	92.1	-	96.2	-	96.9	94.3	100.0	-	94.8	95.0
Buses	0	0	1	4	-	5	0	2	1	1	-	4	0	0	1	2	-	3	0	1	3	0	-	4	16
% Buses	-	0.0	0.9	5.3	-	2.7	-	4.3	1.4	6.3	-	3.1	-	0.0	0.8	2.0	-	1.0	-	3.1	1.9	0.0	-	2.1	2.0
Trucks	0	0	7	1	-	8	0	0	1	0	-	1	0	0	2	6	-	8	0	0	6	0	-	6	23
% Trucks	-	0.0	6.5	1.3	-	4.3	-	0.0	1.4	0.0	-	0.8	-	0.0	1.5	5.9	-	2.8	-	0.0	3.8	0.0	-	3.1	2.9
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	-	0.0	0.9	0.0	-	0.5	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.774814, -75.311806

Count Name: 8. DE Route 5 & Mulberry Street/Atlanta Street
Site Code: 8
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (7:15 AM)

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609-706-6100 lklein@imperialtdc.com

Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.774814, -75.311806

Count Name: 8. DE Route 5 & Mulberry Street/Atlanta Street
Site Code: 8
Start Date: 10/05/2021

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Mulberry Street Eastbound						Wharton Street Westbound						Route 5 Northbound						Route 5 Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:00 PM	0	1	33	29	0	63	0	16	30	14	1	60	0	22	43	15	0	80	0	6	52	1	1	59	262
4:15 PM	0	0	13	11	0	24	0	18	31	4	0	53	0	11	22	9	0	42	0	7	41	2	0	50	169
4:30 PM	0	1	18	13	0	32	0	22	18	5	0	45	0	21	43	9	0	73	0	5	34	2	2	41	191
4:45 PM	0	2	15	24	0	41	0	9	16	4	0	29	0	20	39	14	0	73	0	8	24	2	0	34	177
Total	0	4	79	77	0	160	0	65	95	27	1	187	0	74	147	47	0	268	0	26	151	7	3	184	799
Approach %	0.0	2.5	49.4	48.1	-	-	0.0	34.8	50.8	14.4	-	-	0.0	27.6	54.9	17.5	-	-	0.0	14.1	82.1	3.8	-	-	-
Total %	0.0	0.5	9.9	9.6	-	20.0	0.0	8.1	11.9	3.4	-	23.4	0.0	9.3	18.4	5.9	-	33.5	0.0	3.3	18.9	0.9	-	23.0	-
PHF	0.000	0.500	0.598	0.664	-	0.635	0.000	0.739	0.766	0.482	-	0.779	0.000	0.841	0.855	0.783	-	0.838	0.000	0.813	0.726	0.875	-	0.780	0.762
Lights	0	4	76	76	-	156	0	62	92	27	-	181	0	72	144	47	-	263	0	25	146	7	-	178	778
% Lights	-	100.0	96.2	98.7	-	97.5	-	95.4	96.8	100.0	-	96.8	-	97.3	98.0	100.0	-	98.1	-	96.2	96.7	100.0	-	96.7	97.4
Buses	0	0	2	0	-	2	0	1	2	0	-	3	0	0	1	0	-	1	0	0	3	0	-	3	9
% Buses	-	0.0	2.5	0.0	-	1.3	-	1.5	2.1	0.0	-	1.6	-	0.0	0.7	0.0	-	0.4	-	0.0	2.0	0.0	-	1.6	1.1
Trucks	0	0	1	1	-	2	0	2	1	0	-	3	0	2	2	0	-	4	0	1	2	0	-	3	12
% Trucks	-	0.0	1.3	1.3	-	1.3	-	3.1	1.1	0.0	-	1.6	-	2.7	1.4	0.0	-	1.5	-	3.8	1.3	0.0	-	1.6	1.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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Project: Shingle Point Road
Municipality: Georgetown, Sussex County, DE
Setup: NR
Location: 38.774814, -75.311806

Count Name: 8. DE Route 5 & Mulberry Street/Atlanta Street
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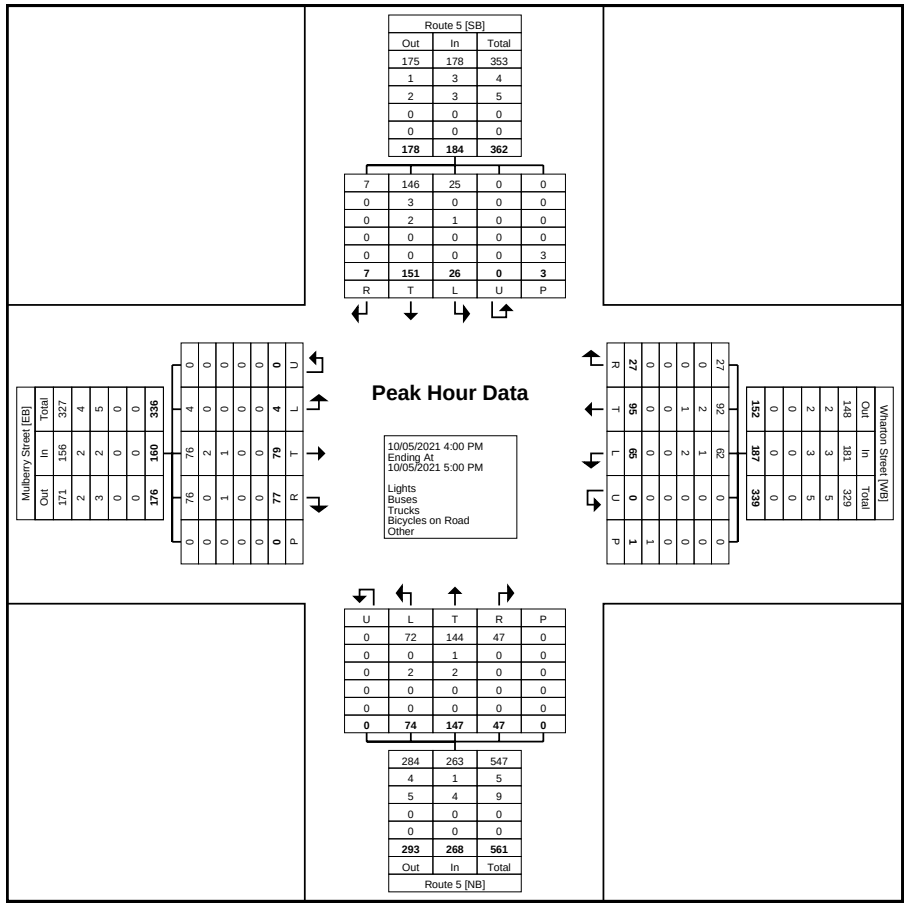
Start Date: 10/05/2021



Turning Movement Peak Hour Data Plot (4:00 PM)

Appendix D

Automatic Traffic Recorder (ATRs)

Count Data

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
WWW.IMPERIALTDC.COM

File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

9/27/2021	Monday		Tuesday		Wednesday		Thursday		Friday		Weekday Average		Saturday		Sunday	
Time	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road
12:00 AM	*	*	*	*	*	*	*	*	1	4	1	4	1	3	2	2
1:00	*	*	*	*	*	*	*	*	1	1	1	1	2	4	1	2
2:00	*	*	*	*	*	*	*	*	0	3	0	3	0	0	0	1
3:00	*	*	*	*	*	*	*	*	1	1	1	1	0	0	0	0
4:00	*	*	*	*	*	*	*	*	2	2	2	2	1	2	3	2
5:00	*	*	*	*	*	*	*	*	13	11	13	11	7	2	3	3
6:00	*	*	*	*	*	*	*	*	46	41	46	41	13	6	16	5
7:00	*	*	*	*	*	*	*	*	65	67	65	67	24	16	13	9
8:00	*	*	*	*	*	*	*	*	57	67	57	67	35	37	14	26
9:00	*	*	*	*	*	*	*	*	35	42	35	42	42	26	29	43
10:00	*	*	*	*	*	*	*	*	37	42	37	42	62	42	32	35
11:00	*	*	*	*	*	*	*	*	46	52	46	52	28	53	33	37
12:00 PM	*	*	*	*	*	*	28	32	51	37	40	34	45	39	44	45
1:00	*	*	*	*	*	*	40	49	46	38	43	44	35	59	41	49
2:00	*	*	*	*	*	*	49	54	57	69	53	62	46	59	39	43
3:00	*	*	*	*	*	*	85	71	54	74	70	72	33	54	23	68
4:00	*	*	*	*	*	*	73	91	71	76	72	84	32	42	34	48
5:00	*	*	*	*	*	*	65	84	62	55	64	70	33	39	27	40
6:00	*	*	*	*	*	*	55	40	42	46	48	43	20	22	26	35
7:00	*	*	*	*	*	*	22	29	38	30	30	30	16	31	27	24
8:00	*	*	*	*	*	*	19	23	17	21	18	22	27	23	14	13
9:00	*	*	*	*	*	*	19	15	19	15	19	15	11	16	8	5
10:00	*	*	*	*	*	*	8	9	17	10	12	10	12	5	12	7
11:00	*	*	*	*	*	*	5	3	5	7	5	5	10	7	6	4
Total	0	0	0	0	0	0	468	500	783	811	778	824	535	587	447	546
Day	0		0		0		968		1594		1602		1122		993	
AM Peak									7:00	7:00	7:00	7:00	10:00	11:00	11:00	9:00
Volume									65	67	65	67	62	53	33	43
PM Peak							3:00	4:00	4:00	4:00	4:00	4:00	2:00	1:00	12:00 PM	3:00
Volume							85	91	71	76	72	84	46	59	44	68

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR

Imperial
TRAFFIC & DATA COLLECTION
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WWW.IMPERIALTDC.COM

File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/4/2021	Monday		Tuesday		Wednesday		Thursday		Friday		Weekday Average		Saturday		Sunday	
Time	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road	SB Shingle Point Road	NB Shingle Point Road
12:00 AM	1	2	1	8	1	6	3	4	1	6	1	5	*	*	*	*
1:00	0	0	0	1	0	3	0	1	1	0	0	1	*	*	*	*
2:00	0	0	0	1	0	1	1	2	2	1	1	1	*	*	*	*
3:00	1	1	3	2	1	0	4	2	3	2	2	1	*	*	*	*
4:00	1	4	3	2	0	3	0	2	2	0	1	2	*	*	*	*
5:00	17	10	11	7	17	8	15	11	14	8	15	9	*	*	*	*
6:00	43	40	36	45	40	43	46	37	41	27	41	38	*	*	*	*
7:00	73	79	81	90	79	92	66	87	56	76	71	85	*	*	*	*
8:00	38	71	58	80	46	72	52	76	50	68	49	73	*	*	*	*
9:00	31	42	32	41	42	31	29	48	35	44	34	41	*	*	*	*
10:00	35	31	39	34	34	48	43	37	4	8	31	32	*	*	*	*
11:00	40	31	38	47	45	46	45	43	*	*	42	42	*	*	*	*
12:00 PM	40	54	32	36	52	42	37	48	*	*	40	45	*	*	*	*
1:00	50	40	37	52	54	53	41	45	*	*	46	48	*	*	*	*
2:00	56	77	56	50	69	70	49	69	*	*	58	66	*	*	*	*
3:00	69	59	71	78	74	91	81	92	*	*	74	80	*	*	*	*
4:00	73	76	84	61	89	83	77	92	*	*	81	78	*	*	*	*
5:00	61	54	55	62	81	53	76	70	*	*	68	60	*	*	*	*
6:00	31	40	40	26	45	42	34	37	*	*	38	36	*	*	*	*
7:00	15	29	26	25	25	28	38	33	*	*	26	29	*	*	*	*
8:00	21	16	11	19	14	13	12	18	*	*	14	16	*	*	*	*
9:00	12	11	7	16	11	12	13	17	*	*	11	14	*	*	*	*
10:00	6	5	8	9	6	6	10	3	*	*	8	6	*	*	*	*
11:00	4	2	4	5	7	5	7	4	*	*	6	4	*	*	*	*
Total	718	774	733	797	832	851	779	878	209	240	758	812	0	0	0	0
Day	1492		1530		1683		1657		449		1570		0		0	
AM Peak	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00				
Volume	73	79	81	90	79	92	66	87	56	76	71	85				
PM Peak	4:00	2:00	4:00	3:00	4:00	3:00	3:00	3:00			4:00	3:00				
Volume	73	77	84	78	89	91	81	92			81	80				
Comb Total	1492		1530		1683		2625		2043		3172		1122		993	
ADT	ADT: 1,592		AADT: 1,592													

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
WWW.IMPERIALTDC.COM

File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

9/30/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
1:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
2:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
3:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
4:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
6:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
7:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
8:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
9:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
12:00 PM	1	2	1	1	2	5	0	7	5	1	0	2	1	0	28
1:00	0	1	6	4	5	4	3	5	7	2	1	0	1	1	40
2:00	1	0	0	5	6	8	10	3	9	2	3	0	1	1	49
3:00	0	1	3	12	13	10	12	11	9	5	6	0	2	1	85
4:00	0	2	5	5	8	7	8	8	10	7	6	3	2	2	73
5:00	0	1	3	9	7	4	10	6	10	5	5	2	2	1	65
6:00	0	2	4	7	2	5	4	15	6	4	4	1	0	1	55
7:00	0	1	3	1	2	5	2	2	2	1	0	0	2	1	22
8:00	0	0	2	3	3	2	0	4	3	0	1	0	1	0	19
9:00	0	0	1	5	2	1	3	3	1	2	0	0	0	1	19
10:00	0	0	1	1	1	1	0	2	0	0	1	0	0	1	8
11:00	0	0	0	0	1	1	1	1	0	0	0	0	0	1	5
Total	2	10	29	53	52	53	53	67	62	29	27	8	12	11	468

Percentile	15th	50th	85th	95th
Speed	37.2	45.9	55.2	61.4

Mean Speed (Average)	48.2
10 MPH Pace Speed	43-52
Number in Pace	199
Percent in Pace	42.5%
Number > 44 MPH	269
Percent > 44 MPH	57.5%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/1/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:00	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
5:00	0	0	3	0	1	1	1	1	1	0	2	0	0	3	13
6:00	0	0	2	4	4	8	6	4	8	3	5	1	0	1	46
7:00	0	0	6	4	11	5	4	9	8	9	3	1	2	3	65
8:00	0	0	4	7	8	2	6	4	9	6	7	2	1	1	57
9:00	0	0	7	2	8	3	3	2	2	1	1	1	3	2	35
10:00	1	1	1	7	4	4	5	6	2	1	2	3	0	0	37
11:00	2	0	7	6	7	9	1	5	1	3	3	1	1	0	46
12:00 PM	1	1	2	5	9	5	8	6	6	4	1	1	0	2	51
1:00	1	0	3	5	8	4	8	8	3	3	1	1	0	1	46
2:00	4	2	4	7	5	5	6	5	10	4	1	2	2	0	57
3:00	2	1	4	3	5	3	6	5	6	9	4	3	2	1	54
4:00	1	2	3	8	4	8	4	4	11	10	8	3	1	4	71
5:00	0	4	4	5	4	4	9	8	8	8	2	3	1	2	62
6:00	0	0	4	4	5	5	10	3	4	2	3	0	2	0	42
7:00	1	3	6	7	5	2	4	4	3	2	1	0	0	0	38
8:00	0	0	1	3	2	2	2	3	0	1	2	1	0	0	17
9:00	3	1	1	3	4	3	0	2	1	0	0	1	0	0	19
10:00	0	2	0	5	2	2	1	4	0	0	0	1	0	0	17
11:00	0	0	0	0	2	1	0	1	0	1	0	0	0	0	5
Total	16	17	64	87	98	76	85	84	83	67	46	25	15	20	783

Percentile	15th	50th	85th	95th
Speed	35.9	45.3	55.2	61.4

Mean Speed (Average)	47.8
10 MPH Pace Speed	35-44
Number in Pace	289
Percent in Pace	36.9%
Number > 44 MPH	425
Percent > 44 MPH	54.3%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/2/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1:00	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
5:00	0	1	0	0	0	0	1	0	1	0	0	1	1	2	7
6:00	0	0	1	1	1	3	3	1	0	1	0	0	1	1	13
7:00	0	1	0	5	5	2	2	2	1	3	0	2	1	0	24
8:00	0	1	0	5	5	3	6	8	0	1	4	1	1	0	35
9:00	3	0	1	6	7	2	4	3	5	3	4	3	0	1	42
10:00	0	1	5	5	7	8	11	10	6	3	3	3	0	0	62
11:00	2	3	2	0	7	5	2	2	2	0	1	1	0	1	28
12:00 PM	1	1	4	5	2	8	6	6	3	2	1	2	3	1	45
1:00	4	1	1	2	6	1	6	4	2	4	3	1	0	0	35
2:00	0	4	5	3	7	3	5	6	7	3	1	0	1	1	46
3:00	0	1	3	5	4	5	2	6	4	2	0	0	0	1	33
4:00	1	0	3	3	5	2	5	7	3	2	0	0	1	0	32
5:00	0	1	1	4	4	2	3	8	3	4	1	0	2	0	33
6:00	0	1	5	2	0	1	2	2	2	2	2	0	1	0	20
7:00	0	0	2	1	2	2	2	3	1	0	3	0	0	0	16
8:00	1	4	0	2	5	2	5	3	2	0	3	0	0	0	27
9:00	1	1	2	2	2	0	0	2	0	1	0	0	0	0	11
10:00	0	0	3	1	3	1	0	0	1	0	0	1	0	2	12
11:00	2	2	0	1	0	1	1	0	1	1	0	1	0	0	10
Total	15	23	38	54	72	51	66	73	45	33	26	16	13	10	535

Percentile	15th	50th	85th	95th
Speed	35.3	44.6	54	61.4

Mean Speed (Average)	46.3
10 MPH Pace Speed	39-48
Number in Pace	214
Percent in Pace	40.0%
Number > 44 MPH	282
Percent > 44 MPH	52.7%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/3/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
1:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	1	0	0	0	0	1	1	0	0	0	3
5:00	0	0	0	0	0	0	0	1	1	0	0	1	0	0	3
6:00	0	1	2	2	1	4	2	1	1	2	0	0	0	0	16
7:00	0	0	0	2	3	0	2	3	0	1	1	0	0	1	13
8:00	0	0	3	3	1	1	2	0	2	1	0	0	0	1	14
9:00	0	1	2	1	2	4	6	2	4	4	0	1	0	2	29
10:00	3	1	3	5	5	7	3	0	1	1	1	1	1	0	32
11:00	2	0	0	3	6	4	4	5	3	3	2	0	0	1	33
12:00 PM	1	1	3	4	5	7	6	10	2	1	1	3	0	0	44
1:00	2	2	2	4	8	5	3	7	1	1	3	2	0	1	41
2:00	0	1	1	7	2	9	1	5	3	2	1	4	2	1	39
3:00	1	0	1	2	2	1	3	5	1	1	3	3	0	0	23
4:00	1	3	4	3	5	5	2	0	4	3	3	0	0	1	34
5:00	0	1	0	3	3	1	4	2	5	3	1	1	1	2	27
6:00	0	0	3	6	4	2	3	2	1	1	0	2	0	2	26
7:00	0	0	3	2	4	3	3	6	1	2	1	2	0	0	27
8:00	0	2	3	2	1	2	0	2	1	1	0	0	0	0	14
9:00	0	0	0	1	1	2	1	1	0	0	1	0	1	0	8
10:00	0	2	0	1	1	2	1	0	2	0	0	1	1	1	12
11:00	1	0	1	1	0	0	2	0	0	0	0	0	0	1	6
Total	11	15	31	53	56	59	49	52	33	28	19	21	6	14	447

	15th	50th	85th	95th
Percentile				
Speed	35.9	43.9	55.8	61.9

Mean Speed (Average)	47.7
10 MPH Pace Speed	35-44
Number in Pace	184
Percent in Pace	41.2%
Number > 44 MPH	222
Percent > 44 MPH	49.7%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

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TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/4/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
5:00	0	2	1	0	5	4	0	2	0	0	1	1	1	0	17
6:00	2	1	5	0	5	6	5	4	4	3	1	3	1	3	43
7:00	0	3	6	5	12	5	5	12	10	7	1	5	1	1	73
8:00	3	0	4	3	6	4	1	7	5	2	2	0	0	1	38
9:00	3	2	2	4	5	1	5	0	2	3	3	1	0	0	31
10:00	0	1	4	2	4	8	1	6	2	1	3	0	2	1	35
11:00	0	1	4	9	6	4	3	4	3	0	4	1	0	1	40
12:00 PM	0	2	1	3	6	4	7	8	6	1	1	0	1	0	40
1:00	1	3	1	7	5	6	4	10	5	1	3	1	1	2	50
2:00	2	3	3	4	7	8	9	4	7	4	1	1	2	1	56
3:00	2	2	3	9	14	9	7	7	2	6	3	3	1	1	69
4:00	0	1	9	6	13	3	12	9	8	2	4	3	1	2	73
5:00	1	2	6	2	8	5	6	8	7	4	7	3	1	1	61
6:00	0	3	1	4	1	8	1	3	3	2	3	1	1	0	31
7:00	3	1	1	1	2	0	1	5	1	0	0	0	0	0	15
8:00	0	1	2	4	5	1	1	1	2	2	1	0	0	1	21
9:00	0	0	0	1	3	0	1	3	1	1	1	1	0	0	12
10:00	0	1	0	0	0	2	2	0	1	0	0	0	0	0	6
11:00	0	1	1	1	1	0	0	0	0	0	0	0	0	0	4
Total	17	30	54	65	109	78	71	94	70	39	39	24	13	15	718

	15th	50th	85th	95th
Percentile				
Speed	35.9	44.9	54.9	60.9

Mean Speed (Average)	46.6
10 MPH Pace Speed	38-47
Number in Pace	288
Percent in Pace	40.1%
Number > 44 MPH	365
Percent > 44 MPH	50.8%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/5/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
4:00	0	0	2	0	1	0	0	0	0	0	0	0	0	0	3
5:00	0	1	0	0	1	3	1	2	1	0	1	0	0	1	11
6:00	2	1	6	3	3	3	2	7	4	1	2	1	1	0	36
7:00	2	1	11	6	7	8	10	11	6	5	6	2	5	1	81
8:00	0	3	2	3	10	7	7	6	6	1	7	1	2	3	58
9:00	1	0	2	3	9	5	5	1	2	3	1	0	0	0	32
10:00	0	0	5	6	2	9	2	3	4	5	1	0	2	0	39
11:00	7	3	4	5	5	1	5	5	2	0	1	0	0	0	38
12:00 PM	1	2	3	0	4	3	7	2	4	2	3	1	0	0	32
1:00	2	1	1	1	4	4	7	4	7	2	2	0	1	1	37
2:00	0	3	1	7	8	6	8	9	6	2	0	0	1	5	56
3:00	1	1	4	7	13	6	8	7	12	2	5	2	2	1	71
4:00	1	2	3	4	15	8	17	11	10	3	8	0	1	1	84
5:00	1	2	2	2	7	7	8	9	7	5	4	0	1	0	55
6:00	0	0	3	5	6	4	6	5	6	4	1	0	0	0	40
7:00	3	0	1	1	3	6	6	3	2	1	0	0	0	0	26
8:00	0	0	1	2	1	2	1	0	2	0	2	0	0	0	11
9:00	0	1	1	0	1	0	0	1	2	1	0	0	0	0	7
10:00	0	0	2	1	1	1	0	2	1	0	0	0	0	0	8
11:00	0	0	0	1	1	1	1	0	0	0	0	0	0	0	4
Total	21	21	54	57	103	84	101	91	84	37	44	7	16	13	733

Percentile	15th	50th	85th	95th
Speed	35.9	44.9	53.9	58.9

Mean Speed (Average)	46.3
10 MPH Pace Speed	38-47
Number in Pace	317
Percent in Pace	43.2%
Number > 44 MPH	393
Percent > 44 MPH	53.6%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/6/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	0	1	3	1	2	0	1	5	0	0	1	2	1	17
6:00	1	0	2	3	4	2	11	4	2	4	5	2	0	0	40
7:00	2	0	2	4	13	7	12	12	10	5	4	6	1	1	79
8:00	0	1	5	4	7	6	4	3	6	3	3	2	2	0	46
9:00	0	0	4	4	3	9	4	4	5	2	1	3	3	0	42
10:00	2	0	5	1	5	4	5	3	6	0	0	1	0	2	34
11:00	5	3	5	2	7	6	9	3	2	1	2	0	0	0	45
12:00 PM	5	3	3	3	8	2	8	5	6	5	2	0	1	1	52
1:00	3	0	7	1	11	7	6	7	3	1	3	2	2	1	54
2:00	0	2	4	8	11	10	15	6	3	3	3	2	2	0	69
3:00	1	3	3	5	16	8	13	7	8	5	2	1	1	1	74
4:00	4	3	8	7	11	8	7	14	8	8	3	4	2	2	89
5:00	3	2	2	8	11	7	13	11	7	5	5	6	0	1	81
6:00	4	3	3	1	8	7	4	5	3	0	4	0	1	2	45
7:00	1	2	1	2	6	5	2	0	2	2	1	1	0	0	25
8:00	0	0	1	0	3	1	2	3	1	0	3	0	0	0	14
9:00	0	1	3	2	0	2	1	1	0	0	0	0	1	0	11
10:00	0	2	1	0	2	0	0	0	1	0	0	0	0	0	6
11:00	0	0	0	1	1	3	1	1	0	0	0	0	0	0	7
Total	31	25	60	59	128	97	117	90	79	44	41	31	18	12	832

Percentile	15th	50th	85th	95th
Speed	35.9	44.9	54.9	60.9

Mean Speed (Average)	45.7
10 MPH Pace Speed	38-47
Number in Pace	371
Percent in Pace	44.6%
Number > 44 MPH	432
Percent > 44 MPH	51.9%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/7/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	1	0	0	1	0	0	0	0	1	0	0	3
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00	0	1	0	0	0	1	0	0	0	2	0	0	0	0	4
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	1	1	0	2	0	1	2	0	2	2	2	0	1	1	15
6:00	1	2	3	6	4	7	7	4	1	4	2	3	0	2	46
7:00	0	3	5	4	9	7	6	9	4	4	8	4	1	2	66
8:00	1	2	3	4	10	3	5	9	5	3	0	1	5	1	52
9:00	0	1	4	3	4	2	4	5	1	1	2	1	0	1	29
10:00	2	2	6	1	3	8	4	7	6	1	2	1	0	0	43
11:00	2	2	5	2	6	2	11	6	4	1	3	1	0	0	45
12:00 PM	0	2	1	0	4	7	5	7	3	4	0	4	0	0	37
1:00	2	3	4	6	2	7	2	5	3	3	0	0	1	3	41
2:00	1	3	2	2	6	7	3	5	8	6	2	4	0	0	49
3:00	5	1	5	2	14	19	9	13	7	2	1	0	0	3	81
4:00	0	2	6	4	11	6	14	10	12	7	4	1	0	0	77
5:00	2	1	1	6	4	9	14	7	18	2	6	2	4	0	76
6:00	3	0	1	3	5	4	3	6	4	1	1	3	0	0	34
7:00	3	1	4	9	12	1	3	1	0	0	1	3	0	0	38
8:00	0	1	1	2	2	1	1	1	0	1	2	0	0	0	12
9:00	0	1	0	2	3	2	2	1	1	0	0	1	0	0	13
10:00	0	1	0	1	2	1	0	2	1	1	0	1	0	0	10
11:00	0	0	1	0	1	1	3	0	0	1	0	0	0	0	7
Total	24	30	52	60	102	96	99	98	80	46	36	31	12	13	779

Percentile	15th	50th	85th	95th
Speed	35.9	44.9	54.9	60.9

Mean Speed (Average)	46.2
10 MPH Pace Speed	38-47
Number in Pace	328
Percent in Pace	42.1%
Number > 44 MPH	415
Percent > 44 MPH	53.3%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

Imperial
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/8/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
1:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:00	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2
3:00	0	0	0	0	0	1	2	0	0	0	0	0	0	0	3
4:00	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2
5:00	0	0	0	1	4	3	2	1	0	0	2	0	1	0	14
6:00	1	2	0	4	11	2	6	3	7	1	0	3	1	0	41
7:00	2	0	1	11	8	5	6	3	5	2	9	3	1	0	56
8:00	1	3	4	4	2	6	4	15	5	1	2	2	0	1	50
9:00	0	1	3	4	4	2	5	4	5	2	2	1	2	0	35
10:00	1	1	0	0	0	0	0	1	0	1	0	0	0	0	4
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
12:00 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
1:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
2:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
3:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
4:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
6:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
7:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
8:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
9:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
Total	5	7	9	25	29	21	25	27	22	8	16	9	5	1	209
			Percentile	15th	50th	85th	95th								
			Speed	36.9	44.9	54.9	60.9								
		Mean Speed (Average)		45.5											
		10 MPH Pace Speed		38-47											
		Number in Pace		84											
		Percent in Pace		40.2%											
		Number > 44 MPH		113											
		Percent > 44 MPH		54.1%											
Grand Total	142	178	391	513	749	615	666	676	558	331	294	172	110	109	5504
Stats			Percentile	15th	50th	85th	95th								
			Speed	35.9	44.9	54.9	60.9								
		Mean Speed (Average)		46.7											
		10 MPH Pace Speed		38-47											
		Number in Pace		2250											
		Percent in Pace		40.9%											
		Number > 44 MPH		2916											
		Percent > 44 MPH		53.0%											

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

9/30/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
1:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
2:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
3:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
4:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
6:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
7:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
8:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
9:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
12:00 PM	1	2	0	1	2	5	5	1	6	3	2	2	1	1	32
1:00	0	0	2	0	2	1	7	10	10	5	4	4	3	1	49
2:00	1	0	0	2	1	3	2	8	7	13	11	5	1	0	54
3:00	0	0	0	0	1	2	8	10	21	10	10	4	2	3	71
4:00	0	0	0	2	2	3	7	15	19	7	19	8	3	6	91
5:00	0	1	0	0	2	1	7	9	21	15	12	7	3	6	84
6:00	0	0	0	1	1	1	3	8	9	6	5	5	0	1	40
7:00	0	0	0	0	1	4	3	10	3	0	5	1	1	1	29
8:00	1	0	0	3	3	0	2	3	2	3	4	1	1	0	23
9:00	0	0	0	0	0	1	2	1	5	1	1	0	2	2	15
10:00	0	0	0	0	0	1	1	0	3	2	0	0	1	1	9
11:00	0	0	0	0	0	0	1	0	0	0	0	0	0	2	3
Total	3	3	2	9	15	22	48	75	106	65	73	37	18	24	500

Percentile	15th	50th	85th	95th
Speed	45.9	52.1	59.6	64.5

Mean Speed (Average)	56.7
10 MPH Pace Speed	47-56
Number in Pace	270
Percent in Pace	54.0%
Number > 44 MPH	446
Percent > 44 MPH	89.2%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/1/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	1	0	1	2	0	0	0	0	0	0	0	4
1:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
2:00	0	0	0	0	0	0	0	1	2	0	0	0	0	0	3
3:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
4:00	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
5:00	0	0	0	1	1	1	2	3	0	0	1	0	0	2	11
6:00	1	0	0	0	2	3	1	4	13	5	7	2	2	1	41
7:00	0	0	0	1	0	1	5	6	16	11	12	4	7	4	67
8:00	0	0	0	0	1	1	3	9	9	12	24	3	2	3	67
9:00	0	0	0	1	1	3	0	7	10	4	8	3	3	2	42
10:00	1	0	1	0	0	3	8	6	9	5	6	0	2	1	42
11:00	0	0	0	1	2	0	3	11	13	5	10	0	6	1	52
12:00 PM	0	1	0	0	1	0	3	7	5	11	5	3	1	0	37
1:00	1	1	1	0	3	1	3	6	8	5	3	4	1	1	38
2:00	0	3	0	1	5	4	6	15	14	10	5	3	2	1	69
3:00	0	1	1	1	2	4	3	16	16	12	9	5	1	3	74
4:00	1	0	0	1	2	1	5	12	10	15	11	6	4	8	76
5:00	0	0	0	0	0	2	3	12	11	11	12	2	2	0	55
6:00	0	0	0	1	2	0	3	9	8	8	8	3	4	0	46
7:00	1	1	0	0	3	1	6	4	5	3	2	2	0	2	30
8:00	1	0	0	0	0	3	4	1	3	4	1	2	1	1	21
9:00	0	0	0	0	1	1	3	1	1	2	2	2	1	1	15
10:00	0	0	0	0	1	1	1	2	2	3	0	0	0	0	10
11:00	0	0	0	0	1	0	3	0	1	1	1	0	0	0	7
Total	6	7	3	9	28	33	68	132	157	127	127	44	39	31	811

Percentile	15th	50th	85th	95th
Speed	45.9	52.1	58.9	63.9

Mean Speed (Average)	55.7
10 MPH Pace Speed	48-57
Number in Pace	457
Percent in Pace	56.4%
Number > 44 MPH	725
Percent > 44 MPH	89.4%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/2/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	1	1	0	0	0	0	0	1	0	0	3
1:00	0	0	1	0	0	0	0	0	0	1	0	2	0	0	4
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
5:00	0	0	1	0	0	0	0	0	1	0	0	0	0	0	2
6:00	0	0	0	0	1	0	0	1	0	0	2	2	0	0	6
7:00	0	0	1	0	0	0	1	3	2	3	2	1	0	3	16
8:00	0	1	0	0	0	1	2	4	9	10	3	2	3	2	37
9:00	0	0	0	0	2	3	0	3	6	4	3	2	0	3	26
10:00	0	0	0	0	1	4	6	5	6	8	7	3	1	1	42
11:00	1	0	1	0	0	2	4	9	14	11	7	1	2	1	53
12:00 PM	0	0	0	0	0	2	6	9	10	7	0	1	2	2	39
1:00	0	0	1	3	1	3	6	11	14	8	7	0	3	2	59
2:00	1	1	0	0	1	1	3	11	11	11	6	9	2	2	59
3:00	0	0	0	0	2	1	3	11	8	17	9	0	2	1	54
4:00	0	0	0	0	1	1	2	5	13	9	2	4	4	1	42
5:00	1	0	2	1	0	1	3	5	9	8	5	2	1	1	39
6:00	0	0	0	0	0	0	2	2	5	8	1	3	0	1	22
7:00	0	0	0	0	1	5	4	11	2	4	4	0	0	0	31
8:00	0	0	0	0	0	1	3	6	6	1	1	2	2	1	23
9:00	1	0	0	0	0	1	1	1	6	3	1	1	0	1	16
10:00	0	0	0	1	0	0	1	0	1	1	0	1	0	0	5
11:00	0	0	0	0	1	1	1	0	2	1	0	1	0	0	7
Total	4	2	7	5	13	28	48	98	125	115	60	38	22	22	587

	Percentile	15th	50th	85th	95th
	Speed	45.9	52.1	58.9	63.9
Mean Speed (Average)		55.5			
10 MPH Pace Speed		47-56			
Number in Pace		358			
Percent in Pace		61.0%			
Number > 44 MPH		528			
Percent > 44 MPH		89.9%			

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/3/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
1:00	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
2:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
5:00	0	0	0	0	0	1	1	0	1	0	0	0	0	0	3
6:00	0	0	0	0	0	1	0	2	1	0	0	0	0	1	5
7:00	0	0	0	0	0	1	2	2	0	3	1	0	0	0	9
8:00	0	0	0	0	0	3	2	5	7	2	4	1	0	2	26
9:00	1	0	0	1	0	0	4	5	10	10	5	3	1	3	43
10:00	1	0	0	0	1	1	3	3	5	3	7	4	3	4	35
11:00	1	0	0	0	3	0	2	6	6	7	5	2	2	3	37
12:00 PM	0	0	0	1	0	1	7	9	11	5	8	2	1	0	45
1:00	1	0	0	1	1	1	7	3	13	6	6	4	2	4	49
2:00	0	0	0	1	1	4	10	7	7	3	5	3	0	2	43
3:00	2	0	0	0	3	3	11	7	17	6	7	10	2	0	68
4:00	1	0	0	0	2	3	6	5	8	5	8	6	2	2	48
5:00	0	0	0	1	0	1	3	6	8	5	6	5	3	2	40
6:00	0	0	0	0	0	3	4	7	6	3	5	4	2	1	35
7:00	0	0	1	1	0	4	3	4	3	2	3	1	0	2	24
8:00	0	0	0	0	0	1	3	3	2	2	2	0	0	0	13
9:00	0	0	0	0	0	2	1	0	1	0	0	1	0	0	5
10:00	0	0	0	0	0	0	1	4	1	0	0	0	1	0	7
11:00	0	0	0	0	0	0	0	2	0	1	0	1	0	0	4
Total	7	0	1	7	12	30	71	82	108	63	72	47	20	26	546

Percentile	15th	50th	85th	95th
Speed	45.9	51.9	59.9	64.9

Mean Speed (Average)	56.4
10 MPH Pace Speed	44-53
Number in Pace	281
Percent in Pace	51.5%
Number > 44 MPH	489
Percent > 44 MPH	89.6%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/4/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4:00	0	0	0	0	0	0	0	1	0	1	0	0	2	0	4
5:00	0	0	0	1	0	1	1	0	1	2	1	0	0	3	10
6:00	1	0	0	0	2	3	2	6	10	3	7	3	1	2	40
7:00	0	0	0	1	2	2	3	14	11	18	14	7	5	2	79
8:00	0	0	0	0	2	5	2	12	14	10	14	3	5	4	71
9:00	0	0	0	0	0	3	7	3	9	3	6	5	5	1	42
10:00	0	0	1	2	2	0	12	4	5	0	4	0	1	0	31
11:00	0	0	0	0	1	7	5	1	6	3	4	1	2	1	31
12:00 PM	2	0	0	0	2	4	7	9	5	7	7	9	1	1	54
1:00	0	0	0	0	1	4	5	3	8	4	4	7	3	1	40
2:00	1	0	1	0	1	3	13	11	20	5	11	7	4	0	77
3:00	0	0	0	1	1	6	6	7	12	3	10	5	5	3	59
4:00	1	1	0	0	2	4	6	12	23	7	7	8	4	1	76
5:00	0	0	0	0	0	3	4	11	11	8	9	4	4	0	54
6:00	0	0	0	0	1	0	4	7	9	10	3	3	2	1	40
7:00	0	0	0	1	3	2	5	10	1	1	1	3	0	2	29
8:00	0	0	1	0	1	1	2	1	2	1	3	3	1	0	16
9:00	0	0	0	0	2	0	0	2	4	0	0	1	0	2	11
10:00	0	0	0	0	0	0	1	0	1	1	0	1	0	1	5
11:00	0	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Total	5	1	3	6	25	48	86	115	152	88	105	70	45	25	774

Percentile	15th	50th	85th	95th
Speed	45.9	52.9	59.9	64.9

Mean Speed (Average)	55.2
10 MPH Pace Speed	47-56
Number in Pace	389
Percent in Pace	50.3%
Number > 44 MPH	686
Percent > 44 MPH	88.6%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/5/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	1	0	1	0	3	1	1	1	0	0	0	8
1:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
2:00	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
3:00	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
4:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2
5:00	0	0	0	0	0	0	0	3	2	0	2	0	0	0	7
6:00	2	0	1	0	2	3	7	5	13	3	1	6	0	2	45
7:00	0	0	0	1	1	1	8	13	28	17	11	3	3	4	90
8:00	0	0	0	1	2	5	12	14	14	12	11	3	2	4	80
9:00	3	0	2	1	3	3	5	4	8	4	3	4	1	0	41
10:00	0	0	1	1	1	1	4	9	4	4	5	0	3	1	34
11:00	4	3	3	3	3	3	8	6	6	4	1	0	1	2	47
12:00 PM	0	0	0	2	3	4	8	4	8	2	5	0	0	0	36
1:00	0	0	3	2	1	5	8	6	8	11	3	4	0	1	52
2:00	1	0	0	0	0	1	8	14	8	5	5	5	0	3	50
3:00	0	0	0	1	3	2	11	17	13	9	12	5	2	3	78
4:00	0	0	2	0	1	3	2	10	20	11	6	3	2	1	61
5:00	0	0	1	0	0	9	16	11	7	9	6	1	2	0	62
6:00	0	0	0	0	0	3	6	4	7	3	1	1	0	1	26
7:00	1	0	3	1	1	3	3	3	5	1	1	1	0	2	25
8:00	1	0	0	0	2	0	1	7	4	2	2	0	0	0	19
9:00	0	0	0	1	0	1	1	3	1	3	5	0	0	1	16
10:00	0	0	0	1	1	0	2	0	1	1	2	1	0	0	9
11:00	0	0	0	0	0	1	2	0	0	0	2	0	0	0	5
Total	12	3	17	16	24	49	112	138	159	103	85	37	16	26	797

	15th	50th	85th	95th
Percentile				
Speed	43.9	50.9	57.9	62.9

Mean Speed (Average)	53.2
10 MPH Pace Speed	44-53
Number in Pace	442
Percent in Pace	55.5%
Number > 44 MPH	676
Percent > 44 MPH	84.8%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/6/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	0	1	2	1	0	0	1	0	0	1	6
1:00	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
2:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	1	1	0	0	0	0	1	3
5:00	0	0	0	1	0	0	3	1	1	0	0	0	2	0	8
6:00	1	0	0	3	0	2	11	5	5	3	5	5	1	2	43
7:00	1	0	0	3	3	6	9	15	25	11	8	4	3	4	92
8:00	1	0	1	3	0	4	11	10	14	9	9	6	2	2	72
9:00	0	0	5	0	0	0	6	3	7	3	5	0	1	1	31
10:00	2	0	2	0	2	7	6	15	6	5	1	0	1	1	48
11:00	2	1	0	0	0	5	11	12	5	2	3	2	2	1	46
12:00 PM	0	0	3	1	1	2	12	8	5	2	6	1	0	1	42
1:00	0	0	0	0	2	5	9	9	7	7	6	5	2	1	53
2:00	1	0	0	0	3	12	11	8	15	9	6	1	4	0	70
3:00	0	1	2	2	1	8	5	14	17	17	12	8	3	1	91
4:00	0	1	2	0	1	4	12	15	21	13	5	5	1	3	83
5:00	0	0	0	0	1	1	6	11	9	7	10	3	5	0	53
6:00	0	0	0	1	2	3	5	7	8	9	3	1	1	2	42
7:00	0	0	0	0	5	0	3	3	7	4	3	1	2	0	28
8:00	0	0	1	0	0	1	0	2	1	2	2	1	3	0	13
9:00	0	0	0	0	1	1	1	0	4	0	1	2	2	0	12
10:00	0	0	0	0	0	1	0	1	1	1	0	1	1	0	6
11:00	0	0	0	0	1	1	0	1	0	0	2	0	0	0	5
Total	8	3	16	14	23	64	124	142	162	104	88	46	36	21	851

Percentile	15th	50th	85th	95th
Speed	43.9	51.9	57.9	62.9

Mean Speed (Average)	52.8
10 MPH Pace Speed	44-53
Number in Pace	461
Percent in Pace	54.2%
Number > 44 MPH	723
Percent > 44 MPH	85.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/7/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	0	0	1	0	1	1	0	0	0	1	4
1:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
2:00	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2
3:00	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
4:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2
5:00	0	0	0	0	0	0	4	0	5	0	0	2	0	0	11
6:00	1	0	0	1	5	3	4	3	10	3	3	2	1	1	37
7:00	0	1	1	0	0	5	14	16	16	6	15	6	5	2	87
8:00	0	0	1	1	2	5	14	5	13	6	15	7	5	2	76
9:00	1	0	0	1	3	3	8	10	4	4	6	3	3	2	48
10:00	0	0	1	1	2	3	7	5	4	2	7	2	2	1	37
11:00	2	2	0	1	3	5	7	6	9	3	4	0	0	1	43
12:00 PM	2	0	1	1	1	6	8	8	10	3	2	4	1	1	48
1:00	0	0	1	0	4	3	8	4	8	5	8	1	1	2	45
2:00	1	0	1	0	0	6	10	11	15	12	6	3	3	1	69
3:00	1	0	1	2	7	6	8	16	15	9	13	8	2	4	92
4:00	2	1	0	0	3	1	10	15	18	14	16	4	1	7	92
5:00	1	0	0	2	1	3	10	10	18	3	8	6	4	4	70
6:00	0	0	0	0	0	4	2	4	11	6	6	1	3	0	37
7:00	0	0	1	0	0	0	10	7	9	2	2	1	0	1	33
8:00	0	0	0	1	0	3	3	3	5	1	1	1	0	0	18
9:00	0	1	0	0	2	1	2	6	3	1	0	1	0	0	17
10:00	0	0	0	0	1	0	2	0	0	0	0	0	0	0	3
11:00	0	0	0	1	0	1	0	0	2	0	0	0	0	0	4
Total	11	5	8	13	36	58	134	129	176	81	112	52	31	32	878

	15th	50th	85th	95th
Percentile				
Speed	44.9	51.9	57.9	63.9

Mean Speed (Average)	54.1
10 MPH Pace Speed	44-53
Number in Pace	465
Percent in Pace	53.0%
Number > 44 MPH	747
Percent > 44 MPH	85.1%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/8/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	0	1	0	0	2	0	1	0	0	2	6
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
3:00	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	0	0	1	0	0	1	1	2	0	2	0	1	0	8
6:00	0	0	0	0	1	1	1	5	7	5	4	1	2	0	27
7:00	0	0	1	0	0	3	4	11	22	11	9	7	6	2	76
8:00	0	0	0	3	0	6	7	20	8	7	7	4	3	3	68
9:00	0	0	0	2	1	7	5	5	8	5	6	3	2	0	44
10:00	0	0	1	0	1	0	2	2	1	0	1	0	0	0	8
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
12:00 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
1:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
2:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
3:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
4:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
6:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
7:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
8:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
9:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
Total	0	0	2	6	3	18	20	45	52	28	30	15	14	7	240
			Percentile	15th	50th	85th	95th								
			Speed	44.9	51.9	58.9	64.9								
			Mean Speed (Average)	54.7											
			10 MPH Pace Speed	47-56											
			Number in Pace	135											
			Percent in Pace	56.3%											
			Number > 44 MPH	211											
			Percent > 44 MPH	87.9%											
Grand Total	56	24	59	85	179	350	711	956	1197	774	752	386	241	214	5984
Stats			Percentile	15th	50th	85th	95th								
			Speed	44.9	51.9	58.9	63.9								
			Mean Speed (Average)	54.8											
			10 MPH Pace Speed	47-56											
			Number in Pace	3176											
			Percent in Pace	53.1%											
			Number > 44 MPH	5231											
			Percent > 44 MPH	87.4%											

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

9/30/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
1:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
2:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
3:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
4:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
6:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
7:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
8:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
9:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
12:00 PM	2	4	1	2	4	10	5	8	11	4	2	4	2	1	60
1:00	0	1	8	4	7	5	10	15	17	7	5	4	4	2	89
2:00	2	0	0	7	7	11	12	11	16	15	14	5	2	1	103
3:00	0	1	3	12	14	12	20	21	30	15	16	4	4	4	156
4:00	0	2	5	7	10	10	15	23	29	14	25	11	5	8	164
5:00	0	2	3	9	9	5	17	15	31	20	17	9	5	7	149
6:00	0	2	4	8	3	6	7	23	15	10	9	6	0	2	95
7:00	0	1	3	1	3	9	5	12	5	1	5	1	3	2	51
8:00	1	0	2	6	6	2	2	7	5	3	5	1	2	0	42
9:00	0	0	1	5	2	2	5	4	6	3	1	0	2	3	34
10:00	0	0	1	1	1	2	1	2	3	2	1	0	1	2	17
11:00	0	0	0	0	1	1	2	1	0	0	0	0	0	3	8
Total	5	13	31	62	67	75	101	142	168	94	100	45	30	35	968

Percentile	15th	50th	85th	95th
Speed	39.7	49.6	58.3	63.3

Mean Speed (Average)	52.6
10 MPH Pace Speed	44-53
Number in Pace	442
Percent in Pace	45.7%
Number > 44 MPH	715
Percent > 44 MPH	73.9%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/1/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	2	0	1	2	0	0	0	0	0	0	0	5
1:00	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2
2:00	0	0	0	0	0	0	0	1	2	0	0	0	0	0	3
3:00	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2
4:00	0	0	0	1	0	0	2	0	1	0	0	0	0	0	4
5:00	0	0	3	1	2	2	3	4	1	0	3	0	0	5	24
6:00	1	0	2	4	6	11	7	8	21	8	12	3	2	2	87
7:00	0	0	6	5	11	6	9	15	24	20	15	5	9	7	132
8:00	0	0	4	7	9	3	9	13	18	18	31	5	3	4	124
9:00	0	0	7	3	9	6	3	9	12	5	9	4	6	4	77
10:00	2	1	2	7	4	7	13	12	11	6	8	3	2	1	79
11:00	2	0	7	7	9	9	4	16	14	8	13	1	7	1	98
12:00 PM	1	2	2	5	10	5	11	13	11	15	6	4	1	2	88
1:00	2	1	4	5	11	5	11	14	11	8	4	5	1	2	84
2:00	4	5	4	8	10	9	12	20	24	14	6	5	4	1	126
3:00	2	2	5	4	7	7	9	21	22	21	13	8	3	4	128
4:00	2	2	3	9	6	9	9	16	21	25	19	9	5	12	147
5:00	0	4	4	5	4	6	12	20	19	19	14	5	3	2	117
6:00	0	0	4	5	7	5	13	12	12	10	11	3	6	0	88
7:00	2	4	6	7	8	3	10	8	8	5	3	2	0	2	68
8:00	1	0	1	3	2	5	6	4	3	5	3	3	1	1	38
9:00	3	1	1	3	5	4	3	3	2	2	2	3	1	1	34
10:00	0	2	0	5	3	3	2	6	2	3	0	1	0	0	27
11:00	0	0	0	0	3	1	3	1	1	2	1	0	0	0	12
Total	22	24	67	96	126	109	153	216	240	194	173	69	54	51	1594

	Percentile	15th	50th	85th	95th
	Speed	38.4	49.6	57.7	63.3
Mean Speed (Average)		51.8			
10 MPH Pace Speed		47-56			
Number in Pace		707			
Percent in Pace		44.4%			
Number > 44 MPH		1150			
Percent > 44 MPH		72.1%			

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/2/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	1	1	1	0	0	0	0	0	1	0	0	4
1:00	0	0	1	0	0	0	0	0	1	1	0	2	1	0	6
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	1	0	0	1	0	1	0	0	0	0	3
5:00	0	1	1	0	0	0	1	0	2	0	0	1	1	2	9
6:00	0	0	1	1	2	3	3	2	0	1	2	2	1	1	19
7:00	0	1	1	5	5	2	3	5	3	6	2	3	1	3	40
8:00	0	2	0	5	5	4	8	12	9	11	7	3	4	2	72
9:00	3	0	1	6	9	5	4	6	11	7	7	5	0	4	68
10:00	0	1	5	5	8	12	17	15	12	11	10	6	1	1	104
11:00	3	3	3	0	7	7	6	11	16	11	8	2	2	2	81
12:00 PM	1	1	4	5	2	10	12	15	13	9	1	3	5	3	84
1:00	4	1	2	5	7	4	12	15	16	12	10	1	3	2	94
2:00	1	5	5	3	8	4	8	17	18	14	7	9	3	3	105
3:00	0	1	3	5	6	6	5	17	12	19	9	0	2	2	87
4:00	1	0	3	3	6	3	7	12	16	11	2	4	5	1	74
5:00	1	1	3	5	4	3	6	13	12	12	6	2	3	1	72
6:00	0	1	5	2	0	1	4	4	7	10	3	3	1	1	42
7:00	0	0	2	1	3	7	6	14	3	4	7	0	0	0	47
8:00	1	4	0	2	5	3	8	9	8	1	4	2	2	1	50
9:00	2	1	2	2	2	1	1	3	6	4	1	1	0	1	27
10:00	0	0	3	2	3	1	1	0	2	1	0	2	0	2	17
11:00	2	2	0	1	1	2	2	0	3	2	0	2	0	0	17
Total	19	25	45	59	85	79	114	171	170	148	86	54	35	32	1122

Percentile	15th	50th	85th	95th
Speed	39	49	57.1	62.7

Mean Speed (Average)	51.1
10 MPH Pace Speed	46-55
Number in Pace	526
Percent in Pace	46.9%
Number > 44 MPH	810
Percent > 44 MPH	72.2%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/3/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	1	0	0	1	1	1	0	0	0	0	0	4
1:00	0	0	0	1	1	0	0	1	0	0	0	0	0	0	3
2:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	2	0	1	0	0	1	1	0	0	0	5
5:00	0	0	0	0	0	1	1	1	2	0	0	1	0	0	6
6:00	0	1	2	2	1	5	2	3	2	2	0	0	0	1	21
7:00	0	0	0	2	3	1	4	5	0	4	2	0	0	1	22
8:00	0	0	3	3	1	4	4	5	9	3	4	1	0	3	40
9:00	1	1	2	2	2	4	10	7	14	14	5	4	1	5	72
10:00	4	1	3	5	6	8	6	3	6	4	8	5	4	4	67
11:00	3	0	0	3	9	4	6	11	9	10	7	2	2	4	70
12:00 PM	1	1	3	5	5	8	13	19	13	6	9	5	1	0	89
1:00	3	2	2	5	9	6	10	10	14	7	9	6	2	5	90
2:00	0	1	1	8	3	13	11	12	10	5	6	7	2	3	82
3:00	3	0	1	2	5	4	14	12	18	7	10	13	2	0	91
4:00	2	3	4	3	7	8	8	5	12	8	11	6	2	3	82
5:00	0	1	0	4	3	2	7	8	13	8	7	6	4	4	67
6:00	0	0	3	6	4	5	7	9	7	4	5	6	2	3	61
7:00	0	0	4	3	4	7	6	10	4	4	4	3	0	2	51
8:00	0	2	3	2	1	3	3	5	3	3	2	0	0	0	27
9:00	0	0	0	1	1	4	2	1	1	0	1	1	1	0	13
10:00	0	2	0	1	1	2	2	4	3	0	0	1	2	1	19
11:00	1	0	1	1	0	0	2	2	0	1	0	1	0	1	10
Total	18	15	32	60	68	89	120	134	141	91	91	68	26	40	993

Percentile	15th	50th	85th	95th
Speed	39.9	49.9	58.9	63.9

Mean Speed (Average)	52.5
10 MPH Pace Speed	44-53
Number in Pace	425
Percent in Pace	42.8%
Number > 44 MPH	711
Percent > 44 MPH	71.6%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/4/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	0	0	1	2	0	0	0	0	0	0	3
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
4:00	0	0	0	0	0	0	0	1	1	1	0	0	2	0	5
5:00	0	2	1	1	5	5	1	2	1	2	2	1	1	3	27
6:00	3	1	5	0	7	9	7	10	14	6	8	6	2	5	83
7:00	0	3	6	6	14	7	8	26	21	25	15	12	6	3	152
8:00	3	0	4	3	8	9	3	19	19	12	16	3	5	5	109
9:00	3	2	2	4	5	4	12	3	11	6	9	6	5	1	73
10:00	0	1	5	4	6	8	13	10	7	1	7	0	3	1	66
11:00	0	1	4	9	7	11	8	5	9	3	8	2	2	2	71
12:00 PM	2	2	1	3	8	8	14	17	11	8	8	9	2	1	94
1:00	1	3	1	7	6	10	9	13	13	5	7	8	4	3	90
2:00	3	3	4	4	8	11	22	15	27	9	12	8	6	1	133
3:00	2	2	3	10	15	15	13	14	14	9	13	8	6	4	128
4:00	1	2	9	6	15	7	18	21	31	9	11	11	5	3	149
5:00	1	2	6	2	8	8	10	19	18	12	16	7	5	1	115
6:00	0	3	1	4	2	8	5	10	12	12	6	4	3	1	71
7:00	3	1	1	2	5	2	6	15	2	1	1	3	0	2	44
8:00	0	1	3	4	6	2	3	2	4	3	4	3	1	1	37
9:00	0	0	0	1	5	0	1	5	5	1	1	2	0	2	23
10:00	0	1	0	0	0	2	3	0	2	1	0	1	0	1	11
11:00	0	1	1	1	2	0	0	0	0	1	0	0	0	0	6
Total	22	31	57	71	134	126	157	209	222	127	144	94	58	40	1492

Percentile	15th	50th	85th	95th
Speed	38.9	49.9	57.9	62.9

Mean Speed (Average)	51.1
10 MPH Pace Speed	44-53
Number in Pace	630
Percent in Pace	42.2%
Number > 44 MPH	1051
Percent > 44 MPH	70.4%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/5/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	1	1	1	0	3	1	1	1	0	0	0	9
1:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
2:00	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
3:00	0	0	1	0	0	0	0	4	0	0	0	0	0	0	5
4:00	0	0	2	0	1	0	0	0	1	0	0	0	0	1	5
5:00	0	1	0	0	1	3	1	5	3	0	3	0	0	1	18
6:00	4	1	7	3	5	6	9	12	17	4	3	7	1	2	81
7:00	2	1	11	7	8	9	18	24	34	22	17	5	8	5	171
8:00	0	3	2	4	12	12	19	20	20	13	18	4	4	7	138
9:00	4	0	4	4	12	8	10	5	10	7	4	4	1	0	73
10:00	0	0	6	7	3	10	6	12	8	9	6	0	5	1	73
11:00	11	6	7	8	8	4	13	11	8	4	2	0	1	2	85
12:00 PM	1	2	3	2	7	7	15	6	12	4	8	1	0	0	68
1:00	2	1	4	3	5	9	15	10	15	13	5	4	1	2	89
2:00	1	3	1	7	8	7	16	23	14	7	5	5	1	8	106
3:00	1	1	4	8	16	8	19	24	25	11	17	7	4	4	149
4:00	1	2	5	4	16	11	19	21	30	14	14	3	3	2	145
5:00	1	2	3	2	7	16	24	20	14	14	10	1	3	0	117
6:00	0	0	3	5	6	7	12	9	13	7	2	1	0	1	66
7:00	4	0	4	2	4	9	9	6	7	2	1	1	0	2	51
8:00	1	0	1	2	3	2	2	7	6	2	4	0	0	0	30
9:00	0	1	1	1	1	1	1	4	3	4	5	0	0	1	23
10:00	0	0	2	2	2	1	2	2	2	1	2	1	0	0	17
11:00	0	0	0	1	1	2	3	0	0	0	2	0	0	0	9
Total	33	24	71	73	127	133	213	229	243	140	129	44	32	39	1530

	15th	50th	85th	95th
Percentile				
Speed	38.9	47.9	56.9	61.9

Mean Speed (Average)	49.9
10 MPH Pace Speed	44-53
Number in Pace	731
Percent in Pace	47.8%
Number > 44 MPH	1069
Percent > 44 MPH	69.9%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/6/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	0	1	2	1	1	0	1	0	0	1	7
1:00	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
2:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
3:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
4:00	0	0	0	0	0	0	0	1	1	0	0	0	0	1	3
5:00	0	0	1	4	1	2	3	2	6	0	0	1	4	1	25
6:00	2	0	2	6	4	4	22	9	7	7	10	7	1	2	83
7:00	3	0	2	7	16	13	21	27	35	16	12	10	4	5	171
8:00	1	1	6	7	7	10	15	13	20	12	12	8	4	2	118
9:00	0	0	9	4	3	9	10	7	12	5	6	3	4	1	73
10:00	4	0	7	1	7	11	11	18	12	5	1	1	1	3	82
11:00	7	4	5	2	7	11	20	15	7	3	5	2	2	1	91
12:00 PM	5	3	6	4	9	4	20	13	11	7	8	1	1	2	94
1:00	3	0	7	1	13	12	15	16	10	8	9	7	4	2	107
2:00	1	2	4	8	14	22	26	14	18	12	9	3	6	0	139
3:00	1	4	5	7	17	16	18	21	25	22	14	9	4	2	165
4:00	4	4	10	7	12	12	19	29	29	21	8	9	3	5	172
5:00	3	2	2	8	12	8	19	22	16	12	15	9	5	1	134
6:00	4	3	3	2	10	10	9	12	11	9	7	1	2	4	87
7:00	1	2	1	2	11	5	5	3	9	6	4	2	2	0	53
8:00	0	0	2	0	3	2	2	5	2	2	5	1	3	0	27
9:00	0	1	3	2	1	3	2	1	4	0	1	2	3	0	23
10:00	0	2	1	0	2	1	0	1	2	1	0	1	1	0	12
11:00	0	0	0	1	2	4	1	2	0	0	2	0	0	0	12
Total	39	28	76	73	151	161	241	232	241	148	129	77	54	33	1683

	Percentile	15th	50th	85th	95th
	Speed	38.9	47.9	56.9	62.9
Mean Speed (Average)		49.3			
10 MPH Pace Speed		43-52			
Number in Pace		765			
Percent in Pace		45.5%			
Number > 44 MPH		1155			
Percent > 44 MPH		68.6%			

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/7/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	1	0	0	2	0	1	1	0	1	0	1	7
1:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
2:00	1	0	0	0	0	0	1	0	0	0	0	0	0	1	3
3:00	0	1	0	0	1	1	1	0	0	2	0	0	0	0	6
4:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2
5:00	1	1	0	2	0	1	6	0	7	2	2	2	1	1	26
6:00	2	2	3	7	9	10	11	7	11	7	5	5	1	3	83
7:00	0	4	6	4	9	12	20	25	20	10	23	10	6	4	153
8:00	1	2	4	5	12	8	19	14	18	9	15	8	10	3	128
9:00	1	1	4	4	7	5	12	15	5	5	8	4	3	3	77
10:00	2	2	7	2	5	11	11	12	10	3	9	3	2	1	80
11:00	4	4	5	3	9	7	18	12	13	4	7	1	0	1	88
12:00 PM	2	2	2	1	5	13	13	15	13	7	2	8	1	1	85
1:00	2	3	5	6	6	10	10	9	11	8	8	1	2	5	86
2:00	2	3	3	2	6	13	13	16	23	18	8	7	3	1	118
3:00	6	1	6	4	21	25	17	29	22	11	14	8	2	7	173
4:00	2	3	6	4	14	7	24	25	30	21	20	5	1	7	169
5:00	3	1	1	8	5	12	24	17	36	5	14	8	8	4	146
6:00	3	0	1	3	5	8	5	10	15	7	7	4	3	0	71
7:00	3	1	5	9	12	1	13	8	9	2	3	4	0	1	71
8:00	0	1	1	3	2	4	4	4	5	2	3	1	0	0	30
9:00	0	2	0	2	5	3	4	7	4	1	0	2	0	0	30
10:00	0	1	0	1	3	1	2	2	1	1	0	1	0	0	13
11:00	0	0	1	1	1	2	3	0	2	1	0	0	0	0	11
Total	35	35	60	73	138	154	233	227	256	127	148	83	43	45	1657

	Percentile	15th	50th	85th	95th
	Speed	39.9	48.9	56.9	62.9
Mean Speed (Average)		50.4			
10 MPH Pace Speed		43-52			
Number in Pace		764			
Percent in Pace		46.1%			
Number > 44 MPH		1162			
Percent > 44 MPH		70.1%			

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/8/2021 Time	0 - 29 MPH	> 29 - 32 MPH	> 32 - 35 MPH	> 35 - 38 MPH	> 38 - 41 MPH	> 41 - 44 MPH	> 44 - 47 MPH	> 47 - 50 MPH	> 50 - 53 MPH	> 53 - 56 MPH	> 56 - 59 MPH	> 59 - 62 MPH	> 62 - 65 MPH	> 65 MPH	
12:00 AM	0	0	0	0	0	1	0	0	2	0	2	0	0	2	7
1:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:00	0	0	1	0	0	1	0	0	1	0	0	0	0	0	3
3:00	0	0	0	0	0	1	2	1	1	0	0	0	0	0	5
4:00	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2
5:00	0	0	0	2	4	3	3	2	2	0	4	0	2	0	22
6:00	1	2	0	4	12	3	7	8	14	6	4	4	3	0	68
7:00	2	0	2	11	8	8	10	14	27	13	18	10	7	2	132
8:00	1	3	4	7	2	12	11	35	13	8	9	6	3	4	118
9:00	0	1	3	6	5	9	10	9	13	7	8	4	4	0	79
10:00	1	1	1	0	1	0	2	3	1	1	1	0	0	0	12
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
12:00 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
1:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
2:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
3:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
4:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
6:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
7:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
8:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
9:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0
Total	5	7	11	31	32	39	45	72	74	36	46	24	19	8	449
			Percentile	15th	50th	85th	95th								
			Speed	38.9	49.9	57.9	62.9								
			Mean Speed (Average)	50.4											
			10 MPH Pace Speed	43-52											
			Number in Pace	203											
			Percent in Pace	45.2%											
			Number > 44 MPH	324											
			Percent > 44 MPH	72.2%											
Grand Total	198	202	450	598	928	965	1377	1632	1755	1105	1046	558	351	323	11488
Stats			Percentile	15th	50th	85th	95th								
			Speed	38.9	49	57.9	62.9								
			Mean Speed (Average)	50.9											
			10 MPH Pace Speed	44-53											
			Number in Pace	5128											
			Percent in Pace	44.6%											
			Number > 44 MPH	8147											
			Percent > 44 MPH	70.9%											

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

9/30/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	*	*	*	*	*	*	*	*	*	*	*	*	0
1:00	*	*	*	*	*	*	*	*	*	*	*	*	0
2:00	*	*	*	*	*	*	*	*	*	*	*	*	0
3:00	*	*	*	*	*	*	*	*	*	*	*	*	0
4:00	*	*	*	*	*	*	*	*	*	*	*	*	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	0
6:00	*	*	*	*	*	*	*	*	*	*	*	*	0
7:00	*	*	*	*	*	*	*	*	*	*	*	*	0
8:00	*	*	*	*	*	*	*	*	*	*	*	*	0
9:00	*	*	*	*	*	*	*	*	*	*	*	*	0
10:00	*	*	*	*	*	*	*	*	*	*	*	*	0
11:00	*	*	*	*	*	*	*	*	*	*	*	*	0
12:00 PM	0	0	15	10	0	3	0	0	0	0	0	0	28
1:00	0	0	25	11	1	1	2	0	0	0	0	0	40
2:00	0	0	29	15	2	1	2	0	0	0	0	0	49
3:00	0	0	61	21	1	1	1	0	0	0	0	0	85
4:00	0	0	54	17	0	2	0	0	0	0	0	0	73
5:00	0	0	50	12	1	0	2	0	0	0	0	0	65
6:00	0	0	36	15	2	1	0	0	0	1	0	0	55
7:00	0	0	19	3	0	0	0	0	0	0	0	0	22
8:00	0	0	15	4	0	0	0	0	0	0	0	0	19
9:00	0	0	14	3	1	0	0	0	0	1	0	0	19
10:00	0	0	7	1	0	0	0	0	0	0	0	0	8
11:00	0	0	2	2	0	1	0	0	0	0	0	0	5
Total	0	0	327	114	8	10	7	0	0	2	0	0	468
Percentage	0.0%	0.0%	34.9%	12.2%	0.9%	1.1%	0.7%	0.0%	0.0%	0.2%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/1/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	1
1:00	0	0	1	0	0	0	0	0	0	0	0	0	1
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	1	0	0	0	0	0	0	0	0	0	1
4:00	0	0	1	1	0	0	0	0	0	0	0	0	2
5:00	0	0	9	4	0	0	0	0	0	0	0	0	13
6:00	0	0	35	9	1	0	0	0	1	0	0	0	46
7:00	0	0	45	13	2	3	1	0	0	0	1	0	65
8:00	0	0	42	9	3	1	1	1	0	0	0	0	57
9:00	0	1	22	11	1	0	0	0	0	0	0	0	35
10:00	1	1	28	5	0	0	2	0	0	0	0	0	37
11:00	0	0	35	7	2	1	1	0	0	0	0	0	46
12:00 PM	0	0	40	10	1	0	0	0	0	0	0	0	51
1:00	0	0	30	11	3	1	0	1	0	0	0	0	46
2:00	0	0	33	12	6	0	5	1	0	0	0	0	57
3:00	0	0	32	20	0	1	1	0	0	0	0	0	54
4:00	0	0	48	20	1	0	2	0	0	0	0	0	71
5:00	0	0	46	13	2	0	1	0	0	0	0	0	62
6:00	0	0	32	9	1	0	0	0	0	0	0	0	42
7:00	0	0	28	7	1	0	2	0	0	0	0	0	38
8:00	0	0	10	6	0	0	1	0	0	0	0	0	17
9:00	0	0	15	3	1	0	0	0	0	0	0	0	19
10:00	0	0	17	0	0	0	0	0	0	0	0	0	17
11:00	0	0	4	1	0	0	0	0	0	0	0	0	5
Total	1	2	555	171	25	7	17	3	1	0	1	0	783
Percentage	0.1%	0.1%	35.4%	10.9%	1.6%	0.4%	1.1%	0.2%	0.1%	0.0%	0.1%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/2/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	1
1:00	0	0	1	1	0	0	0	0	0	0	0	0	2
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	1	0	0	0	0	0	0	0	0	1
5:00	0	0	5	1	1	0	0	0	0	0	0	0	7
6:00	0	0	11	1	1	0	0	0	0	0	0	0	13
7:00	0	0	14	7	1	1	1	0	0	0	0	0	24
8:00	0	1	24	6	0	0	4	0	0	0	0	0	35
9:00	0	0	30	12	0	0	0	0	0	0	0	0	42
10:00	0	0	48	13	1	0	0	0	0	0	0	0	62
11:00	1	0	19	7	0	1	0	0	0	0	0	0	28
12:00 PM	0	0	30	13	2	0	0	0	0	0	0	0	45
1:00	2	0	22	7	0	1	3	0	0	0	0	0	35
2:00	0	0	34	10	1	0	1	0	0	0	0	0	46
3:00	0	1	26	5	1	0	0	0	0	0	0	0	33
4:00	0	1	22	8	1	0	0	0	0	0	0	0	32
5:00	0	2	21	8	0	0	2	0	0	0	0	0	33
6:00	0	0	16	4	0	0	0	0	0	0	0	0	20
7:00	0	0	11	3	2	0	0	0	0	0	0	0	16
8:00	0	0	20	6	0	0	0	0	1	0	0	0	27
9:00	0	0	9	2	0	0	0	0	0	0	0	0	11
10:00	0	0	11	1	0	0	0	0	0	0	0	0	12
11:00	0	0	8	2	0	0	0	0	0	0	0	0	10
Total	3	5	383	118	11	3	11	0	1	0	0	0	535
Percentage	0.3%	0.5%	35.8%	11.0%	1.0%	0.3%	1.0%	0.0%	0.1%	0.0%	0.0%	0.0%	50.0%

Imperial
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Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/3/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	1	1	0	0	0	0	0	0	0	0	2
1:00	0	0	1	0	0	0	0	0	0	0	0	0	1
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	1	2	0	0	0	0	0	0	0	0	3
5:00	0	0	1	2	0	0	0	0	0	0	0	0	3
6:00	0	0	13	2	1	0	0	0	0	0	0	0	16
7:00	0	0	10	2	0	1	0	0	0	0	0	0	13
8:00	1	0	12	1	0	0	0	0	0	0	0	0	14
9:00	0	0	23	4	1	0	1	0	0	0	0	0	29
10:00	1	0	27	4	0	0	0	0	0	0	0	0	32
11:00	1	0	21	11	0	0	0	0	0	0	0	0	33
12:00 PM	0	0	27	17	0	0	0	0	0	0	0	0	44
1:00	0	1	28	10	0	0	1	1	0	0	0	0	41
2:00	0	0	28	11	0	0	0	0	0	0	0	0	39
3:00	0	0	15	8	0	0	0	0	0	0	0	0	23
4:00	0	0	25	8	0	0	1	0	0	0	0	0	34
5:00	0	0	17	9	1	0	0	0	0	0	0	0	27
6:00	0	1	20	4	0	1	0	0	0	0	0	0	26
7:00	0	0	18	8	1	0	0	0	0	0	0	0	27
8:00	0	0	12	1	0	1	0	0	0	0	0	0	14
9:00	0	0	6	2	0	0	0	0	0	0	0	0	8
10:00	0	0	10	2	0	0	0	0	0	0	0	0	12
11:00	0	0	4	2	0	0	0	0	0	0	0	0	6
Total	3	2	320	111	4	3	3	1	0	0	0	0	447
Percentage	0.3%	0.2%	35.8%	12.4%	0.4%	0.3%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/4/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	1
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	1	0	0	0	0	0	0	0	0	0	1
4:00	0	0	0	1	0	0	0	0	0	0	0	0	1
5:00	0	0	13	2	2	0	0	0	0	0	0	0	17
6:00	1	0	27	15	0	0	0	0	0	0	0	0	43
7:00	0	0	54	15	0	2	2	0	0	0	0	0	73
8:00	0	0	34	3	1	0	0	0	0	0	0	0	38
9:00	0	0	23	5	2	1	0	0	0	0	0	0	31
10:00	0	0	23	11	1	0	0	0	0	0	0	0	35
11:00	0	0	26	10	1	0	3	0	0	0	0	0	40
12:00 PM	0	1	26	5	4	1	2	0	1	0	0	0	40
1:00	0	0	34	11	4	0	0	1	0	0	0	0	50
2:00	0	0	36	15	2	1	2	0	0	0	0	0	56
3:00	0	1	47	20	0	1	0	0	0	0	0	0	69
4:00	1	0	49	20	1	0	1	1	0	0	0	0	73
5:00	0	0	46	14	1	0	0	0	0	0	0	0	61
6:00	0	0	17	12	2	0	0	0	0	0	0	0	31
7:00	0	0	10	4	0	0	0	1	0	0	0	0	15
8:00	0	0	14	6	1	0	0	0	0	0	0	0	21
9:00	0	0	8	4	0	0	0	0	0	0	0	0	12
10:00	1	0	5	0	0	0	0	0	0	0	0	0	6
11:00	0	0	4	0	0	0	0	0	0	0	0	0	4
Total	3	2	497	173	22	7	10	3	1	0	0	0	718
Percentage	0.2%	0.1%	34.6%	12.0%	1.5%	0.5%	0.7%	0.2%	0.1%	0.0%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

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TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/5/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	1
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	2	1	0	0	0	0	0	0	0	0	3
4:00	0	0	2	0	0	0	0	0	0	1	0	0	3
5:00	0	0	8	2	1	0	0	0	0	0	0	0	11
6:00	0	0	25	9	2	0	0	0	0	0	0	0	36
7:00	0	0	69	10	1	1	0	0	0	0	0	0	81
8:00	0	0	38	16	1	1	2	0	0	0	0	0	58
9:00	0	0	20	9	1	1	1	0	0	0	0	0	32
10:00	0	0	29	7	1	0	1	1	0	0	0	0	39
11:00	0	0	23	8	3	1	2	1	0	0	0	0	38
12:00 PM	0	0	24	6	2	0	0	0	0	0	0	0	32
1:00	0	1	22	9	3	1	1	0	0	0	0	0	37
2:00	0	0	33	20	2	0	1	0	0	0	0	0	56
3:00	0	0	50	18	1	0	2	0	0	0	0	0	71
4:00	0	1	64	16	1	1	0	1	0	0	0	0	84
5:00	0	0	32	20	2	0	1	0	0	0	0	0	55
6:00	0	0	29	11	0	0	0	0	0	0	0	0	40
7:00	0	0	19	7	0	0	0	0	0	0	0	0	26
8:00	0	0	7	2	0	2	0	0	0	0	0	0	11
9:00	0	0	6	1	0	0	0	0	0	0	0	0	7
10:00	0	0	4	4	0	0	0	0	0	0	0	0	8
11:00	0	0	3	0	0	0	0	0	1	0	0	0	4
Total	0	2	510	176	21	8	11	3	1	1	0	0	733
Percentage	0.0%	0.1%	34.8%	12.0%	1.4%	0.5%	0.8%	0.2%	0.1%	0.1%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

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TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/6/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	1
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	1	0	0	0	0	0	0	0	0	0	1
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	1	0	11	4	1	0	0	0	0	0	0	0	17
6:00	0	0	25	15	0	0	0	0	0	0	0	0	40
7:00	0	0	60	14	2	1	2	0	0	0	0	0	79
8:00	0	0	32	10	2	1	1	0	0	0	0	0	46
9:00	0	0	27	13	1	0	1	0	0	0	0	0	42
10:00	1	0	21	9	2	0	1	0	0	0	0	0	34
11:00	0	0	31	10	0	3	1	0	0	0	0	0	45
12:00 PM	0	0	35	14	1	1	1	0	0	0	0	0	52
1:00	0	0	30	15	2	1	3	1	1	0	1	0	54
2:00	0	0	43	22	1	1	2	0	0	0	0	0	69
3:00	0	1	52	17	0	3	1	0	0	0	0	0	74
4:00	0	1	66	19	1	0	1	1	0	0	0	0	89
5:00	0	0	61	18	1	0	1	0	0	0	0	0	81
6:00	0	0	30	14	1	0	0	0	0	0	0	0	45
7:00	0	0	16	7	0	2	0	0	0	0	0	0	25
8:00	0	0	12	2	0	0	0	0	0	0	0	0	14
9:00	0	0	9	2	0	0	0	0	0	0	0	0	11
10:00	0	0	6	0	0	0	0	0	0	0	0	0	6
11:00	0	0	5	2	0	0	0	0	0	0	0	0	7
Total	2	2	573	208	15	13	15	2	1	0	1	0	832
Percentage	0.1%	0.1%	34.4%	12.5%	0.9%	0.8%	0.9%	0.1%	0.1%	0.0%	0.1%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/7/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	2	0	0	1	0	0	0	0	0	0	3
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	1	0	0	0	0	0	0	0	0	0	1
3:00	0	1	1	0	1	1	0	0	0	0	0	0	4
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	0	11	4	0	0	0	0	0	0	0	0	15
6:00	0	0	33	11	1	0	1	0	0	0	0	0	46
7:00	0	1	48	13	2	2	0	0	0	0	0	0	66
8:00	0	0	33	17	1	0	1	0	0	0	0	0	52
9:00	0	0	18	7	0	0	4	0	0	0	0	0	29
10:00	1	0	29	11	0	2	0	0	0	0	0	0	43
11:00	0	0	25	19	0	0	0	0	1	0	0	0	45
12:00 PM	0	0	24	9	2	0	2	0	0	0	0	0	37
1:00	1	0	26	12	1	0	0	1	0	0	0	0	41
2:00	0	1	27	18	1	2	0	0	0	0	0	0	49
3:00	0	0	49	24	2	1	4	1	0	0	0	0	81
4:00	0	0	53	20	1	1	2	0	0	0	0	0	77
5:00	0	0	49	21	3	1	1	1	0	0	0	0	76
6:00	0	0	25	9	0	0	0	0	0	0	0	0	34
7:00	0	1	28	8	0	0	0	0	0	1	0	0	38
8:00	0	0	8	4	0	0	0	0	0	0	0	0	12
9:00	0	0	12	1	0	0	0	0	0	0	0	0	13
10:00	0	0	6	4	0	0	0	0	0	0	0	0	10
11:00	0	0	5	1	0	0	0	0	0	1	0	0	7
Total	2	4	513	213	15	11	15	3	1	2	0	0	779
Percentage	0.1%	0.3%	32.9%	13.7%	1.0%	0.7%	1.0%	0.2%	0.1%	0.1%	0.0%	0.0%	50.0%

File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: SB Shingle Point Road

10/8/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	1
1:00	0	0	1	0	0	0	0	0	0	0	0	0	1
2:00	0	0	2	0	0	0	0	0	0	0	0	0	2
3:00	0	0	2	1	0	0	0	0	0	0	0	0	3
4:00	0	0	1	1	0	0	0	0	0	0	0	0	2
5:00	0	0	10	4	0	0	0	0	0	0	0	0	14
6:00	0	0	29	12	0	0	0	0	0	0	0	0	41
7:00	0	0	42	13	0	1	0	0	0	0	0	0	56
8:00	1	0	30	15	3	0	0	1	0	0	0	0	50
9:00	0	0	23	11	0	1	0	0	0	0	0	0	35
10:00	0	0	4	0	0	0	0	0	0	0	0	0	4
11:00	*	*	*	*	*	*	*	*	*	*	*	*	0
12:00 PM	*	*	*	*	*	*	*	*	*	*	*	*	0
1:00	*	*	*	*	*	*	*	*	*	*	*	*	0
2:00	*	*	*	*	*	*	*	*	*	*	*	*	0
3:00	*	*	*	*	*	*	*	*	*	*	*	*	0
4:00	*	*	*	*	*	*	*	*	*	*	*	*	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	0
6:00	*	*	*	*	*	*	*	*	*	*	*	*	0
7:00	*	*	*	*	*	*	*	*	*	*	*	*	0
8:00	*	*	*	*	*	*	*	*	*	*	*	*	0
9:00	*	*	*	*	*	*	*	*	*	*	*	*	0
10:00	*	*	*	*	*	*	*	*	*	*	*	*	0
11:00	*	*	*	*	*	*	*	*	*	*	*	*	0
Total	1	0	144	58	3	2	0	1	0	0	0	0	209
Percentage	0.2%	0.0%	34.4%	13.9%	0.7%	0.5%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	50.0%
Grand Total	15	19	3822	1342	124	64	89	16	6	5	2	0	5504
Percent	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

9/30/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	*	*	*	*	*	*	*	*	*	*	*	*	0
1:00	*	*	*	*	*	*	*	*	*	*	*	*	0
2:00	*	*	*	*	*	*	*	*	*	*	*	*	0
3:00	*	*	*	*	*	*	*	*	*	*	*	*	0
4:00	*	*	*	*	*	*	*	*	*	*	*	*	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	0
6:00	*	*	*	*	*	*	*	*	*	*	*	*	0
7:00	*	*	*	*	*	*	*	*	*	*	*	*	0
8:00	*	*	*	*	*	*	*	*	*	*	*	*	0
9:00	*	*	*	*	*	*	*	*	*	*	*	*	0
10:00	*	*	*	*	*	*	*	*	*	*	*	*	0
11:00	*	*	*	*	*	*	*	*	*	*	*	*	0
12:00 PM	0	0	12	15	3	1	1	0	0	0	0	0	32
1:00	0	0	31	15	2	0	1	0	0	0	0	0	49
2:00	0	0	26	24	2	0	2	0	0	0	0	0	54
3:00	0	0	48	19	2	0	2	0	0	0	0	0	71
4:00	0	1	63	25	1	0	0	0	0	1	0	0	91
5:00	1	0	60	23	0	0	0	0	0	0	0	0	84
6:00	0	2	22	15	0	0	1	0	0	0	0	0	40
7:00	0	0	21	8	0	0	0	0	0	0	0	0	29
8:00	0	0	14	7	2	0	0	0	0	0	0	0	23
9:00	0	0	13	2	0	0	0	0	0	0	0	0	15
10:00	0	0	5	4	0	0	0	0	0	0	0	0	9
11:00	0	0	1	1	0	0	0	0	0	1	0	0	3
Total	1	3	316	158	12	1	7	0	0	2	0	0	500
Percentage	0.1%	0.3%	31.6%	15.8%	1.2%	0.1%	0.7%	0.0%	0.0%	0.2%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/1/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	2	2	0	0	0	0	0	0	0	0	4
1:00	0	0	1	0	0	0	0	0	0	0	0	0	1
2:00	0	0	2	1	0	0	0	0	0	0	0	0	3
3:00	0	0	0	0	1	0	0	0	0	0	0	0	1
4:00	0	0	1	0	1	0	0	0	0	0	0	0	2
5:00	0	0	4	4	2	0	1	0	0	0	0	0	11
6:00	0	0	21	13	2	1	2	2	0	0	0	0	41
7:00	0	0	31	34	1	0	1	0	0	0	0	0	67
8:00	0	0	43	23	1	0	0	0	0	0	0	0	67
9:00	0	0	22	13	1	1	4	1	0	0	0	0	42
10:00	1	0	26	10	0	3	0	2	0	0	0	0	42
11:00	0	0	32	17	2	1	0	0	0	0	0	0	52
12:00 PM	0	0	25	10	0	0	0	1	0	1	0	0	37
1:00	0	1	22	11	2	1	1	0	0	0	0	0	38
2:00	0	1	38	26	3	1	0	0	0	0	0	0	69
3:00	0	0	47	22	3	1	1	0	0	0	0	0	74
4:00	0	0	43	30	1	0	2	0	0	0	0	0	76
5:00	0	1	39	13	1	0	1	0	0	0	0	0	55
6:00	0	0	32	14	0	0	0	0	0	0	0	0	46
7:00	1	0	18	11	0	0	0	0	0	0	0	0	30
8:00	0	0	14	7	0	0	0	0	0	0	0	0	21
9:00	0	0	9	6	0	0	0	0	0	0	0	0	15
10:00	0	0	7	3	0	0	0	0	0	0	0	0	10
11:00	0	0	4	3	0	0	0	0	0	0	0	0	7
Total	2	3	483	273	21	9	13	6	0	1	0	0	811
Percentage	0.1%	0.2%	29.8%	16.8%	1.3%	0.6%	0.8%	0.4%	0.0%	0.1%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/2/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	3	0	0	0	0	0	0	0	0	0	3
1:00	0	0	2	2	0	0	0	0	0	0	0	0	4
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	2	0	0	0	0	0	0	0	0	0	2
5:00	0	0	0	1	1	0	0	0	0	0	0	0	2
6:00	0	0	5	1	0	0	0	0	0	0	0	0	6
7:00	0	0	10	6	0	0	0	0	0	0	0	0	16
8:00	0	0	20	15	0	1	1	0	0	0	0	0	37
9:00	0	0	19	4	0	1	1	0	0	1	0	0	26
10:00	0	0	27	15	0	0	0	0	0	0	0	0	42
11:00	0	0	33	18	0	1	0	1	0	0	0	0	53
12:00 PM	1	0	27	10	0	0	0	1	0	0	0	0	39
1:00	1	1	43	10	0	0	4	0	0	0	0	0	59
2:00	1	1	36	18	1	0	2	0	0	0	0	0	59
3:00	0	0	37	14	0	0	3	0	0	0	0	0	54
4:00	0	0	32	9	1	0	0	0	0	0	0	0	42
5:00	1	1	29	7	0	1	0	0	0	0	0	0	39
6:00	0	0	14	7	1	0	0	0	0	0	0	0	22
7:00	0	0	23	7	0	0	0	0	0	1	0	0	31
8:00	0	0	15	8	0	0	0	0	0	0	0	0	23
9:00	0	1	13	2	0	0	0	0	0	0	0	0	16
10:00	0	0	3	2	0	0	0	0	0	0	0	0	5
11:00	0	0	5	2	0	0	0	0	0	0	0	0	7
Total	4	4	398	158	4	4	11	2	0	2	0	0	587
Percentage	0.3%	0.3%	33.9%	13.5%	0.3%	0.3%	0.9%	0.2%	0.0%	0.2%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/3/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	2
1:00	0	0	1	0	0	0	0	0	1	0	0	0	2
2:00	0	0	1	0	0	0	0	0	0	0	0	0	1
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	1	1	0	0	0	0	0	0	0	0	2
5:00	0	0	1	2	0	0	0	0	0	0	0	0	3
6:00	0	0	4	1	0	0	0	0	0	0	0	0	5
7:00	0	0	6	3	0	0	0	0	0	0	0	0	9
8:00	0	0	15	11	0	0	0	0	0	0	0	0	26
9:00	0	1	26	15	0	1	0	0	0	0	0	0	43
10:00	0	1	20	13	0	1	0	0	0	0	0	0	35
11:00	1	0	26	10	0	0	0	0	0	0	0	0	37
12:00 PM	1	1	31	11	0	1	0	0	0	0	0	0	45
1:00	0	0	34	13	0	0	1	1	0	0	0	0	49
2:00	0	0	25	15	1	2	0	0	0	0	0	0	43
3:00	0	2	40	25	0	1	0	0	0	0	0	0	68
4:00	0	0	31	17	0	0	0	0	0	0	0	0	48
5:00	0	0	25	13	0	2	0	0	0	0	0	0	40
6:00	0	0	30	5	0	0	0	0	0	0	0	0	35
7:00	0	0	15	9	0	0	0	0	0	0	0	0	24
8:00	0	0	7	4	0	0	1	0	0	1	0	0	13
9:00	0	0	3	2	0	0	0	0	0	0	0	0	5
10:00	0	0	5	2	0	0	0	0	0	0	0	0	7
11:00	0	0	4	0	0	0	0	0	0	0	0	0	4
Total	2	5	353	172	1	8	2	1	1	1	0	0	546
Percentage	0.2%	0.5%	32.3%	15.8%	0.1%	0.7%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/4/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	2
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	1	0	0	0	0	0	1
4:00	0	0	2	2	0	0	0	0	0	0	0	0	4
5:00	0	0	7	1	1	0	1	0	0	0	0	0	10
6:00	0	0	17	19	2	0	2	0	0	0	0	0	40
7:00	0	0	52	24	0	0	2	1	0	0	0	0	79
8:00	0	0	48	18	2	0	2	1	0	0	0	0	71
9:00	0	1	21	16	2	0	2	0	0	0	0	0	42
10:00	0	0	17	12	1	0	1	0	0	0	0	0	31
11:00	0	0	20	8	0	1	1	0	0	1	0	0	31
12:00 PM	1	0	30	16	1	4	1	1	0	0	0	0	54
1:00	0	1	24	12	0	1	2	0	0	0	0	0	40
2:00	1	0	45	24	2	0	2	2	0	1	0	0	77
3:00	0	0	38	19	0	0	2	0	0	0	0	0	59
4:00	2	0	48	21	4	0	1	0	0	0	0	0	76
5:00	0	1	31	17	3	0	2	0	0	0	0	0	54
6:00	0	1	27	12	0	0	0	0	0	0	0	0	40
7:00	0	0	18	11	0	0	0	0	0	0	0	0	29
8:00	0	0	10	5	0	0	1	0	0	0	0	0	16
9:00	0	0	6	5	0	0	0	0	0	0	0	0	11
10:00	0	0	3	2	0	0	0	0	0	0	0	0	5
11:00	0	0	1	1	0	0	0	0	0	0	0	0	2
Total	4	4	467	245	18	6	23	5	0	2	0	0	774
Percentage	0.3%	0.3%	30.2%	15.8%	1.2%	0.4%	1.5%	0.3%	0.0%	0.1%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/5/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	4	4	0	0	0	0	0	0	0	0	8
1:00	0	0	1	0	0	0	0	0	0	0	0	0	1
2:00	0	0	1	0	0	0	0	0	0	0	0	0	1
3:00	0	0	1	0	0	1	0	0	0	0	0	0	2
4:00	0	0	0	2	0	0	0	0	0	0	0	0	2
5:00	0	0	5	0	2	0	0	0	0	0	0	0	7
6:00	0	0	22	17	2	1	2	1	0	0	0	0	45
7:00	1	0	53	31	3	0	2	0	0	0	0	0	90
8:00	0	0	49	25	2	1	2	1	0	0	0	0	80
9:00	0	0	22	15	0	2	1	1	0	0	0	0	41
10:00	0	0	19	14	0	0	1	0	0	0	0	0	34
11:00	0	0	24	16	0	0	4	2	0	1	0	0	47
12:00 PM	0	0	21	11	1	0	3	0	0	0	0	0	36
1:00	0	0	32	14	2	3	1	0	0	0	0	0	52
2:00	0	0	33	13	1	1	2	0	0	0	0	0	50
3:00	0	0	48	27	1	0	1	1	0	0	0	0	78
4:00	0	0	40	21	0	0	0	0	0	0	0	0	61
5:00	0	0	37	23	2	0	0	0	0	0	0	0	62
6:00	0	1	21	4	0	0	0	0	0	0	0	0	26
7:00	1	0	20	4	0	0	0	0	0	0	0	0	25
8:00	0	0	12	6	1	0	0	0	0	0	0	0	19
9:00	0	0	13	3	0	0	0	0	0	0	0	0	16
10:00	0	0	7	2	0	0	0	0	0	0	0	0	9
11:00	0	0	5	0	0	0	0	0	0	0	0	0	5
Total	2	1	490	252	17	9	19	6	0	1	0	0	797
Percentage	0.1%	0.1%	30.7%	15.8%	1.1%	0.6%	1.2%	0.4%	0.0%	0.1%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/6/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	2	4	0	0	0	0	0	0	0	0	6
1:00	0	0	1	0	1	0	0	0	1	0	0	0	3
2:00	0	0	1	0	0	0	0	0	0	0	0	0	1
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	1	2	0	0	0	0	0	0	0	0	3
5:00	0	0	6	0	2	0	0	0	0	0	0	0	8
6:00	0	0	21	19	1	0	2	0	0	0	0	0	43
7:00	0	0	59	27	2	1	2	1	0	0	0	0	92
8:00	0	0	44	23	1	2	1	1	0	0	0	0	72
9:00	0	0	20	9	1	1	0	0	0	0	0	0	31
10:00	0	1	27	15	2	1	2	0	0	0	0	0	48
11:00	0	0	28	14	2	1	0	0	1	0	0	0	46
12:00 PM	0	0	26	12	0	1	1	1	0	1	0	0	42
1:00	0	0	30	18	0	2	3	0	0	0	0	0	53
2:00	0	0	45	19	2	1	2	0	0	1	0	0	70
3:00	0	2	58	30	0	0	0	1	0	0	0	0	91
4:00	0	1	52	26	1	0	2	0	0	0	1	0	83
5:00	0	0	29	24	0	0	0	0	0	0	0	0	53
6:00	0	1	27	11	0	0	3	0	0	0	0	0	42
7:00	0	0	18	10	0	0	0	0	0	0	0	0	28
8:00	0	0	10	3	0	0	0	0	0	0	0	0	13
9:00	0	0	5	7	0	0	0	0	0	0	0	0	12
10:00	0	0	6	0	0	0	0	0	0	0	0	0	6
11:00	0	0	5	0	0	0	0	0	0	0	0	0	5
Total	0	5	521	273	15	10	18	4	2	2	1	0	851
Percentage	0.0%	0.3%	30.6%	16.0%	0.9%	0.6%	1.1%	0.2%	0.1%	0.1%	0.1%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/7/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	4	0	0	0	0	0	0	0	0	0	4
1:00	0	0	1	0	0	0	0	0	0	0	0	0	1
2:00	0	0	0	2	0	0	0	0	0	0	0	0	2
3:00	0	0	1	0	1	0	0	0	0	0	0	0	2
4:00	0	0	0	1	0	1	0	0	0	0	0	0	2
5:00	0	0	8	1	1	0	0	1	0	0	0	0	11
6:00	0	0	21	13	0	2	1	0	0	0	0	0	37
7:00	0	0	45	34	4	1	2	1	0	0	0	0	87
8:00	0	1	48	23	0	0	2	2	0	0	0	0	76
9:00	0	0	28	17	1	0	2	0	0	0	0	0	48
10:00	0	0	29	5	1	1	0	0	0	1	0	0	37
11:00	0	0	26	15	2	0	0	0	0	0	0	0	43
12:00 PM	0	1	28	13	1	2	2	0	1	0	0	0	48
1:00	0	0	22	20	1	0	1	0	0	1	0	0	45
2:00	0	0	45	19	3	0	1	0	0	0	1	0	69
3:00	1	1	53	30	3	1	1	2	0	0	0	0	92
4:00	2	1	46	36	3	2	2	0	0	0	0	0	92
5:00	0	0	40	26	0	0	2	1	0	1	0	0	70
6:00	0	2	29	6	0	0	0	0	0	0	0	0	37
7:00	0	0	18	13	1	0	1	0	0	0	0	0	33
8:00	0	0	13	5	0	0	0	0	0	0	0	0	18
9:00	0	1	12	4	0	0	0	0	0	0	0	0	17
10:00	0	0	2	1	0	0	0	0	0	0	0	0	3
11:00	0	0	3	1	0	0	0	0	0	0	0	0	4
Total	3	7	522	285	22	10	17	7	1	3	1	0	878
Percentage	0.2%	0.4%	29.7%	16.2%	1.3%	0.6%	1.0%	0.4%	0.1%	0.2%	0.1%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: NB Shingle Point Road

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/8/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	5	1	0	0	0	0	0	0	0	0	6
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	1	0	0	0	0	0	0	0	0	1
3:00	0	0	2	0	0	0	0	0	0	0	0	0	2
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	0	5	2	1	0	0	0	0	0	0	0	8
6:00	0	0	16	9	0	0	1	1	0	0	0	0	27
7:00	0	1	49	23	2	0	1	0	0	0	0	0	76
8:00	1	0	46	17	1	1	2	0	0	0	0	0	68
9:00	1	0	24	14	3	0	2	0	0	0	0	0	44
10:00	0	0	5	2	0	0	1	0	0	0	0	0	8
11:00	*	*	*	*	*	*	*	*	*	*	*	*	0
12:00 PM	*	*	*	*	*	*	*	*	*	*	*	*	0
1:00	*	*	*	*	*	*	*	*	*	*	*	*	0
2:00	*	*	*	*	*	*	*	*	*	*	*	*	0
3:00	*	*	*	*	*	*	*	*	*	*	*	*	0
4:00	*	*	*	*	*	*	*	*	*	*	*	*	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	0
6:00	*	*	*	*	*	*	*	*	*	*	*	*	0
7:00	*	*	*	*	*	*	*	*	*	*	*	*	0
8:00	*	*	*	*	*	*	*	*	*	*	*	*	0
9:00	*	*	*	*	*	*	*	*	*	*	*	*	0
10:00	*	*	*	*	*	*	*	*	*	*	*	*	0
11:00	*	*	*	*	*	*	*	*	*	*	*	*	0
Total	2	1	152	69	7	1	7	1	0	0	0	0	240
Percentage	0.4%	0.2%	31.7%	14.4%	1.5%	0.2%	1.5%	0.2%	0.0%	0.0%	0.0%	0.0%	50.0%
Grand Total	20	33	3702	1885	117	58	117	32	4	14	2	0	5984
Percent	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

9/30/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	*	*	*	*	*	*	*	*	*	*	*	*	0
1:00	*	*	*	*	*	*	*	*	*	*	*	*	0
2:00	*	*	*	*	*	*	*	*	*	*	*	*	0
3:00	*	*	*	*	*	*	*	*	*	*	*	*	0
4:00	*	*	*	*	*	*	*	*	*	*	*	*	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	0
6:00	*	*	*	*	*	*	*	*	*	*	*	*	0
7:00	*	*	*	*	*	*	*	*	*	*	*	*	0
8:00	*	*	*	*	*	*	*	*	*	*	*	*	0
9:00	*	*	*	*	*	*	*	*	*	*	*	*	0
10:00	*	*	*	*	*	*	*	*	*	*	*	*	0
11:00	*	*	*	*	*	*	*	*	*	*	*	*	0
12:00 PM	0	0	27	25	3	4	1	0	0	0	0	0	60
1:00	0	0	56	26	3	1	3	0	0	0	0	0	89
2:00	0	0	55	39	4	1	4	0	0	0	0	0	103
3:00	0	0	109	40	3	1	3	0	0	0	0	0	156
4:00	0	1	117	42	1	2	0	0	0	1	0	0	164
5:00	1	0	110	35	1	0	2	0	0	0	0	0	149
6:00	0	2	58	30	2	1	1	0	0	1	0	0	95
7:00	0	0	40	11	0	0	0	0	0	0	0	0	51
8:00	0	0	29	11	2	0	0	0	0	0	0	0	42
9:00	0	0	27	5	1	0	0	0	0	1	0	0	34
10:00	0	0	12	5	0	0	0	0	0	0	0	0	17
11:00	0	0	3	3	0	1	0	0	0	1	0	0	8
Total	1	3	643	272	20	11	14	0	0	4	0	0	968
Percentage	0.1%	0.2%	33.2%	14.0%	1.0%	0.6%	0.7%	0.0%	0.0%	0.2%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/1/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	3	2	0	0	0	0	0	0	0	0	5
1:00	0	0	2	0	0	0	0	0	0	0	0	0	2
2:00	0	0	2	1	0	0	0	0	0	0	0	0	3
3:00	0	0	1	0	1	0	0	0	0	0	0	0	2
4:00	0	0	2	1	1	0	0	0	0	0	0	0	4
5:00	0	0	13	8	2	0	1	0	0	0	0	0	24
6:00	0	0	56	22	3	1	2	2	1	0	0	0	87
7:00	0	0	76	47	3	3	2	0	0	0	1	0	132
8:00	0	0	85	32	4	1	1	1	0	0	0	0	124
9:00	0	1	44	24	2	1	4	1	0	0	0	0	77
10:00	2	1	54	15	0	3	2	2	0	0	0	0	79
11:00	0	0	67	24	4	2	1	0	0	0	0	0	98
12:00 PM	0	0	65	20	1	0	0	1	0	1	0	0	88
1:00	0	1	52	22	5	2	1	1	0	0	0	0	84
2:00	0	1	71	38	9	1	5	1	0	0	0	0	126
3:00	0	0	79	42	3	2	2	0	0	0	0	0	128
4:00	0	0	91	50	2	0	4	0	0	0	0	0	147
5:00	0	1	85	26	3	0	2	0	0	0	0	0	117
6:00	0	0	64	23	1	0	0	0	0	0	0	0	88
7:00	1	0	46	18	1	0	2	0	0	0	0	0	68
8:00	0	0	24	13	0	0	1	0	0	0	0	0	38
9:00	0	0	24	9	1	0	0	0	0	0	0	0	34
10:00	0	0	24	3	0	0	0	0	0	0	0	0	27
11:00	0	0	8	4	0	0	0	0	0	0	0	0	12
Total	3	5	1038	444	46	16	30	9	1	1	1	0	1594
Percentage	0.1%	0.2%	32.6%	13.9%	1.4%	0.5%	0.9%	0.3%	0.0%	0.0%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
WWW.IMPERIALTDC.COM

File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/2/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	4	0	0	0	0	0	0	0	0	0	4
1:00	0	0	3	3	0	0	0	0	0	0	0	0	6
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	2	1	0	0	0	0	0	0	0	0	3
5:00	0	0	5	2	2	0	0	0	0	0	0	0	9
6:00	0	0	16	2	1	0	0	0	0	0	0	0	19
7:00	0	0	24	13	1	1	1	0	0	0	0	0	40
8:00	0	1	44	21	0	1	5	0	0	0	0	0	72
9:00	0	0	49	16	0	1	1	0	0	1	0	0	68
10:00	0	0	75	28	1	0	0	0	0	0	0	0	104
11:00	1	0	52	25	0	2	0	1	0	0	0	0	81
12:00 PM	1	0	57	23	2	0	0	1	0	0	0	0	84
1:00	3	1	65	17	0	1	7	0	0	0	0	0	94
2:00	1	1	70	28	2	0	3	0	0	0	0	0	105
3:00	0	1	63	19	1	0	3	0	0	0	0	0	87
4:00	0	1	54	17	2	0	0	0	0	0	0	0	74
5:00	1	3	50	15	0	1	2	0	0	0	0	0	72
6:00	0	0	30	11	1	0	0	0	0	0	0	0	42
7:00	0	0	34	10	2	0	0	0	0	1	0	0	47
8:00	0	0	35	14	0	0	0	0	1	0	0	0	50
9:00	0	1	22	4	0	0	0	0	0	0	0	0	27
10:00	0	0	14	3	0	0	0	0	0	0	0	0	17
11:00	0	0	13	4	0	0	0	0	0	0	0	0	17
Total	7	9	781	276	15	7	22	2	1	2	0	0	1122
Percentage	0.3%	0.4%	34.8%	12.3%	0.7%	0.3%	1.0%	0.1%	0.0%	0.1%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/3/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	3	1	0	0	0	0	0	0	0	0	4
1:00	0	0	2	0	0	0	0	0	1	0	0	0	3
2:00	0	0	1	0	0	0	0	0	0	0	0	0	1
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	2	3	0	0	0	0	0	0	0	0	5
5:00	0	0	2	4	0	0	0	0	0	0	0	0	6
6:00	0	0	17	3	1	0	0	0	0	0	0	0	21
7:00	0	0	16	5	0	1	0	0	0	0	0	0	22
8:00	1	0	27	12	0	0	0	0	0	0	0	0	40
9:00	0	1	49	19	1	1	1	0	0	0	0	0	72
10:00	1	1	47	17	0	1	0	0	0	0	0	0	67
11:00	2	0	47	21	0	0	0	0	0	0	0	0	70
12:00 PM	1	1	58	28	0	1	0	0	0	0	0	0	89
1:00	0	1	62	23	0	0	2	2	0	0	0	0	90
2:00	0	0	53	26	1	2	0	0	0	0	0	0	82
3:00	0	2	55	33	0	1	0	0	0	0	0	0	91
4:00	0	0	56	25	0	0	1	0	0	0	0	0	82
5:00	0	0	42	22	1	2	0	0	0	0	0	0	67
6:00	0	1	50	9	0	1	0	0	0	0	0	0	61
7:00	0	0	33	17	1	0	0	0	0	0	0	0	51
8:00	0	0	19	5	0	1	1	0	0	1	0	0	27
9:00	0	0	9	4	0	0	0	0	0	0	0	0	13
10:00	0	0	15	4	0	0	0	0	0	0	0	0	19
11:00	0	0	8	2	0	0	0	0	0	0	0	0	10
Total	5	7	673	283	5	11	5	2	1	1	0	0	993
Percentage	0.3%	0.4%	33.9%	14.2%	0.3%	0.6%	0.3%	0.1%	0.1%	0.1%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/4/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	2	0	0	1	0	0	0	0	0	0	3
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	1	0	0	0	1	0	0	0	0	0	2
4:00	0	0	2	3	0	0	0	0	0	0	0	0	5
5:00	0	0	20	3	3	0	1	0	0	0	0	0	27
6:00	1	0	44	34	2	0	2	0	0	0	0	0	83
7:00	0	0	106	39	0	2	4	1	0	0	0	0	152
8:00	0	0	82	21	3	0	2	1	0	0	0	0	109
9:00	0	1	44	21	4	1	2	0	0	0	0	0	73
10:00	0	0	40	23	2	0	1	0	0	0	0	0	66
11:00	0	0	46	18	1	1	4	0	0	1	0	0	71
12:00 PM	1	1	56	21	5	5	3	1	1	0	0	0	94
1:00	0	1	58	23	4	1	2	1	0	0	0	0	90
2:00	1	0	81	39	4	1	4	2	0	1	0	0	133
3:00	0	1	85	39	0	1	2	0	0	0	0	0	128
4:00	3	0	97	41	5	0	2	1	0	0	0	0	149
5:00	0	1	77	31	4	0	2	0	0	0	0	0	115
6:00	0	1	44	24	2	0	0	0	0	0	0	0	71
7:00	0	0	28	15	0	0	0	1	0	0	0	0	44
8:00	0	0	24	11	1	0	1	0	0	0	0	0	37
9:00	0	0	14	9	0	0	0	0	0	0	0	0	23
10:00	1	0	8	2	0	0	0	0	0	0	0	0	11
11:00	0	0	5	1	0	0	0	0	0	0	0	0	6
Total	7	6	964	418	40	13	33	8	1	2	0	0	1492
Percentage	0.2%	0.2%	32.3%	14.0%	1.3%	0.4%	1.1%	0.3%	0.0%	0.1%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/5/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	5	4	0	0	0	0	0	0	0	0	9
1:00	0	0	1	0	0	0	0	0	0	0	0	0	1
2:00	0	0	1	0	0	0	0	0	0	0	0	0	1
3:00	0	0	3	1	0	1	0	0	0	0	0	0	5
4:00	0	0	2	2	0	0	0	0	0	1	0	0	5
5:00	0	0	13	2	3	0	0	0	0	0	0	0	18
6:00	0	0	47	26	4	1	2	1	0	0	0	0	81
7:00	1	0	122	41	4	1	2	0	0	0	0	0	171
8:00	0	0	87	41	3	2	4	1	0	0	0	0	138
9:00	0	0	42	24	1	3	2	1	0	0	0	0	73
10:00	0	0	48	21	1	0	2	1	0	0	0	0	73
11:00	0	0	47	24	3	1	6	3	0	1	0	0	85
12:00 PM	0	0	45	17	3	0	3	0	0	0	0	0	68
1:00	0	1	54	23	5	4	2	0	0	0	0	0	89
2:00	0	0	66	33	3	1	3	0	0	0	0	0	106
3:00	0	0	98	45	2	0	3	1	0	0	0	0	149
4:00	0	1	104	37	1	1	0	1	0	0	0	0	145
5:00	0	0	69	43	4	0	1	0	0	0	0	0	117
6:00	0	1	50	15	0	0	0	0	0	0	0	0	66
7:00	1	0	39	11	0	0	0	0	0	0	0	0	51
8:00	0	0	19	8	1	2	0	0	0	0	0	0	30
9:00	0	0	19	4	0	0	0	0	0	0	0	0	23
10:00	0	0	11	6	0	0	0	0	0	0	0	0	17
11:00	0	0	8	0	0	0	0	0	1	0	0	0	9
Total	2	3	1000	428	38	17	30	9	1	2	0	0	1530
Percentage	0.1%	0.1%	32.7%	14.0%	1.2%	0.6%	1.0%	0.3%	0.0%	0.1%	0.0%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

Imperial
TRAFFIC & DATA COLLECTION
P.O. BOX 4637 | CHERRY HILL, NJ 08034 | 609-706-6100
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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/6/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	2	5	0	0	0	0	0	0	0	0	7
1:00	0	0	1	0	1	0	0	0	1	0	0	0	3
2:00	0	0	1	0	0	0	0	0	0	0	0	0	1
3:00	0	0	1	0	0	0	0	0	0	0	0	0	1
4:00	0	0	1	2	0	0	0	0	0	0	0	0	3
5:00	1	0	17	4	3	0	0	0	0	0	0	0	25
6:00	0	0	46	34	1	0	2	0	0	0	0	0	83
7:00	0	0	119	41	4	2	4	1	0	0	0	0	171
8:00	0	0	76	33	3	3	2	1	0	0	0	0	118
9:00	0	0	47	22	2	1	1	0	0	0	0	0	73
10:00	1	1	48	24	4	1	3	0	0	0	0	0	82
11:00	0	0	59	24	2	4	1	0	1	0	0	0	91
12:00 PM	0	0	61	26	1	2	2	1	0	1	0	0	94
1:00	0	0	60	33	2	3	6	1	1	0	1	0	107
2:00	0	0	88	41	3	2	4	0	0	1	0	0	139
3:00	0	3	110	47	0	3	1	1	0	0	0	0	165
4:00	0	2	118	45	2	0	3	1	0	0	1	0	172
5:00	0	0	90	42	1	0	1	0	0	0	0	0	134
6:00	0	1	57	25	1	0	3	0	0	0	0	0	87
7:00	0	0	34	17	0	2	0	0	0	0	0	0	53
8:00	0	0	22	5	0	0	0	0	0	0	0	0	27
9:00	0	0	14	9	0	0	0	0	0	0	0	0	23
10:00	0	0	12	0	0	0	0	0	0	0	0	0	12
11:00	0	0	10	2	0	0	0	0	0	0	0	0	12
Total	2	7	1094	481	30	23	33	6	3	2	2	0	1683
Percentage	0.1%	0.2%	32.5%	14.3%	0.9%	0.7%	1.0%	0.2%	0.1%	0.1%	0.1%	0.0%	50.0%

Shingle Point Road
North of Black Drive
Georgetown, Sussex County, DE
Setup: NR
Direction: Combined

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File Name: 1. Shingle Point Road, North of Black Drive
Start Date: 9/30/2021
End Date: 10/8/2021
Date Printed: 10/13/2021

10/7/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	6	0	0	1	0	0	0	0	0	0	7
1:00	0	0	1	0	0	0	0	0	0	0	0	0	1
2:00	0	0	1	2	0	0	0	0	0	0	0	0	3
3:00	0	1	2	0	2	1	0	0	0	0	0	0	6
4:00	0	0	0	1	0	1	0	0	0	0	0	0	2
5:00	0	0	19	5	1	0	0	1	0	0	0	0	26
6:00	0	0	54	24	1	2	2	0	0	0	0	0	83
7:00	0	1	93	47	6	3	2	1	0	0	0	0	153
8:00	0	1	81	40	1	0	3	2	0	0	0	0	128
9:00	0	0	46	24	1	0	6	0	0	0	0	0	77
10:00	1	0	58	16	1	3	0	0	0	1	0	0	80
11:00	0	0	51	34	2	0	0	0	1	0	0	0	88
12:00 PM	0	1	52	22	3	2	4	0	1	0	0	0	85
1:00	1	0	48	32	2	0	1	1	0	1	0	0	86
2:00	0	1	72	37	4	2	1	0	0	0	1	0	118
3:00	1	1	102	54	5	2	5	3	0	0	0	0	173
4:00	2	1	99	56	4	3	4	0	0	0	0	0	169
5:00	0	0	89	47	3	1	3	2	0	1	0	0	146
6:00	0	2	54	15	0	0	0	0	0	0	0	0	71
7:00	0	1	46	21	1	0	1	0	0	1	0	0	71
8:00	0	0	21	9	0	0	0	0	0	0	0	0	30
9:00	0	1	24	5	0	0	0	0	0	0	0	0	30
10:00	0	0	8	5	0	0	0	0	0	0	0	0	13
11:00	0	0	8	2	0	0	0	0	0	1	0	0	11
Total	5	11	1035	498	37	21	32	10	2	5	1	0	1657
Percentage	0.2%	0.3%	31.2%	15.0%	1.1%	0.6%	1.0%	0.3%	0.1%	0.2%	0.0%	0.0%	50.0%

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Start Date: 9/30/2021
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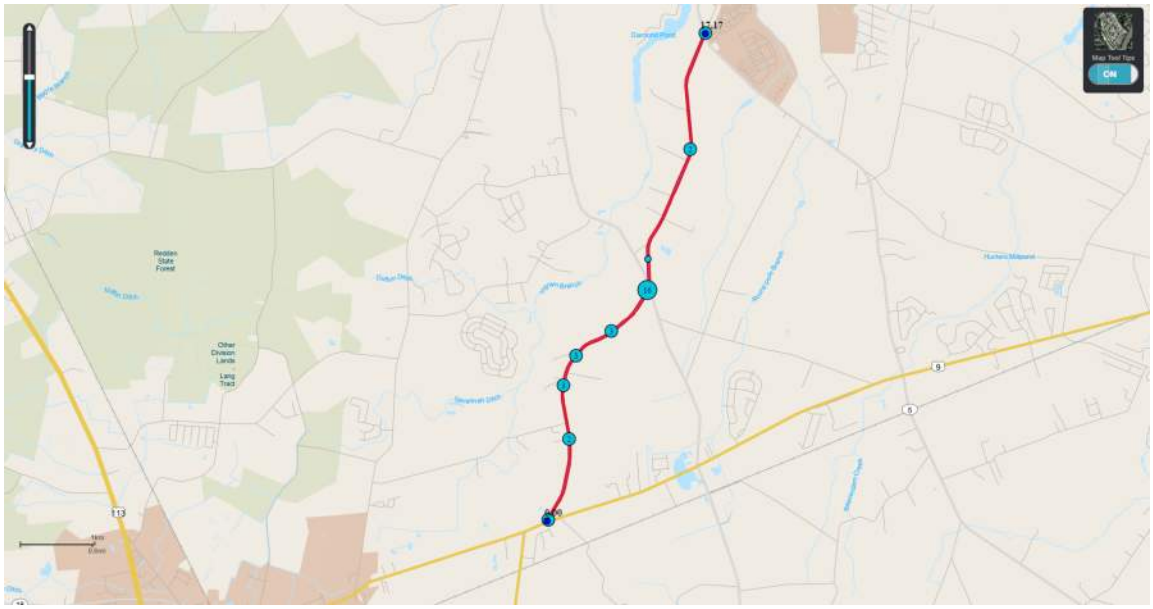
10/8/2021 Time	0 - 72 in.	> 72 - 120 in.	> 120 - 180 in.	> 180 - 240 in.	> 240 - 300 in.	> 300 - 360 in.	> 360 - 480 in.	> 480 - 600 in.	> 600 - 720 in.	> 720 - 840 in.	> 840 - 960 in.	> 960 in.	Total
12:00 AM	0	0	5	2	0	0	0	0	0	0	0	0	7
1:00	0	0	1	0	0	0	0	0	0	0	0	0	1
2:00	0	0	2	1	0	0	0	0	0	0	0	0	3
3:00	0	0	4	1	0	0	0	0	0	0	0	0	5
4:00	0	0	1	1	0	0	0	0	0	0	0	0	2
5:00	0	0	15	6	1	0	0	0	0	0	0	0	22
6:00	0	0	45	21	0	0	1	1	0	0	0	0	68
7:00	0	1	91	36	2	1	1	0	0	0	0	0	132
8:00	2	0	76	32	4	1	2	1	0	0	0	0	118
9:00	1	0	47	25	3	1	2	0	0	0	0	0	79
10:00	0	0	9	2	0	0	1	0	0	0	0	0	12
11:00	*	*	*	*	*	*	*	*	*	*	*	*	0
12:00 PM	*	*	*	*	*	*	*	*	*	*	*	*	0
1:00	*	*	*	*	*	*	*	*	*	*	*	*	0
2:00	*	*	*	*	*	*	*	*	*	*	*	*	0
3:00	*	*	*	*	*	*	*	*	*	*	*	*	0
4:00	*	*	*	*	*	*	*	*	*	*	*	*	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	0
6:00	*	*	*	*	*	*	*	*	*	*	*	*	0
7:00	*	*	*	*	*	*	*	*	*	*	*	*	0
8:00	*	*	*	*	*	*	*	*	*	*	*	*	0
9:00	*	*	*	*	*	*	*	*	*	*	*	*	0
10:00	*	*	*	*	*	*	*	*	*	*	*	*	0
11:00	*	*	*	*	*	*	*	*	*	*	*	*	0
Total	3	1	296	127	10	3	7	2	0	0	0	0	449
Percentage	0.3%	0.1%	33.0%	14.1%	1.1%	0.3%	0.8%	0.2%	0.0%	0.0%	0.0%	0.0%	50.0%
Grand Total	35	52	7524	3227	241	122	206	48	10	19	4	0	11488
Percent	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Appendix E

Crash Data Summary

Delaware Crash Analysis Reporting System

Crash Study Time Period:	01/01/2017 - 09/28/2021
Query Type:	AdvancedQueryTool
Description:	Four Winds Farm TIS
Study Requested By:	Teresa Lord (Pennoni)
Study Generated By:	TDTSCJM
Number of Crashes:	45
Includes Non-Reportable Crashes:	N
Study Code:	



State of Delaware Crash Study

Summary	
	# of Crashes
Total Crashes	45
Fatal Crashes	1
Total Alcohol-Related Crashes	1
Total Non Alcohol-Related Crashes	44
Total Fatalities	1
Total Pedestrian Fatalities	0
Total Pedestrian Injuries	0
Total Pedestrian Crashes	0
Total Motorcycle Crashes	1
Total Pedalcyclist Crashes	0

Classification		
	# of Crashes	**% of Total Crashes**
Non-Reportable	0	0.00%
Reportable	37	82.22%
Personal Injury	7	15.56%
Fatality	1	2.22%
Total	**45**	

Manner of Impact		
	# of Crashes	**% of Total Crashes**
Front to rear	4	8.89%
Front to front	3	6.67%
Angle	12	26.67%
Sideswipe, same direction	1	2.22%
Sideswipe, opposite direction	0	0.00%
Rear to side	0	0.00%
Rear to rear	1	2.22%
Other	1	2.22%
Unknown	1	2.22%
Not a collision between two vehicles	22	48.89%
Total	**45**	

Alcohol Related Crashes By Classification					
	Non-reportable	Reportable	Personal Injury	Fatality	**Total**
Alcohol Related	0	1	0	0	**1**
Non-Alcohol Related	0	36	7	1	**44**
Total	**0**	**37**	**7**	**1**	**45**

Manner of Impact By Classification					
	Non-Reportable	Reportable	Personal Injury	Fatality	**Total**
Front to rear	0	4	0	0	**4**
Front to front	0	1	2	0	**3**
Angle	0	9	2	1	**12**
Sideswipe, same direction	0	1	0	0	**1**
Sideswipe, opposite direction	0	0	0	0	**0**
Rear to side	0	0	0	0	**0**
Rear to rear	0	0	1	0	**1**
Other	0	1	0	0	**1**
Unknown	0	1	0	0	**1**
Not a collision between two vehicles	0	20	2	0	**22**
Total	**0**	**37**	**7**	**1**	**45**

Day Of Week		
	# of Crashes	% of Total Crashes
Sunday	5	11.11%
Monday	8	17.78%
Tuesday	6	13.33%
Wednesday	9	20.00%
Thursday	5	11.11%
Friday	8	17.78%
Saturday	4	8.89%
Total	**45**	

Time Of Day (AM)		
	# of Crashes	% of Total Crashes
00:00 - 00:59	2	4.44%
01:00 - 01:59	1	2.22%
02:00 - 02:59	1	2.22%
03:00 - 03:59	1	2.22%
04:00 - 04:59	2	4.44%
05:00 - 05:59	1	2.22%
06:00 - 06:59	3	6.67%
07:00 - 07:59	2	4.44%
08:00 - 08:59	0	0.00%
09:00 - 09:59	2	4.44%
10:00 - 10:59	2	4.44%
11:00 - 11:59	0	0.00%
Total	**17**	

Time Of Day (PM)		
	# of Crashes	% of Total Crashes
12:00 - 12:59	1	2.22%
13:00 - 13:59	3	6.67%
14:00 - 14:59	0	0.00%
15:00 - 15:59	3	6.67%
16:00 - 16:59	4	8.89%
17:00 - 17:59	6	13.33%
18:00 - 18:59	4	8.89%
19:00 - 19:59	1	2.22%
20:00 - 20:59	4	8.89%
21:00 - 21:59	0	0.00%
22:00 - 22:59	1	2.22%
23:00 - 23:59	1	2.22%
Total	**28**	
Unknown Time	0	

Surface Conditions		
	# of Crashes	% of Total Crashes
Dry	39	86.67%
Wet	6	13.33%
Snow	0	0.00%
Ice/Frost	0	0.00%
Sand	0	0.00%
Water (standing, moving)	0	0.00%
Slush	0	0.00%
Oil	0	0.00%
Mud, Dirt, Gravel	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**45**	

Lighting Conditions		
	# of Crashes	% of Total Crashes
Daylight	24	53.33%
Dawn	0	0.00%
Dusk	1	2.22%
Dark-Lighted	0	0.00%
Dark-Not Lighted	20	44.44%
Dark-Unknown Lighting	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**45**	

Weather Conditions		
	# of Crashes	% of Total Crashes
Clear	31	68.89%
Cloudy	11	24.44%
Fog, Smog, Smoke	0	0.00%
Rain	6	13.33%
Sleet, Hail (freezing rain or drizzle)	0	0.00%
Snow	0	0.00%
Blowing Snow	0	0.00%
Severe Crosswinds	0	0.00%
Blowing Sand, Soil, Dirt	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**48**	

First Harmful Event		
	# of Crashes	% of Total Crashes
Overturn/Rollover, Non-Collision	0	0.00%
Fire/Explosion, Non-Collision	0	0.00%
Immersion, Non-Collision	0	0.00%
Jackknife, Non-Collision	0	0.00%
Cargo/Equipment Loss or Shift, Non-Collision	0	0.00%
Fell/Jumped From Motor Vehicle, Non-Collision	0	0.00%
Thrown or Falling Object, Non-Collision	0	0.00%
Other Non-Collision, Non-Collision	1	2.22%
Pedestrian, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Pedalcycle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Railway Vehicle (train, engine), Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Animal, Collision With Person, Motor Vehicle, or Non-Fixed Object	14	31.11%
Motor Vehicle in Transport, Collision With Person, Motor Vehicle, or Non-Fixed Object	21	46.67%
Legally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	1	2.22%
Struck by Anything Set in Motion by Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Work Zone / Maintenance Equipment, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Other Non-Fixed Object, Collision With Person, Motor Vehicle, or Non-Fixed Object	1	2.22%
Impact Attenuator/Crash Cushion, Collision With Fixed Object	0	0.00%
Bridge Overhead Structure, Collision With Fixed Object	0	0.00%
Bridge Pier or Support, Collision With Fixed Object	0	0.00%
Bridge Rail, Collision With Fixed Object	0	0.00%
Cable Barrier, Collision With Fixed Object	0	0.00%
Culvert, Collision With Fixed Object	0	0.00%
Curb, Collision With Fixed Object	1	2.22%
Ditch, Collision With Fixed Object	3	6.67%
Embankment, Collision With Fixed Object	0	0.00%

Guardrail Face, Collision With Fixed Object	0	0.00%
Guardrail End, Collision With Fixed Object	0	0.00%
Concrete Traffic Barrier, Collision With Fixed Object	0	0.00%
Other Traffic Barrier, Collision With Fixed Object	0	0.00%
Tree (standing), Collision With Fixed Object	2	4.44%
Utility Pole, Collision With Fixed Object	0	0.00%
Light Support, Collision With Fixed Object	0	0.00%
Traffic Sign Support, Collision With Fixed Object	1	2.22%
Overhead Sign Support, Collision With Fixed Object	0	0.00%
Traffic Signal Support, Collision With Fixed Object	0	0.00%
Fence, Collision With Fixed Object	0	0.00%
Mailbox, Collision With Fixed Object	0	0.00%
Other Post, Pole or Support, Collision With Fixed Object	0	0.00%
Other Fixed Object (wall, building, tunnel, etc.), Collision With Fixed Object	0	0.00%
Illegally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Stopped Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Unknown, Collision With Fixed Object	0	0.00%
Total	**31**	

Primary Contributing Circumstance		
	# of Crashes	**% of Total Crashes**
Speeding	0	0.00%
Failed to yield right of way	7	15.56%
Passed Stop Sign	5	11.11%
Disregard Traffic Signal	0	0.00%
Wrong side or wrong way	0	0.00%
Improper passing	2	4.44%
Improper lane change	0	0.00%
Following too close	1	2.22%
Made improper turn	1	2.22%
Driving under the influence	2	4.44%
Driver inattention, distraction, or fatigue	4	8.89%
Driving in a careless or reckless manner	4	8.89%
Driving in an aggressive manner	0	0.00%
Improper backing	0	0.00%
Other improper driving	2	4.44%
Mechanical defects	0	0.00%
Animal in Roadway - Deer	13	28.89%
Animal in Roadway - Other Animal	1	2.22%
Other environmental circumstances - weather, glare	0	0.00%
Roadway circumstances - debris, holes, work zone,	0	0.00%
Other	1	2.22%
Unknown	2	4.44%
Total	**45**	

Driver Action		
	# of Drivers	**% of Total Crashes**
No Contributing Action	36	53.73%
Failed to yield right of way	7	10.45%
Ran Red Light	0	0.00%
Ran Stop Sign	5	7.46%
Disregard other traffic sign	0	0.00%
Disregard other road markings	0	0.00%
Exceeded authorized speed limit	1	1.49%
Driving too fast for conditions	2	2.99%
Made an improper turn	0	0.00%
Improper backing	0	0.00%
Wrong side or wrong way	1	1.49%
Followed to closely	0	0.00%
Failure to keep in proper lane	1	1.49%
Ran off roadway	0	0.00%
Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	8	11.94%
Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc.	1	1.49%
Over-correcting/over-steering	0	0.00%
Improper Passing	2	2.99%
Other Contributing Action	2	2.99%
Unknown	1	1.49%
Total	**67**	

Date	Time	CTY	RD	MP	C-MP	Class	MOI	FHE	PC	LC	WC	SC	Fat	Inj	AL
2017															
01/28/2017	23:20	S	00249	0.06	0.06	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Dark-Not Lighted	Clear	Dry	0	0	N
08/22/2017	06:11	S				Property Damage Only	Not a collision between two vehicles	Ditch	Driver inattention, distraction, or fatigue	Dark-Not Lighted	Clear	Dry	0	0	N
08/24/2017	09:42	S	00248	10.01	10.01	Property Damage Only	Angle	Motor Vehicle in Transport	Failed to yield right of way	Daylight	Clear	Dry	0	0	N
11/04/2017	02:13	S				Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Dark-Not Lighted	Clear	Dry	0	0	N
11/15/2017	13:56	S	00018	22.25	22.25	Property Damage Only	Sideswipe, same direction	Motor Vehicle in Transport	Improper passing	Daylight	Clear	Dry	0	0	N
02/08/2017	18:35	S	00249	3.55	3.55	Personal Injury Crash	Not a collision between two vehicles	Other Non-Collision	Other improper driving	Dark-Not Lighted	Clear	Dry	0	1	N
04/20/2017	20:54	S	00022	17.16	17.16	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Daylight	Clear	Dry	0	0	N
12/05/2017	17:04	S	00022	17.17	17.17	Property Damage Only	Other	Motor Vehicle in Transport	Other	Dark-Not Lighted	Cloudy	Dry	0	0	N
2018															
02/26/2018	16:17	S				Property Damage Only	Front to front	Motor Vehicle in Transport	Failed to yield right of way	Daylight	Clear	Dry	0	0	N
08/26/2018	19:33	S	00249	2.27	2.27	Property Damage Only	Angle	Motor Vehicle in Transport	Passed Stop Sign	Daylight	Clear	Dry	0	0	N
09/08/2018	15:36	S				Property Damage Only	Not a collision between two vehicles	Ditch	Driving in a careless or reckless manner	Daylight	Rain	Wet	0	0	N
10/23/2018	06:29	S	00249	1.14	1.14	Personal Injury Crash	Angle	Motor Vehicle in Transport	Driver inattention, distraction, or fatigue	Dark-Not Lighted	Clear	Dry	0	1	N
11/05/2018	13:27	S	00248	10	10.00	Fatality Crash	Angle	Motor Vehicle in Transport	Passed Stop Sign	Daylight	Rain - Cloudy	Wet	1	1	N

Date	Time	CTY	RD	MP	C-MP	Class	MOI	FHE	PC	LC	WC	SC	Fat	Inj	AL
2018															
03/12/2018	07:33	S	00248	10.01	10.01	Property Damage Only	Front to rear	Motor Vehicle in Transport	Failed to yield right of way	Daylight	Clear	Dry	0	0	N
03/26/2018	05:40	S	00022	17.17	17.17	Property Damage Only	Angle	Motor Vehicle in Transport	Driver inattention, distraction, or fatigue	Dark-Not Lighted	Clear	Dry	0	0	N
03/27/2018	22:29	S	00249	2.5	2.50	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Dark-Not Lighted	Clear	Dry	0	0	N
05/17/2018	18:07	S	00249	4.45	4.45	Property Damage Only	Angle	Motor Vehicle in Transport	Driver inattention, distraction, or fatigue	Daylight	Cloudy - Rain	Dry	0	0	N
2019															
02/22/2019	17:50	S	00248	9.99	9.99	Personal Injury Crash	Angle	Motor Vehicle in Transport	Failed to yield right of way	Dark-Not Lighted	Clear	Dry	0	1	N
04/11/2019	20:17	S	00249	1.89	1.89	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Dark-Not Lighted	Cloudy	Dry	0	0	N
04/17/2019	18:08	S	00249	1.47	1.47	Property Damage Only	Not a collision between two vehicles	Tree (standing)	Driving in a careless or reckless manner	Daylight	Clear	Dry	0	0	N
05/04/2019	13:53	S	00248	10	10.00	Property Damage Only	Angle	Motor Vehicle in Transport	Failed to yield right of way	Daylight	Cloudy	Wet	0	0	N
07/03/2019	15:54	S	00249	2.27	2.27	Property Damage Only	Angle	Motor Vehicle in Transport	Failed to yield right of way	Daylight	Cloudy	Dry	0	0	N
07/17/2019	04:08	S				Property Damage Only	Front to rear	Motor Vehicle in Transport	Following too close	Dark-Not Lighted	Clear	Dry	0	0	N
09/04/2019	17:30	S				Personal Injury Crash	Front to front	Motor Vehicle in Transport	Improper passing	Daylight	Clear	Dry	0	2	N
09/22/2019	07:15	S				Property Damage Only	Not a collision between two vehicles	Tree (standing)	Unknown	Daylight	Clear	Dry	0	0	N
09/25/2019	20:19	S	00249	2.14	2.14	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Dark-Not Lighted	Clear	Dry	0	0	N

Date	Time	CTY	RD	MP	C-MP	Class	MOI	FHE	PC	LC	WC	SC	Fat	Inj	AL
2019															
10/11/2019	20:08	S	00249	1.23	1.23	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Dark-Not Lighted	Clear	Dry	0	0	N
11/08/2019	09:45	S	00018	22.26	22.26	Property Damage Only	Angle	Motor Vehicle in Transport	Failed to yield right of way	Daylight	Clear	Dry	0	0	N
11/12/2019	12:02	S	00249	2.3	2.30	Property Damage Only	Not a collision between two vehicles	Traffic Sign Support	Driving in a careless or reckless manner	Daylight	Rain	Wet	0	0	N
12/04/2019	17:38	S	00249	1.88	1.88	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Dark-Not Lighted	Cloudy	Dry	0	0	N
03/07/2019	17:28	S	00248	10	10.00	Personal Injury Crash	Front to front	Motor Vehicle in Transport	Passed Stop Sign	Daylight	Clear - Cloudy	Dry	0	1	N
2020															
01/07/2020	17:05	S	00018	22.26	22.26	Property Damage Only	Front to rear	Motor Vehicle in Transport	Driving in a careless or reckless manner	Dusk	Rain	Wet	0	0	N
06/19/2020	04:31	S	00249	1.48	1.48	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Dark-Not Lighted	Clear	Dry	0	0	N
07/20/2020	15:27	S	00249	1.17	1.17	Property Damage Only	Unknown	Other Non-Fixed Object	Unknown	Daylight	Clear	Dry	0	0	N
08/31/2020	16:54	S	00249	0.62	0.62	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Daylight	Cloudy	Dry	0	0	N
11/01/2020	06:56	S	00018	22.26	22.26	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Daylight	Clear	Dry	0	0	N
12/20/2020	18:49	S	00249	0.79	0.79	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Other Animal	Dark-Not Lighted	Rain	Wet	0	0	N
2021															
02/28/2021	00:59	S				Property Damage Only	Front to rear	Legally Parked Motor Vehicle	Driving under the influence	Dark-Not Lighted	Clear	Dry	0	0	Y

Date	Time	CTY	RD	MP	C-MP	Class	MOI	FHE	PC	LC	WC	SC	Fat	Inj	AL
2021															
06/18/2021	01:45	S	00249	0.07	0.07	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Dark-Not Lighted	Clear	Dry	0	0	N
07/05/2021	10:43	S	00249	1.64	1.64	Personal Injury Crash	Rear to rear	Motor Vehicle in Transport	Other improper driving	Daylight	Clear	Dry	0	2	N
08/09/2021	10:19	S	00249	2.32	2.32	Property Damage Only	Angle	Motor Vehicle in Transport	Made improper turn	Daylight	Clear	Dry	0	0	N
03/26/2021	00:24	S	00249	3.41	3.41	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Deer	Dark-Not Lighted	Clear	Dry	0	0	N
05/07/2021	16:33	S	00022	17.17	17.17	Property Damage Only	Angle	Motor Vehicle in Transport	Passed Stop Sign	Daylight	Cloudy	Dry	0	0	N
06/04/2021	03:30	S				Property Damage Only	Not a collision between two vehicles	Ditch	Driving under the influence	Dark-Not Lighted	Clear	Dry	0	0	N
08/04/2021	16:15	S	00022	17.17	17.17	Personal Injury Crash	Not a collision between two vehicles	Curb	Passed Stop Sign	Daylight	Cloudy	Dry	0	1	N

Report generated by TDTSCJM at 2021-09-30 08:29:32.831

Report Legend

CTY – County

RD – Maintenance Road

MP – Milepoint

C-MP – Continuous Milepoint

Fat – Fatality

Inj – Injury

AL - Alcohol Involved

LC – Lighting Condition

WC – Weather Condition

SC – Surface Condition

FHE – First Harmful Event

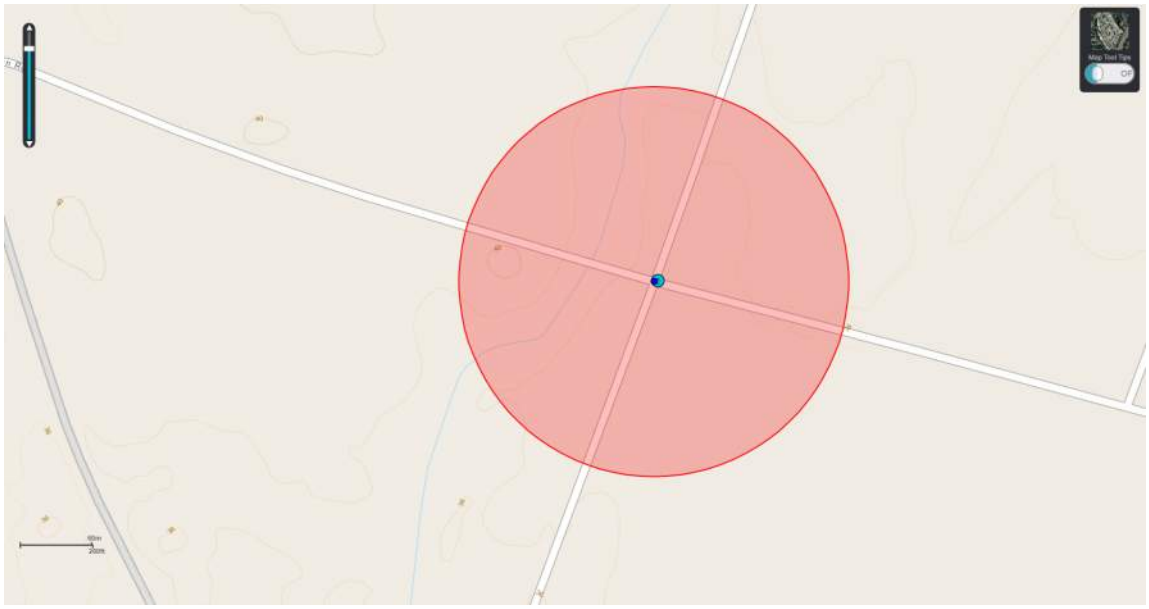
PC – Primary Contributing Circumstance

Class – Report Classification

MOI – Manner of Impact

Delaware Crash Analysis Reporting System

Crash Study Time Period:	01/01/2017 - 09/28/2021
Query Type:	AdvancedQueryTool
Description:	Four Winds Farm TIS
Study Requested By:	Teresa Lord (Pennoni)
Study Generated By:	TDTSCJM
Number of Crashes:	2
Includes Non-Reportable Crashes:	N
Study Code:	



State of Delaware Crash Study

Summary	
	# of Crashes
Total Crashes	2
Fatal Crashes	0
Total Alcohol-Related Crashes	0
Total Non Alcohol-Related Crashes	2
Total Fatalities	0
Total Pedestrian Fatalities	0
Total Pedestrian Injuries	0
Total Pedestrian Crashes	0
Total Motorcycle Crashes	0
Total Pedalcyclist Crashes	0

Classification		
	# of Crashes	**% of Total Crashes**
Non-Reportable	0	0.00%
Reportable	2	100.00%
Personal Injury	0	0.00%
Fatality	0	0.00%
Total	**2**	

Manner of Impact		
	# of Crashes	**% of Total Crashes**
Front to rear	0	0.00%
Front to front	0	0.00%
Angle	2	100.00%
Sideswipe, same direction	0	0.00%
Sideswipe, opposite direction	0	0.00%
Rear to side	0	0.00%
Rear to rear	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
	0	0.00%
Total	**2**	

Alcohol Related Crashes By Classification					
	Non-reportable	Reportable	Personal Injury	Fatality	**Total**
Alcohol Related	0	0	0	0	**0**
Non-Alcohol Related	0	2	0	0	**2**
Total	**0**	**2**	**0**	**0**	**2**

Manner of Impact By Classification					
	Non-Reportable	Reportable	Personal Injury	Fatality	**Total**
Front to rear	0	0	0	0	**0**
Front to front	0	0	0	0	**0**
Angle	0	2	0	0	**2**
Sideswipe, same direction	0	0	0	0	**0**
Sideswipe, opposite direction	0	0	0	0	**0**
Rear to side	0	0	0	0	**0**
Rear to rear	0	0	0	0	**0**
Other	0	0	0	0	**0**
Unknown	0	0	0	0	**0**
Not a collision between two vehicles	0	0	0	0	**0**
Total	**0**	**2**	**0**	**0**	**2**

Day Of Week		
	# of Crashes	% of Total Crashes
Sunday	1	50.00%
Monday	0	0.00%
Tuesday	0	0.00%
Wednesday	0	0.00%
Thursday	1	50.00%
Friday	0	0.00%
Saturday	0	0.00%
Total	**2**	

Time Of Day (AM)		
	# of Crashes	% of Total Crashes
00:00 - 00:59	0	0.00%
01:00 - 01:59	0	0.00%
02:00 - 02:59	0	0.00%
03:00 - 03:59	0	0.00%
04:00 - 04:59	0	0.00%
05:00 - 05:59	0	0.00%
06:00 - 06:59	0	0.00%
07:00 - 07:59	1	50.00%
08:00 - 08:59	0	0.00%
09:00 - 09:59	1	50.00%
10:00 - 10:59	0	0.00%
11:00 - 11:59	0	0.00%
Total	**2**	

Time Of Day (PM)		
	# of Crashes	% of Total Crashes
12:00 - 12:59	0	0.00%
13:00 - 13:59	0	0.00%
14:00 - 14:59	0	0.00%
15:00 - 15:59	0	0.00%
16:00 - 16:59	0	0.00%
17:00 - 17:59	0	0.00%
18:00 - 18:59	0	0.00%
19:00 - 19:59	0	0.00%
20:00 - 20:59	0	0.00%
21:00 - 21:59	0	0.00%
22:00 - 22:59	0	0.00%
23:00 - 23:59	0	0.00%
Total	**0**	
Unknown Time	0	

Surface Conditions		
	# of Crashes	% of Total Crashes
Dry	2	100.00%
Wet	0	0.00%
Snow	0	0.00%
Ice/Frost	0	0.00%
Sand	0	0.00%
Water (standing, moving)	0	0.00%
Slush	0	0.00%
Oil	0	0.00%
Mud, Dirt, Gravel	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**2**	

Lighting Conditions		
	# of Crashes	% of Total Crashes
Daylight	2	100.00%
Dawn	0	0.00%
Dusk	0	0.00%
Dark-Lighted	0	0.00%
Dark-Not Lighted	0	0.00%
Dark-Unknown Lighting	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**2**	

Weather Conditions		
	# of Crashes	% of Total Crashes
Clear	2	100.00%
Cloudy	0	0.00%
Fog, Smog, Smoke	0	0.00%
Rain	0	0.00%
Sleet, Hail (freezing rain or drizzle)	0	0.00%
Snow	0	0.00%
Blowing Snow	0	0.00%
Severe Crosswinds	0	0.00%
Blowing Sand, Soil, Dirt	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**2**	

First Harmful Event		
	# of Crashes	% of Total Crashes
Overturn/Rollover, Non-Collision	0	0.00%
Fire/Explosion, Non-Collision	0	0.00%
Immersion, Non-Collision	0	0.00%
Jackknife, Non-Collision	0	0.00%
Cargo/Equipment Loss or Shift, Non-Collision	0	0.00%
Fell/Jumped From Motor Vehicle, Non-Collision	0	0.00%
Thrown or Falling Object, Non-Collision	0	0.00%
Other Non-Collision, Non-Collision	0	0.00%
Pedestrian, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Pedalcycle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Railway Vehicle (train, engine), Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Animal, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Motor Vehicle in Transport, Collision With Person, Motor Vehicle, or Non-Fixed Object	2	100.00%
Legally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Struck by Anything Set in Motion by Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Work Zone / Maintenance Equipment, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Other Non-Fixed Object, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Impact Attenuator/Crash Cushion, Collision With Fixed Object	0	0.00%
Bridge Overhead Structure, Collision With Fixed Object	0	0.00%
Bridge Pier or Support, Collision With Fixed Object	0	0.00%
Bridge Rail, Collision With Fixed Object	0	0.00%
Cable Barrier, Collision With Fixed Object	0	0.00%
Culvert, Collision With Fixed Object	0	0.00%
Curb, Collision With Fixed Object	0	0.00%
Ditch, Collision With Fixed Object	0	0.00%
Embankment, Collision With Fixed Object	0	0.00%

Guardrail Face, Collision With Fixed Object	0	0.00%
Guardrail End, Collision With Fixed Object	0	0.00%
Concrete Traffic Barrier, Collision With Fixed Object	0	0.00%
Other Traffic Barrier, Collision With Fixed Object	0	0.00%
Tree (standing), Collision With Fixed Object	0	0.00%
Utility Pole, Collision With Fixed Object	0	0.00%
Light Support, Collision With Fixed Object	0	0.00%
Traffic Sign Support, Collision With Fixed Object	0	0.00%
Overhead Sign Support, Collision With Fixed Object	0	0.00%
Traffic Signal Support, Collision With Fixed Object	0	0.00%
Fence, Collision With Fixed Object	0	0.00%
Mailbox, Collision With Fixed Object	0	0.00%
Other Post, Pole or Support, Collision With Fixed Object	0	0.00%
Other Fixed Object (wall, building, tunnel, etc.), Collision With Fixed Object	0	0.00%
Illegally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Stopped Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Unknown, Collision With Fixed Object	0	0.00%
Total	**2**	

Primary Contributing Circumstance		
	# of Crashes	**% of Total Crashes**
Speeding	0	0.00%
Failed to yield right of way	1	50.00%
Passed Stop Sign	0	0.00%
Disregard Traffic Signal	0	0.00%
Wrong side or wrong way	0	0.00%
Improper passing	0	0.00%
Improper lane change	0	0.00%
Following too close	0	0.00%
Made improper turn	0	0.00%
Driving under the influence	0	0.00%
Driver inattention, distraction, or fatigue	1	50.00%
Driving in a careless or reckless manner	0	0.00%
Driving in an aggressive manner	0	0.00%
Improper backing	0	0.00%
Other improper driving	0	0.00%
Mechanical defects	0	0.00%
Animal in Roadway - Deer	0	0.00%
Animal in Roadway - Other Animal	0	0.00%
Other environmental circumstances - weather, glare	0	0.00%
Roadway circumstances - debris, holes, work zone,	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**2**	

Driver Action		
	# of Drivers	**% of Total Crashes**
No Contributing Action	2	50.00%
Failed to yield right of way	1	25.00%
Ran Red Light	0	0.00%
Ran Stop Sign	1	25.00%
Disregard other traffic sign	0	0.00%
Disregard other road markings	0	0.00%
Exceeded authorized speed limit	0	0.00%
Driving too fast for conditions	0	0.00%
Made an improper turn	0	0.00%
Improper backing	0	0.00%
Wrong side or wrong way	0	0.00%
Followed to closely	0	0.00%
Failure to keep in proper lane	0	0.00%
Ran off roadway	0	0.00%
Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	0	0.00%
Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc.	0	0.00%
Over-correcting/over-steering	0	0.00%
Improper Passing	0	0.00%
Other Contributing Action	0	0.00%
Unknown	0	0.00%
Total	**4**	

Date	Time	CTY	RD	MP	C-MP	Class	MOI	FHE	PC	LC	WC	SC	Fat	Inj	AL
2018															
08/26/2018	09:42	S	00255	0.4	0.40	Property Damage Only	Angle	Motor Vehicle in Transport	Failed to yield right of way	Daylight	Clear	Dry	0	0	N
2019															
04/11/2019	07:31	S				Property Damage Only	Angle	Motor Vehicle in Transport	Driver inattention, distraction, or fatigue	Daylight	Clear	Dry	0	0	N

Report generated by TDTSCJM at 2021-09-29 16:16:56.725

Report Legend

CTY – County

RD – Maintenance Road

MP – Milepoint

C-MP – Continuous Milepoint

Fat – Fatality

Inj – Injury

AL - Alcohol Involved

LC – Lighting Condition

WC – Weather Condition

SC – Surface Condition

FHE – First Harmful Event

PC – Primary Contributing Circumstance

Class – Report Classification

MOI – Manner of Impact

Delaware Crash Analysis Reporting System

Crash Study Time Period:	01/01/2017 - 09/28/2021
Query Type:	AdvancedQueryTool
Description:	Four Winds Farm TIS
Study Requested By:	Teresa Lord (Pennoni)
Study Generated By:	TDTSCJM
Number of Crashes:	10
Includes Non-Reportable Crashes:	N
Study Code:	

State of Delaware Crash Study

Summary	
	# of Crashes
Total Crashes	10
Fatal Crashes	0
Total Alcohol-Related Crashes	0
Total Non Alcohol-Related Crashes	10
Total Fatalities	0
Total Pedestrian Fatalities	0
Total Pedestrian Injuries	1
Total Pedestrian Crashes	1
Total Motorcycle Crashes	0
Total Pedalcyclist Crashes	0

Classification		
	# of Crashes	**% of Total Crashes**
Non-Reportable	0	0.00%
Reportable	7	70.00%
Personal Injury	3	30.00%
Fatality	0	0.00%
Total	**10**	

Manner of Impact		
	# of Crashes	**% of Total Crashes**
Front to rear	3	30.00%
Front to front	1	10.00%
Angle	1	10.00%
Sideswipe, same direction	0	0.00%
Sideswipe, opposite direction	0	0.00%
Rear to side	0	0.00%
Rear to rear	0	0.00%
Other	2	20.00%
Unknown	2	20.00%
Not a collision between two vehicles	1	10.00%
Total	**10**	

Alcohol Related Crashes By Classification					
	Non-reportable	Reportable	Personal Injury	Fatality	**Total**
Alcohol Related	0	0	0	0	**0**
Non-Alcohol Related	0	7	3	0	**10**
Total	**0**	**7**	**3**	**0**	**10**

Manner of Impact By Classification					
	Non-Reportable	Reportable	Personal Injury	Fatality	**Total**
Front to rear	0	3	0	0	**3**
Front to front	0	1	0	0	**1**
Angle	0	0	1	0	**1**
Sideswipe, same direction	0	0	0	0	**0**
Sideswipe, opposite direction	0	0	0	0	**0**
Rear to side	0	0	0	0	**0**
Rear to rear	0	0	0	0	**0**
Other	0	1	1	0	**2**
Unknown	0	2	0	0	**2**
Not a collision between two vehicles	0	0	1	0	**1**
Total	**0**	**7**	**3**	**0**	**10**

Day Of Week		
	# of Crashes	% of Total Crashes
Sunday	2	20.00%
Monday	0	0.00%
Tuesday	3	30.00%
Wednesday	3	30.00%
Thursday	0	0.00%
Friday	0	0.00%
Saturday	2	20.00%
Total	**10**	

Time Of Day (AM)		
	# of Crashes	% of Total Crashes
00:00 - 00:59	1	10.00%
01:00 - 01:59	0	0.00%
02:00 - 02:59	0	0.00%
03:00 - 03:59	0	0.00%
04:00 - 04:59	0	0.00%
05:00 - 05:59	1	10.00%
06:00 - 06:59	0	0.00%
07:00 - 07:59	0	0.00%
08:00 - 08:59	1	10.00%
09:00 - 09:59	1	10.00%
10:00 - 10:59	0	0.00%
11:00 - 11:59	0	0.00%
Total	**4**	

Time Of Day (PM)		
	# of Crashes	% of Total Crashes
12:00 - 12:59	2	20.00%
13:00 - 13:59	1	10.00%
14:00 - 14:59	0	0.00%
15:00 - 15:59	1	10.00%
16:00 - 16:59	1	10.00%
17:00 - 17:59	0	0.00%
18:00 - 18:59	0	0.00%
19:00 - 19:59	0	0.00%
20:00 - 20:59	0	0.00%
21:00 - 21:59	0	0.00%
22:00 - 22:59	0	0.00%
23:00 - 23:59	1	10.00%
Total	**6**	
Unknown Time	0	

Surface Conditions		
	# of Crashes	% of Total Crashes
Dry	8	80.00%
Wet	0	0.00%
Snow	0	0.00%
Ice/Frost	0	0.00%
Sand	0	0.00%
Water (standing, moving)	0	0.00%
Slush	0	0.00%
Oil	0	0.00%
Mud, Dirt, Gravel	0	0.00%
Other	0	0.00%
Unknown	2	20.00%
Total	**10**	

Lighting Conditions		
	# of Crashes	% of Total Crashes
Daylight	6	60.00%
Dawn	0	0.00%
Dusk	0	0.00%
Dark-Lighted	2	20.00%
Dark-Not Lighted	0	0.00%
Dark-Unknown Lighting	0	0.00%
Other	0	0.00%
Unknown	2	20.00%
Total	**10**	

Weather Conditions		
	# of Crashes	% of Total Crashes
Clear	8	80.00%
Cloudy	0	0.00%
Fog, Smog, Smoke	0	0.00%
Rain	0	0.00%
Sleet, Hail (freezing rain or drizzle)	0	0.00%
Snow	0	0.00%
Blowing Snow	0	0.00%
Severe Crosswinds	0	0.00%
Blowing Sand, Soil, Dirt	0	0.00%
Other	0	0.00%
Unknown	2	20.00%
Total	**10**	

First Harmful Event		
	# of Crashes	% of Total Crashes
Overturn/Rollover, Non-Collision	0	0.00%
Fire/Explosion, Non-Collision	0	0.00%
Immersion, Non-Collision	0	0.00%
Jackknife, Non-Collision	0	0.00%
Cargo/Equipment Loss or Shift, Non-Collision	0	0.00%
Fell/Jumped From Motor Vehicle, Non-Collision	0	0.00%
Thrown or Falling Object, Non-Collision	0	0.00%
Other Non-Collision, Non-Collision	0	0.00%
Pedestrian, Collision With Person, Motor Vehicle, or Non-Fixed Object	1	10.00%
Pedalcycle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Railway Vehicle (train, engine), Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Animal, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Motor Vehicle in Transport, Collision With Person, Motor Vehicle, or Non-Fixed Object	4	40.00%
Legally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	2	20.00%
Struck by Anything Set in Motion by Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Work Zone / Maintenance Equipment, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Other Non-Fixed Object, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Impact Attenuator/Crash Cushion, Collision With Fixed Object	1	10.00%
Bridge Overhead Structure, Collision With Fixed Object	0	0.00%
Bridge Pier or Support, Collision With Fixed Object	0	0.00%
Bridge Rail, Collision With Fixed Object	0	0.00%
Cable Barrier, Collision With Fixed Object	0	0.00%
Culvert, Collision With Fixed Object	0	0.00%
Curb, Collision With Fixed Object	0	0.00%
Ditch, Collision With Fixed Object	0	0.00%
Embankment, Collision With Fixed Object	0	0.00%

Guardrail Face, Collision With Fixed Object	0	0.00%
Guardrail End, Collision With Fixed Object	0	0.00%
Concrete Traffic Barrier, Collision With Fixed Object	0	0.00%
Other Traffic Barrier, Collision With Fixed Object	0	0.00%
Tree (standing), Collision With Fixed Object	0	0.00%
Utility Pole, Collision With Fixed Object	0	0.00%
Light Support, Collision With Fixed Object	0	0.00%
Traffic Sign Support, Collision With Fixed Object	0	0.00%
Overhead Sign Support, Collision With Fixed Object	0	0.00%
Traffic Signal Support, Collision With Fixed Object	0	0.00%
Fence, Collision With Fixed Object	0	0.00%
Mailbox, Collision With Fixed Object	0	0.00%
Other Post, Pole or Support, Collision With Fixed Object	0	0.00%
Other Fixed Object (wall, building, tunnel, etc.), Collision With Fixed Object	0	0.00%
Illegally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Stopped Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Unknown, Collision With Fixed Object	2	20.00%
Total	**10**	

Primary Contributing Circumstance		
	# of Crashes	**% of Total Crashes**
Speeding	0	0.00%
Failed to yield right of way	2	20.00%
Passed Stop Sign	0	0.00%
Disregard Traffic Signal	0	0.00%
Wrong side or wrong way	0	0.00%
Improper passing	0	0.00%
Improper lane change	0	0.00%
Following too close	0	0.00%
Made improper turn	0	0.00%
Driving under the influence	0	0.00%
Driver inattention, distraction, or fatigue	3	30.00%
Driving in a careless or reckless manner	0	0.00%
Driving in an aggressive manner	0	0.00%
Improper backing	0	0.00%
Other improper driving	0	0.00%
Mechanical defects	0	0.00%
Animal in Roadway - Deer	0	0.00%
Animal in Roadway - Other Animal	0	0.00%
Other environmental circumstances - weather, glare	1	10.00%
Roadway circumstances - debris, holes, work zone,	0	0.00%
Other	0	0.00%
Unknown	4	40.00%
Total	**10**	

Driver Action		
	# of Drivers	**% of Total Crashes**
No Contributing Action	5	38.46%
Failed to yield right of way	5	38.46%
Ran Red Light	0	0.00%
Ran Stop Sign	0	0.00%
Disregard other traffic sign	0	0.00%
Disregard other road markings	0	0.00%
Exceeded authorized speed limit	0	0.00%
Driving too fast for conditions	0	0.00%
Made an improper turn	0	0.00%
Improper backing	0	0.00%
Wrong side or wrong way	0	0.00%
Followed to closely	0	0.00%
Failure to keep in proper lane	0	0.00%
Ran off roadway	0	0.00%
Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	2	15.38%
Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc.	0	0.00%
Over-correcting/over-steering	0	0.00%
Improper Passing	0	0.00%
Other Contributing Action	0	0.00%
Unknown	1	7.69%
Total	**13**	

Date	Time	CTY	RD	MP	C-MP	Class	MOI	FHE	PC	LC	WC	SC	Fat	Inj	AL
2018															
05/27/2018	12:02	S				Personal Injury Crash	Other	Motor Vehicle in Transport	Driver inattention, distraction, or fatigue	Daylight	Clear	Dry	0	2	N
10/17/2018	08:58	S	37012	0.4	0.40	Property Damage Only	Other	Motor Vehicle in Transport	Other environmental circumstances - weather, glare	Daylight	Clear	Dry	0	0	N
11/17/2018	23:34	S	00022	17.99	17.99	Property Damage Only	Front to rear	Legally Parked Motor Vehicle	Unknown	Dark-Lighted	Clear	Dry	0	0	N
2019															
06/26/2019	16:30	S	00022	17.86	17.86	Property Damage Only	Front to rear	Impact Attenuator/ Crash Cushion	Failed to yield right of way	Daylight	Clear Clear	Dry	0	0	N
07/02/2019	12:21	S	00088	0.06	0.06	Property Damage Only	Front to front	Motor Vehicle in Transport	Failed to yield right of way	Daylight	Clear	Dry	0	0	N
07/27/2019	09:44	S	00022	17.92	17.92	Personal Injury Crash	Not a collision between two vehicles	Pedestrian	Unknown	Daylight	Clear	Dry	0	1	N
10/27/2019	13:43	S	37012	0.44	0.44	Property Damage Only	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	0	0	N
10/29/2019	00:00	S	37012	0.44	0.44	Property Damage Only	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	0	0	N
2020															
09/01/2020	15:11	S	00022	17.92	17.92	Personal Injury Crash	Angle	Motor Vehicle in Transport	Driver inattention, distraction, or fatigue	Daylight	Clear	Dry	0	1	N
09/09/2020	05:57	S	00022	17.95	17.95	Property Damage Only	Front to rear	Legally Parked Motor Vehicle	Driver inattention, distraction, or fatigue	Dark-Lighted	Clear	Dry	0	0	N

Report generated by TDTSCJM at 2021-09-29 16:24:29.174

CRASHES OUTSIDE OF STUDY AREA

Report Legend

CTY – County

RD – Maintenance Road

MP – Milepoint

C-MP – Continuous Milepoint

Fat – Fatality

Inj – Injury

AL - Alcohol Involved

LC – Lighting Condition

WC – Weather Condition

SC – Surface Condition

FHE – First Harmful Event

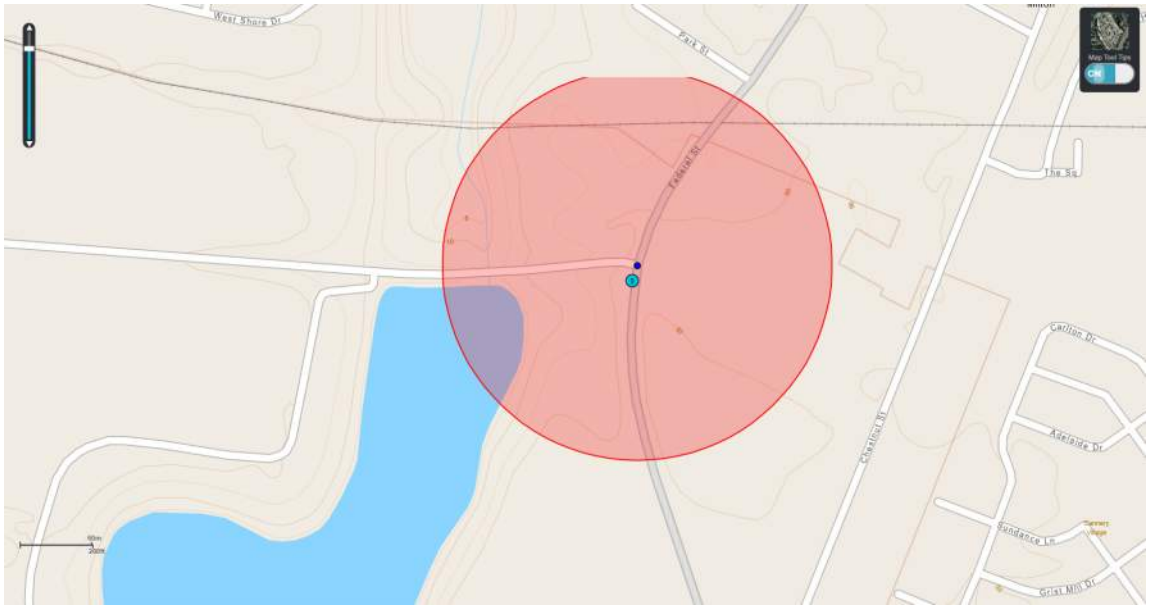
PC – Primary Contributing Circumstance

Class – Report Classification

MOI – Manner of Impact

Delaware Crash Analysis Reporting System

Crash Study Time Period:	01/01/2017 - 09/28/2021
Query Type:	AdvancedQueryTool
Description:	Four Winds Farm TIS
Study Requested By:	Teresa Lord (Pennoni)
Study Generated By:	TDTSCJM
Number of Crashes:	8
Includes Non-Reportable Crashes:	N
Study Code:	



State of Delaware Crash Study

Summary	
	# of Crashes
Total Crashes	8
Fatal Crashes	0
Total Alcohol-Related Crashes	0
Total Non Alcohol-Related Crashes	8
Total Fatalities	0
Total Pedestrian Fatalities	0
Total Pedestrian Injuries	0
Total Pedestrian Crashes	0
Total Motorcycle Crashes	1
Total Pedalcyclist Crashes	0

Classification		
	# of Crashes	**% of Total Crashes**
Non-Reportable	0	0.00%
Reportable	6	75.00%
Personal Injury	2	25.00%
Fatality	0	0.00%
Total	**8**	

Manner of Impact		
	# of Crashes	**% of Total Crashes**
Front to rear	0	0.00%
Front to front	1	12.50%
Angle	5	62.50%
Sideswipe, same direction	0	0.00%
Sideswipe, opposite direction	0	0.00%
Rear to side	0	0.00%
Rear to rear	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Not a collision between two vehicles	2	25.00%
Total	**8**	

Alcohol Related Crashes By Classification					
	Non-reportable	Reportable	Personal Injury	Fatality	**Total**
Alcohol Related	0	0	0	0	**0**
Non-Alcohol Related	0	6	2	0	**8**
Total	**0**	**6**	**2**	**0**	**8**

Manner of Impact By Classification					
	Non-Reportable	Reportable	Personal Injury	Fatality	**Total**
Front to rear	0	0	0	0	**0**
Front to front	0	1	0	0	**1**
Angle	0	3	2	0	**5**
Sideswipe, same direction	0	0	0	0	**0**
Sideswipe, opposite direction	0	0	0	0	**0**
Rear to side	0	0	0	0	**0**
Rear to rear	0	0	0	0	**0**
Other	0	0	0	0	**0**
Unknown	0	0	0	0	**0**
Not a collision between two vehicles	0	2	0	0	**2**
Total	**0**	**6**	**2**	**0**	**8**

Day Of Week		
	# of Crashes	% of Total Crashes
Sunday	1	12.50%
Monday	1	12.50%
Tuesday	1	12.50%
Wednesday	0	0.00%
Thursday	2	25.00%
Friday	2	25.00%
Saturday	1	12.50%
Total	**8**	

Time Of Day (AM)		
	# of Crashes	% of Total Crashes
00:00 - 00:59	0	0.00%
01:00 - 01:59	0	0.00%
02:00 - 02:59	1	12.50%
03:00 - 03:59	0	0.00%
04:00 - 04:59	0	0.00%
05:00 - 05:59	0	0.00%
06:00 - 06:59	0	0.00%
07:00 - 07:59	0	0.00%
08:00 - 08:59	1	12.50%
09:00 - 09:59	0	0.00%
10:00 - 10:59	2	25.00%
11:00 - 11:59	0	0.00%
Total	**4**	

Time Of Day (PM)		
	# of Crashes	% of Total Crashes
12:00 - 12:59	0	0.00%
13:00 - 13:59	0	0.00%
14:00 - 14:59	0	0.00%
15:00 - 15:59	2	25.00%
16:00 - 16:59	1	12.50%
17:00 - 17:59	1	12.50%
18:00 - 18:59	0	0.00%
19:00 - 19:59	0	0.00%
20:00 - 20:59	0	0.00%
21:00 - 21:59	0	0.00%
22:00 - 22:59	0	0.00%
23:00 - 23:59	0	0.00%
Total	**4**	
Unknown Time	0	

Surface Conditions		
	# of Crashes	% of Total Crashes
Dry	5	62.50%
Wet	3	37.50%
Snow	0	0.00%
Ice/Frost	0	0.00%
Sand	0	0.00%
Water (standing, moving)	0	0.00%
Slush	0	0.00%
Oil	0	0.00%
Mud, Dirt, Gravel	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**8**	

Lighting Conditions		
	# of Crashes	% of Total Crashes
Daylight	6	75.00%
Dawn	0	0.00%
Dusk	0	0.00%
Dark-Lighted	0	0.00%
Dark-Not Lighted	2	25.00%
Dark-Unknown Lighting	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**8**	

Weather Conditions		
	# of Crashes	% of Total Crashes
Clear	5	62.50%
Cloudy	1	12.50%
Fog, Smog, Smoke	0	0.00%
Rain	2	25.00%
Sleet, Hail (freezing rain or drizzle)	0	0.00%
Snow	0	0.00%
Blowing Snow	0	0.00%
Severe Crosswinds	0	0.00%
Blowing Sand, Soil, Dirt	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**8**	

First Harmful Event		
	# of Crashes	% of Total Crashes
Overturn/Rollover, Non-Collision	0	0.00%
Fire/Explosion, Non-Collision	0	0.00%
Immersion, Non-Collision	0	0.00%
Jackknife, Non-Collision	0	0.00%
Cargo/Equipment Loss or Shift, Non-Collision	0	0.00%
Fell/Jumped From Motor Vehicle, Non-Collision	0	0.00%
Thrown or Falling Object, Non-Collision	0	0.00%
Other Non-Collision, Non-Collision	0	0.00%
Pedestrian, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Pedalcycle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Railway Vehicle (train, engine), Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Animal, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Motor Vehicle in Transport, Collision With Person, Motor Vehicle, or Non-Fixed Object	6	75.00%
Legally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Struck by Anything Set in Motion by Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Work Zone / Maintenance Equipment, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Other Non-Fixed Object, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Impact Attenuator/Crash Cushion, Collision With Fixed Object	0	0.00%
Bridge Overhead Structure, Collision With Fixed Object	0	0.00%
Bridge Pier or Support, Collision With Fixed Object	0	0.00%
Bridge Rail, Collision With Fixed Object	0	0.00%
Cable Barrier, Collision With Fixed Object	0	0.00%
Culvert, Collision With Fixed Object	0	0.00%
Curb, Collision With Fixed Object	0	0.00%
Ditch, Collision With Fixed Object	0	0.00%
Embankment, Collision With Fixed Object	0	0.00%

Guardrail Face, Collision With Fixed Object	0	0.00%
Guardrail End, Collision With Fixed Object	0	0.00%
Concrete Traffic Barrier, Collision With Fixed Object	0	0.00%
Other Traffic Barrier, Collision With Fixed Object	0	0.00%
Tree (standing), Collision With Fixed Object	1	12.50%
Utility Pole, Collision With Fixed Object	0	0.00%
Light Support, Collision With Fixed Object	0	0.00%
Traffic Sign Support, Collision With Fixed Object	0	0.00%
Overhead Sign Support, Collision With Fixed Object	0	0.00%
Traffic Signal Support, Collision With Fixed Object	0	0.00%
Fence, Collision With Fixed Object	0	0.00%
Mailbox, Collision With Fixed Object	0	0.00%
Other Post, Pole or Support, Collision With Fixed Object	1	12.50%
Other Fixed Object (wall, building, tunnel, etc.), Collision With Fixed Object	0	0.00%
Illegally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Stopped Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Unknown, Collision With Fixed Object	0	0.00%
Total	**8**	

Primary Contributing Circumstance		
	# of Crashes	**% of Total Crashes**
Speeding	1	12.50%
Failed to yield right of way	4	50.00%
Passed Stop Sign	0	0.00%
Disregard Traffic Signal	0	0.00%
Wrong side or wrong way	0	0.00%
Improper passing	0	0.00%
Improper lane change	0	0.00%
Following too close	0	0.00%
Made improper turn	0	0.00%
Driving under the influence	0	0.00%
Driver inattention, distraction, or fatigue	2	25.00%
Driving in a careless or reckless manner	0	0.00%
Driving in an aggressive manner	0	0.00%
Improper backing	0	0.00%
Other improper driving	1	12.50%
Mechanical defects	0	0.00%
Animal in Roadway - Deer	0	0.00%
Animal in Roadway - Other Animal	0	0.00%
Other environmental circumstances - weather, glare	0	0.00%
Roadway circumstances - debris, holes, work zone,	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**8**	

Driver Action		
	# of Drivers	**% of Total Crashes**
No Contributing Action	7	46.67%
Failed to yield right of way	4	26.67%
Ran Red Light	0	0.00%
Ran Stop Sign	1	6.67%
Disregard other traffic sign	0	0.00%
Disregard other road markings	0	0.00%
Exceeded authorized speed limit	0	0.00%
Driving too fast for conditions	1	6.67%
Made an improper turn	0	0.00%
Improper backing	0	0.00%
Wrong side or wrong way	0	0.00%
Followed to closely	0	0.00%
Failure to keep in proper lane	0	0.00%
Ran off roadway	1	6.67%
Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	1	6.67%
Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc.	0	0.00%
Over-correcting/over-steering	0	0.00%
Improper Passing	0	0.00%
Other Contributing Action	0	0.00%
Unknown	0	0.00%
Total	**15**	

Date	Time	CTY	RD	MP	C-MP	Class	MOI	FHE	PC	LC	WC	SC	Fat	Inj	AL
2017															
01/01/2017	10:09	S	00022	17.43	17.43	Personal Injury Crash	Angle	Motor Vehicle in Transport	Failed to yield right of way	Daylight	Clear	Dry	0	1	N
09/07/2017	16:25	S				Property Damage Only	Angle	Motor Vehicle in Transport	Failed to yield right of way	Daylight	Clear	Dry	0	0	N
2018															
06/30/2018	15:52	S	00319	8.55	8.55	Property Damage Only	Angle	Motor Vehicle in Transport	Failed to yield right of way	Daylight	Clear	Dry	0	0	N
10/11/2018	10:24	S	00022	17.43	17.43	Property Damage Only	Angle	Motor Vehicle in Transport	Speeding	Daylight	Rain	Wet	0	0	N
11/06/2018	17:21	S	00319	8.55	8.55	Property Damage Only	Not a collision between two vehicles	Other Post, Pole or Support	Driver inattention, distraction, or fatigue	Dark-Not Lighted	Rain	Wet	0	0	N
10/26/2018	08:10	S				Personal Injury Crash	Angle	Motor Vehicle in Transport	Failed to yield right of way	Daylight	Clear	Dry	0	1	N
2021															
06/14/2021	15:01	S				Property Damage Only	Front to front	Motor Vehicle in Transport	Driver inattention, distraction, or fatigue	Daylight	Clear	Dry	0	0	N
08/20/2021	02:43	S	00319	8.54	8.54	Property Damage Only	Not a collision between two vehicles	Tree (standing)	Other improper driving	Dark-Not Lighted	Cloudy	Wet	0	0	N

Report generated by TDTSCJM at 2021-09-29 16:21:11.429

Report Legend

CTY – County

RD – Maintenance Road

MP – Milepoint

C-MP – Continuous Milepoint

Fat – Fatality

Inj – Injury

AL - Alcohol Involved

LC – Lighting Condition

WC – Weather Condition

SC – Surface Condition

FHE – First Harmful Event

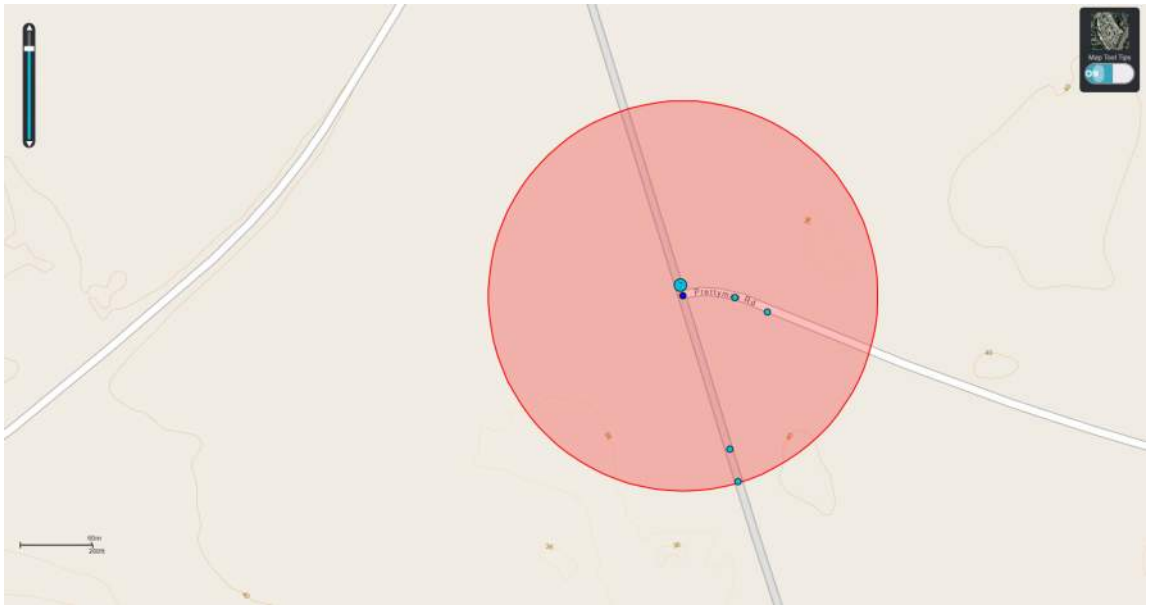
PC – Primary Contributing Circumstance

Class – Report Classification

MOI – Manner of Impact

Delaware Crash Analysis Reporting System

Crash Study Time Period:	01/01/2017 - 09/28/2021
Query Type:	AdvancedQueryTool
Description:	Four Winds Farm TIS
Study Requested By:	Teresa Lord (Pennoni)
Study Generated By:	TDTSCJM
Number of Crashes:	11
Includes Non-Reportable Crashes:	N
Study Code:	



State of Delaware Crash Study

Summary	
	# of Crashes
Total Crashes	11
Fatal Crashes	0
Total Alcohol-Related Crashes	1
Total Non Alcohol-Related Crashes	10
Total Fatalities	0
Total Pedestrian Fatalities	0
Total Pedestrian Injuries	0
Total Pedestrian Crashes	0
Total Motorcycle Crashes	0
Total Pedalcyclist Crashes	0

Classification		
	# of Crashes	**% of Total Crashes**
Non-Reportable	0	0.00%
Reportable	9	81.82%
Personal Injury	2	18.18%
Fatality	0	0.00%
Total	**11**	

Manner of Impact		
	# of Crashes	**% of Total Crashes**
Front to rear	2	18.18%
Front to front	0	0.00%
Angle	2	18.18%
Sideswipe, same direction	0	0.00%
Sideswipe, opposite direction	0	0.00%
Rear to side	0	0.00%
Rear to rear	0	0.00%
Other	0	0.00%
Unknown	1	9.09%
Not a collision between two vehicles	6	54.55%
Total	**11**	

Alcohol Related Crashes By Classification					
	Non-reportable	Reportable	Personal Injury	Fatality	**Total**
Alcohol Related	0	1	0	0	**1**
Non-Alcohol Related	0	8	2	0	**10**
Total	**0**	**9**	**2**	**0**	**11**

Manner of Impact By Classification					
	Non-Reportable	Reportable	Personal Injury	Fatality	**Total**
Front to rear	0	2	0	0	**2**
Front to front	0	0	0	0	**0**
Angle	0	2	0	0	**2**
Sideswipe, same direction	0	0	0	0	**0**
Sideswipe, opposite direction	0	0	0	0	**0**
Rear to side	0	0	0	0	**0**
Rear to rear	0	0	0	0	**0**
Other	0	0	0	0	**0**
Unknown	0	1	0	0	**1**
Not a collision between two vehicles	0	4	2	0	**6**
Total	**0**	**9**	**2**	**0**	**11**

Day Of Week		
	# of Crashes	% of Total Crashes
Sunday	2	18.18%
Monday	0	0.00%
Tuesday	3	27.27%
Wednesday	2	18.18%
Thursday	1	9.09%
Friday	1	9.09%
Saturday	2	18.18%
Total	**11**	

Time Of Day (AM)		
	# of Crashes	% of Total Crashes
00:00 - 00:59	0	0.00%
01:00 - 01:59	1	9.09%
02:00 - 02:59	2	18.18%
03:00 - 03:59	0	0.00%
04:00 - 04:59	1	9.09%
05:00 - 05:59	0	0.00%
06:00 - 06:59	0	0.00%
07:00 - 07:59	2	18.18%
08:00 - 08:59	0	0.00%
09:00 - 09:59	0	0.00%
10:00 - 10:59	1	9.09%
11:00 - 11:59	0	0.00%
Total	**7**	

Time Of Day (PM)		
	# of Crashes	% of Total Crashes
12:00 - 12:59	1	9.09%
13:00 - 13:59	0	0.00%
14:00 - 14:59	1	9.09%
15:00 - 15:59	0	0.00%
16:00 - 16:59	0	0.00%
17:00 - 17:59	1	9.09%
18:00 - 18:59	0	0.00%
19:00 - 19:59	0	0.00%
20:00 - 20:59	0	0.00%
21:00 - 21:59	1	9.09%
22:00 - 22:59	0	0.00%
23:00 - 23:59	0	0.00%
Total	**4**	
Unknown Time	0	

Surface Conditions		
	# of Crashes	% of Total Crashes
Dry	7	63.64%
Wet	3	27.27%
Snow	0	0.00%
Ice/Frost	0	0.00%
Sand	0	0.00%
Water (standing, moving)	1	9.09%
Slush	0	0.00%
Oil	0	0.00%
Mud, Dirt, Gravel	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**11**	

Lighting Conditions		
	# of Crashes	% of Total Crashes
Daylight	5	45.45%
Dawn	1	9.09%
Dusk	0	0.00%
Dark-Lighted	0	0.00%
Dark-Not Lighted	5	45.45%
Dark-Unknown Lighting	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**11**	

Weather Conditions		
	# of Crashes	% of Total Crashes
Clear	7	63.64%
Cloudy	0	0.00%
Fog, Smog, Smoke	1	9.09%
Rain	3	27.27%
Sleet, Hail (freezing rain or drizzle)	0	0.00%
Snow	0	0.00%
Blowing Snow	0	0.00%
Severe Crosswinds	0	0.00%
Blowing Sand, Soil, Dirt	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	**11**	

First Harmful Event		
	# of Crashes	% of Total Crashes
Overturn/Rollover, Non-Collision	0	0.00%
Fire/Explosion, Non-Collision	0	0.00%
Immersion, Non-Collision	0	0.00%
Jackknife, Non-Collision	0	0.00%
Cargo/Equipment Loss or Shift, Non-Collision	0	0.00%
Fell/Jumped From Motor Vehicle, Non-Collision	0	0.00%
Thrown or Falling Object, Non-Collision	0	0.00%
Other Non-Collision, Non-Collision	0	0.00%
Pedestrian, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Pedalcycle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Railway Vehicle (train, engine), Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Animal, Collision With Person, Motor Vehicle, or Non-Fixed Object	1	9.09%
Motor Vehicle in Transport, Collision With Person, Motor Vehicle, or Non-Fixed Object	4	36.36%
Legally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Struck by Anything Set in Motion by Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Work Zone / Maintenance Equipment, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Other Non-Fixed Object, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Impact Attenuator/Crash Cushion, Collision With Fixed Object	0	0.00%
Bridge Overhead Structure, Collision With Fixed Object	0	0.00%
Bridge Pier or Support, Collision With Fixed Object	0	0.00%
Bridge Rail, Collision With Fixed Object	0	0.00%
Cable Barrier, Collision With Fixed Object	0	0.00%
Culvert, Collision With Fixed Object	0	0.00%
Curb, Collision With Fixed Object	0	0.00%
Ditch, Collision With Fixed Object	3	27.27%
Embankment, Collision With Fixed Object	0	0.00%

Guardrail Face, Collision With Fixed Object	0	0.00%
Guardrail End, Collision With Fixed Object	0	0.00%
Concrete Traffic Barrier, Collision With Fixed Object	0	0.00%
Other Traffic Barrier, Collision With Fixed Object	0	0.00%
Tree (standing), Collision With Fixed Object	0	0.00%
Utility Pole, Collision With Fixed Object	0	0.00%
Light Support, Collision With Fixed Object	0	0.00%
Traffic Sign Support, Collision With Fixed Object	0	0.00%
Overhead Sign Support, Collision With Fixed Object	0	0.00%
Traffic Signal Support, Collision With Fixed Object	0	0.00%
Fence, Collision With Fixed Object	0	0.00%
Mailbox, Collision With Fixed Object	0	0.00%
Other Post, Pole or Support, Collision With Fixed Object	0	0.00%
Other Fixed Object (wall, building, tunnel, etc.), Collision With Fixed Object	0	0.00%
Illegally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Stopped Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	1	9.09%
Unknown, Collision With Fixed Object	2	18.18%
Total	**10**	

Primary Contributing Circumstance		
	# of Crashes	**% of Total Crashes**
Speeding	0	0.00%
Failed to yield right of way	0	0.00%
Passed Stop Sign	0	0.00%
Disregard Traffic Signal	0	0.00%
Wrong side or wrong way	0	0.00%
Improper passing	0	0.00%
Improper lane change	0	0.00%
Following too close	1	9.09%
Made improper turn	1	9.09%
Driving under the influence	2	18.18%
Driver inattention, distraction, or fatigue	2	18.18%
Driving in a careless or reckless manner	0	0.00%
Driving in an aggressive manner	0	0.00%
Improper backing	0	0.00%
Other improper driving	1	9.09%
Mechanical defects	0	0.00%
Animal in Roadway - Deer	0	0.00%
Animal in Roadway - Other Animal	1	9.09%
Other environmental circumstances - weather, glare	1	9.09%
Roadway circumstances - debris, holes, work zone,	0	0.00%
Other	0	0.00%
Unknown	2	18.18%
Total	**11**	

Driver Action		
	# of Drivers	**% of Total Crashes**
No Contributing Action	4	26.67%
Failed to yield right of way	0	0.00%
Ran Red Light	0	0.00%
Ran Stop Sign	1	6.67%
Disregard other traffic sign	0	0.00%
Disregard other road markings	0	0.00%
Exceeded authorized speed limit	0	0.00%
Driving too fast for conditions	0	0.00%
Made an improper turn	1	6.67%
Improper backing	0	0.00%
Wrong side or wrong way	0	0.00%
Followed to closely	2	13.33%
Failure to keep in proper lane	2	13.33%
Ran off roadway	0	0.00%
Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	2	13.33%
Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc.	1	6.67%
Over-correcting/over-steering	0	0.00%
Improper Passing	0	0.00%
Other Contributing Action	0	0.00%
Unknown	2	13.33%
Total	**15**	

Date	Time	CTY	RD	MP	C-MP	Class	MOI	FHE	PC	LC	WC	SC	Fat	Inj	AL
2017															
01/17/2017	01:35	S	00248	9.75	9.75	Property Damage Only	Unknown	Unknown	Unknown	Dark-Not Lighted	Clear	Dry	0	0	N
09/29/2017	14:44	S				Personal Injury Crash	Not a collision between two vehicles	Ditch	Driving under the influence	Daylight	Clear	Dry	0	1	N
03/29/2017	17:30	S	00254	1.78	1.78	Property Damage Only	Front to rear	Stopped Motor Vehicle	Following too close	Daylight	Clear	Dry	0	0	N
2018															
07/19/2018	07:14	S	00248	9.73	9.73	Property Damage Only	Angle	Motor Vehicle in Transport	Made improper turn	Daylight	Clear	Dry	0	0	N
2019															
01/02/2019	02:48	S				Property Damage Only	Not a collision between two vehicles	Ditch	Driving under the influence	Dark-Not Lighted	Clear	Dry	0	0	Y
12/17/2019	21:05	S	00254	1.8	1.80	Property Damage Only	Front to rear	Motor Vehicle in Transport	Other improper driving	Dark-Not Lighted	Rain	Wet	0	0	N
2020															
03/01/2020	02:22	S				Property Damage Only	Not a collision between two vehicles	Ditch	Other environmental circumstances - weather, glare	Dark-Not Lighted	Clear	Dry	0	0	N
03/21/2020	04:56	S	00254	1.83	1.83	Property Damage Only	Not a collision between two vehicles	Unknown	Unknown	Dark-Not Lighted	Rain	Wet	0	0	N
03/29/2020	10:43	S	00254	1.83	1.83	Property Damage Only	Angle	Motor Vehicle in Transport	Driver inattention, distraction, or fatigue	Daylight	Fog, Smog, Smoke	Wet	0	0	N
08/04/2020	07:44	S	00248	9.72	9.72	Property Damage Only	Not a collision between two vehicles	Animal	Animal in Roadway - Other Animal	Dawn	Rain	Water (standing, moving)	0	0	N
12/26/2020	12:58	S				Personal Injury Crash	Not a collision between two vehicles	Motor Vehicle in Transport	Driver inattention, distraction, or fatigue	Daylight	Clear	Dry	0	1	N

Report generated by TDTSCJM at 2021-09-29 16:12:46.559

Report Legend

CTY – County

RD – Maintenance Road

MP – Milepoint

C-MP – Continuous Milepoint

Fat – Fatality

Inj – Injury

AL - Alcohol Involved

LC – Lighting Condition

WC – Weather Condition

SC – Surface Condition

FHE – First Harmful Event

PC – Primary Contributing Circumstance

Class – Report Classification

MOI – Manner of Impact

Appendix F

Committed Development Information

Committed Developments

Project Information	
Project Name:	Four Winds Farm Residential
No:	RIBER21001
Date:	12/8/2021
City:	Sussex County
State/Province:	Delaware
Country:	United States
Client Name:	Ribera Development, LLC
Analyst's Name:	T.Lord
Edition:	Trip Gen Manual, 10th Ed

COMMITTED DEVELOPMENTS

Land Use	Size	Weekday			Weekday AM			Weekday PM			Saturday Midday		
		Entry	Exit	Total	Entry	Exit	Total	Entry	Exit	Total	Entry	Exit	Total
Hawthorne (LUC 210- Single Family Detached Housing)	48 Dwelling Units	264	265	529	10	29	39	31	19	50	31	27	58
Azalea Woods (LUC 210- Single Family Detached Housing)	610 Dwelling Units	2744	2744	5488	109	329	438	363	213	576	286	244	530
Heritage Creek (LUC 251 - Senior Adult Housing - Detached)	58 Dwelling Units	174	174	348	9	18	27	19	12	31	6	7	13
Vines at Sand Hill (LUC 210- Single Family Detached Housing)	301 Dwelling Units	1433	1433	2866	55	164	219	184	109	293	146	125	271
Cypress Grove - Residential ("New" Trip Generation taken from TIS Review Letter, dated 5/15/2020)		513	513	1026	23	67	90	48	26	74	39	40	79
Cypress Grove - Retail ("New" Trip Generation taken from TIS Review Letter, dated 5/15/2020)		733	733	1466	99	62	161	64	51	115	72	62	134
Total Committed Development Trip Generation		5861	5862	11723	305	669	974	709	430	1139	580	505	1085

1 - Development to include 71multifamily housing (low-rise) units, 168 multifamily housing (mid-rise) units, and 20,000 squre feet of retail space.

FIGURE 4A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - HAWTHORNE

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

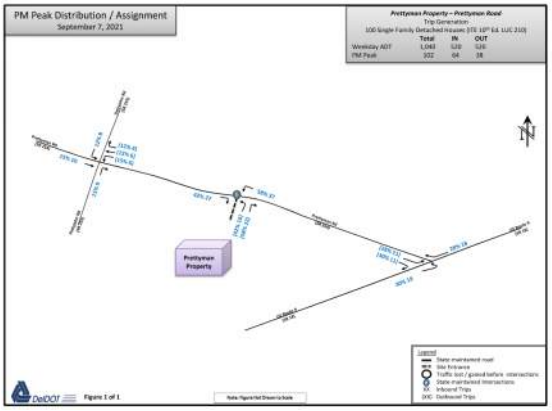
LEGEND

= *Inbound Trip Distribution Percentage*

(###) = *Outbound Trip Distribution Percentage*

→ = MOVEMENT DIRECTION

Consider utilizing a similar distribution based on Prettyman Property



20% TO/FROM NORTH ALONG DE ROUTE 5

3% TO/FROM WEST ALONG MULBERRY ST

12% TO/FROM NORTH ALONG DE ROUTE 30

9% TO/FROM WEST ALONG BRIARWOOD RD

22% TO/FROM WEST ALONG US ROUTE 9

8% TO/FROM SOUTH ALONG DE ROUTE 30

26% TO/FROM EAST ALONG US ROUTE 9

SITE

HAWTHORNE

PM Peak Distribution / Assignment

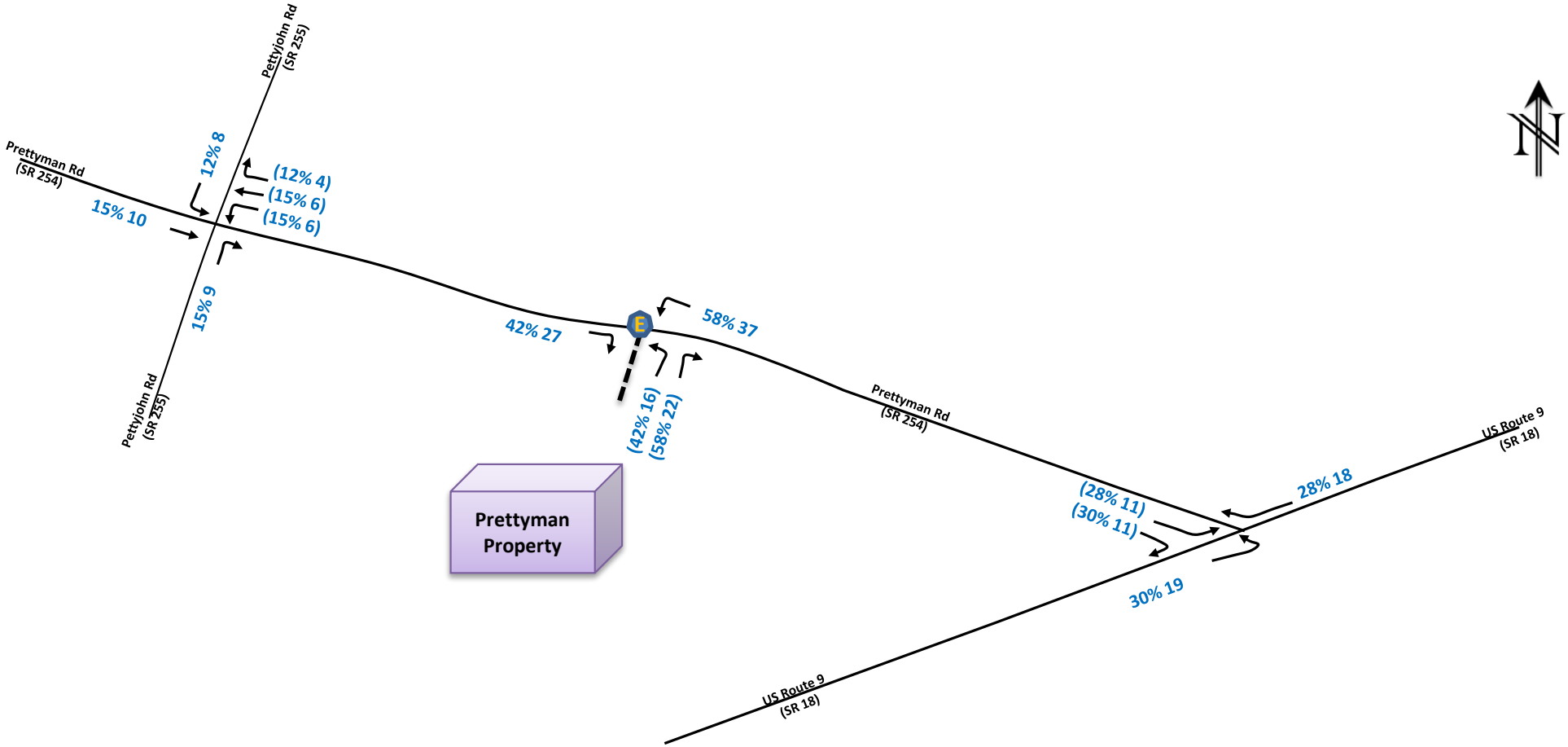
September 7, 2021

Prettyman Property – Prettyman Road

Trip Generation

100 Single Family Detached Houses (ITE 10th Ed. LUC 210)

	Total	IN	OUT
Weekday ADT	1,040	520	520
PM Peak	102	64	38



Legend

- State-maintained road
- Site Entrance
- Traffic lost / gained before intersections
- State-maintained Intersections
- XX Inbound Trips
- (XX) Outbound Trips

DelDOT

Figure 1 of 1

Note: Figure Not Drawn to Scale

FIGURE 5A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - AZALEA WOODS

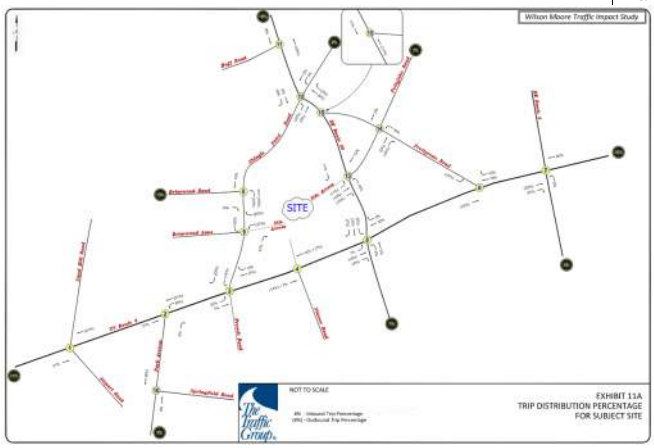
Four Winds Farm Residential Development
Sussex County, Delaware

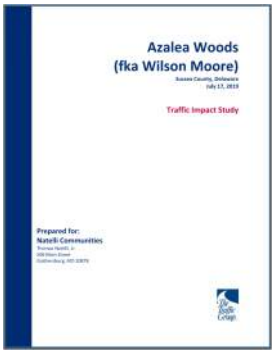
By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

LEGEND

= *Inbound Trip Distribution Percentage*
(###) = *Outbound Trip Distribution Percentage*
→ = MOVEMENT DIRECTION

Use trip distribution from approved TIS for this development





20% TO/FROM NORTH ALONG DE ROUTE 5

3% TO/FROM WEST ALONG MULBERRY ST

8% TO/FROM WEST ALONG SAND HILL RD

OM NORTH E ROUTE 30

9% TO/FROM WEST ALONG BRIARWOOD RD

22% TO/FROM WEST ALONG US ROUTE 9

8% TO/FROM SOUTH ALONG DE ROUTE 30

26% TO/FROM EAST ALONG US ROUTE 9

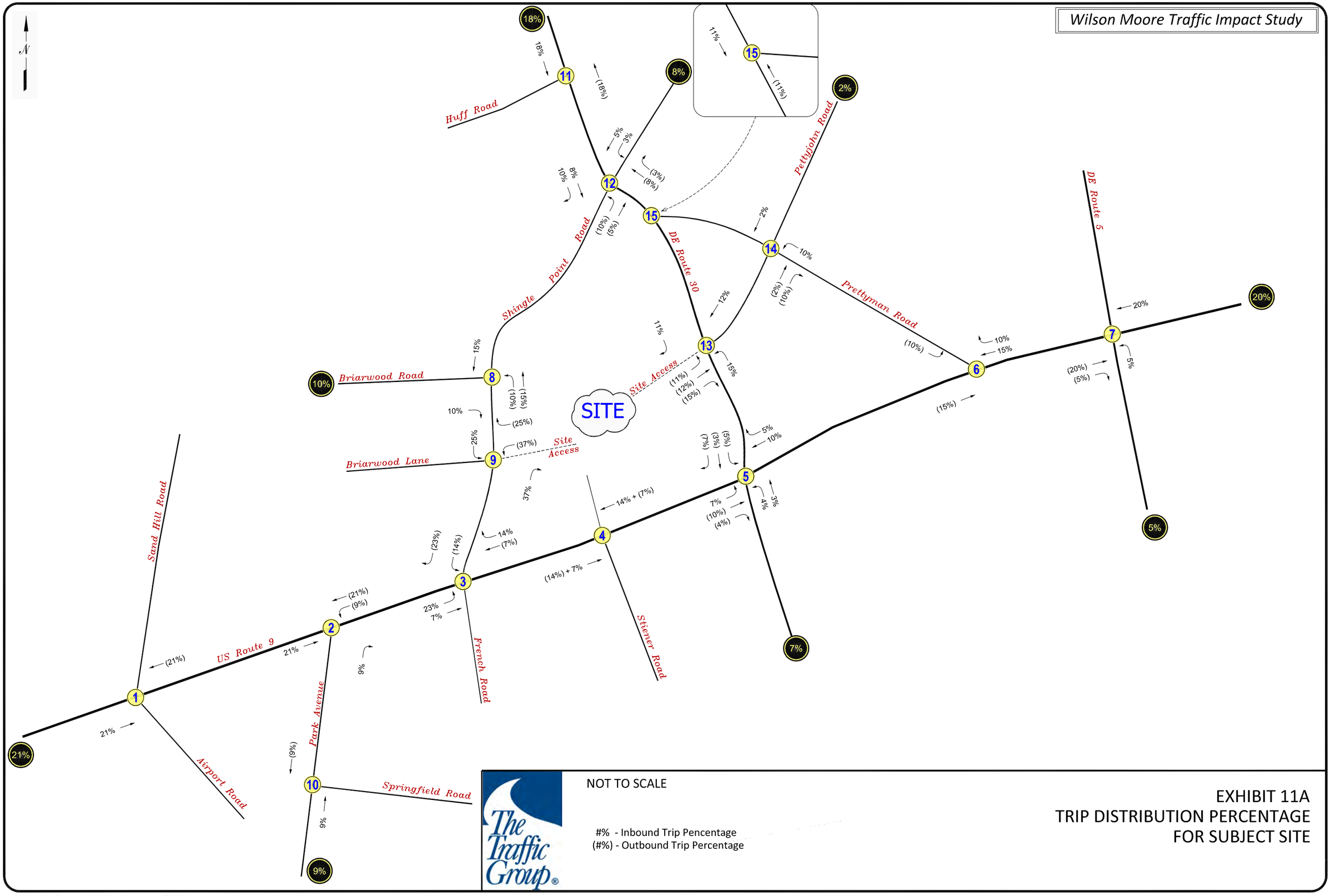
AZALEA WOODS

SITE

PROPOSED SITE ACCESS

AZALEA WOODS ACCESS

FEDERAL ST (DE ROUTE 5)
MULBERRY ST (SR 197)
ATLANTIC ST (SR 88)
SAND HILL RD (SR 319)
CHESTNUT ST (SR 249)
SHINGLE POINT RD
HARRESON RD (DE ROUTE 5)
GRAVEL HILL ROAD (DE ROUTE 30)
PRETTYMAN RD (SR 254)
PETTIJOHN RD (SR 255)
SHINGLE POINT RD (SR 249)
BRIARWOOD RD (SR 253)
US ROUTE 9
FRENCH RD



NOT TO SCALE

#% - Inbound Trip Pencentage
(#%) - Outbound Trip Percentage

EXHIBIT 11A
TRIP DISTRIBUTION PERCENTAGE
FOR SUBJECT SITE

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

November 21, 2019

Ms. Betty Tustin
The Traffic Group, Inc.
104 Kenwood Court
Berlin, MD 21811

Dear Ms. Tustin:

The enclosed Traffic Impact Study (TIS) review letter for the proposed **Azalea Woods (f.k.a. Wilson Moore)** (Tax Parcels 135-11.00-32.01, 48.00, 49.00 and 56.00) development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this review letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at (302) 760-2167.

Sincerely,

Troy Brestel
Project Engineer

TEB:km
Enclosures
cc with enclosures: Mr. Thomas Natelli, Jr., Natelli Communities
Mr. Jason Palkewicz, Solutions IPEM, Inc.
Ms. Constance C. Holland, Office of State Planning Coordination
Ms. Janelle Cornwell, Sussex County Planning and Zoning
Mr. Andrew Parker, McCormick Taylor, Inc.
DelDOT Distribution

DelDOT

DelDOT Distribution

Brad Eaby, Deputy Attorney General
Shanté Hastings, Director, Transportation Solutions (DOTS)
Drew Boyce, Director, Planning
Mark Luszcz, Deputy Director, DOTS
Michael Simmons, Assistant Director, Project Development South, DOTS
J. Marc Coté, Assistant Director, Development Coordination
T. William Brockenbrough, Jr., County Coordinator, Development Coordination
Peter Haag, Chief Traffic Engineer, Traffic, DOTS
Alastair Probert, South District Engineer, South District
Gemez Norwood, South District Public Works Manager, South District
Susanne Laws, Sussex Subdivision Review Coordinator, Development Coordination
David Dooley, Service Development Planner, Delaware Transit Corporation
Mark Galipo, Traffic Engineer, Traffic, DOTS
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning
Derek Sapp, Sussex County Subdivision Reviewer, Development Coordination
Claudy Joinville, Project Engineer, Development Coordination

November 21, 2019

Mr. Troy E. Brestel
Project Engineer
DelDOT Division of Planning
P.O. Box 778
Dover, DE 19903

RE: Agreement No. 1773
Traffic Impact Study Services
Task No. 1A Subtask 2A – Azalea Woods

Dear Mr. Brestel:

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the Azalea Woods residential development prepared by The Traffic Group, Inc. dated July 17, 2019. The Traffic Group prepared the report in a manner generally consistent with DelDOT's Development Coordination Manual.

The TIS evaluates the impacts of the proposed Azalea Woods residential development, proposed to be located north of US Route 9, west of Delaware Route 30 (Gravel Hill Road / Sussex Road 248) and east of Shingle Point Road (Sussex Road 249) in unincorporated Sussex County, Delaware. The proposed development would consist of 610 single-family detached homes. Two full-access driveways are proposed. One full movement access is proposed on Shingle Point Road opposite Briarwood Lane. The second full access movement is proposed along Delaware Route 30 opposite Pettyjohn Road (Sussex Road 255). Construction is expected to be complete by 2032.

The subject land is located on an approximately 316-acre assemblage of parcels. The land is currently zoned AR-1 (Agricultural Residential) in Sussex County. No rezoning is needed or sought to permit the proposed development.

DelDOT has three projects within the study area. The first is the Georgetown East Gateway Improvements project (aka Sand Hill Road Realignment Project), which will improve the existing intersection geometry of US Route 9 and Sand Hill Road/Airport Road (State Road 319). Sand Hill Road and Airport Road presently intersect US Route 9 at skewed angles at offset locations. The improvements will realign Sand Hill Road and Airport Road to intersect US Route 9 at one location at an improved angle, add turn lanes, add pedestrian and bicycle facilities, and improve drainage. Final design and right of way acquisition are underway. Utility relocations will begin in the spring of 2020. Construction is anticipated to begin in the summer of 2020.

The second project is Park Avenue Relocation – Phase 2, which involves improvements along Park Avenue (Sussex Road 321) from the Park Avenue Relocation – Phase 1 project up to the signalized intersection with US Route 9, which will be reconstructed to provide a westbound left-turn lane and a northbound right-turn lane with acceleration lane onto eastbound US Route 9, along with signal upgrades. The Phase 2 project is within the Azalea Woods study area, while the Phase

1 project is located southwest of the Azalea Woods study area. Phase 1 will relocate part of Park Avenue, a designated truck bypass through Georgetown, and upgrade another part of Park Avenue with appropriate turn lanes, shoulders, and intersection improvements. Phase 2 will consist of the improvements along the existing Park Avenue from where the Phase 1 relocation ties in west of Cedar Lane all the way up to US Route 9. Both phases of the project will combine to provide a continuous US Route 9 Truck Bypass from US Route 113 to US 9 east of the Town of Georgetown. This project is currently in the design and planning stage. Construction of Phase 1 is anticipated to begin in the fall of 2022. Construction of Phase 2 is anticipated to begin in 2023.

The third project is DelDOT's HSIP SC, US 9 and SR 5 Intersection project. This project, initiated by the 2009 Hazard Elimination Program, is located at the intersection of US Route 9 and Delaware Route 5 and involves widening the intersection to provide turn lanes on each leg to address safety and operational issues and to accommodate large vehicles. Construction was underway in early 2019 and was substantially complete by September 2019.

Based on our review, we have the following comments and recommendations:

The following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements:

Intersection	***Existing Traffic Control***	***Situations for which deficiencies occur***
US 9 and Sand Hill Road/Airport Road	Signalized	2018 Existing PM (Case 1) 2032 without Azalea Woods AM & PM (Case 2) * 2032 with Azalea Woods AM & PM (Case 3) * * Deficient only without East Gateway Improvements
US 9 and Park Avenue	Signalized	2018 Existing AM & PM (Case 1) 2032 without Azalea Woods AM & PM (Case 2) * 2032 with Azalea Woods AM & PM (Case 3) * * Deficient only without Park Avenue Relocation – Phase 2
US 9 and Shingle Point Road/French Road	Unsignalized	2018 Existing AM (Case 1) 2032 without Azalea Woods AM & PM (Case 2) 2032 with Azalea Woods AM & PM (Case 3)
US 9 and Stiener Road	Unsignalized	2018 Existing AM (Case 1) 2032 without Azalea Woods AM & PM (Case 2) 2032 with Azalea Woods AM & PM (Case 3)
US 9 and DE 30	Signalized	2032 without Azalea Woods AM & PM (Case 2) 2032 with Azalea Woods AM & PM (Case 3)
US 9 and Prettyman Road	Unsignalized	2018 Existing AM & PM (Case 1) 2032 without Azalea Woods AM & PM (Case 2) 2032 with Azalea Woods AM & PM (Case 3)
US 9 and DE 5	Signalized	2018 Existing AM (Case 1) 2032 without Azalea Woods AM & PM (Case 2) 2032 with Azalea Woods AM & PM (Case 3)
Park Avenue and Springfield Road	Unsignalized	2032 without Azalea Woods AM (Case 2) 2032 with Azalea Woods AM & PM (Case 3)

For three of the intersections listed in the table above, it is anticipated that future LOS deficiencies will be completely mitigated via implementation of improvements as described in the numbered recommendation items starting on page 4. The intersections and corresponding recommendation items are as follows: US Route 9 and Sand Hill Road / Airport Road (Item No. 4), US Route 9 and Park Avenue (Item No. 5), and Park Avenue and Springfield Road (also Item No. 5).

For one other intersection, US Route 9 and Shingle Point Road / French Road, it is anticipated that the recommended improvement will partially mitigate future LOS deficiencies. While it was determined that the improvement needed to achieve a complete mitigation of future LOS deficiencies at this location would not be required of this developer, the addition of a separate right-turn lane on the southbound approach of Shingle Point Road, as recommended below in Item No. 6, will reduce delays and queue lengths on that approach.

As for the other four intersections listed in the table above, we do not recommend any improvements be implemented by the developer. Additional information for each of these four intersections is provided immediately below.

US Route 9 and Stiener Road
This unsignalized intersection experiences LOS deficiencies in the 2018 existing AM peak hour and in the 2032 AM and PM peak hours, both without and with Azalea Woods.

The northbound Stiener Road and southbound business driveway approaches are expected to operate at LOS F in both 2032 peak hours, without and with Azalea Woods. During these times, both approaches have ten vehicles per hour or less, and the anticipated 95th percentile queue lengths are less than 25 feet. Thus, mitigation is not required as per the DelDOT Development Coordination Manual.

US Route 9 and Delaware Route 30
This signalized intersection exhibits LOS deficiencies in the 2032 AM and PM peak hours, both without and with Azalea Woods. Given that the intersection is already signalized and has separate left and right-turn lanes on every approach, we do not recommend any improvements be implemented by the developer at this intersection. The major improvements required to fully correct the LOS deficiencies at this intersection (i.e., widening US Route 9 to provide two through lanes in each direction) cannot be considered a reasonable developer improvement project.

US Route 9 and Prettyman Road
This unsignalized intersection experiences LOS deficiencies in all existing and future peak hours, with the southbound approach of Prettyman Road operating at LOS F. However, a new traffic signal at this location on US Route 9 would not be desirable, and because drivers who would use the southbound approach of Prettyman Road can choose alternative routes to access US Route 9, it was determined that improvements are not required to be implemented by the developer at this intersection.

US Route 9 and Delaware Route 5

This signalized intersection exhibits LOS deficiencies in the 2032 AM and PM peak hours, both without and with Azalea Woods. Given that the intersection is already signalized and was recently improved in 2019 to include a separate left-turn lane on every approach, we do not recommend any improvements be implemented by the developer at this intersection. The major improvements required to fully correct the LOS deficiencies at this intersection (i.e., widening US Route 9 to provide two through lanes in each direction) cannot be considered a reasonable developer improvement project.

Should the County choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration. All applicable agreements (i.e. letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed development.

1. The developer should improve Shingle Point Road from Briarwood Road to US Route 9 as needed in order to meet DelDOT's local road standards. These standards include, but are not limited to, eleven-foot travel lanes and five-foot shoulders. The developer should provide a bituminous concrete overlay to the existing travel lanes, at DelDOT's discretion. DelDOT should analyze the existing lanes' pavement section and recommend an overlay thickness to the developer's engineer if necessary. Construction of this improvement should begin prior to issuance of the 226th building permit.

2. The developer should construct the full-movement Site Access A on Shingle Point Road. This proposed site driveway should be constructed directly across from Briarwood Lane. The proposed configuration is shown in the table below.

Approach	Existing Configuration	Proposed Configuration
Eastbound Briarwood Lane	One shared left-turn/right-turn lane	One shared left/through/right-turn lane
Westbound Site Access A	Approach does not exist	One shared left/through/right-turn lane
Northbound Shingle Point Road	One shared left-turn/through lane	One left-turn lane, one through lane and one right-turn lane
Southbound Shingle Point Road	One shared through/right-turn lane	One left-turn lane and one shared through/right-turn lane

Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes are listed below. The developer should coordinate with DelDOT's Development Coordination Section to determine final turn-lane lengths during the site plan review.

Approach	Left-Turn Lane	Right-Turn Lane
Eastbound Briarwood Lane	N/A	N/A
Westbound Site Access A	N/A	N/A
Northbound Shingle Point Road	50 feet *	240 feet **
Southbound Shingle Point Road	210 feet **	N/A

* Initial turn-lane length based on coordination with DelDOT's Development Coordination Section.
** Initial turn-lane length based on DelDOT's *Auxiliary Lane Worksheet*.

3. The developer should construct the full-movement Site Access B on Delaware Route 30. This proposed site driveway should be constructed directly across from Pettyjohn Road. The proposed configuration is shown in the table below.

Approach	Existing Configuration	Proposed Configuration
Eastbound Site Access B	Approach does not exist	One shared left/through/right-turn lane
Westbound Prettyjohn Road	One shared left-turn/right-turn lane	One shared left/through/right-turn lane
Northbound DE 30	One shared through/right-turn lane	One left-turn lane and one shared through/right-turn lane
Southbound DE 30	One shared left-turn/through lane	One left-turn lane, one through lane and one right-turn lane

Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes are listed below. The developer should coordinate with DelDOT's Development Coordination Section to determine final turn-lane lengths during the site plan review.

Approach	Left-Turn Lane	Right-Turn Lane
Eastbound Site Access B	N/A	N/A
Westbound Prettyjohn Road	N/A	N/A
Northbound DE 30	210 feet *	N/A
Southbound DE 30	50 feet **	240 feet *

* Initial turn-lane length based on DelDOT's *Auxiliary Lane Worksheet.*
** Initial turn-lane length based on coordination with DelDOT's Development Coordination Section.

4. The developer should coordinate with DelDOT regarding an equitable share contribution toward DelDOT's Georgetown East Gateway Improvements Project, which will improve the intersection of US Route 9 and Sand Hill Road / Airport Road. The amount of the contribution should be determined through coordination with DelDOT's Development Coordination Section.

5. The developer should coordinate with DelDOT regarding an equitable share contribution toward DelDOT's Park Avenue Relocation – Phase 2 Project, which will improve the intersections of US Route 9 & Park Avenue and Park Avenue & Springfield Road. While the design of improvements under the DelDOT project has not yet been finalized, at US Route 9 & Park Avenue it should include a westbound left-turn lane and a northbound right-turn lane with acceleration lane onto eastbound US Route 9, and at Park Avenue & Springfield Road it should include a westbound right-turn lane. The amount of the contribution should be determined through coordination with DelDOT's Development Coordination Section.

6. The developer should improve the intersection of US Route 9 and Shingle Point Road / French Road. The proposed configuration is shown in the table below.

Approach	Existing Configuration	Proposed Configuration
Eastbound US Route 9	One shared left/through/right-turn lane	One shared left/through/right-turn lane
Westbound US Route 9	One shared left/through/right-turn lane	One shared left/through/right-turn lane
Northbound French Road	One shared left/through/right-turn lane	One shared left/through/right-turn lane
Southbound Shingle Point Road	One shared left/through/right-turn lane	One shared left-turn/through lane and one right-turn lane

Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes are listed below.

Approach	Left-Turn Lane	Right-Turn Lane
Eastbound US Route 9	N/A	N/A
Westbound US Route 9	N/A	N/A
Northbound French Road	N/A	N/A
Southbound Shingle Point Road	N/A	200 feet *

* Initial turn-lane length based on storage length per queuing analysis

Proposed Four Winds Farm TIS
Imprvt Included in all Future Analysis

The developer should coordinate with DelDOT's Development Coordination Section to determine all final design details including the above turn-lane lengths during the site plan review. Construction of this improvement should begin prior to issuance of the 101st building permit.

7. The following bicycle and pedestrian improvements should be included:

   a. Adjacent to the proposed right-turn lanes on southbound Delaware Route 30 and northbound Shingle Point Road at the proposed site entrances, a minimum of a five-foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel.

   b. Appropriate bicycle symbols, directional arrows, pavement markings, and signing should be included along bicycle facilities and turn lanes within the project limits.

   c. Utility covers should be made flush with the pavement.

   d. If clubhouses or other community facilities are constructed as shown on the site plan, bicycle parking should be provided near building entrances. Where building architecture provides for an awning, other overhang, or indoor parking, the bicycle parking should be covered.

   e. A minimum 15-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontages along Delaware Route 30 and Shingle Point Road.

   f. Within the easements along the Delaware Route 30 site frontage and the Shingle Point Road southern site frontage, a minimum of a ten-foot wide shared-use path that meets current AASHTO and ADA standards should be constructed. The shared-use paths should meet AASHTO and ADA standards. Each shared-use path should have a minimum of a five-foot buffer from the roadway. At the property boundaries, the shared-use paths should connect to the adjacent property or to the shoulder in accordance with DelDOT's *Shared-Use Path and/or Sidewalk Termination Reference Guide* dated August 1, 2018. The developer should coordinate with DelDOT's Development Coordination Section to determine the details of the shared-use path connections at the property boundaries. No shared-use path is required along the northern site frontage of Shingle Point Road.

   g. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.

   h. Internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should each be a minimum of five-feet wide (with a minimum of a five-foot

buffer from the roadway) and should meet current AASHTO and ADA standards. Internal sidewalks in the development should connect to the proposed shared-use paths along Delaware Route 30 and Shingle Point Road.

i. Access-ways should be used to connect shared-use paths or sidewalks along a road to an interior trail or subdivision street when the spacing between streets is inadequate to accommodate convenient pedestrian and bicycle travel. Based on the Office of State Planning Coordination PLUS review (August 20, 2018), two access-ways are recommended, both on Shingle Point Road. One would be near the northern limit of the site frontage and the other near the southern limit of the site frontage. The developer should coordinate with DelDOT's Development Coordination Section during the site plan review to determine exact locations and design details for these access-ways.

j. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to prevent vehicular overhang onto the sidewalk.

Improvements in this TIS may be considered "significant" under DelDOT's *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DelDOT's website at http://deldot.gov/Publications/manuals/de_mutcd/index.shtml.

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DelDOT's site plan review process.

Additional details on our review of this TIS are attached. Please contact me at (610) 640-3500 or through e-mail at ajparker@mccormicktaylor.com if you have any questions concerning this review.

Sincerely,

McCormick Taylor, Inc.

Andrew J. Parker, PE, PTOE
Project Manager

Enclosure

FIGURE 6A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - HERITAGE CREEK

Four Winds Farm Residential Development
Sussex County, Delaware

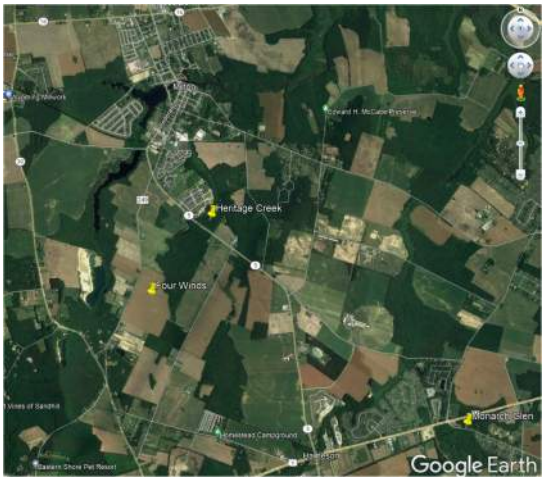
By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

LEGEND

= *Inbound Trip Distribution Percentage*

(###) = *Outbound Trip Distribution Percentage*

→ = MOVEMENT DIRECTION



20% TO/FROM NORTH ALONG DE ROUTE 5

3% TO/FROM WEST ALONG MULBERRY ST

8% TO/FROM WEST ALONG SAND HILL RD

Revise distribution

4% TO/FROM NORTH ALONG DE ROUTE 30

Percentages don't balance

On Rt 5

HERITAGE CREEK

SITE

34% TO/FROM SOUTH ALONG DE ROUTE 5

9% TO/FROM WEST ALONG BRIARWOOD RD

22% TO/FROM WEST ALONG US ROUTE 9

These vehicles may take Rt 9 to NB Rt 5?

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

NATHAN HAYWARD III
SECRETARY

February 3, 2006

Mr. Harold Godwin
Town Manager
Town of Milton
101 Federal Street
Milton, DE 19968

Dear Mr. Godwin:

The attached Traffic Impact Study (TIS) review letter for the **Heritage Creek** subdivision has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Rules and Regulations for Subdivision Streets and other accepted practices and procedures for such studies. DelDOT accepts this TIS review and concurs with the recommendations. We are providing it to you in fulfillment of our joint agreement regarding the review of TIS. If you have any questions concerning this letter or the attached review letter, please contact me at (302) 760-2134.

Sincerely,

Todd J. Sammons
Project Engineer

TS:km
Enclosures
cc with enclosures: Ms. Constance C. Holland, Office of State Planning Coordination
Mr. Derrick S. Kennedy, Orth-Rodgers & Associates, Inc.
Mr. Mark Luszcz, McCormick Taylor
DelDOT Distribution

DelDOT

DelDOT Distribution

Carolann D. Wicks, Secretary of Transportation
Frederick H. Schranck, Deputy Attorney General
Darrel Cole, Chief of Community Relations, Public Relations
Director, Transportation Solutions (DOTS)
Ralph A. Reeb, Director, Division of Planning
Robert F. Carver, Jr., Capital Budget Manager, Finance
Michael H. Simmons, Assistant Director, Project Development South, DOTS
Donald D. Weber, Assistant Director, Traffic, DOTS
Joseph Cantalupo, Assistant Director, Statewide & Regional Planning
Theodore G. Bishop, Assistant Director, Development Coordination
Thomas E. Meyer, Traffic Studies Manager, Traffic, DOTS
William J. Dryden, Transportation Planner, Project Development South, DOTS
David Dooley, Service Development Planner, Delaware Transit Corporation
Marc Coté, Subdivision Engineer, Development Coordination
T. William Brockenbrough, Jr., County Coordinator, Development Coordination
John T. Fiori, Subdivision Manager, Development Coordination
Monet Lea, Project Engineer, Development Coordination

McCormick Taylor
Engineers & Planners Since 1946

January 27, 2006

Mr. Todd J. Sammons
Project Engineer
DelDOT Division of Planning
P.O. Box 778
Dover, DE 19903

RE: Agreement No. 1294
Traffic Impact Study Review Services
Task No. 77– Heritage Creek

Dear Mr. Sammons,

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the development of the Heritage Creek Property prepared by Orth-Rodgers & Associates, Inc., dated November 4, 2005. This review was assigned as Task Number 77 and was prepared for Carey Communities, LLC. Orth-Rodgers & Associates, Inc. prepared the report in a manner generally consistent with DelDOT's *Rules and Regulations for Subdivision Streets*.

The TIS evaluates the impacts of the development of the Heritage Creek Property, in the Town of Milton, Sussex County, Delaware. The proposed development includes two zones. Zone 1 is proposed to have 151 single-family homes, 26 apartments, 74 semi-detached single-family homes, 91 townhouses, 51 single-family four-plex units, 14,000 square foot health center, 10,000 square feet of office space, and 41,000 square feet of retail. It should be noted that the proposed mix of uses has been modified from previous submissions. Zone 1 will also have a community center and a pool/bathhouse that will be internal to the site only. Zone 2 is proposed to have 32 single-family homes. This development is located in the Town of Milton, on the north side of Delaware Route 5 (Harbeson Road) between Shingle Point Road (Sussex Road 249) and Pettyjohn Road (Sussex Roads 255). The developer has proposed to widen Delaware Route 5 and create two access points, one each for Zone 1 and Zone 2, both on Delaware Route 5. Construction of this project is anticipated to be complete by 2010.

DelDOT had one related project in the study area, the Milton Truck Bypass, Delaware Route 5 to Delaware Route 30. This project has been completed and included improvements to one of the intersections in the study area, Delaware Route 5 and Sand Hill Road. These improvements were in place at the time of our field view. The new configuration of the intersection is as follows: separate northbound Route 5 left-turn and through lanes, separate southbound Route 5 right-turn and through lanes, and separate eastbound Sand Hill Road left and right-turn lanes.

Based on our review, we have the following comments and recommendations.

200 Continental Drive • Suite 305 • Newark, DE 19713 • Phone: 302-738-0203 • Fax: 302-738-0275
www.mccormicktaylor.com

One intersection exhibits level of service deficiencies without the implementation of physical roadway and/or traffic control improvements: the intersection of Delaware Route 5 and the Site Access to Zone 1, during the design year Saturday peak with the proposed development.

Should the Town choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan. All applicable agreements (i.e., letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed development.

1. The developer should enter into a traffic signal agreement with DelDOT for the intersection of Delaware Route 5 and the Site Access to Zone 1. The agreement should include pedestrian signals, crosswalks, and interconnection at DelDOT's discretion.

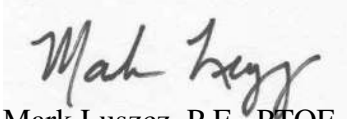
2. The following bicycle and pedestrian improvements should be completed:
   a. A minimum of a five-foot bicycle lane should be striped along Delaware Route 5 (in addition to any turn lanes) along the development frontage in order to facilitate safe and unimpeded bicycle travel.
   b. Regulatory/warning signage should be added to any forthcoming plans to this project in order to alert motorists to the presence of bicycle traffic.
   c. Any utility covers should be moved outside of the designated bicycle lane or be flush with the pavement.
   d. A minimum of a five-foot sidewalk (with a minimum of a five-foot buffer from the roadway) that meets current AASHTO and ADA standards should be included along the site frontage of the proposed development along Delaware Route 5.
   e. Internal sidewalks to promote walking as a viable transportation alternative should be constructed.
   f. The developer should provide accommodations for a bus stop with pedestrian access for the DART Bus Route 303. This bus stop should include a pad and shelter, at Delaware Transit Corporation's discretion.

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DelDOT's subdivision review process.

Additional details on our review of the TIS are attached. Please contact me at (302) 738-0203 or through e-mail at mluszcz@mtmail.biz if you have any questions concerning this review.

Sincerely,

McCormick Taylor, Inc.



Mark Luszcz, P.E., PTOE, AICP
Associate

Enclosure

FIGURE 7A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - VINES OF SAND HILL

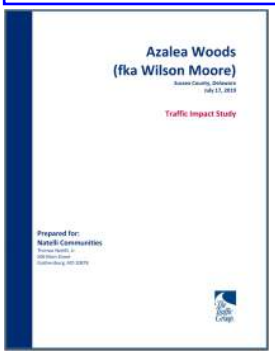
Four Winds Farm Residential Development
Sussex County, Delaware

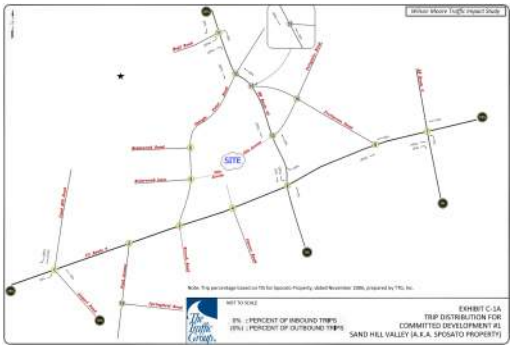
By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

LEGEND

= *Inbound Trip Distribution Percentage*
(###) = *Outbound Trip Distribution Percentage*
→ = MOVEMENT DIRECTION

Use trip distribution from approved TIS for this development





20% TO/FROM NORTH ALONG DE ROUTE 5

3% TO/FROM WEST ALONG MULBERRY ST

12% TO/FROM NORTH ALONG DE ROUTE 30

31% TO/FROM WEST ALONG US ROUTE 9

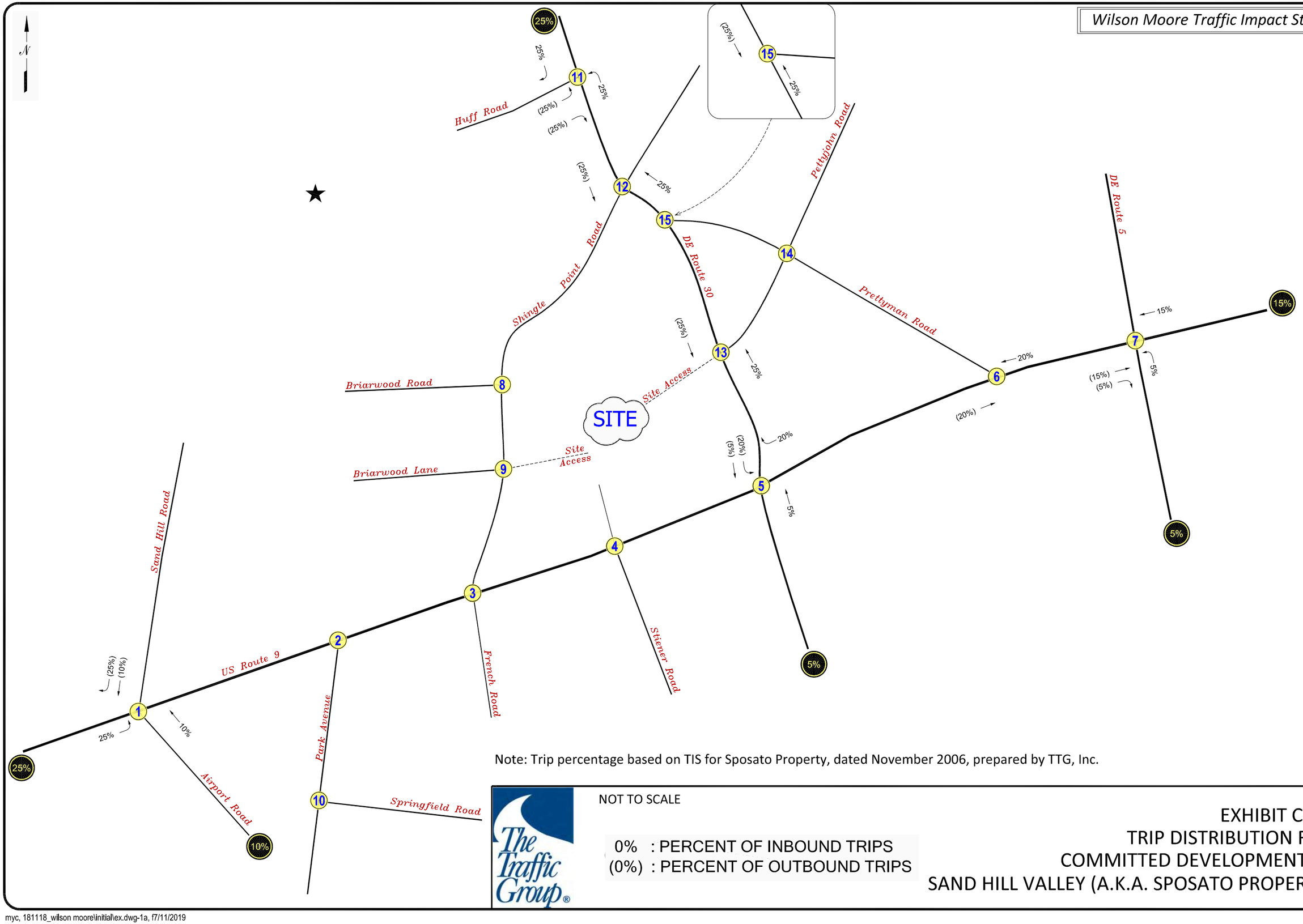
8% TO/FROM SOUTH ALONG DE ROUTE 30

26% TO/FROM SOUTHEAST ALONG PRETTYMAN RD

VINES OF

SITE

FEDERAL ST (DE ROUTE 5)
MULBERRY ST (SR 197)
ATLANTIC ST (SR 88)
SAND HILL RD (SR 319)
CHESTNUT ST (SR 249)
SHINGLE POINT RD
HARBESON RD (DE ROUTE 5)
GRAVEL HILL ROAD (DE ROUTE 30)
PROPOSED SITE ACCESS
PRETTYMAN RD (SR 254)
PETTIJOHN RD (SR 255)
SHINGLE POINT RD (SR 249)
BRIARWOOD RD (SR 253)
AZALEA WOODS ACCESS
US ROUTE 9
FRENCH RD



Note: Trip percentage based on TIS for Sposato Property, dated November 2006, prepared by TTG, Inc.

NOT TO SCALE

0% : PERCENT OF INBOUND TRIPS
(0%) : PERCENT OF OUTBOUND TRIPS

EXHIBIT C-1A
TRIP DISTRIBUTION FOR
COMMITTED DEVELOPMENT #1
SAND HILL VALLEY (A.K.A. SPOSATO PROPERTY)

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

CAROLANN WICKS, P.E.
SECRETARY

March 28, 2007

Mr. Lawrence B. Lank
Director
Sussex County Planning & Zoning Commission
P.O. Box 417
Georgetown, DE 19947

Dear Mr. Lank:

The attached Traffic Impact Study (TIS) review letter for the **Sposato Property** has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Rules and Regulations for Subdivision Streets and other accepted practices and procedures for such studies. DelDOT accepts this TIS review and concurs with the recommendations. We are providing it to you in fulfillment of our joint agreement regarding the review of TIS. If you have any questions concerning this letter or the attached review letter, please contact me at (302) 760-2134.

Sincerely,

Todd J. Sammons
Project Engineer

TS:km
Enclosures
cc with enclosures: Ms. Constance C. Holland, Office of State Planning Coordination
Mr. Carl Wilson, The Traffic Group
Mr. Scott Diehl, McCormick Taylor
DelDOT Distribution

DelDOT

DelDOT Distribution

Frederick H. Schranck, Deputy Attorney General
Darrel Cole, Chief of Community Relations, Public Relations
Robert Taylor, Director, Transportation Solutions (DOTS)
Ralph A. Reeb, Director, Division of Planning
Michael H. Simmons, Assistant Director, Project Development South, DOTS
Donald D. Weber, Chief Traffic Engineer, Traffic, DOTS
Mark Luszcz, Assistant Chief Traffic Engineer, Traffic, DOTS
Thomas E. Meyer, Traffic Studies Manager, Traffic, DOTS
Assistant Director, Statewide & Regional Planning
Theodore G. Bishop, Assistant Director, Development Coordination
Joseph Wright, Assistant Director, Transportation Engineering
Jennifer Pinkerton, Deputy Principal Assistant, Pavement Management
William J. Dryden, Transportation Planner, Project Development South, DOTS
David Dooley, Service Development Planner, Delaware Transit Corporation
Lisa Collins, Service Development Planner, Delaware Transit Corporation
Marc Coté, Subdivision Engineer, Development Coordination
T. William Brockenbrough, Jr., County Coordinator, Development Coordination
John T. Fiori, Subdivision Manager, Development Coordination
Troy Brestel, Project Engineer, Development Coordination

McCormick Taylor
Engineers & Planners Since 1946

March 28, 2007

Mr. Todd J. Sammons
Project Engineer
DelDOT Division of Planning
P.O. Box 778
Dover, DE 19903

RE: Agreement No. 1294
Traffic Impact Study Review Services
Task No. 137 – Sposato Property

Dear Mr. Sammons,

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for Sposato Property development prepared by The Traffic Group, dated November 20, 2006. This review was assigned as Task Number 137. The Traffic Group prepared the report in a manner generally consistent with DelDOT's *Rules and Regulations for Subdivision Streets*.

The TIS evaluates the impacts of the Sposato Property development, proposed to be located on an approximately 266-acre assemblage of several parcels in Sussex County, Delaware. The proposed development would consist of 406 single-family detached houses. This development is located on the south side of Huff Road (Sussex Road 252) east of Sand Hill Road (Sussex Road 319). One access point is proposed on Huff Road. Construction is anticipated to be complete by 2011.

Currently, DelDOT has two relevant on-going projects within the study area. The first project is *US 9, Lewes and Georgetown Highway and S319, Airport Road Realignment, Georgetown* (State Contract No. 25-046-01). The project involves improvements to the intersection of US Route 9 (Sussex Road 18) and Sand Hill Road/Airport Road (Sussex Road 319) including the realignment of the minor street approaches to reduce the skew at which they currently intersect US Route 9. In addition, all approaches are proposed to be widened to accommodate separate left and right-turn lanes. The eastbound approach will be widened to accommodate a future second left-turn lane, which will be hatched at the completion of the project and opened when warranted by future traffic volumes. This project is currently being studied for feasibility, although there are not yet funds allocated for construction.

The second project is the *US Route 113, North/South Improvements* (State Contract No. 22-127-01). The US Route 113 North/South Study is being conducted by DelDOT to consider capacity improvements for the US Route 113 (DuPont Boulevard/Sussex Road 113) corridor from north of Milford to the Delaware/Maryland state line. The project will continue to study viable alternatives for north/south capacity improvements throughout Sussex County. Many alternatives are being studied, both on and off existing alignments. While this project will probably not affect the TIS, some of the alignments being considered could affect the plan for

the proposed development. The preferred alternative for this project is expected to be selected by the end of 2007.

Based on our review, we have the following comments and recommendations:

The following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements:

Intersection	***Situations for which deficiencies occur***
US Route 9 and Sand Hill Road/Airport Road	2011 AM, PM and Saturday with and without development

Should the County choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan. All applicable agreements (i.e., letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed development.

1. The developer should enter into an agreement with DelDOT to fund an equitable portion of the planned improvement project at the intersection of US Route 9 and Sand Hill Road/Airport Road. The proposed configuration for the DelDOT's project is shown below. However, the state currently does not have funds allocated for construction. The Town of Georgetown is working with the developer of The Parsonage on alternative improvements for this intersection. Should an alternative design be developed for this intersection, the developer should fund an equitable portion of the improvements.

Approach	Current Configuration	Proposed Configuration
Northbound Airport Road	Shared left/through/right-turn lane	Separate left-turn lane, through lane, and right-turn lane
Southbound Sand Hill Road	Shared left/through/right-turn lane	Separate left-turn lane, through lane, and right-turn lane
Eastbound US Route 9	Shared left/through/right-turn lane	Separate through lane, right-turn lane, and dual left-turn lanes
Westbound US Route 9	Shared left/through/right-turn lane	Separate left-turn lane, through lane, and right-turn lane

2. The developer should enter into a traffic signal agreement with DelDOT for the intersection of US Route 9 and Sand Hill Road/Airport Road. The agreement will cover the signal adjustments required by the physical improvements noted in Item No. 1. The agreement should include pedestrian signals, crosswalks and interconnection at DelDOT's discretion.

3. The developer should improve Huff Road from Sand Hill Road to the western edge of the Lakes at Carriage Springs in order to meet DelDOT's local road standards. These standards include two eleven-foot lanes and two five-foot shoulders. Additionally, the horizontal alignment of the roadway should be improved as needed to conform to current DelDOT and AASHTO design criteria. The developer should provide a bituminous

concrete overlay to the existing travel lanes, at DelDOT's discretion. DelDOT should analyze the through travel lanes' pavement section and recommend an overlay thickness to the developer's engineer if necessary.

4. The following bicycle and pedestrian improvements should be included:
   a. A minimum of a five-foot bicycle lane (in addition to any required auxiliary lanes) should be striped along the site frontage of Huff Road in order to facilitate safe and unimpeded bicycle travel.
   b. Share the road signs (MUTCD W11-1 with W16-1) should be added along the bicycle lane in order to alert motorists to the presence of bicycle traffic. Right-turn yield to bikes sign (MUTCD R4-4) should be added at the start of any right-turn lane.
   c. Utility covers should be moved outside of the designated bicycle lane or be flush with the pavement.
   d. ADA compliant type 1 curb ramps and crosswalks should be considered at the site entrance.
   e. Internal sidewalks to promote walking as a viable transportation alternative should be constructed, including sidewalks connecting this development to adjacent developments. These internal sidewalks should be connected to the frontage shoulder.

5. Due to the proximity of the proposed development to the Sussex County Airport, we recommend that deed restrictions be required similar to the attached Avigation Nuisance Easement and Non-Suit Covenant (pages 19 and 20). The applicant should contact Mr. Michael Kirkpatrick at (302) 760-2153 of DelDOT's Statewide Regional Planning Section to determine whether the proposed development is within the Runway Protection Zone. If so, restrictions may apply.

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DelDOT's subdivision review process.

Additional details on our review of the TIS are attached. Please contact me at (302) 738-0203 or through e-mail at sjdiehl@MTmail.biz if you have any questions concerning this review or Mr. Michael Kirkpatrick, at (302) 760-2153, if you have any questions regarding the Airport Nuisance Easement and Non-Suit Covenant.

Sincerely,

McCormick Taylor, Inc.

Scott Diehl, P.E., PTOE
Project Manager

Enclosure

FIGURE 8A: COMMITTED DEVELOPMENT TRIP DISTRIBUTION - CYPRESS GROVE

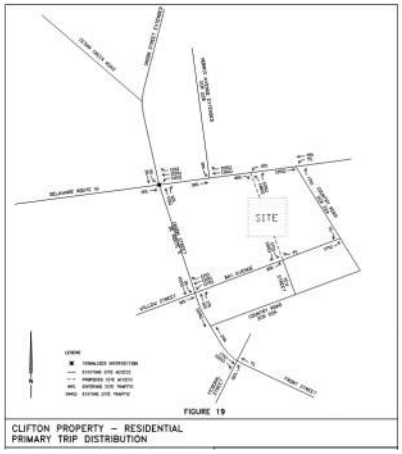
Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

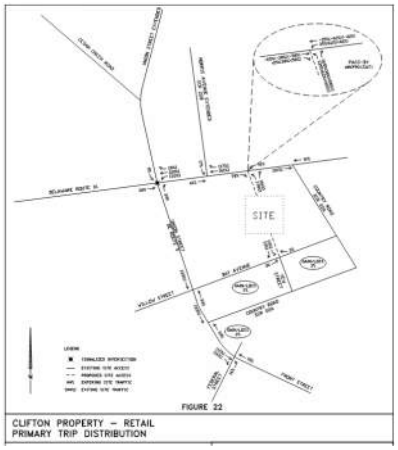
LEGEND

= *Inbound Trip Distribution Percentage*
(###) = *Outbound Trip Distribution Percentage*
→ = MOVEMENT DIRECTION

Use approved Trip Distribution from TIS dated 02/2020



CLIFTON PROPERTY – RESIDENTIAL
PRIMARY TRIP DISTRIBUTION



CLIFTON PROPERTY – RETAIL
PRIMARY TRIP DISTRIBUTION

CYPRESS GROVE

35% TO/FROM NORTH, WEST & WEST VIA DE ROUTE 16

34% TO/FROM SOUTH ALONG DE ROUTE 5

9% TO/FROM WEST ALONG BRIARWOOD RD

22% TO/FROM WEST ALONG US ROUTE 9

SITE

PROPOSED SITE ACCESS

AZALEA WOODS ACCESS

FEDERAL ST (DE ROUTE 5)
MULBERRY ST (SR 197)
ATLANTIC ST (SR 88)
SAND HILL RD (SR 319)
CHESTNUT ST (SR 249)
SHINGLE POINT RD
HARBESON RD (DE ROUTE 5)
GRAVEL HILL ROAD (DE ROUTE 30)
PRETTYMAN RD (SR 254)
PETTIJOHN RD (SR 255)
SHINGLE POINT RD (SR 249)
BRIARWOOD RD (SR 253)
US ROUTE 9
FRENCH RD

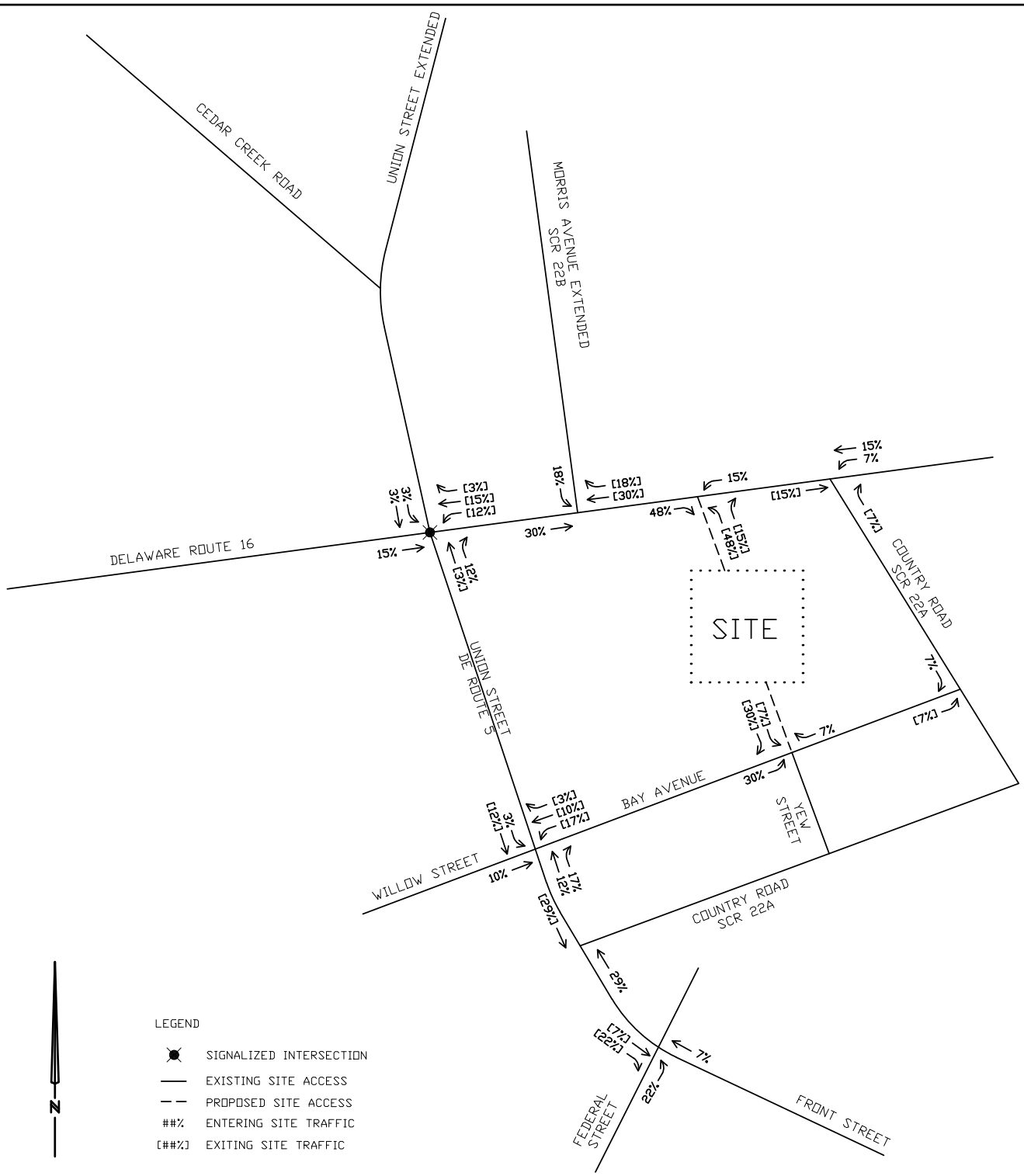


FIGURE 19

CLIFTON PROPERTY – RESIDENTIAL PRIMARY TRIP DISTRIBUTION

DAVIS, BOWEN & FRIEDEL, INC.
ARCHITECTS, ENGINEERS & SURVEYORS

SALISBURY, MARYLAND 410-543-9091
MILFORD, DELAWARE 302-424-1441
EASTON, MARYLAND 410-770-4744

CLIFTON PROPERTY
TRAFFIC IMPACT STUDY
MILTON, DELAWARE

Date:	Scale:	Proj.No.:
10/19	NONE	3311A001.J01

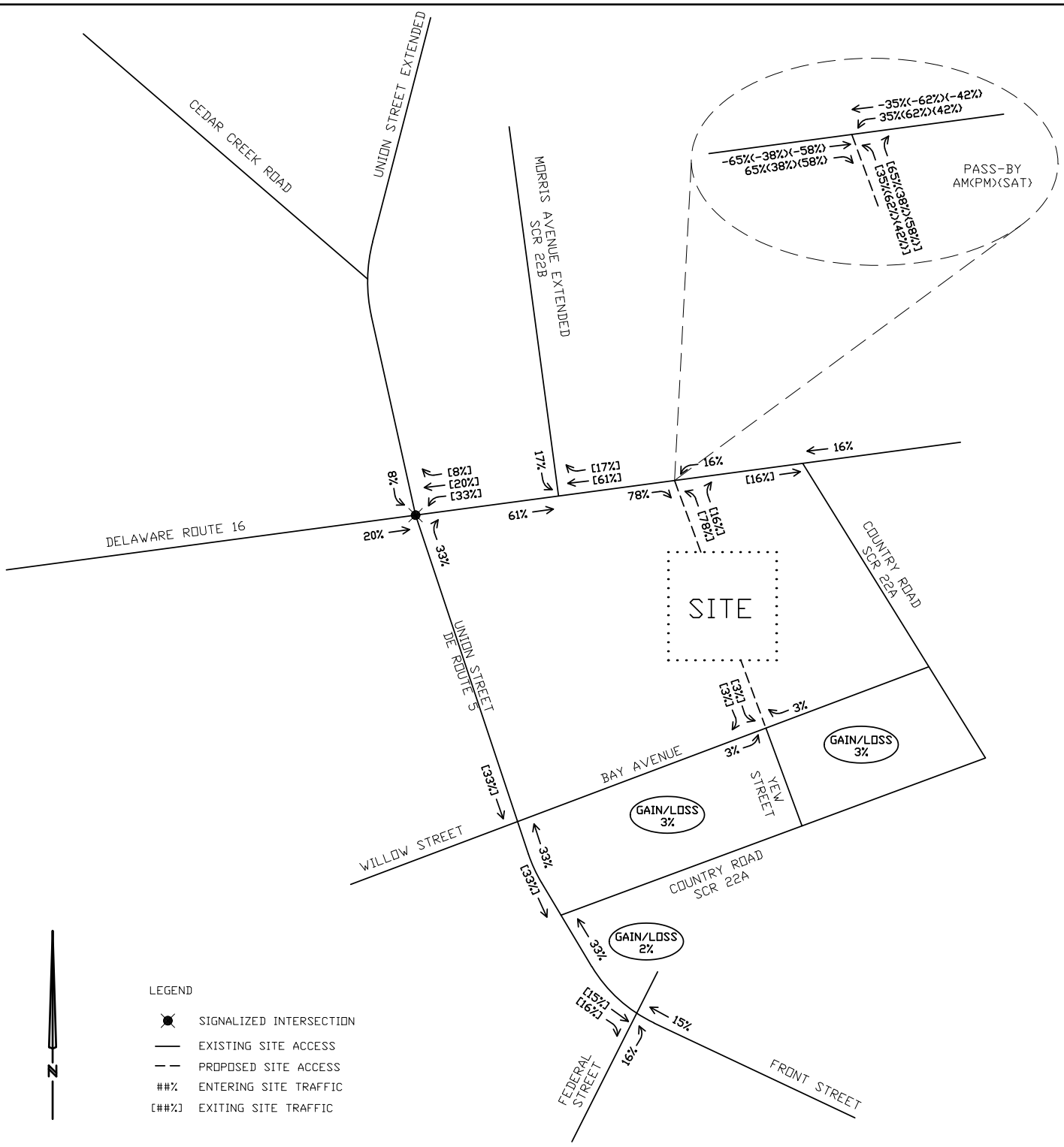


FIGURE 22

CLIFTON PROPERTY – RETAIL
PRIMARY TRIP DISTRIBUTION

DAVIS, BOWEN & FRIEDEL, INC.
ARCHITECTS, ENGINEERS & SURVEYORS

SALISBURY, MARYLAND 410-543-9091
MILFORD, DELAWARE 302-424-1441
EASTON, MARYLAND 410-770-4744

CLIFTON PROPERTY
TRAFFIC IMPACT STUDY
MILTON, DELAWARE

Date:	Scale:	Proj.No.:
10/19	NONE	3311A001.J01

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

May 15, 2020

Ms. Dawn Riggi
Davis, Bowen & Friedel, Inc.
1 Park Avenue
Milford, DE 19963

Dear Ms. Riggi:

The enclosed Traffic Impact Study (TIS) review letter for the proposed **Clifton Property** (Tax Parcels 234-14.00-123.00 & 123.01, 235-14.16-1.00, 2.00, 3.00, & 4.00) development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this review letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at (302) 760-2167.

Sincerely,

Troy Brestel
Project Engineer

TEB:km
Enclosures
cc with enclosures: Mr. Zachary Crouch, Davis, Bowen & Friedel, Inc.
Ms. Constance C. Holland, Office of State Planning Coordination
Ms. Kristy Rogers, Town Manager, Town of Milton
Ms. Joanne Arellano, Johnson, Mirmiran & Thompson, Inc.
DelDOT Distribution

DelDOT

DelDOT Distribution

Brad Eaby, Deputy Attorney General
Shanté Hastings, Director, Transportation Solutions (DOTS)
J. Marc Coté, Director, Planning
Mark Luszcz, Deputy Director, DOTS
Michael Simmons, Assistant Director, Project Development South, DOTS
Todd Sammons, Assistant Director, Development Coordination
T. William Brockenbrough, Jr., County Coordinator, Development Coordination
Peter Haag, Chief Traffic Engineer, Traffic, DOTS
Alastair Probert, South District Engineer, South District
Gemez Norwood, South District Public Works Manager, South District
Susanne Laws, Sussex Subdivision Review Coordinator, Development Coordination
David Dooley, Service Development Planner, Delaware Transit Corporation
Mark Galipo, Traffic Engineer, Traffic, DOTS
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning
Derek Sapp, Sussex County Subdivision Reviewer, Development Coordination
Claudy Joinville, Project Engineer, Development Coordination

May 15, 2020

Mr. Troy E. Brestel
Project Engineer
Development Coordination, Division of Planning
800 Bay Road
Dover, DE 19901

RE: Agreement No. 1945F
Project Number T202069012
Traffic Impact Study Services
Task 8A - Clifton Property

Dear Mr. Brestel:

Johnson, Mirmiran and Thompson (JMT) has completed the review of the Traffic Impact Study (TIS) for Clifton Property prepared by Davis, Bowen & Friedel, Inc. (DBF) dated February 2020. This task was assigned as Task Number 8A. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual*.

The TIS evaluates the impacts of a proposed residential development in both the Town of Milton and Sussex County, Delaware. The development would be comprised of 71 multi-family (low-rise) units, 168 multi-family (mid-rise) units, and a 20,000 square-foot shopping center. Construction is anticipated to be complete in 2025.

The site is located on the southwest corner of the intersection of Delaware Route 16 and Country Road (Sussex Road 22A). Two full access points are proposed: one along Delaware Route 16 and another along Bay Avenue, opposite Yew Street.

The subject property is on an approximately 27.51-acre assemblage of parcels that is split-zoned as AR-1 (Agricultural Residential), R-1 (Single-Family Residential), and C-1 (General Commercial) and the developer plans to rezone the land to R-3 (General and Multi-Family Residential) and C-1 (General Commercial). Annexation of lands currently under Sussex County jurisdiction into the Town of Milton is anticipated.

DelDOT is actively coordinating with the Town of Milton to address operational concerns at two of the study intersections. At the Delaware Route 5 signalized intersection with Delaware Route 16, DelDOT's Traffic section is working with the Town to develop a short-term solution to minimize the occurrence of eastbound and westbound vehicles passing on the shoulders of Delaware Route 16. A potential short-term solution developed by DelDOT involves installing delineators along Delaware Route 16 at the shoulders located at the northeast and southwest corners. DelDOT is awaiting concurrence from the Town regarding the design but the short-term solution is expected to be implemented by the end of this year.

At the Delaware Route 5/Front Street/Federal Street (Sussex Road 22) intersection, the Town has requested that the existing YIELD sign located along the Delaware Route 5/Union Street approach be converted to a STOP sign. A potential solution suggested by DelDOT Traffic involved the conversion of the intersection to be all-way-stop-controlled. DelDOT is awaiting a decision from the Town.

Based on our review of the TIS, we have the following comments and recommendations:

Based on the LOS evaluation criteria as stated in DelDOT's *Development Coordination Manual*, none of the study intersections exhibit LOS deficiencies.

Should the Town of Milton approve the development, the following items should be incorporated into the site design and reflected on the record plan. All applicable agreements (i.e. letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed development.

1. The developer should provide a bituminous concrete overlay to the existing travel lanes along the Delaware Route 16 site frontage in the area affected by entrance plan construction, including any auxiliary lanes, at DelDOT's discretion. DelDOT should analyze the existing lanes' pavement section and recommend an overlay thickness to the developer's engineer, if necessary.

2. The developer should coordinate with the Town regarding improvements along the Bay Avenue site frontage.

3. The developer should construct a full access site entrance for the proposed Clifton Property development along Delaware Route 16, approximately 520 feet east of the southeast point of tangency with the Palmer Street intersection to be consistent with the lane configurations shown in the table below:

Approach	Current Configuration	Proposed Configuration
Eastbound Delaware Route 16	One through lane	One through lane and one right-turn lane
Westbound Delaware Route 16	One through lane	One through lane and one left-turn lane
Northbound Site Entrance	Approach does not exist	One shared left-turn/right-turn lane

Based on DelDOT's *Development Coordination Manual*, the recommended minimum storage lengths along Delaware Route 16 is 190 feet (excluding taper) on the eastbound approach right turn lane and 120 feet (excluding taper) on the westbound approach left turn lane. The calculated queue lengths from the HCS analysis can be accommodated within the recommended storage lengths.

4. The developer should construct a full access site entrance for the proposed Clifton Property development along Bay Avenue directly across from Yew Street, to be consistent with the lane configurations shown in the table below:

Approach	Current Configuration	Proposed Configuration
Eastbound Bay Avenue	One shared through/right-turn lane	One shared left-turn/through/right-turn lane
Westbound Bay Avenue	One shared left-turn/through lane	One shared left-turn/through/right-turn lane
Northbound Yew Street	One shared left-turn/right-turn lane	One shared left-turn/through/right-turn lane
Southbound Site Entrance	Approach does not exist	One shared left-turn/through/right-turn lane

5. The following bicycle, pedestrian, and transit improvements should be included:

    a. A minimum fifteen-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT along the Delaware Route 16 and Country Road site frontages. Within the Delaware Route 16 easement, a shared use path should be constructed to meet AASHTO and ADA standards. If feasible, the SUP should be placed behind utility poles and street trees should be provided within the buffer area. The developer should coordinate with DelDOT's Development Coordination section during the plan review process to identify the exact location of the SUP.

    b. An internal connection from the SUP along the easternmost and westernmost Delaware Route 16 site frontages into the site should be installed.

    c. An internal connection between the commercial use and residential use should be installed.

    d. Where internal sidewalks are located alongside of parking spaces, a buffer, physical barrier or signage should be added to eliminate vehicular overhang onto the sidewalk.

    e. Internal bicycle racks should be installed for the commercial use section of the site. The bike parking should be provided near the building entrances. Where the building architecture provides for an awning or other overhang, the bike parking should be covered.

    f. A direct pedestrian pathway between the site and Park Royal Apartment's internal sidewalk should also be created to connect the site with the existing bus stops along

Palmer Street. The developer should coordinate with DelDOT's Development Coordination section for the exact location of the pathway.

g. ADA compliant curb ramps and marked crosswalks should be provided along the Site Entrance approaches to Delaware Route 16 and Bay Avenue. The use of diagonal curb ramps is discouraged. The curb ramps should be designed to accommodate the SUP.

h. Minimum five-foot wide bicycle lanes should be incorporated in the right turn lane and shoulder along the Delaware Route 16 approaches to the site entrance.

i. Utility covers should be moved outside of any designated bicycle lanes and any proposed sidewalks/shared-use paths or should be flush with the pavement.

j. A five-foot by eight-foot Type 2 bus stop should be installed along the westerly Delaware Route 16 site frontage. The developer should coordinate with DelDOT's Development Coordination section for the exact location of the bus stop.

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DelDOT's Plan Review process.

Improvements in this TIS may be considered "significant" under DelDOT's *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DelDOT's website at https://www.deldot.gov//Publications/manuals/de_mutcd/index.shtml. For any additional information regarding the work zone impact and mitigation procedures during construction please contact Mr. Don Weber, Assistant Director for Traffic Operations and Management. Mr. Weber can be reached at (302) 659-4651 or by email at Don.Weber@delaware.gov.

Additional details on our review of the TIS are attached. Please contact me at (302) 266-9600 if you have any questions concerning this review.

Sincerely,
Johnson, Mirmiran, and Thompson, Inc.

Joanne M. Arellano, P.E., PTOE

cc: Mir Wahed, P.E., PTOE
Enclosure

Other Pending Developments

Project Information	
Project Name:	Four Winds Farm Residential
No:	RIBER21001
Date:	9/24/2021
City:	Sussex County
State/Province:	Delaware
Country:	United States
Client Name:	Ribera Development, LLC
Analyst's Name:	T.Lord
Edition:	Trip Gen Manual, 10th Ed

PENDING DEVELOPMENTS

Land Use	Size	Weekday			Weekday AM			Weekday PM			Saturday Midday		
		Entry	Exit	Total	Entry	Exit	Total	Entry	Exit	Total	Entry	Exit	Total
Prettyman Property (LUC 210- Single Family Detached Housing)	100 Dwelling Units	520	520	1040	19	57	76	64	38	102	55	47	102
Granary at Draper Farm (LUC 210- Single Family Detached Housing)	875 Dwelling Units	3824	3825	7649	156	470	626	513	302	815	407	346	753
	- Internal Trips[1]	-0	-0	-0	-3	-4	-7	-33	-12	-45	-0	-0	-0
	External Trips	3824	3825	7649	153	466	619	480	290	770	407	346	753
Granary at Draper Farm (LUC 221 - Multifamily Housing (Mid-Rise))	475 Dwelling Units	1293	1294	2587	41	117	158	121	77	198	101	105	206
	- Internal Trips[1]	-0	-0	-0	-1	-2	-3	-17	-6	-23	-0	-0	-0
	External Trips	1293	1294	2587	40	115	155	104	71	175	101	105	206
Granary at Draper Farm (LUC 820 - Shopping Center)	60,000 square feet	2124	2124	4248	113	69	182	178	194	372	215	198	413
	- Internal Trips[1]	-0	-0	-0	-6	-4	-10	-18	-50	-68	-0	-0	-0
	External Trips	2124	2124	4248	107	65	172	160	144	304	215	198	413
	- Pass-By (34% PM, 26% SAT)	-0	-0	-0	-0	-0	-0	-61	-66	-127	-56	-51	-107
	New Trips	2124	2124	4248	107	65	172	99	78	177	159	147	306
Total Committed Development Trip Generation		7761	7763	15524	319	703	1022	747	477	1224	722	645	1367

1 - See NCHRP 8-51 Internal Trip Capture Estimation Tool for Internal Trip calculations.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Four Winds Farm	**Organization:**	Pennoni
Project Location:	Sussex County, DE	**Performed By:**	T. Lord
Scenario Description:	Pending Dev: Granary at Draper Frm	**Date:**	9/28/2021
Analysis Year:	2030	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	60,000	sq. ft.	182	113	69
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 & 221	1,350	dwelling units	784	197	587
Hotel				0		
All Other Land Uses[2]				0		
Total				966	310	656

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.00	0%	0%	1.00	0%	0%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	4	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	6	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	966	310	656
Internal Capture Percentage	2%	3%	2%
External Vehicle-Trips[3]	946	300	646
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	5%	6%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Four Winds Farm
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	113	113	1.00	69	69
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	197	197	1.00	587	587
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	20		9	0	10	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	12	6	117	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		36	0	0	0	0
Retail	0		0	0	4	0
Restaurant	0	9		0	10	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	19	0	0		0
Hotel	0	5	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	6	107	113	107	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	193	197	193	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	4	65	69	65	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	6	581	587	581	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Four Winds Farm	**Organization:**	Pennoni
Project Location:	Sussex County, DE	**Performed By:**	T. Lord
Scenario Description:	Pending Dev: Granary at Draper Frm	**Date:**	9/28/2021
Analysis Year:	2030	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	60,000	sq. ft.	372	178	194
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 & 221	1,350	dwelling units	1013	634	379
Hotel				0		
All Other Land Uses[2]				0		
Total				1385	812	573

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.00	0%	0%	1.00	0%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	50	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	18	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,385	812	573
Internal Capture Percentage	10%	8%	12%
External Vehicle-Trips[3]	1,249	744	505
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	8%	5%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Four Winds Farm
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	178	178	1.00	194	194
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	634	634	1.00	379	379
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	4		56	8	50	10
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	15	159	80	0		11
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		14	0	0	25	0
Retail	0		0	0	292	0
Restaurant	0	89		0	101	0
Cinema/Entertainment	0	7	0		25	0
Residential	0	18	0	0		0
Hotel	0	4	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	18	160	178	160	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	50	584	634	584	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	50	144	194	144	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	18	361	379	361	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

FIGURE 9A: PENDING DEVELOPMENT TRIP DISTRIBUTION - GRANARY AT DRAPER FARM

Four Winds Farm Residential Development
Sussex County, Delaware

By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

LEGEND

= *Inbound Trip Distribution Percentage*
(###) = *Outbound Trip Distribution Percentage*
→ = MOVEMENT DIRECTION

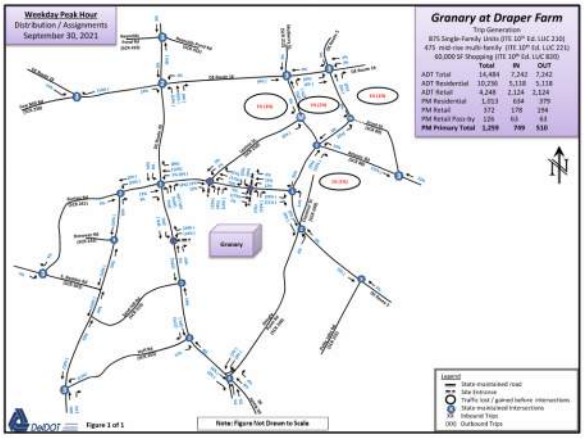
20% TO/FROM NORTH ALONG DE ROUTE 5

3% TO/FROM WEST ALONG MULBERRY ST

12% TO/FROM NORTH & EAST ALONG DE ROUTE 30 & SAND HILL RD

Use approved Trip Distribution from DelDOT letter dated 09/30/2021

GRANARY AT



SITE

PROPOSED SITE ACCESS

AZALEA WOODS ACCESS

26% TO/FROM SOUTHEAST ALONG PRETTYMAN RD

9% TO/FROM WEST ALONG BRIARWOOD RD

22% TO/FROM WEST ALONG US ROUTE 9

8% TO/FROM SOUTH ALONG DE ROUTE 30

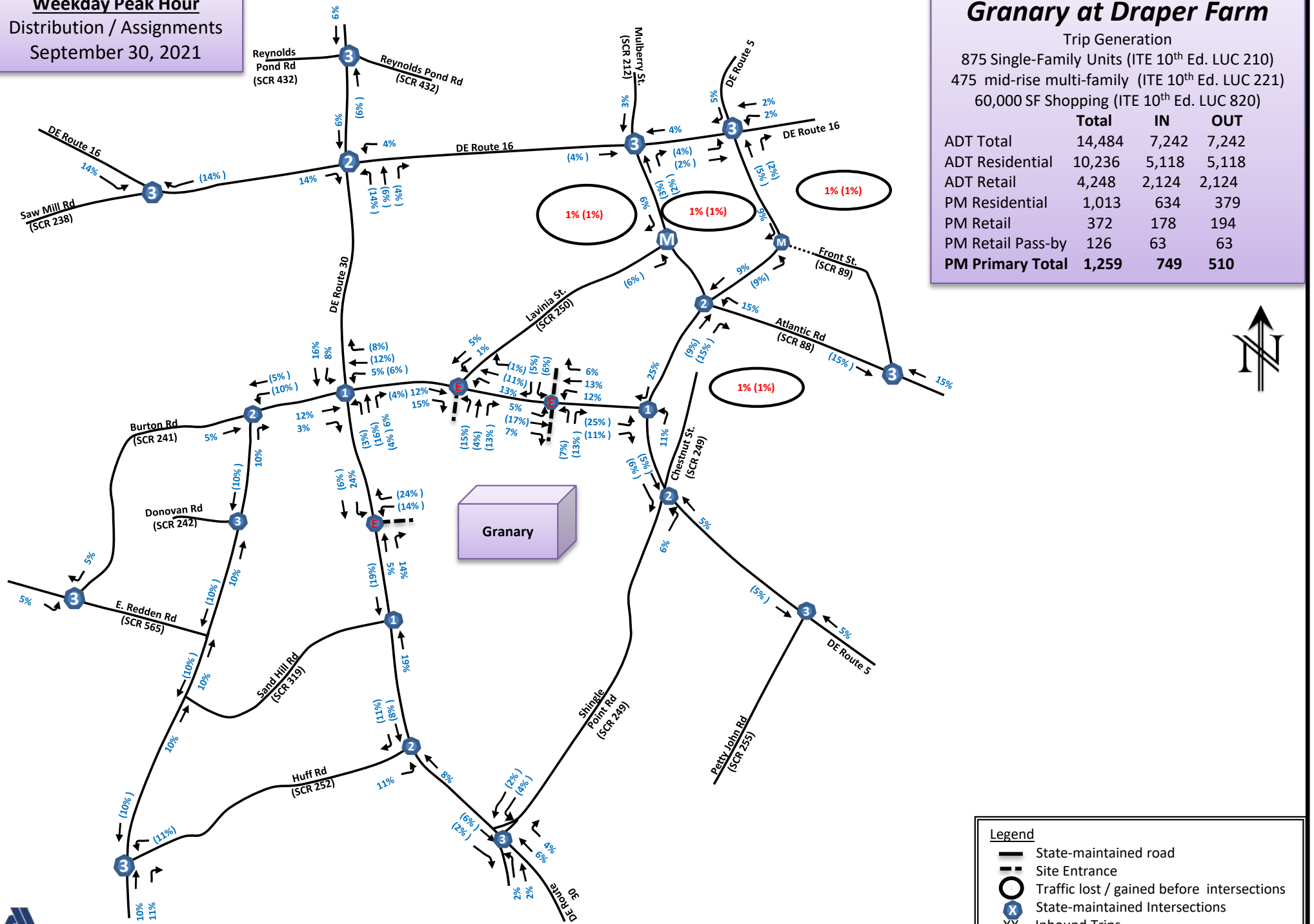
FEDERAL ST (DE ROUTE 5)
MULBERRY ST (SR 197)
ATLANTIC ST (SR 88)
SAND HILL RD (SR 319)
CHESTNUT ST (SR 249)
SHINGLE POINT RD
HARBESON RD (DE ROUTE 5)
GRAVEL HILL ROAD (DE ROUTE 30)
PRETTYMAN RD (SR 254)
PETTIJOHN RD (SR 255)
SHINGLE POINT RD (SR 249)
BRIARWOOD RD (SR 253)
US ROUTE 9
FRENCH RD

Weekday Peak Hour
Distribution / Assignments
September 30, 2021

Granary at Draper Farm

Trip Generation
875 Single-Family Units (ITE 10th Ed. LUC 210)
475 mid-rise multi-family (ITE 10th Ed. LUC 221)
60,000 SF Shopping (ITE 10th Ed. LUC 820)

	Total	IN	OUT
ADT Total	14,484	7,242	7,242
ADT Residential	10,236	5,118	5,118
ADT Retail	4,248	2,124	2,124
PM Residential	1,013	634	379
PM Retail	372	178	194
PM Retail Pass-by	126	63	63
PM Primary Total	**1,259**	**749**	**510**



Legend
- State-maintained road
- Site Entrance
- Traffic lost / gained before intersections
- State-maintained Intersections
- XX Inbound Trips
- (XX) Outbound Trips

DelDOT

Figure 1 of 1

Note: Figure Not Drawn to Scale

FIGURE 10A: PENDING DEVELOPMENT TRIP DISTRIBUTION - PRETTYMAN PROPERTY

Four Winds Farm Residential Development
Sussex County, Delaware

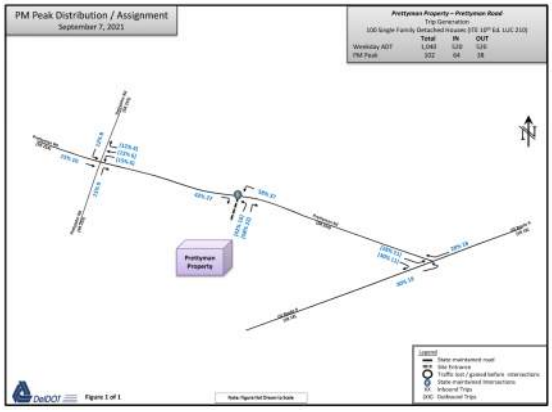
By: TML Date: 10/15/2021
Ckd By: PV Date: 10/27/2021

LEGEND

= *Inbound Trip Distribution Percentage*
(###) = *Outbound Trip Distribution Percentage*

→ = MOVEMENT DIRECTION

Use approved Trip Distribution from DelDOT letter dated 09/07/2021



20% TO/FROM NORTH ALONG DE ROUTE 5

3% TO/FROM WEST ALONG MULBERRY ST

8% TO/FROM WEST ALONG SAND HILL RD

4% TO/FROM NORTH ALONG DE ROUTE 30

37% TO/FROM SOUTHEAST ALONG PRETTYMAN RD

9% TO/FROM WEST ALONG BRIARWOOD RD

22% TO/FROM WEST ALONG US ROUTE 9 (11% TO PETTYJOHN RD VIA SR 30 ; 11% TO PRETTYMAN RD VIA US 9)

8% TO/FROM SOUTH ALONG DE ROUTE 30 TO PETTYJOHN RD VIA SR 30

FEDERAL ST (DE ROUTE 5)
MULBERRY ST (SR 197)
ATLANTIC ST (SR 88)
SAND HILL RD (SR 319)
CHESTNUT ST (SR 249)
SHINGLE POINT RD
HARBESON RD (DE ROUTE 5)
GRAVEL HILL ROAD (DE ROUTE 30)
PROPOSED SITE ACCESS
SITE
PRETTYMAN RD (SR 254)
PETTYJOHN RD (SR 255)
PRETTYMAN
SHINGLE POINT RD (SR 249)
BRIARWOOD RD (SR 253)
AZALEA WOODS ACCESS
US ROUTE 9
FRENCH RD

PM Peak Distribution / Assignment

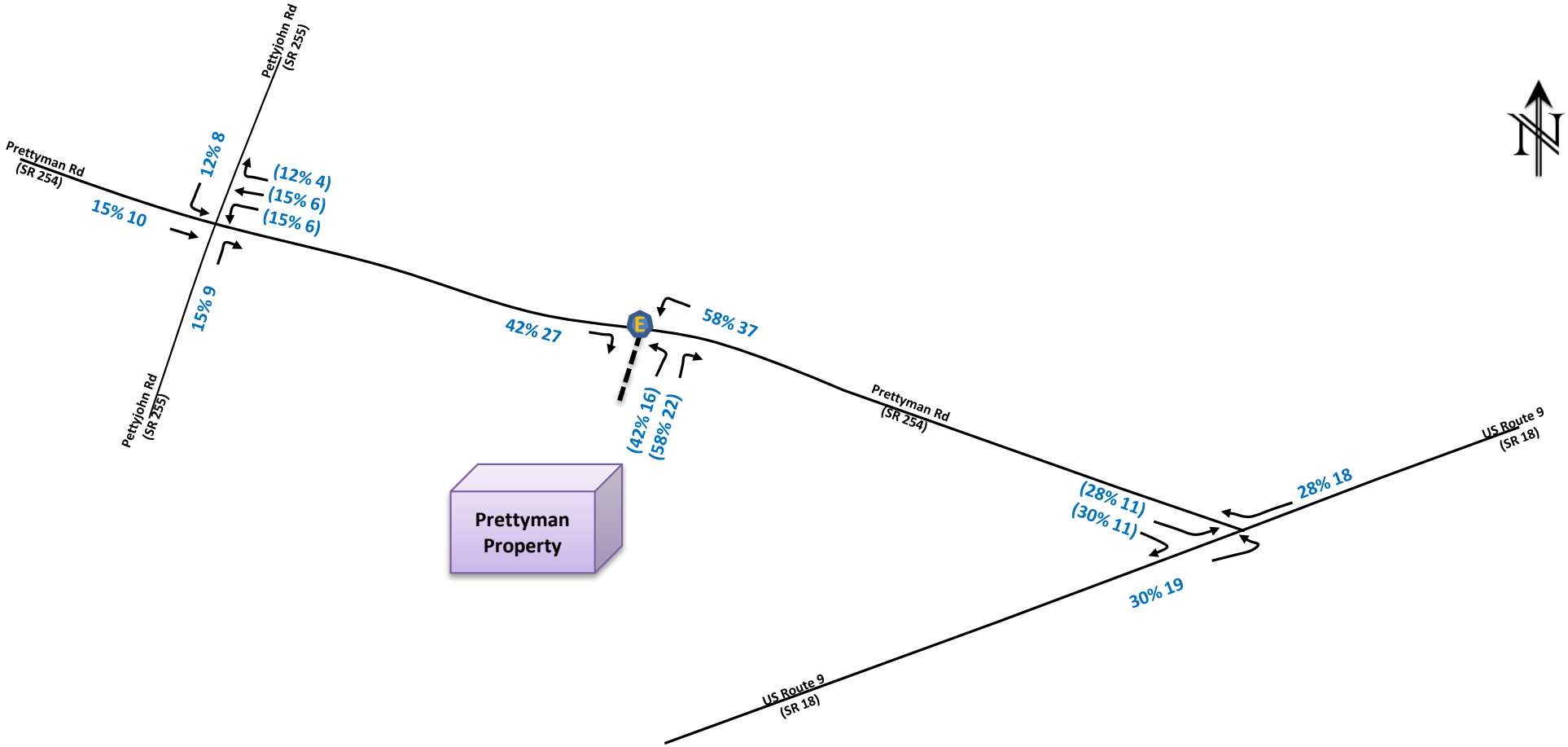
September 7, 2021

Prettyman Property – Prettyman Road

Trip Generation

100 Single Family Detached Houses (ITE 10th Ed. LUC 210)

	Total	IN	OUT
Weekday ADT	1,040	520	520
PM Peak	102	64	38



Legend

- State-maintained road
- Site Entrance
- Traffic lost / gained before intersections
- State-maintained Intersections
- XX Inbound Trips
- (XX) Outbound Trips

DelDOT

Figure 1 of 1

Note: Figure Not Drawn to Scale

Appendix G

Volume Development Spreadsheets

Pennoni

Four Winds Farm Residential Development TIS
Traffic Volume Development Worksheets

Time Period:	Weekday AM Peak Hour	Done By:	TML 12/8/2021
Annual Growth Rate:	Provided by DelDOT See Growth Factors (2021 to 2030) Column	Chkd By:	ZMB 12/27/2021

#	Intersection	Approach	Direction	Movement	2021 Raw Count Volumes	Seasonal Adjustment Factor	2021 Seasonally Adjusted Volume	Growth Factors (2021 to 2030)	Other "Committed" Development Volumes: Hawthorne				Azalea Woods				Heritage Creek				Vines of Sand Hill				Cypress Grove - Residential				Cypress Grove - Retail				Other "Pending" Development Volumes: Granary at Draper Farm				Prettyman Property				2030 No Build Volumes: Committed	2030 No Build Volumes: Committed + Pending	"New" Development Trips: Residential				Total Development New Trips	2030 Build Volumes: Committed	2030 Build Volumes: Committed + Pending
									Enter	10	Exit	29	Enter	109	Exit	329	Enter	9	Exit	18	Enter	55	Exit	164	Enter	23	Exit	67	Enter	99	Exit	62	Enter	300	Exit	646	Enter	19	Exit	57			Enter	60	Exit	183			
									%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume			%	Volume	%	Volume			
1	DE Route 30 & Shingle Point Rd (SR 249)	Shingle Point Rd (SR 249)	Eastbound	Left	22	0.950	21	1.046		0		0		0	10%	33		0		0		0		0		0		0		0		0	2%	6		0		0		0	55	61					0	55	61
				Through	39	0.950	37	1.046		0		0		0	5%	16	9%	1		0		0		0		0		0		0		0	2%	6		0		0		0	56	62	31%	18			18	74	80
				Right	21	0.950	20	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	21	21					0	21	21
		Shingle Point Rd (SR 249)	Westbound	Left	39	0.950	37	1.046		0		0	3%	4		0		0		0		0		0		0	11%	8		0	8%	5		0	4%	26		0		0	56	82			34%	62	62	118	144
				Through	29	0.950	28	1.046		0		0	5%	5		0		0	9%	2		0		0		0		0		0		0		0	2%	13		0		0	36	49			31%	57	57	93	106
				Right	1	0.950	1	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	1	1					0	1	1
		DE Route 30	Northbound	Left	22	0.990	22	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	23	23					0	23	23
				Through	216	0.990	214	1.046		0	15%	4		0	8%	26		0		0	25%	14		0		0		0		0		0	6%	18		0		0	15%	9	268	295					0	268	295
				Right	35	0.990	35	1.046		0		0		0	3%	10		0		0		0		0	11%	3		0	8%	8		0	4%	12		0		0		0	58	70	34%	21			21	79	91
			Southbound	Left	0	0.990	0	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	0					0	0	0
				Through	264	0.990	261	1.046	15%	2		0	8%	8		0		0		0		0	25%	41		0		0		0		0		0	6%	39	15%	3		0	324	366					0	324	366
				Right	53	0.990	52	1.046		0		0	10%	11		0		0		0		0		0		0		0		0		0		0	2%	13		0		0	65	78					0	65	78
	Counted: 10/5/21 ; Peak Hour: 7:15	Total (Count Date)			**741**	-	**728**																																		**574**	**664**		**39**		**119**		**732**	**822**
2	Shingle Point Rd (SR 249) & Briarwood Rd (SR 253)	Briarwood Rd (SR 253)	Eastbound	Left	16	1.000	16	1.000		0		0		0		0	9%	1		0		0		0		0		0		0		0		0		0		0		0	17	17	9%	5			5	22	22
				Right	38	1.000	38	1.000	13%	1		0	10%	11		0		0		0		0		0		0		0		0		0		0		0		0		0	50	50					0	50	50
		Shingle Point Rd (SR 249)	Northbound	Left	23	0.950	22	1.046		0	13%	4		0	10%	33		0		0		0		0		0		0		0		0		0		0		0		0	60	60					0	60	60
				Through	74	0.950	70	1.046		0		0		0	15%	49		0		0		0		0		0		0		0		0	4%	12		0		0		0	122	134	22%	13			13	135	147
			Southbound	Through	78	0.950	74	1.046		0		0	15%	16		0		0		0		0		0		0		0		0		0		0	4%	26		0		0	93	119			22%	40	40	133	159
				Right	19	0.950	18	1.046		0		0		0		0		0	9%	2		0		0		0		0		0		0		0		0		0		0	21	21			9%	17	17	38	38
	Counted: 10/5/21 ; Peak Hour: 7:30	Total (Count Date)			**248**	-	**238**																																		**249**	**261**		**18**		**57**		**267**	**279**
3	US Route 9 & Shingle Point Rd (SR 249) / French Rd	US Route 9	Eastbound	Left	66	1.090	72	1.143		0		0	23%	25		0		0		0		0		0		0		0		0		0	4%	12		0		0		0	107	119	22%	13			13	120	132
				Through	557	1.090	607	1.143	31%	3		0	7%	8		0	22%	2		0		0		0	11%	3		0	8%	8		0		0		0		0		0	718	718					0	718	718
				Right	3	1.090	3	1.143		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	3	3					0	3	3
			Westbound	Left	0	1.090	0	1.143		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	0					0	0	0
				Through	587	1.090	640	1.143		0	31%	9		0	7%	23		0	22%	4		0		0		0	11%	7		0	8%	5		0		0		0		0	780	780					0	780	780
				Right	15	1.090	16	1.143		0	13%	4	14%	15		0		0		0		0		0		0		0		0		0		0		0		0		0	37	37					0	37	37
		French Rd	Northbound	Left	1	1.000	1	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	1	1					0	1	1
				Through	1	1.000	1	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	1	1					0	1	1
				Right	8	1.000	8	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	8	8					0	8	8
		Shingle Point Rd (SR 249)	Southbound	Left	21	0.950	20	1.046	13%	1		0		0	14%	46		0		0		0		0		0		0		0		0		0		0		0		0	68	68					0	68	68
				Through	1	0.950	1	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	1	1					0	1	1
				Right	86	0.950	82	1.046		0		0		0	23%	76		0		0		0		0		0		0		0		0		0	4%	26		0		0	162	188			22%	40	40	202	228
	Counted: 10/5/21 ; Peak Hour: 7:15	Total (Count Date)			**1346**	-	**1451**																																		**1655**	**1667**		**13**		**40**		**1668**	**1680**
4	DE Route 30 & Prettyman Rd (SR 254)	Prettyman Rd (SR 254)	Westbound	Left	1	0.950	1	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	1	1					0	1	1
				Right	106	0.950	101	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	15%	9	106	115	26%	16			16	122	131
		DE Route 30	Northbound	Through	168	0.990	166	1.046		0	15%	4		0	11%	36		0		0	25%	14		0	11%	3		0	8%	8		0	10%	30		0		0		0	239	269	8%	5			5	244	274
				Right	4	0.990	4	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	4	4					0	4	4
			Southbound	Left	109	0.990	108	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0	15%	3		0	113	116			26%	47	47	160	163
				Through	206	0.990	204	1.046	15%	2		0	11%	12		0		0		0		0	25%	41		0	11%	8		0	8%	5		0	10%	65		0		0	281	346			8%	15	15	296	361
	Counted: 10/5/21 ; Peak Hour: 7:15	Total (Count Date)			**594**	-	**584**																																		**350**	**389**		**21**		**62**		**371**	**410**
5	Prettyman Rd (SR 254) & Pettyjohn Rd (SR 255)	Prettyman Rd (SR 254)	Eastbound	Left	9	0.950	9	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	9	9					0	9	9
				Through	120	0.950	114	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0	15%	3		0	119	122			26%	47	47	166	169
				Right	1	0.950	1	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	1	1					0	1	1
			Westbound	Left	4	0.950	4	1.046		0		0	10%	11		0		0		0		0		0		0		0		0		0		0		0		0	15%	9	15	24					0	15	24
				Through	89	0.950	85	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	15%	9	89	98	26%	16			16	105	114
				Right	3	0.950	3	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	12%	7	3	10					0	3	10
		Pettyjohn Rd (SR 255)	Northbound	Left	1	0.950	1	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	1	1					0	1	1
				Through	14	0.950	13	1.046		0	12%	3		0	2%	7		0		0		0		0		0		0		0		0		0		0		0		0	24	24					0	24	24
				Right	2	0.950	2	1.046		0		0		0	10%	33		0		0		0		0		0		0		0		0		0		0	15%	3		0	35	38					0	35	38
			Southbound	Left	0	0.950	0	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0	12%	2		0	0	2					0	0	2
				Through	10	0.950	10	1.046	12%	1		0	2%	2		0		0		0		0		0		0		0		0		0		0		0		0		0	13	13					0	13	13
				Right	9	0.950	9	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	9	9					0	9	9
	Counted: 10/5/21 ; Peak Hour: 7:00	Total (Count Date)			**262**	-	**251**																																		**296**	**327**		**16**		**47**		**359**	**390**

Pennoni

Four Winds Farm Residential Development TIS
Traffic Volume Development Worksheets

Time Period:	**Weekday AM Peak Hour**								Done By:	TML	12/8/2021
Annual Growth Rate:	Provided by DelDOT See Growth Factors (2021 to 2030) Column								Chkd By:	ZMB	12/27/2021

	Intersection	Approach		Direction / Movement	2021 Raw Count Volumes	Seasonal Adjustment Factor	2021 Seasonally Adjusted Volume	Growth Factors (2021 to 2030)	Other "Committed" Development Volumes																				Other "Pending" Development Volumes								2030 No Build Volumes		"New" Development Trips						Total Development New Trips	2030 Build Volumes	
									Hawthorne				Azalea Woods				Heritage Creek				Vines of Sand Hill				Cypress Grove - Residential				Cypress Grove - Retail				Granary at Draper Farm				Prettyman Property						Residential					
									Enter	10	Exit	29	Enter	109	Exit	329	Enter	9	Exit	18	Enter	55	Exit	164	Enter	23	Exit	67	Enter	99	Exit	62	Enter	300	Exit	646	Enter	19	Exit	57	Committed	Committed + Pending	Enter	60	Exit	183		Committed	Committed + Pending
									%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume									
6	DE Route 5 & Shingle Point Rd (SR 249)	Shingle Point Rd (SR 249)	Eastbound	Left	32	0.950	30	1.046		0		0		0	8%	26		0		0		0		0	11%	3		0	8%	8		0	6%	18		0		0		0	68	86			31%	57	57	125	143
				Through	33	0.950	31	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	32	32					0	32	32
				Right	30	0.950	29	1.046		0		0		0		0	13%	1		0		0		0		0		0		0		0		0		0		0	31	31					0	31	31
			Westbound	Left	13	0.950	12	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	13	13					0	13	13
				Through	18	0.950	17	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	18	18					0	18	18
				Right	6	0.950	6	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	6	6					0	6	6
		DE Route 5	Northbound	Left	19	0.990	19	1.046		0		0		0		0		0	13%	2		0		0		0		0		0		0		0		0		0	22	22					0	22	22
				Through	282	0.990	279	1.046		0	12%	3		0	2%	7		0	31%	6		0		0	11%	2		0	8%	8		0	5%	15		0		0	12%	0	318	340					0	318	340
				Right	37	0.990	37	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	39	39					0	39	39
			Southbound	Left	5	0.960	5	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	5	5					0	5	5
				Through	329	0.960	316	1.046	12%	1		0	2%	2		0	31%	3		0		0		0		0	11%	7		0	8%	5		0	5%	32	12%	2		0	349	383					0	349	383
				Right	50	0.960	48	1.046		0		0	8%	9		0		0		0		0		0		0	11%	8		0	8%	5		0	6%	39		0		0	72	111	31%	19			19	91	130
	Counted: 10/5/21 ; Peak Hour: 7:15	Total (Count Date)			**854**	-	**829**																																**973**	**1086**		**19**		**57**		**1049**	**1162**
7	DE Route 5 & Sand Hill Rd (SR 319)	Sand Hill Rd (SR 319)	Eastbound	Left	112	0.950	106	1.046		0		0		0		0		0		0		0	10%	16		0		0		0		0		0	25%	162		0		0	127	289					0	127	289
				Right	178	0.950	169	1.046		0		0		0	8%	1		0		0		0		0		0		0		0		0		0	11%	71		0		0	178	249	8%	5			5	183	254
		DE Route 5	Northbound	Left	112	0.960	108	1.046		0		0		0		0		0	8%	1		0		0		0		0		0		0	11%	33		0		0		0	114	147			8%	15	15	129	162
				Through	208	0.960	200	1.046		0	12%	3		0	10%	33		0	23%	5		0		0	22%	5		0	16%	16		0		0		0		0	12%	7	271	278			23%	42	42	313	320
			Southbound	Through	201	0.960	193	1.046	12%	1		0	10%	11		0	23%	2		0		0		0		0	22%	15		0	16%	10		0		0	12%	2		0	241	243	23%	14			14	255	257
				Right	37	0.960	36	1.046		0		0		0		0		0		0	10%	6		0		0		0		0		0	25%	75		0		0		0	44	119					0	44	119
	Counted: 10/5/21 ; Peak Hour: 7:15	Total (Count Date)			**848**	-	**812**																																**690**	**963**		**19**		**57**		**752**	**1025**
8	DE Route 5 & Mulberry St (SR 197) / Atlantic St (SR 88)	Mulberry St (SR 197)	Eastbound	Left	2	0.960	2	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	2	2					0	2	2
				Through	108	0.960	104	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	109	109					0	109	109
				Right	76	0.960	73	1.046		0		0		0	3%	0		0		0		0		0		0		0		0		0		0		0		0	76	76	3%	2			2	78	78
		Atlantic St (SR 88)	Westbound	Left	46	0.960	44	1.046		0		0		0		0		0		0		0		0		0		0		0	15%	45		0		0		0	46	91					0	46	91
				Through	69	0.960	66	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	69	69					0	69	69
				Right	16	0.960	15	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	16	16					0	16	16
		DE Route 5	Northbound	Left	57	0.960	55	1.046		0		0		0		0	3%	1		0		0		0		0		0		0		0		0	9%	58		0		0	59	117			3%	5	5	64	122
				Through	132	0.960	127	1.046		0	12%	3		0	10%	33		0	20%	4		0	10%	16	22%	5		0	16%	16		0		0	15%	97		0	12%	7	210	314			20%	37	37	247	351
				Right	101	0.960	97	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	101	101					0	101	101
			Southbound	Left	32	0.960	31	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	32	32					0	32	32
				Through	158	0.960	152	1.046	12%	1		0	10%	11		0	20%	2		0	10%	6		0		0		0		0		0	9%	27		0	12%	2		0	204	233	20%	12			12	216	245
				Right	2	0.960	2	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	2	2					0	2	2
	Counted: 10/5/21 ; Peak Hour: 7:15	Total (Count Date)			**799**	-	**768**																																**926**	**1162**		**14**		**42**		**982**	**1218**
9	Shingle Point Rd (SR 249) & Proposed Site Access	Proposed Site Access	Westbound	Left	-	-	-	1.000		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	0			69%	126	126	126	126
				Right	-	-	-	1.000		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	0			31%	57	57	57	57
		Shingle Point Rd (SR 249)	Northbound	Through	95	0.950	90	1.046		0		0		0	8%	26	13%	1		0		0		0	11%	3		0	8%	8		0	6%	18		0		0		0	128	146					0	128	146
				Right	-	-	-	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	0	69%	41			41	41	41
			Southbound	Left	-	-	-	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	0	31%	19			19	19	19
				Through	87	0.950	83	1.046		0	8%	9		0		0	13%	2		0		0		0		0	11%	8		0	8%	5		0	6%	39		0		0	107	146					0	107	146
		Total (Count Date)			**182**	-	**173**																																**128**	**146**		**60**		**183**		**352**	**370**

Pennoni

Four Winds Farm Residential Development TIS
Traffic Volume Development Worksheets

Time Period:	Weekday PM Peak Hour	Done By:	TML 12/8/2021
Annual Growth Rate:	Provided by DelDOT See Growth Factors (2021 to 2030) Column	Chkd By:	ZMB 12/27/2021

#	Intersection	Approach	Direction	Movement	2021 Raw Count Volumes	Seasonal Adjustment Factor	2021 Seasonally Adjusted Volume	Growth Factors (2021 to 2030)	Other "Committed" Development Volumes: Hawthorne				Azalea Woods				Heritage Creek				Vines of Sand Hill				Cypress Grove - Residential				Cypress Grove - Retail				Other "Pending" Development Volumes: Granary at Draper Farm				Prettyman Property				2030 No Build Volumes		"New" Development Trips: Residential				Total Development New Trips	2030 Build Volumes	
									Enter	31	Exit	19	Enter	363	Exit	213	Enter	19	Exit	12	Enter	184	Exit	109	Enter	48	Exit	26	Enter	64	Exit	51	Enter	683	Exit	439	Enter	64	Exit	38	Committed	Committed + Pending	Enter	205	Exit	120		Committed	Committed + Pending
									%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume			%	Volume	%	Volume			
1	DE Route 30 & Shingle Point Rd (SR 249)	Shingle Point Rd (SR 249)	Eastbound	Left	42	0.950	40	1.046		0		0		0	10%	21		0		0		0		0		0		0		0		0	2%	14		0		0		0	63	77					0	63	77
				Through	35	0.950	33	1.046		0		0		0	5%	11	9%	2		0		0		0		0		0		0		0	2%	14		0		0		0	48	62	31%	63			63	111	125
				Right	17	0.950	16	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	17	17					0	17	17
		Shingle Point Rd (SR 249)	Westbound	Left	30	0.950	29	1.046		0		0	3%	11		0		0		0		0		0		0	11%	3		0	8%	4		0	4%	17		0		0	48	65			34%	41	41	89	106
				Through	27	0.950	26	1.046		0		0	5%	18		0		0	9%	1		0		0		0		0		0		0		0	2%	9		0		0	46	55			31%	38	38	84	93
				Right	3	0.950	3	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	3	3					0	3	3
		DE Route 30	Northbound	Left	29	0.990	29	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	30	30					0	30	30
				Through	260	0.990	257	1.046		0	15%	3		0	8%	17		0		0	25%	46		0		0		0		0		0	6%	41		0		0	15%	6	335	382					0	335	382
				Right	25	0.990	25	1.046		0		0		0	3%	6		0		0		0		0	11%	5		0	8%	5		0	4%	27		0		0		0	42	69	34%	70			70	112	139
			Southbound	Left	1	0.990	1	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	1	1					0	1	1
				Through	230	0.990	228	1.046	15%	5		0	8%	29		0		0		0		0	25%	27		0		0		0		0		0	6%	26	15%	10		0	299	335					0	299	335
				Right	30	0.990	30	1.046		0		0	10%	36		0		0		0		0		0		0		0		0		0		0	2%	9		0		0	67	76					0	67	76
	Counted: 10/5/21 ; Peak Hour: 4:15	Total (Count Date)			**729**	-	**717**																																		**632**	**760**		**133**		**79**		**844**	**972**
2	Shingle Point Rd (SR 249) & Briarwood Rd (SR 253)	Briarwood Rd (SR 253)	Eastbound	Left	15	1.000	15	1.000		0		0		0		0	9%	2		0		0		0		0		0		0		0		0		0		0		0	17	17	9%	18			18	35	35
				Right	16	1.000	16	1.000	13%	4		0	10%	36		0		0		0		0		0		0		0		0		0		0		0		0		0	56	56					0	56	56
		Shingle Point Rd (SR 249)	Northbound	Left	24	0.950	23	1.046		0	13%	2		0	10%	21		0		0		0		0		0		0		0		0		0		0		0		0	47	47					0	47	47
				Through	77	0.950	73	1.046		0		0		0	15%	32		0		0		0		0		0		0		0		0	4%	28		0		0		0	108	136	22%	45			45	153	181
			Southbound	Through	53	0.950	50	1.046		0		0	15%	54		0		0		0		0		0		0		0		0		0		0	4%	18		0		0	106	124			22%	27	27	133	151
				Right	21	0.950	20	1.046		0		0		0		0		0	9%	1		0		0		0		0		0		0		0		0		0		0	22	22			9%	11	11	33	33
	Counted: 10/5/21 ; Peak Hour: 4:15	Total (Count Date)			**206**	-	**197**																																		**228**	**256**		**63**		**38**		**291**	**319**
3	US Route 9 & Shingle Point Rd (SR 249) / French Rd	US Route 9	Eastbound	Left	74	1.090	81	1.143		0		0	23%	83		0		0		0		0		0		0		0		0		0	4%	28		0		0		0	176	204	22%	45			45	221	249
				Through	569	1.090	620	1.143	31%	10		0	7%	25		0	22%	4		0		0		0	11%	5		0	8%	5		0		0		0		0		0	758	758					0	758	758
				Right	5	1.090	5	1.143		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	6	6					0	6	6
			Westbound	Left	5	1.090	5	1.143		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	6	6					0	6	6
				Through	621	1.090	677	1.143		0	31%	6		0	7%	15		0	22%	3		0		0		0	11%	3		0	8%	4		0		0		0		0	805	805					0	805	805
				Right	26	1.090	28	1.143		0	13%	2	14%	51		0		0		0		0		0		0		0		0		0		0		0		0		0	85	85					0	85	85
		French Rd	Northbound	Left	1	1.000	1	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	1	1					0	1	1
				Through	1	1.000	1	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	1	1					0	1	1
				Right	6	1.000	6	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	6	6					0	6	6
		Shingle Point Rd (SR 249)	Southbound	Left	12	0.950	11	1.046	13%	4		0		0	14%	30		0		0		0		0		0		0		0		0		0		0		0		0	46	46					0	46	46
				Through	4	0.950	4	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	4	4					0	4	4
				Right	63	0.950	60	1.046		0		0		0	23%	49		0		0		0		0		0		0		0		0		0	4%	18		0		0	112	130			22%	27	27	139	157
	Counted: 10/5/21 ; Peak Hour: 4:00	Total (Count Date)			**1387**	-	**1499**																																		**1844**	**1872**		**45**		**27**		**1889**	**1917**
4	DE Route 30 & Prettyman Rd (SR 254)	Prettyman Rd (SR 254)	Westbound	Left	2	0.950	2	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	2	2					0	2	2
				Right	176	0.950	167	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	15%	6	175	181	26%	54			54	229	235
		DE Route 30	Northbound	Through	133	0.990	132	1.046		0	15%	3		0	11%	23		0		0	25%	46		0	11%	5		0	8%	5		0	10%	68		0		0		0	220	288	8%	16			16	236	304
				Right	3	0.990	3	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	3	3					0	3	3
			Southbound	Left	99	0.990	98	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0	15%	10		0	103	113			26%	31	31	134	144
				Through	172	0.990	170	1.046	15%	5		0	11%	40		0		0		0		0	25%	27		0	11%	3		0	8%	4		0	10%	43		0		0	257	300			8%	10	10	267	310
	Counted: 10/5/21 ; Peak Hour: 4:15	Total (Count Date)			**585**	-	**572**																																		**400**	**474**		**70**		**41**		**470**	**544**
5	Prettyman Rd (SR 254) & Pettyjohn Rd (SR 255)	Prettyman Rd (SR 254)	Eastbound	Left	11	0.950	10	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	10	10					0	10	10
				Through	84	0.950	80	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0	15%	10		0	84	94			26%	31	31	115	125
				Right	3	0.950	3	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	3	3					0	3	3
			Westbound	Left	3	0.950	3	1.046		0		0	10%	36		0		0		0		0		0		0		0		0		0		0		0		0	15%	6	39	45					0	39	45
				Through	155	0.950	147	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	15%	6	154	160	26%	54			54	208	214
				Right	0	0.950	0	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	12%	5	0	5					0	0	5
		Pettyjohn Rd (SR 255)	Northbound	Left	3	1.000	3	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	3	3					0	3	3
				Through	6	1.000	6	1.046		0	12%	2		0	2%	4		0		0		0		0		0		0		0		0		0		0		0		0	12	12					0	12	12
				Right	5	1.000	5	1.046		0		0		0	10%	21		0		0		0		0		0		0		0		0		0		0	15%	10		0	26	36					0	26	36
			Southbound	Left	3	1.000	3	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0	12%	8		0	3	11					0	3	11
				Through	8	1.000	8	1.046	12%	4		0	2%	7		0		0		0		0		0		0		0		0		0		0		0		0		0	19	19					0	19	19
				Right	18	1.000	18	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	19	19					0	19	19
	Counted: 10/5/21 ; Peak Hour: 4:15	Total (Count Date)			**299**	-	**286**																																		**331**	**368**		**54**		**31**		**416**	**453**

Four Winds Farm Residential Development TIS

Traffic Volume Development Worksheets

Time Period:	Weekday PM Peak Hour
Annual Growth Rate:	Provided by DelDOT See Growth Factors (2021 to 2030) Column
Done By:	TML 12/8/2021
Chkd By:	ZMB 12/27/2021

#	Intersection	Approach	Direction	Movement	2021 Raw Count Volumes	Seasonal Adjustment Factor	2021 Seasonally Adjusted Volume	Growth Factors (2021 to 2030)	Other "Committed" Development Volumes																								Other "Pending" Development Volumes								2030 No Build Volumes		"New" Development Trips					2030 Build Volumes	
									Hawthorne				Azalea Woods				Heritage Creek				Vines of Sand Hill				Cypress Grove - Residential				Cypress Grove - Retail				Granary at Draper Farm				Prettyman Property				Committed	Committed + Pending	Residential				Total Development New Trips	Committed	Committed + Pending
									Enter	31	Exit	19	Enter	363	Exit	213	Enter	19	Exit	12	Enter	184	Exit	109	Enter	48	Exit	26	Enter	64	Exit	51	Enter	683	Exit	439	Enter	64	Exit	38			Enter	205	Exit	120			
									%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume			%	Volume	%	Volume			
6	DE Route 5 & Shingle Point Rd (SR 249)	Shingle Point Rd (SR 249)	Eastbound	Left	39	0.950	37	1.046		0		0		0	8%	17		0		0		0		0	11%	5		0	8%	5		0	6%	41		0		0		0	66	107			31%	37	37	103	144
				Through	13	0.950	12	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	13	13					0	13	13
				Right	7	0.950	7	1.046		0		0		0		0	13%	2		0		0		0		0		0		0		0		0		0		0		0	9	9					0	9	9
			Westbound	Left	27	0.950	26	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	27	27					0	27	27
				Through	20	0.950	19	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	20	20					0	20	20
				Right	12	0.950	11	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	12	12					0	12	12
		DE Route 5	Northbound	Left	12	0.990	12	1.046		0		0		0		0		0	13%	2		0		0		0		0		0		0		0		0		0		0	15	15					0	15	15
				Through	301	0.990	298	1.046		0	12%	2		0	2%	4		0	31%	4		0		0	11%	5		0	8%	5		0	5%	34		0		0	12%	5	332	371					0	332	371
				Right	30	0.990	30	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	31	31					0	31	31
			Southbound	Left	9	0.960	9	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	9	9					0	9	9
				Through	287	0.960	276	1.046	12%	4		0	2%	7		0	31%	6		0		0		0		0	11%	3		0	8%	4		0	5%	22	12%	8		0	313	343					0	313	343
				Right	53	0.960	51	1.046		0		0	8%	29		0		0		0		0		0		0	11%	3		0	8%	4		0	6%	26		0		0	89	115	31%	64			64	153	179
	Counted: 10/5/21 ; Peak Hour: 4:00	Total (Count Date)			**810**	-	**788**																																		**936**	**1072**		**64**		**37**		**1037**	**1173**
7	DE Route 5 & Sand Hill Rd (SR 319)	Sand Hill Rd (SR 319)	Eastbound	Left	43	0.950	41	1.046		0		0		0		0		0		0		0	10%	11		0		0		0		0		0	25%	110		0		0	54	164					0	54	164
				Right	122	0.950	116	1.046		0		0		0		0	8%	2		0		0		0		0		0		0		0		0	11%	48		0		0	123	171	8%	16			16	139	187
		DE Route 5	Northbound	Left	157	0.960	151	1.046		0		0		0		0		0	8%	1		0		0		0		0		0		0	11%	75		0		0		0	159	234			8%	9	9	168	243
				Through	191	0.960	183	1.046		0	12%	2		0	10%	21		0	23%	3		0		0	22%	10		0	16%	10		0		0		0		0	12%	5	237	242			23%	28	28	265	270
			Southbound	Through	227	0.960	218	1.046	12%	4		0	10%	36		0	23%	4		0		0		0		0	22%	6		0	16%	8		0		0	12%	8		0	286	294	23%	48			48	334	342
				Right	98	0.960	94	1.046		0		0		0		0		0		0	10%	18		0		0		0		0		0	25%	171		0		0		0	116	287					0	116	287
	Counted: 10/5/21 ; Peak Hour: 4:15	Total (Count Date)			**838**	-	**803**																																		**573**	**811**		**64**		**37**		**626**	**864**
8	DE Route 5 & Mulberry St (SR 197) / Atlantic St (SR 88)	Mulberry St (SR 197)	Eastbound	Left	4	0.960	4	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	4	4					0	4	4
				Through	79	0.960	76	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	79	79					0	79	79
				Right	77	0.960	74	1.046		0		0		0		0	3%	0		0		0		0		0		0		0		0		0		0		0		0	77	77	3%	7			7	84	84
		Atlantic St (SR 88)	Westbound	Left	65	0.960	62	1.046		0		0		0		0		0		0		0		0		0		0		0		0	15%	102		0		0		0	65	167					0	65	167
				Through	95	0.960	91	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	95	95					0	95	95
				Right	27	0.960	26	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	27	27					0	27	27
		DE Route 5	Northbound	Left	74	0.960	71	1.046		0		0		0		0		0	3%	0		0		0		0		0		0		0		0	9%	40		0		0	74	114			3%	4	4	78	118
				Through	147	0.960	141	1.046		0	12%	2		0	10%	21		0	20%	3		0	10%	11	22%	10		0	16%	10		0		0	15%	66		0	12%	5	204	275			20%	24	24	228	299
				Right	47	0.960	45	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	47	47					0	47	47
			Southbound	Left	26	0.960	25	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	26	26					0	26	26
				Through	151	0.960	145	1.046	12%	4		0	10%	36		0	20%	4		0	10%	18		0		0	22%	6		0	16%	8	9%	61		0	12%	8		0	228	297	20%	41			41	269	338
				Right	7	0.960	7	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	7	7					0	7	7
	Counted: 10/5/21 ; Peak Hour: 4:00	Total (Count Date)			**799**	-	**767**																																		**933**	**1215**		**48**		**28**		**1009**	**1291**
9	Shingle Point Rd (SR 249) & Proposed Site Access	Proposed Site Access	Westbound	Left	-	-	-	1.000		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	0			69%	83	83	83	83
				Right	-	-	-	1.000		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	0			31%	37	37	37	37
		Shingle Point Rd (SR 249)	Northbound	Through	59	0.950	56	1.046		0		0		0	8%	17	13%	2		0		0		0	11%	5		0	8%	5		0	6%	41		0		0		0	29	70					0	29	70
				Right	-	-	-	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	0	69%	141			141	141	141
			Southbound	Left	-	-	-	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	0	31%	64			64	64	64
				Through	85	0.950	81	1.046		0		0	8%	29		0		0	13%	2		0		0		0	11%	3		0	8%	4		0	6%	26		0		0	38	64					0	38	64
		Total (Count Date)			**144**	-	**137**																																		**29**	**70**		**205**		**120**		**290**	**331**

Pennoni

Four Winds Farm Residential Development TIS
Traffic Volume Development Worksheets

Time Period:	**Saturday Midday Peak Hour**			Done By:	TML 10/15/2021
Annual Growth Rate:	Provided by DelDOT See Growth Factors (2021 to 2030) Column			Chkd By:	ZMB 12/27/2021

Intersection		Approach		Direction / Movement	2021 Raw Count Volumes	Seasonal Adjustment Factor	2021 Seasonally Adjusted Volume	Growth Factors (2021 to 2030)	Other "Committed" Development Volumes																				Other "Pending" Development Volumes								2030 No Build Volumes		"New" Development Trips						Total Development New Trips	2030 Build Volumes	
									Hawthorne				Azalea Woods				Heritage Creek				Vines of Sand Hill				Cypress Grove - Residential				Cypress Grove - Retail				Granary at Draper Farm				Prettyman Property						Residential					
									Enter	31	Exit	27	Enter	286	Exit	244	Enter	6	Exit	7	Enter	146	Exit	125	Enter	39	Exit	40	Enter	72	Exit	62	Enter	667	Exit	598	Enter	55	Exit	47	Committed	Committed + Pending	Enter	162	Exit	138		Committed	Committed + Pending
									%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume			%	Volume	%	Volume			
3	US Route 9 & Shingle Point Rd (SR 249) / French Rd	US Route 9	Eastbound	Left	7	1.000	7	1.143		0		0	23%	66		0		0		0		0		0		0		0		0	4%	27		0		0		0	74	101	22%	36			36	110	137
				Through	368	1.000	368	1.143	31%	10		0	7%	20		0	22%	1		0		0		0	11%	4		0	8%	6		0		0		0		0	462	462					0	462	462
				Right	7	1.000	7	1.143		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	8	8					0	8	8
			Westbound	Left	40	1.000	40	1.143		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	46	46					0	46	46
				Through	405	1.000	405	1.143		0	31%	8		0	7%	17		0	22%	2		0		0		0	11%	4		0	8%	5		0		0		0	499	499					0	499	499
				Right	2	1.000	2	1.143		0	13%	4	14%	40		0		0		0		0		0		0		0		0		0		0		0		0	46	46					0	46	46
		French Rd	Northbound	Left	5	1.000	5	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	5	5					0	5	5
				Through	0	1.000	0	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	0					0	0	0
				Right	3	1.000	3	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	3	3					0	3	3
		Shingle Point Rd (SR 249)	Southbound	Left	5	1.000	5	1.046	13%	4		0		0	14%	34		0		0		0		0		0		0		0		0		0		0		0	43	43					0	43	43
				Through	2	1.000	2	1.046		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	2	2					0	2	2
				Right	40	1.000	40	1.046		0		0		0	23%	56		0		0		0		0		0		0		0		0	4%	24		0		0	98	122			22%	30	30	128	152
	Counted: 8/21/21 ; Peak Hour: 12:15	Total (Count Date)			884	-	884																														1286	1337		36		30		1352	1403

Appendix H

Capacity / Level-of-Service Worksheets

2021 Existing Conditions

HCS7 Two-Way Stop-Control Report

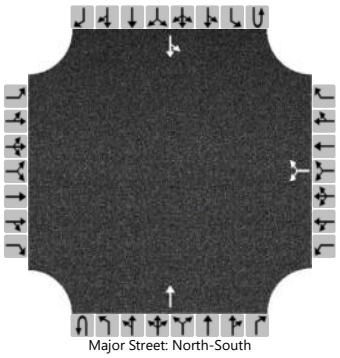
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 30 & Shingle Point (N)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				T			LT		
Volume (veh/h)						65		1			235			0	313	
Percent Heavy Vehicles (%)						4		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.44		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.54		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							78							0		
Capacity, c (veh/h)							437							1298		
v/c Ratio							0.18							0.00		
95% Queue Length, Q_{95} (veh)							0.6							0.0		
Control Delay (s/veh)							15.0							7.8		
Level of Service (LOS)							C							A		
Approach Delay (s/veh)						15.0								0.0		
Approach LOS						C										

HCS7 Two-Way Stop-Control Report

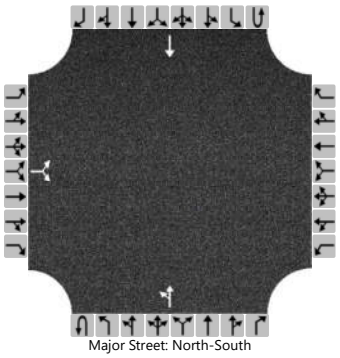
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 30 & Shingle Point (S)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT					T	
Volume (veh/h)		58		20						22	249				298	
Percent Heavy Vehicles (%)		5		5						14						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.24						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.33						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			92							26						
Capacity, c (veh/h)			441							1145						
v/c Ratio			0.21							0.02						
95% Queue Length, Q_{95} (veh)			0.8							0.1						
Control Delay (s/veh)			15.3							8.2						
Level of Service (LOS)			C							A						
Approach Delay (s/veh)		15.3								0.9						
Approach LOS		C														

HCS7 Two-Way Stop-Control Report

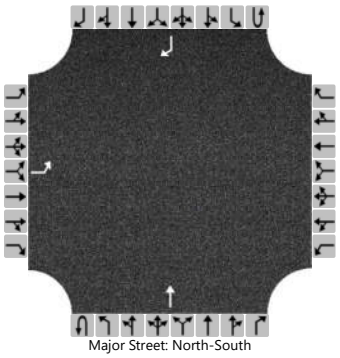
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 30 & Shingle Point (E)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	0		0	0	0	0	0	1	0	0	0	0	1
Configuration		L									T					R
Volume (veh/h)		0									72					66
Percent Heavy Vehicles (%)		0														
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1														
Critical Headway (sec)		6.40														
Base Follow-Up Headway (sec)		3.5														
Follow-Up Headway (sec)		3.50														

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0														
Capacity, c (veh/h)		922														
v/c Ratio		0.00														
95% Queue Length, Q_{95} (veh)		0.0														
Control Delay (s/veh)		8.9														
Level of Service (LOS)		A														
Approach Delay (s/veh)																
Approach LOS																

HCS7 Two-Way Stop-Control Report

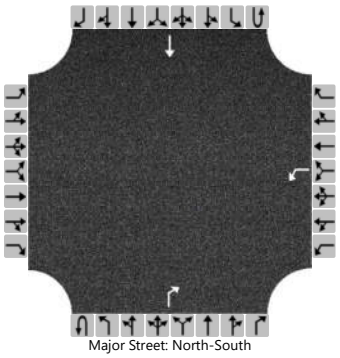
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 30 & Shingle Point (W)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	0	0	0	0	1	0	0	1	0
Configuration						L						R			T	
Volume (veh/h)						22						78			80	
Percent Heavy Vehicles (%)						14										
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized												No				
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1										
Critical Headway (sec)						6.54										
Base Follow-Up Headway (sec)						3.5										
Follow-Up Headway (sec)						3.63										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						26										
Capacity, c (veh/h)						877										
v/c Ratio						0.03										
95% Queue Length, Q_{95} (veh)						0.1										
Control Delay (s/veh)						9.2										
Level of Service (LOS)						A										
Approach Delay (s/veh)						9.2										
Approach LOS						A										

HCS7 Two-Way Stop-Control Report

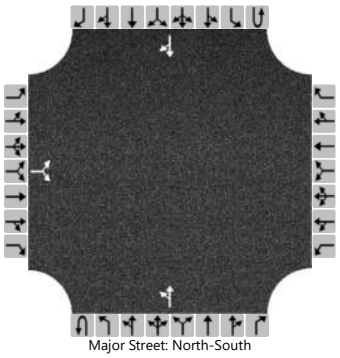
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	Shingle Point & Briarwood
Jurisdiction	Sussex County
East/West Street	Briarwood Rd
North/South Street	Shingle Point Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		16		38						22	70				74	18
Percent Heavy Vehicles (%)		0		3						17						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.23						4.27						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.33						2.35						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			67							27						
Capacity, c (veh/h)			874							1387						
v/c Ratio			0.08							0.02						
95% Queue Length, Q_{95} (veh)			0.2							0.1						
Control Delay (s/veh)			9.5							7.6						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.5								1.9						
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

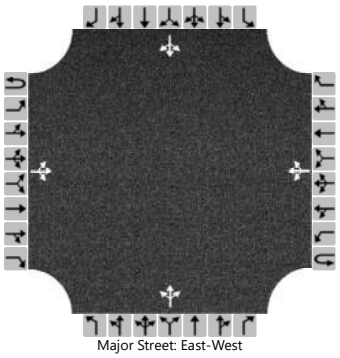
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	East-West
Project Description	2021 Existing

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		72	607	3		0	640	16		1	1	8		20	1	82
Percent Heavy Vehicles (%)		6				0				0	0	13		0	0	4
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.16				4.10				7.10	6.50	6.33		7.10	6.50	6.24
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.25				2.20				3.50	4.00	3.42		3.50	4.00	3.34

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		79				0					11				113	
Capacity, c (veh/h)		863				929					224				231	
v/c Ratio		0.09				0.00					0.05				0.49	
95% Queue Length, Q_{95} (veh)		0.3				0.0					0.2				2.5	
Control Delay (s/veh)		9.6				8.9					21.9				34.7	
Level of Service (LOS)		A				A					C				D	
Approach Delay (s/veh)		2.3				0.0				21.9				34.7		
Approach LOS										C				D		

HCS7 Two-Way Stop-Control Report

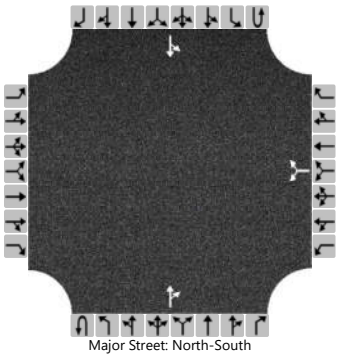
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 30 & Prettyman Rd
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	DE 30
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						1		101			166	4		108	204	
Percent Heavy Vehicles (%)						0		6						4		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.26						4.14		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.35						2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							123							130		
Capacity, c (veh/h)							818							1355		
v/c Ratio							0.15							0.10		
95% Queue Length, Q_{95} (veh)							0.5							0.3		
Control Delay (s/veh)							10.2							7.9		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						10.2								3.3		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

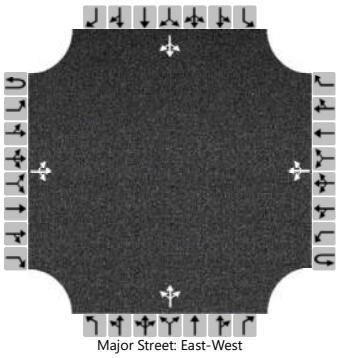
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	East-West
Project Description	2021 Existing

Site Information

Intersection	Prettyman & Pettyjohn
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	Pettyjohn Rd
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		9	114	1		4	85	3		1	13	2		0	10	9
Percent Heavy Vehicles (%)		0				0				0	0	0		0	20	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.70	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.18	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		10				4					18				21	
Capacity, c (veh/h)		1507				1469					671				740	
v/c Ratio		0.01				0.00					0.03				0.03	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.1				0.1	
Control Delay (s/veh)		7.4				7.5					10.5				10.0	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.6				0.3				10.5				10.0			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

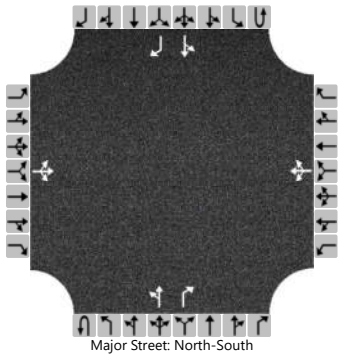
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 5 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	Shingle Point Rd
North/South Street	DE Route 5
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	1	0	0	1	1
Configuration			LTR				LTR			LT		R		LT		R
Volume (veh/h)		30	31	29		12	17	6		19	279	37		5	316	48
Percent Heavy Vehicles (%)		3	9	7		0	0	0		11				20		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized									No				No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.59	6.27		7.10	6.50	6.20		4.21				4.30		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.08	3.36		3.50	4.00	3.30		2.30				2.38		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			111				43			23				6		
Capacity, c (veh/h)			335				292			1065				1077		
v/c Ratio			0.33				0.15			0.02				0.01		
95% Queue Length, Q_{95} (veh)			1.4				0.5			0.1				0.0		
Control Delay (s/veh)			21.0				19.4			8.5				8.4		
Level of Service (LOS)			C				C			A				A		
Approach Delay (s/veh)	21.0				19.4				0.7				0.2			
Approach LOS	C				C											

HCS7 Two-Way Stop-Control Report

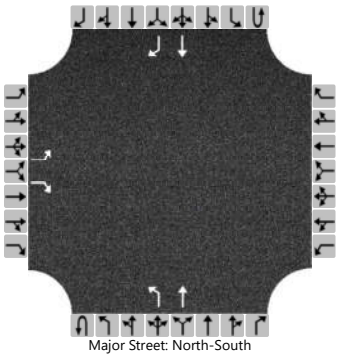
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 5 & Sand Hill
Jurisdiction	Sussex County
East/West Street	Sand Hill Rd
North/South Street	DE Route 5
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		106		169						108	200				193	36
Percent Heavy Vehicles (%)		7		25						8						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.47		6.45						4.18						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.56		3.53						2.27						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		126		201						129						
Capacity, c (veh/h)		345		756						1257						
v/c Ratio		0.37		0.27						0.10						
95% Queue Length, Q_{95} (veh)		1.6		1.1						0.3						
Control Delay (s/veh)		21.3		11.5						8.2						
Level of Service (LOS)		C		B						A						
Approach Delay (s/veh)		15.3								3.4						
Approach LOS		C														

HCS7 Two-Way Stop-Control Report

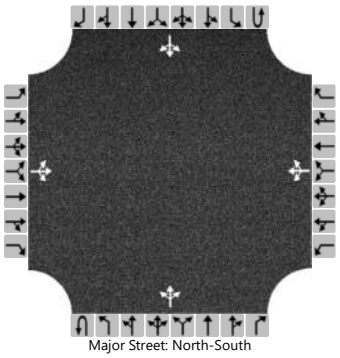
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 5 & Mulberry/Atlantic
Jurisdiction	Sussex County
East/West Street	Mulberry / Atlantic St
North/South Street	DE Route 5
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		2	104	73		44	66	15		55	127	97		31	152	2
Percent Heavy Vehicles (%)		0	7	7		4	3	6		0				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.57	6.27		7.14	6.53	6.26		4.10				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.06	3.36		3.54	4.03	3.35		2.20				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			197				137			60				34		
Capacity, c (veh/h)			486				351			1420				1314		
v/c Ratio			0.40				0.39			0.04				0.03		
95% Queue Length, Q_{95} (veh)			1.9				1.8			0.1				0.1		
Control Delay (s/veh)			17.3				21.7			7.6				7.8		
Level of Service (LOS)			C				C			A				A		
Approach Delay (s/veh)	17.3				21.7				1.8				1.5			
Approach LOS	C				C											

HCS7 Two-Way Stop-Control Report

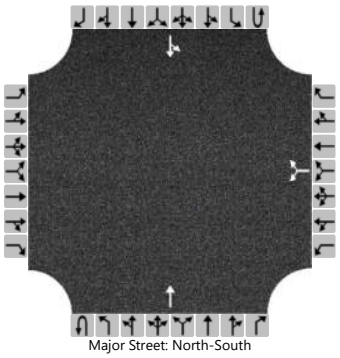
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 30 & Shingle Point (N)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				T			LT		
Volume (veh/h)						55		3			297			1	258	
Percent Heavy Vehicles (%)						5		33						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.45		6.53						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.55		3.60						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							65							1		
Capacity, c (veh/h)							450							1237		
v/c Ratio							0.14							0.00		
95% Queue Length, Q_{95} (veh)							0.5							0.0		
Control Delay (s/veh)							14.3							7.9		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						14.3								0.0		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

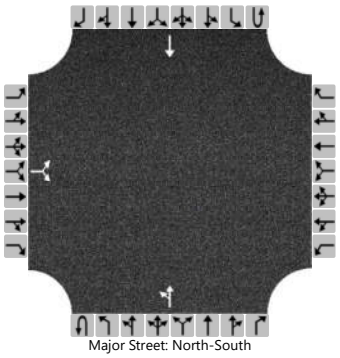
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 30 & Shingle Point (S)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT					T	
Volume (veh/h)		73		16						29	282				257	
Percent Heavy Vehicles (%)		3		0						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			100							33						
Capacity, c (veh/h)			444							1285						
v/c Ratio			0.23							0.03						
95% Queue Length, Q_{95} (veh)			0.9							0.1						
Control Delay (s/veh)			15.4							7.9						
Level of Service (LOS)			C							A						
Approach Delay (s/veh)		15.4								1.0						
Approach LOS		C														

HCS7 Two-Way Stop-Control Report

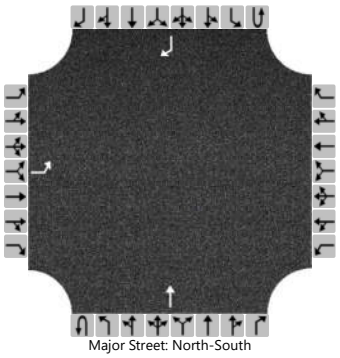
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 30 & Shingle Point (E)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	0		0	0	0	0	0	1	0	0	0	0	1
Configuration		L									T					R
Volume (veh/h)		1									58					58
Percent Heavy Vehicles (%)		0														
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1														
Critical Headway (sec)		6.40														
Base Follow-Up Headway (sec)		3.5														
Follow-Up Headway (sec)		3.50														

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1														
Capacity, c (veh/h)		945														
v/c Ratio		0.00														
95% Queue Length, Q_{95} (veh)		0.0														
Control Delay (s/veh)		8.8														
Level of Service (LOS)		A														
Approach Delay (s/veh)		8.8														
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

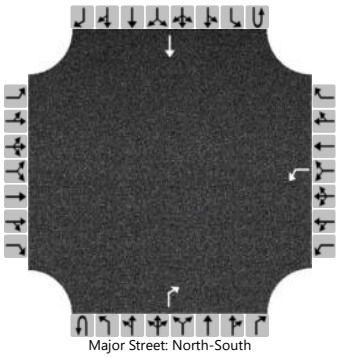
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 30 & Shingle Point (W)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	0	0	0	0	1	0	0	1	0
Configuration						L						R			T	
Volume (veh/h)						29						89			56	
Percent Heavy Vehicles (%)						0										
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized												No				
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1										
Critical Headway (sec)						6.40										
Base Follow-Up Headway (sec)						3.5										
Follow-Up Headway (sec)						3.50										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						33										
Capacity, c (veh/h)						948										
v/c Ratio						0.03										
95% Queue Length, Q_{95} (veh)						0.1										
Control Delay (s/veh)						8.9										
Level of Service (LOS)						A										
Approach Delay (s/veh)						8.9										
Approach LOS						A										

HCS7 Two-Way Stop-Control Report

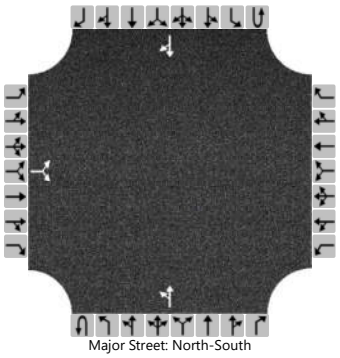
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	Shingle Point & Briarwood
Jurisdiction	Sussex County
East/West Street	Briarwood Rd
North/South Street	Shingle Point Rd
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		15		16						23	73				50	20
Percent Heavy Vehicles (%)		0		6						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.26						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.35						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			32							24						
Capacity, c (veh/h)			885							1540						
v/c Ratio			0.04							0.02						
95% Queue Length, Q_{95} (veh)			0.1							0.0						
Control Delay (s/veh)			9.2							7.4						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.2								1.9						
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

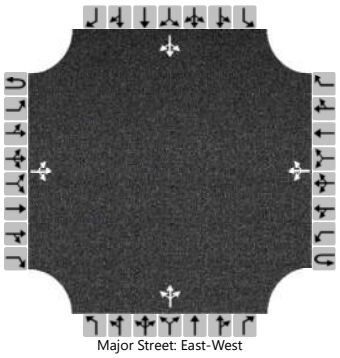
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday PM
Intersection Orientation	East-West
Project Description	2021 Existing

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		81	620	5		5	677	28		1	1	6		11	4	60
Percent Heavy Vehicles (%)		1				0				0	0	0		0	25	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.11				4.10				7.10	6.50	6.20		7.10	6.75	6.26
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.21				2.20				3.50	4.00	3.30		3.50	4.23	3.35

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		88				5					9				82	
Capacity, c (veh/h)		852				922					186				210	
v/c Ratio		0.10				0.01					0.05				0.39	
95% Queue Length, Q_{95} (veh)		0.3				0.0					0.1				1.7	
Control Delay (s/veh)		9.7				8.9					25.3				32.5	
Level of Service (LOS)		A				A					D				D	
Approach Delay (s/veh)	2.5				0.2				25.3				32.5			
Approach LOS									D				D			

HCS7 Two-Way Stop-Control Report

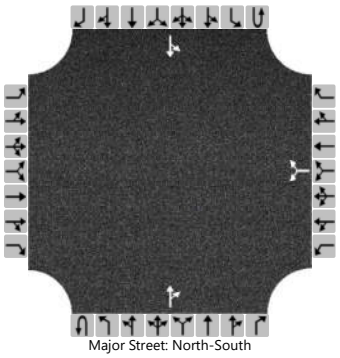
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 30 & Prettyman Rd
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	DE 30
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						2		167			132	3		98	170	
Percent Heavy Vehicles (%)						0		4						2		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.24						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.34						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							204							118		
Capacity, c (veh/h)							868							1416		
v/c Ratio							0.23							0.08		
95% Queue Length, Q_{95} (veh)							0.9							0.3		
Control Delay (s/veh)							10.4							7.8		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						10.4								3.3		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

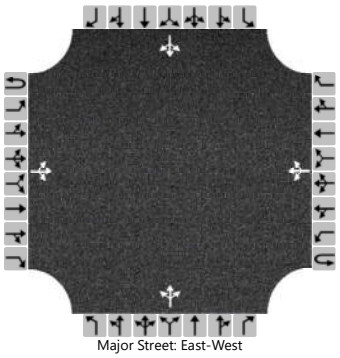
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday PM
Intersection Orientation	East-West
Project Description	2021 Existing

Site Information

Intersection	Prettyman & Pettyjohn
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	Pettyjohn Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	80	3		3	147	0		3	6	5		3	8	18
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				3					15				31	
Capacity, c (veh/h)		1438				1521					730				780	
v/c Ratio		0.01				0.00					0.02				0.04	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.1				0.1	
Control Delay (s/veh)		7.5				7.4					10.0				9.8	
Level of Service (LOS)		A				A					B				A	
Approach Delay (s/veh)	0.9				0.2				10.0				9.8			
Approach LOS									B				A			

HCS7 Two-Way Stop-Control Report

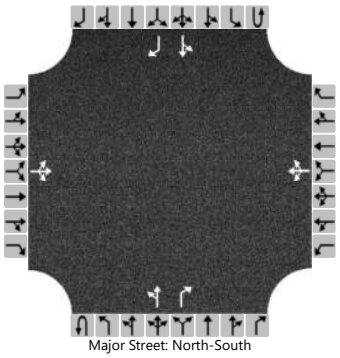
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 5 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	Shingle Point Rd
North/South Street	DE Route 5
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	1	0	0	1	1
Configuration			LTR				LTR			LT		R		LT		R
Volume (veh/h)		37	12	7		26	19	11		12	298	30		9	276	51
Percent Heavy Vehicles (%)		0	0	29		4	0	0		8				11		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized										No				No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.49		7.14	6.50	6.20		4.18				4.21		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.56		3.54	4.00	3.30		2.27				2.30		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			65				65			14				10		
Capacity, c (veh/h)			330				348			1146				1129		
v/c Ratio			0.20				0.19			0.01				0.01		
95% Queue Length, Q_{95} (veh)			0.7				0.7			0.0				0.0		
Control Delay (s/veh)			18.6				17.7			8.2				8.2		
Level of Service (LOS)			C				C			A				A		
Approach Delay (s/veh)		18.6				17.7				0.4				0.3		
Approach LOS		C				C										

HCS7 Two-Way Stop-Control Report

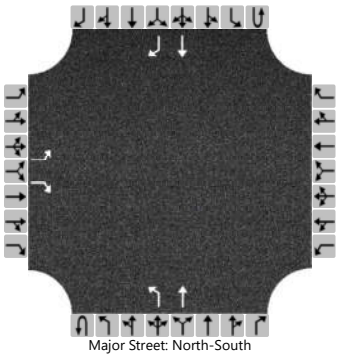
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 5 & Sand Hill
Jurisdiction	Sussex County
East/West Street	Sand Hill Rd
North/South Street	DE Route 5
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		41		116						151	183				218	94
Percent Heavy Vehicles (%)		2		8						11						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.28						4.21						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.37						2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		49		138						180						
Capacity, c (veh/h)		284		765						1139						
v/c Ratio		0.17		0.18						0.16						
95% Queue Length, Q_{95} (veh)		0.6		0.7						0.6						
Control Delay (s/veh)		20.3		10.7						8.8						
Level of Service (LOS)		C		B						A						
Approach Delay (s/veh)		13.2								4.7						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

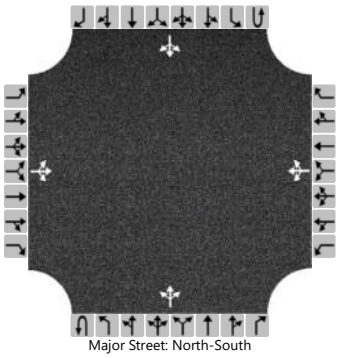
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2021 Existing

Site Information

Intersection	DE 5 & Mulberry/Atlantic
Jurisdiction	Sussex County
East/West Street	Mulberry / Atlantic St
North/South Street	DE Route 5
Peak Hour Factor	0.76
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		4	76	74		62	91	26		71	141	45		25	145	7
Percent Heavy Vehicles (%)		0	4	1		5	3	0		3				4		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.54	6.21		7.15	6.53	6.20		4.13				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.04	3.31		3.55	4.03	3.30		2.23				2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			203				236			93				33		
Capacity, c (veh/h)			454				292			1366				1310		
v/c Ratio			0.45				0.81			0.07				0.03		
95% Queue Length, Q_{95} (veh)			2.3				6.5			0.2				0.1		
Control Delay (s/veh)			19.2				53.7			7.8				7.8		
Level of Service (LOS)			C				F			A				A		
Approach Delay (s/veh)	19.2				53.7				2.6				1.3			
Approach LOS	C				F											

HCS7 Two-Way Stop-Control Report

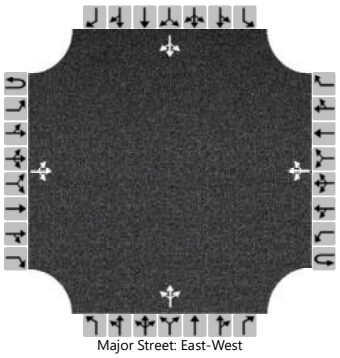
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Summer Saturday Midday
Intersection Orientation	East-West
Project Description	2021 Existing

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		7	368	7		40	405	2		5	0	3		5	2	40
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		7				43					9				50	
Capacity, c (veh/h)		1137				1171					287				508	
v/c Ratio		0.01				0.04					0.03				0.10	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.1				0.3	
Control Delay (s/veh)		8.2				8.2					17.9				12.9	
Level of Service (LOS)		A				A					C				B	
Approach Delay (s/veh)	0.2				1.1				17.9				12.9			
Approach LOS									C				B			

Case 1A

2030 Future Conditions

Without-Development

With Committed Developments, Only

HCS7 Two-Way Stop-Control Report

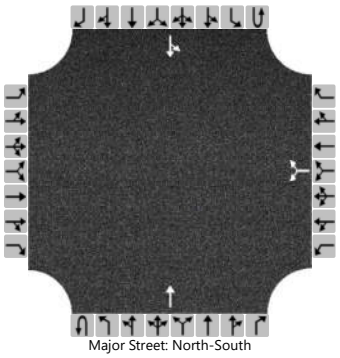
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (N)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				T			LT		
Volume (veh/h)						92		1			323			0	389	
Percent Heavy Vehicles (%)						4		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.44		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.54		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							109							0		
Capacity, c (veh/h)							336							1190		
v/c Ratio							0.33							0.00		
95% Queue Length, Q_{95} (veh)							1.4							0.0		
Control Delay (s/veh)							20.8							8.0		
Level of Service (LOS)							C							A		
Approach Delay (s/veh)						20.8								0.0		
Approach LOS						C										

HCS7 Two-Way Stop-Control Report

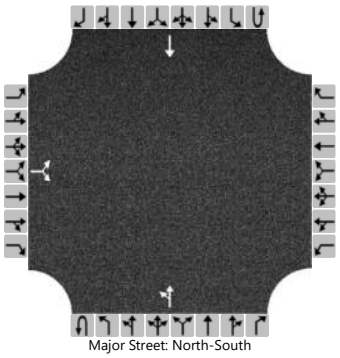
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (S)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT					T	
Volume (veh/h)		111		21						23	326				380	
Percent Heavy Vehicles (%)		5		5						14						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.24						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.33						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			155							27						
Capacity, c (veh/h)			328							1053						
v/c Ratio			0.47							0.03						
95% Queue Length, Q_{95} (veh)			2.4							0.1						
Control Delay (s/veh)			25.5							8.5						
Level of Service (LOS)			D							A						
Approach Delay (s/veh)		25.5								0.8						
Approach LOS		D														

HCS7 Two-Way Stop-Control Report

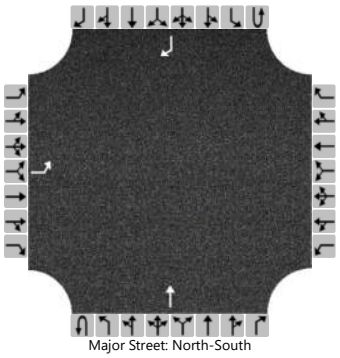
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (E)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	0		0	0	0	0	0	1	0	0	0	0	1
Configuration		L									T					R
Volume (veh/h)		0									114					93
Percent Heavy Vehicles (%)		0														
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1														
Critical Headway (sec)		6.40														
Base Follow-Up Headway (sec)		3.5														
Follow-Up Headway (sec)		3.50														

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0														
Capacity, c (veh/h)		864														
v/c Ratio		0.00														
95% Queue Length, Q_{95} (veh)		0.0														
Control Delay (s/veh)		9.2														
Level of Service (LOS)		A														
Approach Delay (s/veh)																
Approach LOS																

HCS7 Two-Way Stop-Control Report

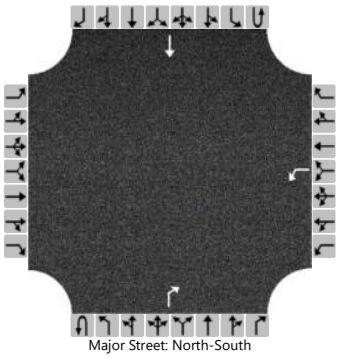
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (W)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	0	0	0	0	1	0	0	1	0
Configuration						L						R			T	
Volume (veh/h)						23						132			101	
Percent Heavy Vehicles (%)						14										
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized												No				
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1										
Critical Headway (sec)						6.54										
Base Follow-Up Headway (sec)						3.5										
Follow-Up Headway (sec)						3.63										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						27										
Capacity, c (veh/h)						849										
v/c Ratio						0.03										
95% Queue Length, Q_{95} (veh)						0.1										
Control Delay (s/veh)						9.4										
Level of Service (LOS)						A										
Approach Delay (s/veh)						9.4										
Approach LOS						A										

HCS7 Two-Way Stop-Control Report

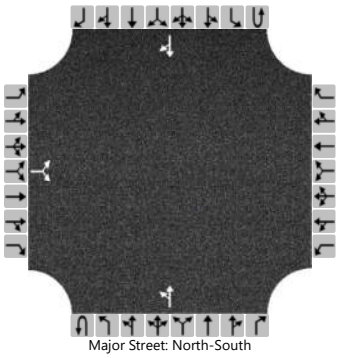
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed Dev Only

Site Information

Intersection	Shingle Point & Briarwood
Jurisdiction	Sussex County
East/West Street	Briarwood Rd
North/South Street	Shingle Point Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		17		50						60	122				93	21
Percent Heavy Vehicles (%)		0		3						17						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.23						4.27						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.33						2.35						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			83							74						
Capacity, c (veh/h)			787							1355						
v/c Ratio			0.11							0.05						
95% Queue Length, Q_{95} (veh)			0.4							0.2						
Control Delay (s/veh)			10.1							7.8						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.1								2.9						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

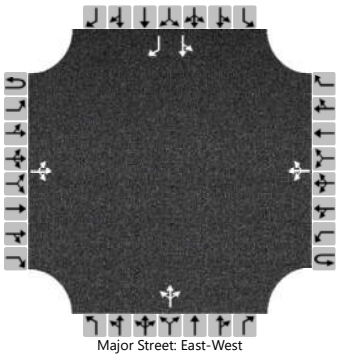
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	East-West
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration			LTR				LTR				LTR			LT		R
Volume (veh/h)		107	718	3		0	780	37		1	1	8		68	1	162
Percent Heavy Vehicles (%)		6				0				0	0	13		0	0	4
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.16				4.10				7.10	6.50	6.33		7.10	6.50	6.24
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.25				2.20				3.50	4.00	3.42		3.50	4.00	3.34

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		118				0					11			76		178
Capacity, c (veh/h)		740				837					99			39		345
v/c Ratio		0.16				0.00					0.11			1.92		0.52
95% Queue Length, Q_{95} (veh)		0.6				0.0					0.4			8.1		2.8
Control Delay (s/veh)		10.8				9.3					45.9			652.8		26.1
Level of Service (LOS)		B				A					E			F		D
Approach Delay (s/veh)	4.1				0.0				45.9				213.3			
Approach LOS									E				F			

HCS7 Two-Way Stop-Control Report

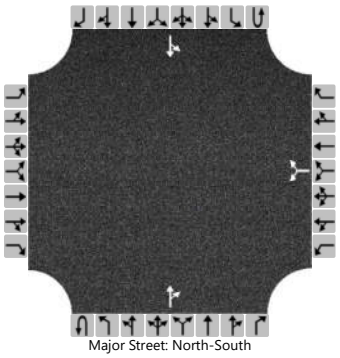
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 30 & Prettyman Rd
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	DE 30
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						1		106			239	4		113	281	
Percent Heavy Vehicles (%)						0		6						4		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.26						4.14		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.35						2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							129							136		
Capacity, c (veh/h)							728							1257		
v/c Ratio							0.18							0.11		
95% Queue Length, Q_{95} (veh)							0.6							0.4		
Control Delay (s/veh)							11.0							8.2		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					11.0								3.1			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

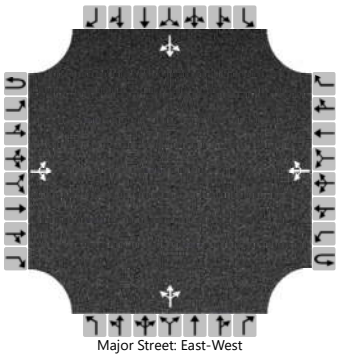
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	East-West
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	Prettyman & Pettyjohn
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	Pettyjohn Rd
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		9	119	1		15	89	3		1	24	35		0	13	9
Percent Heavy Vehicles (%)		0				0				0	0	0		0	20	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.70	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.18	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		10				17					67				25	
Capacity, c (veh/h)		1501				1462					760				691	
v/c Ratio		0.01				0.01					0.09				0.04	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.3				0.1	
Control Delay (s/veh)		7.4				7.5					10.2				10.4	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.6				1.1				10.2				10.4			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

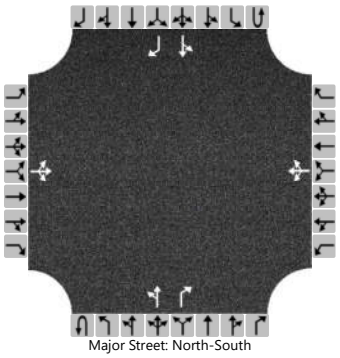
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 5 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	Shingle Point Rd
North/South Street	DE Route 5
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	1	0	0	1	1
Configuration			LTR				LTR			LT		R		LT		R
Volume (veh/h)		68	32	31		13	18	6		22	318	39		5	349	72
Percent Heavy Vehicles (%)		3	9	7		0	0	0		11				20		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized										No				No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.59	6.27		7.10	6.50	6.20		4.21				4.30		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.08	3.36		3.50	4.00	3.30		2.30				2.38		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			162				46			27				6		
Capacity, c (veh/h)			267				241			1002				1030		
v/c Ratio			0.60				0.19			0.03				0.01		
95% Queue Length, Q_{95} (veh)			3.6				0.7			0.1				0.0		
Control Delay (s/veh)			37.1				23.4			8.7				8.5		
Level of Service (LOS)			E				C			A				A		
Approach Delay (s/veh)		37.1				23.4				0.8				0.2		
Approach LOS		E				C										

HCS7 Two-Way Stop-Control Report

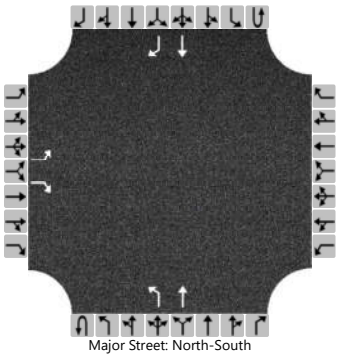
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 5 & Sand Hill
Jurisdiction	Sussex County
East/West Street	Sand Hill Rd
North/South Street	DE Route 5
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		127		178						114	271				241	44
Percent Heavy Vehicles (%)		7		25						8						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.47		6.45						4.18						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.56		3.53						2.27						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		151		212						136						
Capacity, c (veh/h)		275		701						1187						
v/c Ratio		0.55		0.30						0.11						
95% Queue Length, Q_{95} (veh)		3.1		1.3						0.4						
Control Delay (s/veh)		32.9		12.4						8.4						
Level of Service (LOS)		D		B						A						
Approach Delay (s/veh)		20.9								3.2						
Approach LOS		C														

HCS7 Two-Way Stop-Control Report

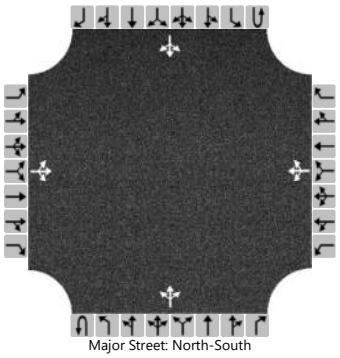
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 5 & Mulberry/Atlantic
Jurisdiction	Sussex County
East/West Street	Mulberry / Atlantic St
North/South Street	DE Route 5
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		2	109	76		46	69	16		59	210	101		32	204	2
Percent Heavy Vehicles (%)		0	7	7		4	3	6		0				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.57	6.27		7.14	6.53	6.26		4.10				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.06	3.36		3.54	4.03	3.35		2.20				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			205				144			65				35		
Capacity, c (veh/h)			398				259			1354				1212		
v/c Ratio			0.52				0.56			0.05				0.03		
95% Queue Length, Q_{95} (veh)			2.9				3.1			0.2				0.1		
Control Delay (s/veh)			23.3				35.1			7.8				8.1		
Level of Service (LOS)			C				E			A				A		
Approach Delay (s/veh)	23.3				35.1				1.6				1.3			
Approach LOS	C				E											

HCS7 Two-Way Stop-Control Report

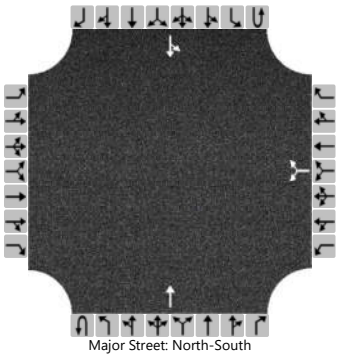
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (N)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				T			LT		
Volume (veh/h)						94		3			398			1	366	
Percent Heavy Vehicles (%)						5		33						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.45		6.53						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.55		3.60						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							109							1		
Capacity, c (veh/h)							326							1124		
v/c Ratio							0.33							0.00		
95% Queue Length, Q_{95} (veh)							1.4							0.0		
Control Delay (s/veh)							21.5							8.2		
Level of Service (LOS)							C							A		
Approach Delay (s/veh)						21.5								0.0		
Approach LOS						C										

HCS7 Two-Way Stop-Control Report

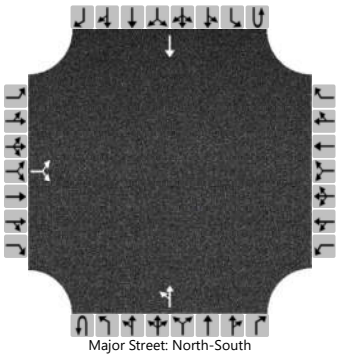
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (S)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT					T	
Volume (veh/h)		111		17						30	377				347	
Percent Heavy Vehicles (%)		3		0						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			144							34						
Capacity, c (veh/h)			328							1180						
v/c Ratio			0.44							0.03						
95% Queue Length, Q_{95} (veh)			2.1							0.1						
Control Delay (s/veh)			24.3							8.1						
Level of Service (LOS)			C							A						
Approach Delay (s/veh)		24.3								0.9						
Approach LOS		C														

HCS7 Two-Way Stop-Control Report

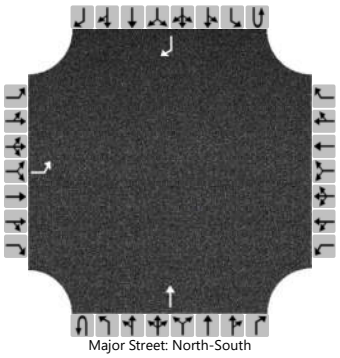
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (E)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	0		0	0	0	0	0	1	0	0	0	0	1
Configuration		L									T					R
Volume (veh/h)		1									90					97
Percent Heavy Vehicles (%)		0														
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1														
Critical Headway (sec)		6.40														
Base Follow-Up Headway (sec)		3.5														
Follow-Up Headway (sec)		3.50														

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1														
Capacity, c (veh/h)		902														
v/c Ratio		0.00														
95% Queue Length, Q_{95} (veh)		0.0														
Control Delay (s/veh)		9.0														
Level of Service (LOS)		A														
Approach Delay (s/veh)	9.0															
Approach LOS	A															

HCS7 Two-Way Stop-Control Report

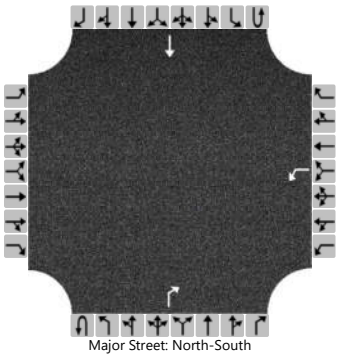
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (W)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	0	0	0	0	1	0	0	1	0
Configuration						L						R			T	
Volume (veh/h)						30						128			113	
Percent Heavy Vehicles (%)						0										
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized												No				
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1										
Critical Headway (sec)						6.40										
Base Follow-Up Headway (sec)						3.5										
Follow-Up Headway (sec)						3.50										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						34										
Capacity, c (veh/h)						872										
v/c Ratio						0.04										
95% Queue Length, Q_{95} (veh)						0.1										
Control Delay (s/veh)						9.3										
Level of Service (LOS)						A										
Approach Delay (s/veh)						9.3										
Approach LOS						A										

HCS7 Two-Way Stop-Control Report

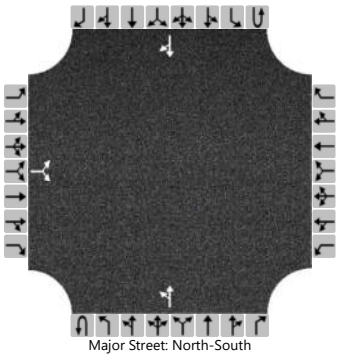
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed Dev Only

Site Information

Intersection	Shingle Point & Briarwood
Jurisdiction	Sussex County
East/West Street	Briarwood Rd
North/South Street	Shingle Point Rd
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		17		56						47	108				106	22
Percent Heavy Vehicles (%)		0		6						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.26						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.35						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			76							49						
Capacity, c (veh/h)			835							1464						
v/c Ratio			0.09							0.03						
95% Queue Length, Q_{95} (veh)			0.3							0.1						
Control Delay (s/veh)			9.7							7.5						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.7								2.5						
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

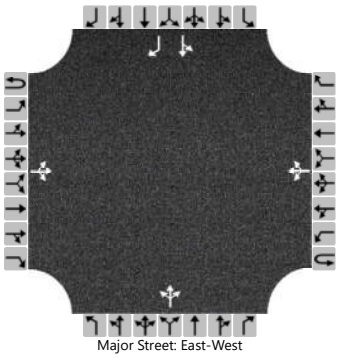
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	East-West
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration			LTR				LTR				LTR			LT		R
Volume (veh/h)		176	758	6		6	805	85		1	1	6		46	4	112
Percent Heavy Vehicles (%)		1				0				0	0	0		0	25	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.11				4.10				7.10	6.50	6.20		7.10	6.75	6.26
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.21				2.20				3.50	4.00	3.30		3.50	4.23	3.35

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		191				7					9			54		122
Capacity, c (veh/h)		716				810					51			20		322
v/c Ratio		0.27				0.01					0.17			2.68		0.38
95% Queue Length, Q_{95} (veh)		1.1				0.0					0.6			7.1		1.7
Control Delay (s/veh)		11.8				9.5					89.9			1155.8		22.8
Level of Service (LOS)		B				A					F			F		C
Approach Delay (s/veh)	7.0				0.2				89.9				372.5			
Approach LOS									F				F			

HCS7 Two-Way Stop-Control Report

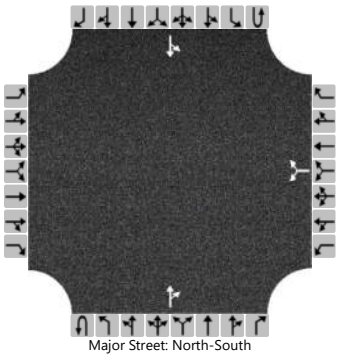
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 30 & Prettyman Rd
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	DE 30
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						2		175			220	3		103	257	
Percent Heavy Vehicles (%)						0		4						2		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.24						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.34						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							213							124		
Capacity, c (veh/h)							754							1295		
v/c Ratio							0.28							0.10		
95% Queue Length, Q_{95} (veh)							1.2							0.3		
Control Delay (s/veh)							11.6							8.1		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					11.6								3.0			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

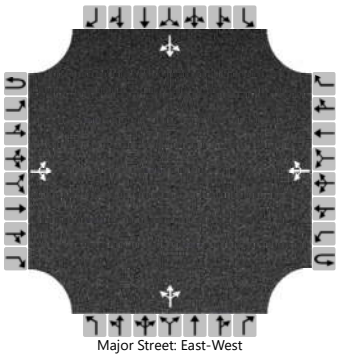
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	East-West
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	Prettyman & Pettyjohn
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	Pettyjohn Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	84	3		39	154	0		3	12	26		3	19	19
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				41					43				43	
Capacity, c (veh/h)		1429				1516					759				668	
v/c Ratio		0.01				0.03					0.06				0.06	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.2				0.2	
Control Delay (s/veh)		7.5				7.4					10.0				10.8	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.8				1.7				10.0				10.8			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

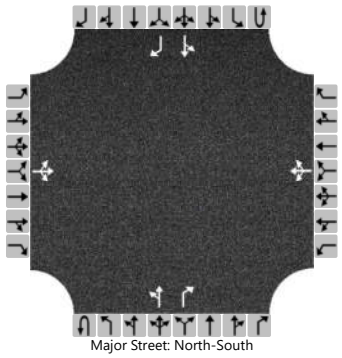
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 5 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	Shingle Point Rd
North/South Street	DE Route 5
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	1	0	0	1	1
Configuration			LTR				LTR			LT		R		LT		R
Volume (veh/h)		66	13	9		27	20	12		15	332	31		9	313	89
Percent Heavy Vehicles (%)		0	0	29		4	0	0		8				11		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized										No				No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.49		7.14	6.50	6.20		4.18				4.21		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.56		3.54	4.00	3.30		2.27				2.30		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			102				69			17				10		
Capacity, c (veh/h)			277				293			1063				1090		
v/c Ratio			0.37				0.23			0.02				0.01		
95% Queue Length, Q_{95} (veh)			1.6				0.9			0.1				0.0		
Control Delay (s/veh)			25.4				21.0			8.4				8.3		
Level of Service (LOS)			D				C			A				A		
Approach Delay (s/veh)		25.4				21.0				0.5				0.3		
Approach LOS		D				C										

HCS7 Two-Way Stop-Control Report

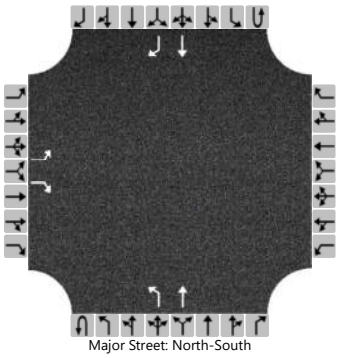
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 5 & Sand Hill
Jurisdiction	Sussex County
East/West Street	Sand Hill Rd
North/South Street	DE Route 5
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		54		123						159	237				286	116
Percent Heavy Vehicles (%)		2		8						11						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.28						4.21						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.37						2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		64		146						189						
Capacity, c (veh/h)		220		688						1038						
v/c Ratio		0.29		0.21						0.18						
95% Queue Length, Q_{95} (veh)		1.2		0.8						0.7						
Control Delay (s/veh)		28.0		11.6						9.2						
Level of Service (LOS)		D		B						A						
Approach Delay (s/veh)		16.6								4.7						
Approach LOS		C														

HCS7 Two-Way Stop-Control Report

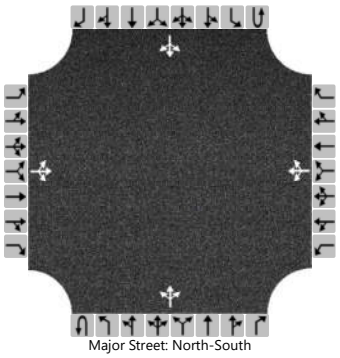
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 5 & Mulberry/Atlantic
Jurisdiction	Sussex County
East/West Street	Mulberry / Atlantic St
North/South Street	DE Route 5
Peak Hour Factor	0.76
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		4	79	77		65	95	27		74	204	47		26	228	7
Percent Heavy Vehicles (%)		0	4	1		5	3	0		3				4		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.54	6.21		7.15	6.53	6.20		4.13				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.04	3.31		3.55	4.03	3.30		2.23				2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			211				246			97				34		
Capacity, c (veh/h)			346				195			1246				1218		
v/c Ratio			0.61				1.26			0.08				0.03		
95% Queue Length, Q_{95} (veh)			3.8				13.3			0.3				0.1		
Control Delay (s/veh)			30.3				199.5			8.1				8.0		
Level of Service (LOS)			D				F			A				A		
Approach Delay (s/veh)	30.3				199.5				2.5				1.0			
Approach LOS	D				F											

HCS7 Two-Way Stop-Control Report

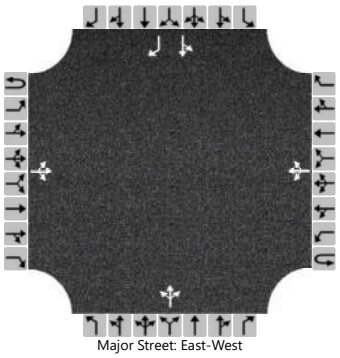
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Summer Saturday Midday
Intersection Orientation	East-West
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration			LTR				LTR				LTR			LT		R
Volume (veh/h)		74	462	8		46	499	46		5	0	3		43	2	98
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		79				49					9			48		104
Capacity, c (veh/h)		1004				1075					129			120		535
v/c Ratio		0.08				0.05					0.07			0.40		0.19
95% Queue Length, Q_{95} (veh)		0.3				0.1					0.2			1.7		0.7
Control Delay (s/veh)		8.9				8.5					34.9			53.8		13.4
Level of Service (LOS)		A				A					D			F		B
Approach Delay (s/veh)	2.0				1.2				34.9				26.1			
Approach LOS									D				D			

Case 1A

2030 Future Conditions

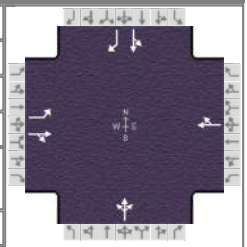
Without-Development

With Committed Developments, Only

With Improvements by Others

HCS7 Signalized Intersection Results Summary

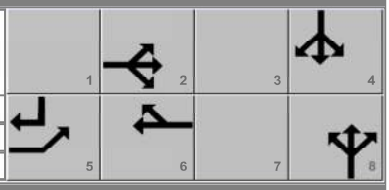
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction		Time Period	Weekday AM	PHF	0.92
Urban Street	US 9	Analysis Year	2030 No-Build, Committed Dev	Analysis Period	1> 7:00
Intersection	US 9 & Shingle Point Ro…	File Name	US 9 & Shingle Point_AM.xus		
Project Description	2030 No-Build with Committed Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	107	718	3		780	37	1	1	8	68	1	162

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.9	77.8	16.3	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



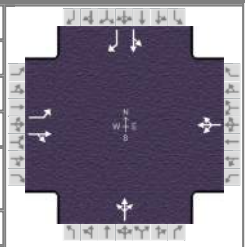
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		8.3		8.0		7.0
Phase Duration, s	11.9	96.7		84.8		23.3		23.3
Change Period, (*Y+R c*), s	7.0	7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s	3.0	0.0		0.0		3.2		3.2
Queue Clearance Time (*g s*), s	4.8					2.8		15.9
Green Extension Time (*g e*), s	0.1	0.0		0.0		0.5		0.4
Phase Call Probability	0.98					1.00		1.00
Max Out Probability	0.00					0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	116	784			888			11			75	176
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1589	1554			1628			1401			1432	1431
Queue Service Time (*g s*), s	2.8	30.8			50.6			0.0			4.9	13.9
Cycle Queue Clearance Time (*g c*), s	2.8	30.8			50.6			0.8			5.7	13.9
Green Ratio (*g/C*)	0.71	0.75			0.65			0.14			0.14	0.18
Capacity (*c*), veh/h	262	1162			1056			223			254	252
Volume-to-Capacity Ratio (*X*)	0.443	0.674			0.841			0.049			0.296	0.698
Back of Queue (*Q*), ft/ln (95 th percentile)	74.9	352.6			660.5			14			89.9	218.1
Back of Queue (*Q*), veh/ln (95 th percentile)	2.9	13.1			24.8			0.5			3.6	8.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh	19.9	7.7			16.3			45.2			47.3	46.4
Incremental Delay (*d 2*), s/veh	0.4	3.1			8.1			0.0			0.2	1.3
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	20.3	10.8			24.4			45.2			47.6	47.7
Level of Service (LOS)	C	B			C			D			D	D
Approach Delay, s/veh / LOS	12.1	B		24.4	C		45.2	D		47.7	D	
Intersection Delay, s/veh / LOS	21.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.63	B	1.88	B	1.72	B	1.95	B
Bicycle LOS Score / LOS	1.97	B	1.95	B	0.51	A	0.90	A

HCS7 Signalized Intersection Results Summary

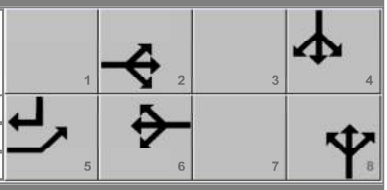
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction		Time Period	Weekday PM	PHF	0.92
Urban Street	US 9	Analysis Year	2030 No-Build, Committed Dev	Analysis Period	1> 7:00
Intersection	US 9 & Shingle Point Ro…	File Name	US 9 & Shingle Point_PM.xus		
Project Description	2030 No-Build with Committed Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	176	758	6	6	805	85	1	1	6	46	4	112

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.7	65.3	8.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



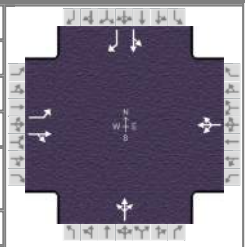
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		8.3		8.0		7.0
Phase Duration, s	12.7	85.0		72.3		15.0		15.0
Change Period, (*Y+R c*), s	7.0	7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s	3.0	0.0		0.0		3.2		3.2
Queue Clearance Time (*g s*), s	5.5					2.5		10.0
Green Extension Time (*g e*), s	0.2	0.0		0.0		0.2		0.0
Phase Call Probability	1.00					0.99		0.99
Max Out Probability	0.00					0.09		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	191	830			974			9			54	122
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1654	1639			1649			1529			1390	1402
Queue Service Time (*g s*), s	3.5	22.6			3.2			0.0			3.2	8.0
Cycle Queue Clearance Time (*g c*), s	3.5	22.6			49.9			0.5			3.7	8.0
Green Ratio (*g/C*)	0.73	0.78			0.65			0.08			0.08	0.14
Capacity (*c*), veh/h	257	1278			1112			163			180	193
Volume-to-Capacity Ratio (*X*)	0.745	0.650			0.876			0.053			0.301	0.632
Back of Queue (*Q*), ft/ln (95 th percentile)	134.7	217.7			615.8			9.1			58.8	139.5
Back of Queue (*Q*), veh/ln (95 th percentile)	5.3	8.4			23.7			0.4			2.2	5.3
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh	23.1	4.9			14.7			42.6			44.0	40.7
Incremental Delay (*d 2*), s/veh	1.6	2.6			9.7			0.1			0.3	5.0
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	24.7	7.5			24.4			42.6			44.4	45.8
Level of Service (LOS)	C	A			C			D			D	D
Approach Delay, s/veh / LOS	10.7	B		24.4	C		42.6	D		45.3	D	
Intersection Delay, s/veh / LOS	19.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.61	B	1.87	B	1.72	B	1.95	B
Bicycle LOS Score / LOS	2.17	B	2.09	B	0.50	A	0.78	A

HCS7 Signalized Intersection Results Summary

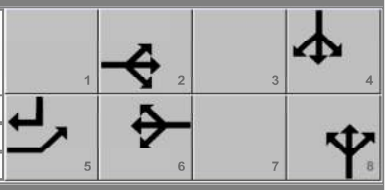
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction		Time Period	Saturday Midday	PHF	0.94
Urban Street	US 9	Analysis Year	2030 No-Build, Committed	Analysis Period	1> 7:00
Intersection	US 9 & Shingle Point Ro…	File Name	US 9 & Shingle Point_SAT.xus		
Project Description	2030 No-Build with Committed Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	74	462	8	46	499	46	5	0	3	43	2	98

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.4	66.0	8.6	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		8.3		8.0		7.0
Phase Duration, s	11.4	84.4		73.0		15.6		15.6
Change Period, (*Y+R c*), s	7.0	7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s	3.0	0.0		0.0		3.1		3.1
Queue Clearance Time (*g s*), s	3.4					2.5		8.6
Green Extension Time (*g e*), s	0.0	0.0		0.0		0.2		0.1
Phase Call Probability	0.89					0.99		0.99
Max Out Probability	0.00					0.00		0.24

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	79	500			629			9			48	104
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1654	1717			1646			1499			1451	1483
Queue Service Time (*g s*), s	1.4	9.3			0.0			0.0			2.6	6.6
Cycle Queue Clearance Time (*g c*), s	1.4	9.3			19.6			0.5			3.1	6.6
Green Ratio (*g/C*)	0.72	0.77			0.66			0.09			0.09	0.13
Capacity (*c*), veh/h	536	1329			1125			187			195	193
Volume-to-Capacity Ratio (*X*)	0.147	0.376			0.559			0.045			0.246	0.540
Back of Queue (*Q*), ft/ln (95 th percentile)	14.7	93.8			258.8			8.8			48.8	104.8
Back of Queue (*Q*), veh/ln (95 th percentile)	0.6	3.7			10.4			0.4			2.0	4.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh	6.6	3.6			9.1			42.0			43.2	40.7
Incremental Delay (*d 2*), s/veh	0.0	0.8			2.0			0.0			0.2	0.9
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	6.6	4.4			11.1			42.0			43.4	41.6
Level of Service (LOS)	A	A			B			D			D	D
Approach Delay, s/veh / LOS	4.7	A		11.1	B		42.0	D		42.2	D	
Intersection Delay, s/veh / LOS	12.1						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.61	B	1.87	B	1.72	B	1.95	B
Bicycle LOS Score / LOS	1.44	A	1.52	B	0.50	A	0.74	A

HCS7 Two-Way Stop-Control Report

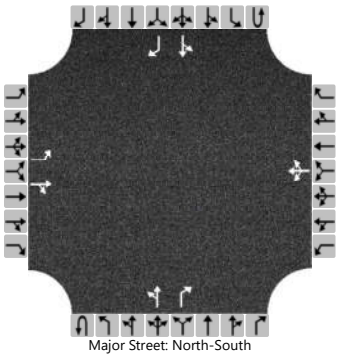
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 5 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	Shingle Point Rd
North/South Street	DE Route 5
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		0	1	0	0	0	1	1	0	0	1	1
Configuration		L		TR			LTR			LT		R		LT		R
Volume (veh/h)		68	32	31		13	18	6		22	318	39		5	349	72
Percent Heavy Vehicles (%)		3	9	7		0	0	0		11				20		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized									No				No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.59	6.27		7.10	6.50	6.20		4.21				4.30		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.08	3.36		3.50	4.00	3.30		2.30				2.38		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		84		78			46			27				6		
Capacity, c (veh/h)		220		349			241			1002				1030		
v/c Ratio		0.38		0.22			0.19			0.03				0.01		
95% Queue Length, Q_{95} (veh)		1.7		0.8			0.7			0.1				0.0		
Control Delay (s/veh)		31.2		18.2			23.4			8.7				8.5		
Level of Service (LOS)		D		C			C			A				A		
Approach Delay (s/veh)	24.9				23.4				0.8				0.2			
Approach LOS	C				C											

HCS7 Two-Way Stop-Control Report

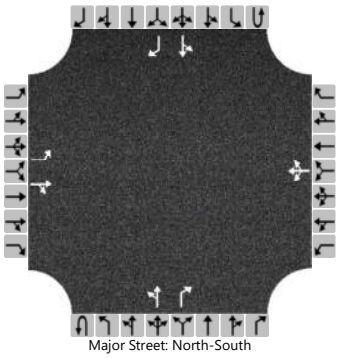
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build with Committed Dev Only

Site Information

Intersection	DE 5 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	Shingle Point Rd
North/South Street	DE Route 5
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		0	1	0	0	0	1	1	0	0	1	1
Configuration		L		TR			LTR			LT		R		LT		R
Volume (veh/h)		66	13	9		27	20	12		15	332	31		9	313	89
Percent Heavy Vehicles (%)		0	0	29		4	0	0		8				11		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized									No				No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.49		7.14	6.50	6.20		4.18				4.21		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.56		3.54	4.00	3.30		2.27				2.30		

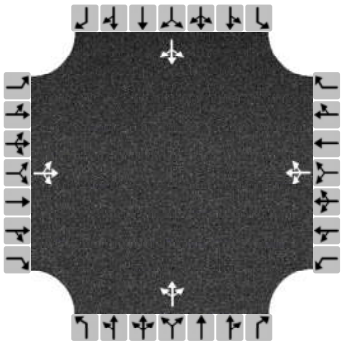
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		77		26			69			17				10		
Capacity, c (veh/h)		255		374			293			1063				1090		
v/c Ratio		0.30		0.07			0.23			0.02				0.01		
95% Queue Length, Q_{95} (veh)		1.2		0.2			0.9			0.1				0.0		
Control Delay (s/veh)		25.1		15.3			21.0			8.4				8.3		
Level of Service (LOS)		D		C			C			A				A		
Approach Delay (s/veh)	22.6				21.0				0.5				0.3			
Approach LOS	C				C											

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	T. Lord	Intersection	DE 5 & Mulberry/Atlantic
Agency/Co.	Pennoni	Jurisdiction	Sussex County
Date Performed	1/26/2022	East/West Street	Mulberry/Atlantic St
Analysis Year	2030	North/South Street	DE 5
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.91
Time Analyzed	Weekday AM		
Project Description	2030 No Build with Committed		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	2	109	76	46	69	16	59	210	101	32	204	2
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	205			144			407			262		
Percent Heavy Vehicles	7			4			4			5		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.183			0.128			0.361			0.232		
Final Departure Headway, hd (s)	5.96			6.29			5.40			5.79		
Final Degree of Utilization, x	0.340			0.251			0.610			0.421		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, ts (s)	3.96			4.29			3.40			3.79		

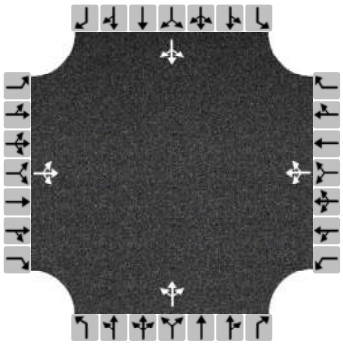
Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	205			144			407			262		
Capacity	604			573			667			622		
95% Queue Length, Q_{95} (veh)	1.5			1.0			4.2			2.1		
Control Delay (s/veh)	12.0			11.4			16.5			12.9		
Level of Service, LOS	B			B			C			B		
Approach Delay (s/veh)	12.0			11.4			16.5			12.9		
Approach LOS	B			B			C			B		
Intersection Delay, s/veh | LOS	13.9						B					

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	T. Lord	Intersection	DE 5 & Mulberry/Atlantic
Agency/Co.	Pennoni	Jurisdiction	Sussex County
Date Performed	1/26/2022	East/West Street	Mulberry/Atlantic St
Analysis Year	2030	North/South Street	DE 5
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.76
Time Analyzed	Weekday PM		
Project Description	2030 No Build with Committed		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	4	79	77	65	95	27	74	204	47	26	228	7
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	211			246			428			343		
Percent Heavy Vehicles	7			4			4			5		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.187			0.219			0.380			0.305		
Final Departure Headway, hd (s)	6.99			7.07			6.39			6.63		
Final Degree of Utilization, x	0.409			0.483			0.758			0.632		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, ts (s)	4.99			5.07			4.39			4.63		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	211			246			428			343		
Capacity	515			509			564			543		
95% Queue Length, Q_{95} (veh)	2.0			2.6			6.7			4.4		
Control Delay (s/veh)	14.7			16.5			26.7			20.3		
Level of Service, LOS	B			C			D			C		
Approach Delay (s/veh)	14.7			16.5			26.7			20.3		
Approach LOS	B			C			D			C		
Intersection Delay, s/veh | LOS	20.8						C					

Case 1B

2030 Future Conditions

With-Development

With Committed Developments, Only

HCS7 Two-Way Stop-Control Report

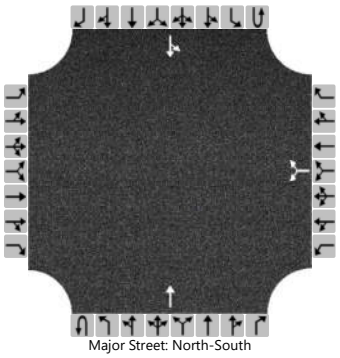
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (N)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				T			LT		
Volume (veh/h)						211		1			323			0	389	
Percent Heavy Vehicles (%)						4		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.44		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.54		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							249							0		
Capacity, c (veh/h)							335							1190		
v/c Ratio							0.75							0.00		
95% Queue Length, Q_{95} (veh)							5.7							0.0		
Control Delay (s/veh)							41.5							8.0		
Level of Service (LOS)							E							A		
Approach Delay (s/veh)						41.5								0.0		
Approach LOS						E										

HCS7 Two-Way Stop-Control Report

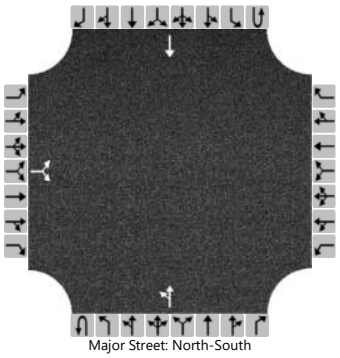
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (S)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT					T	
Volume (veh/h)		129		21						23	347				417	
Percent Heavy Vehicles (%)		5		5						14						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.24						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.33						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			176							27						
Capacity, c (veh/h)			296							1013						
v/c Ratio			0.60							0.03						
95% Queue Length, Q_{95} (veh)			3.6							0.1						
Control Delay (s/veh)			33.7							8.6						
Level of Service (LOS)			D							A						
Approach Delay (s/veh)		33.7								0.8						
Approach LOS		D														

HCS7 Two-Way Stop-Control Report

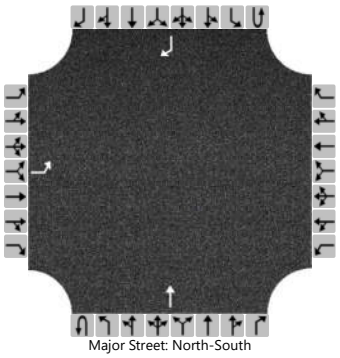
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (E)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	0		0	0	0	0	0	1	0	0	0	0	1
Configuration		L									T					R
Volume (veh/h)		0									153					212
Percent Heavy Vehicles (%)		0														
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1														
Critical Headway (sec)		6.40														
Base Follow-Up Headway (sec)		3.5														
Follow-Up Headway (sec)		3.50														

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0														
Capacity, c (veh/h)		814														
v/c Ratio		0.00														
95% Queue Length, Q_{95} (veh)		0.0														
Control Delay (s/veh)		9.4														
Level of Service (LOS)		A														
Approach Delay (s/veh)																
Approach LOS																

HCS7 Two-Way Stop-Control Report

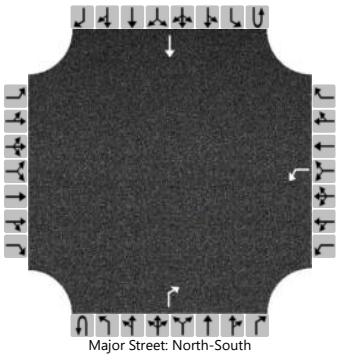
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (W)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	0	0	0	0	1	0	0	1	0
Configuration						L						R			T	
Volume (veh/h)						23						150			158	
Percent Heavy Vehicles (%)						14										
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized												No				
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1										
Critical Headway (sec)						6.54										
Base Follow-Up Headway (sec)						3.5										
Follow-Up Headway (sec)						3.63										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						27										
Capacity, c (veh/h)						777										
v/c Ratio						0.03										
95% Queue Length, Q_{95} (veh)						0.1										
Control Delay (s/veh)						9.8										
Level of Service (LOS)						A										
Approach Delay (s/veh)						9.8										
Approach LOS						A										

HCS7 Two-Way Stop-Control Report

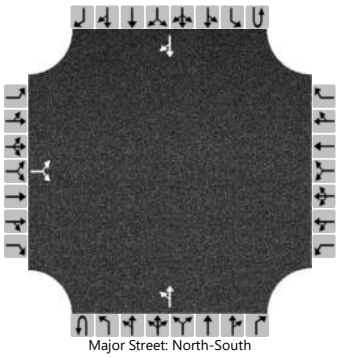
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	Shingle Point & Briarwood
Jurisdiction	Sussex County
East/West Street	Briarwood Rd
North/South Street	Shingle Point Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		22		50						60	135				133	38
Percent Heavy Vehicles (%)		0		3						17						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.23						4.27						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.33						2.35						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			89							74						
Capacity, c (veh/h)			700							1275						
v/c Ratio			0.13							0.06						
95% Queue Length, Q_{95} (veh)			0.4							0.2						
Control Delay (s/veh)			10.9							8.0						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.9								2.8						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

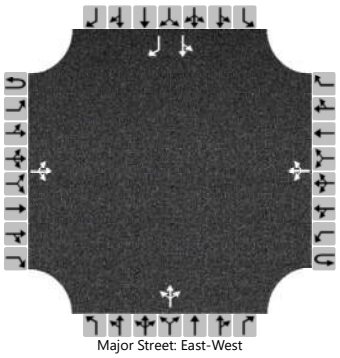
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	East-West
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration			LTR				LTR				LTR			LT		R
Volume (veh/h)		120	718	3		0	780	37		1	1	8		68	1	202
Percent Heavy Vehicles (%)		6				0				0	0	13		0	0	4
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.16				4.10				7.10	6.50	6.33		7.10	6.50	6.24
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.25				2.20				3.50	4.00	3.42		3.50	4.00	3.34

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		132				0					11			76		222
Capacity, c (veh/h)		740				837					74			36		345
v/c Ratio		0.18				0.00					0.15			2.09		0.64
95% Queue Length, Q_{95} (veh)		0.6				0.0					0.5			8.3		4.3
Control Delay (s/veh)		10.9				9.3					61.5			740.9		32.6
Level of Service (LOS)		B				A					F			F		D
Approach Delay (s/veh)	4.5				0.0				61.5				212.9			
Approach LOS									F				F			

HCS7 Two-Way Stop-Control Report

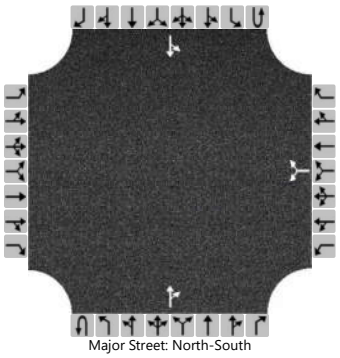
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 30 & Prettyman Rd
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	DE 30
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						1		122			244	4		160	296	
Percent Heavy Vehicles (%)						0		6						4		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.26						4.14		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.35						2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							148							193		
Capacity, c (veh/h)							719							1251		
v/c Ratio							0.21							0.15		
95% Queue Length, Q_{95} (veh)							0.8							0.5		
Control Delay (s/veh)							11.3							8.4		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						11.3								4.0		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

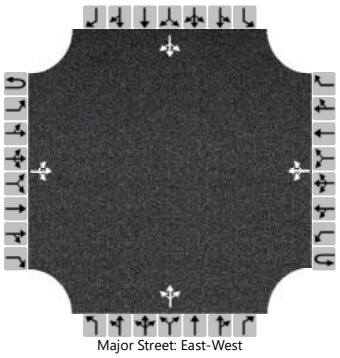
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	East-West
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	Prettyman & Pettyjohn
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	Pettyjohn Rd
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		9	166	1		15	105	3		1	24	35		0	13	9
Percent Heavy Vehicles (%)		0				0				0	0	0		0	20	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.70	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.18	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		10				17					67				25	
Capacity, c (veh/h)		1479				1399					701				642	
v/c Ratio		0.01				0.01					0.10				0.04	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.3				0.1	
Control Delay (s/veh)		7.5				7.6					10.7				10.8	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.4				1.0				10.7				10.8			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

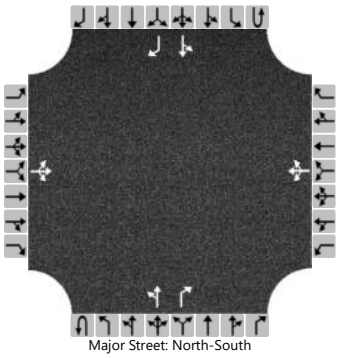
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 5 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	Shingle Point Rd
North/South Street	DE Route 5
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	1	0	0	1	1
Configuration			LTR				LTR			LT		R		LT		R
Volume (veh/h)		125	32	31		13	18	6		22	318	39		5	349	91
Percent Heavy Vehicles (%)		3	9	7		0	0	0		11				20		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized										No				No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.59	6.27		7.10	6.50	6.20		4.21				4.30		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.08	3.36		3.50	4.00	3.30		2.30				2.38		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			232				46			27				6		
Capacity, c (veh/h)			250				235			982				1030		
v/c Ratio			0.93				0.19			0.03				0.01		
95% Queue Length, Q_{95} (veh)			8.3				0.7			0.1				0.0		
Control Delay (s/veh)			82.2				24.0			8.8				8.5		
Level of Service (LOS)			F				C			A				A		
Approach Delay (s/veh)		82.2				24.0				0.8				0.1		
Approach LOS		F				C										

HCS7 Two-Way Stop-Control Report

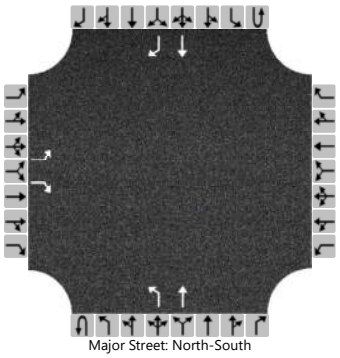
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 5 & Sand Hill
Jurisdiction	Sussex County
East/West Street	Sand Hill Rd
North/South Street	DE Route 5
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		127		183						129	313				255	44
Percent Heavy Vehicles (%)		7		25						8						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.47		6.45						4.18						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.56		3.53						2.27						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		151		218						154						
Capacity, c (veh/h)		235		685						1170						
v/c Ratio		0.64		0.32						0.13						
95% Queue Length, Q_{95} (veh)		3.9		1.4						0.5						
Control Delay (s/veh)		44.5		12.7						8.5						
Level of Service (LOS)		E		B						A						
Approach Delay (s/veh)		25.7								3.3						
Approach LOS		D														

HCS7 Two-Way Stop-Control Report

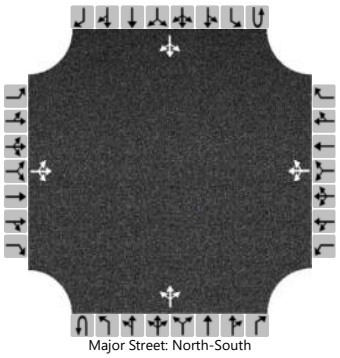
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 5 & Mulberry/Atlantic
Jurisdiction	Sussex County
East/West Street	Mulberry / Atlantic St
North/South Street	DE Route 5
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		2	109	78		46	69	16		64	247	101		32	216	2
Percent Heavy Vehicles (%)		0	7	7		4	3	6		0				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.57	6.27		7.14	6.53	6.26		4.10				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.06	3.36		3.54	4.03	3.35		2.20				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			208				144			70				35		
Capacity, c (veh/h)			368				227			1339				1171		
v/c Ratio			0.56				0.63			0.05				0.03		
95% Queue Length, Q_{95} (veh)			3.3				3.8			0.2				0.1		
Control Delay (s/veh)			26.7				44.9			7.8				8.2		
Level of Service (LOS)			D				E			A				A		
Approach Delay (s/veh)	26.7				44.9				1.7				1.3			
Approach LOS	D				E											

HCS7 Two-Way Stop-Control Report

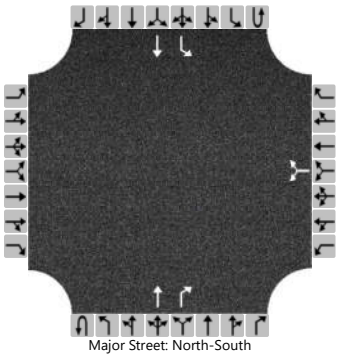
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/25/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	Shingle Point Rd & Access
Jurisdiction	Sussex County
East/West Street	Site Access
North/South Street	Shingle Point Rd
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	1	0	1	1	0
Configuration							LR				T	R		L	T	
Volume (veh/h)						126		57			128	41		19	107	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized										No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							229							24		
Capacity, c (veh/h)							701							1353		
v/c Ratio							0.33							0.02		
95% Queue Length, Q_{95} (veh)							1.4							0.1		
Control Delay (s/veh)							12.6							7.7		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						12.6								1.3		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

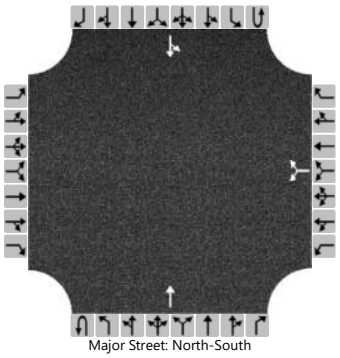
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (N)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				T			LT		
Volume (veh/h)						173		3			398			1	366	
Percent Heavy Vehicles (%)						5		33						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.45		6.53						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.55		3.60						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							198							1		
Capacity, c (veh/h)							324							1124		
v/c Ratio							0.61							0.00		
95% Queue Length, Q_{95} (veh)							3.8							0.0		
Control Delay (s/veh)							32.1							8.2		
Level of Service (LOS)							D							A		
Approach Delay (s/veh)						32.1								0.0		
Approach LOS						D										

HCS7 Two-Way Stop-Control Report

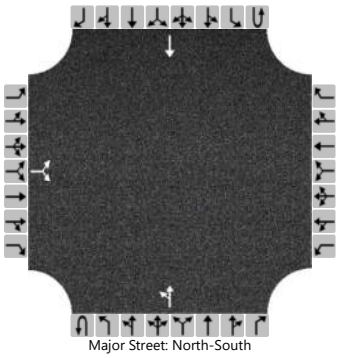
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (S)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT					T	
Volume (veh/h)		174		17						30	447				388	
Percent Heavy Vehicles (%)		3		0						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			215							34						
Capacity, c (veh/h)			269							1135						
v/c Ratio			0.80							0.03						
95% Queue Length, Q_{95} (veh)			6.2							0.1						
Control Delay (s/veh)			55.5							8.3						
Level of Service (LOS)			F							A						
Approach Delay (s/veh)		55.5								0.8						
Approach LOS		F														

HCS7 Two-Way Stop-Control Report

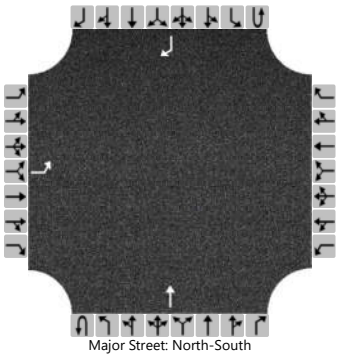
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (E)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	0		0	0	0	0	0	1	0	0	0	0	1
Configuration		L									T					R
Volume (veh/h)		1									223					176
Percent Heavy Vehicles (%)		0														
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1														
Critical Headway (sec)		6.40														
Base Follow-Up Headway (sec)		3.5														
Follow-Up Headway (sec)		3.50														

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1														
Capacity, c (veh/h)		742														
v/c Ratio		0.00														
95% Queue Length, Q_{95} (veh)		0.0														
Control Delay (s/veh)		9.9														
Level of Service (LOS)		A														
Approach Delay (s/veh)		9.9														
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

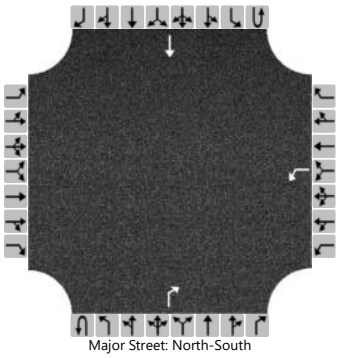
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 30 & Shingle Point (W)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	0	0	0	0	1	0	0	1	0
Configuration						L						R			T	
Volume (veh/h)						30						191			151	
Percent Heavy Vehicles (%)						0										
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized												No				
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1										
Critical Headway (sec)						6.40										
Base Follow-Up Headway (sec)						3.5										
Follow-Up Headway (sec)						3.50										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						34										
Capacity, c (veh/h)						825										
v/c Ratio						0.04										
95% Queue Length, Q_{95} (veh)						0.1										
Control Delay (s/veh)						9.5										
Level of Service (LOS)						A										
Approach Delay (s/veh)						9.5										
Approach LOS						A										

HCS7 Two-Way Stop-Control Report

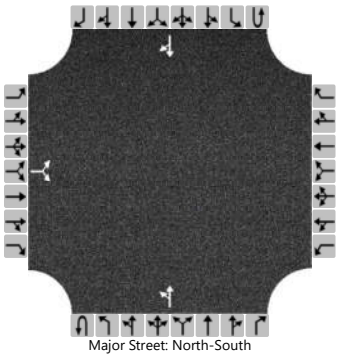
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	Shingle Point & Briarwood
Jurisdiction	Sussex County
East/West Street	Briarwood Rd
North/South Street	Shingle Point Rd
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		35		56						47	153				133	33
Percent Heavy Vehicles (%)		0		6						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.26						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.35						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			95							49						
Capacity, c (veh/h)			732							1416						
v/c Ratio			0.13							0.03						
95% Queue Length, Q_{95} (veh)			0.4							0.1						
Control Delay (s/veh)			10.7							7.6						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.7								2.0						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

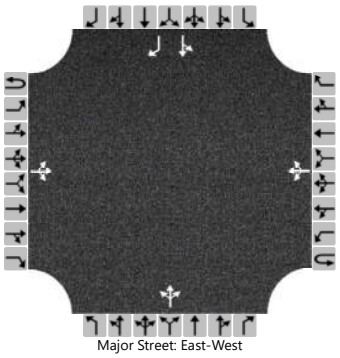
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	East-West
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration			LTR				LTR				LTR			LT		R
Volume (veh/h)		221	758	6		6	805	85		1	1	6		46	4	139
Percent Heavy Vehicles (%)		1				0				0	0	0		0	25	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.11				4.10				7.10	6.50	6.20		7.10	6.75	6.26
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.21				2.20				3.50	4.00	3.30		3.50	4.23	3.35

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		240				7					9			54		151
Capacity, c (veh/h)		716				810					30			14		322
v/c Ratio		0.34				0.01					0.29			3.90		0.47
95% Queue Length, Q_{95} (veh)		1.5				0.0					0.9			7.7		2.4
Control Delay (s/veh)		12.5				9.5					168.6			1856.0		25.7
Level of Service (LOS)		B				A					F			F		D
Approach Delay (s/veh)	8.9				0.2				168.6				509.9			
Approach LOS									F				F			

HCS7 Two-Way Stop-Control Report

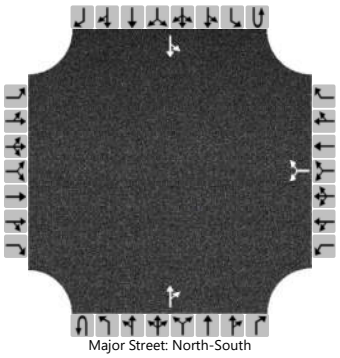
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 30 & Prettyman Rd
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	DE 30
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						2		229			236	3		134	267	
Percent Heavy Vehicles (%)						0		4						2		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.24						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.34						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							278							161		
Capacity, c (veh/h)							736							1274		
v/c Ratio							0.38							0.13		
95% Queue Length, Q_{95} (veh)							1.8							0.4		
Control Delay (s/veh)							12.8							8.2		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						12.8								3.6		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

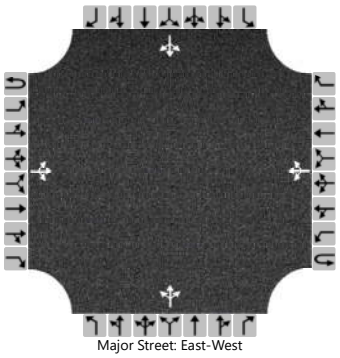
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	East-West
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	Prettyman & Pettyjohn
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	Pettyjohn Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	115	3		39	208	0		3	12	26		3	19	19
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				41					43				43	
Capacity, c (veh/h)		1362				1475					698				601	
v/c Ratio		0.01				0.03					0.06				0.07	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.2				0.2	
Control Delay (s/veh)		7.7				7.5					10.5				11.4	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.7				1.4				10.5				11.4			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

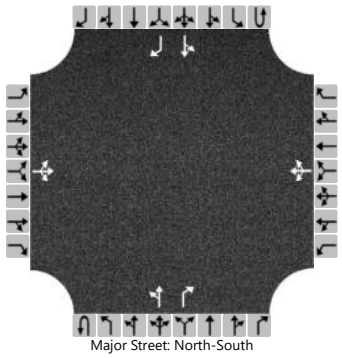
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 5 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	Shingle Point Rd
North/South Street	DE Route 5
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	1	0	0	1	1
Configuration			LTR				LTR			LT		R		LT		R
Volume (veh/h)		103	13	9		27	20	12		15	332	31		9	313	153
Percent Heavy Vehicles (%)		0	0	29		4	0	0		8				11		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized									No				No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.49		7.14	6.50	6.20		4.18				4.21		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.56		3.54	4.00	3.30		2.27				2.30		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			145				69			17				10		
Capacity, c (veh/h)			268				273			997				1090		
v/c Ratio			0.54				0.25			0.02				0.01		
95% Queue Length, Q_{95} (veh)			3.0				1.0			0.1				0.0		
Control Delay (s/veh)			33.3				22.5			8.7				8.3		
Level of Service (LOS)			D				C			A				A		
Approach Delay (s/veh)	33.3				22.5				0.5				0.2			
Approach LOS	D				C											

HCS7 Two-Way Stop-Control Report

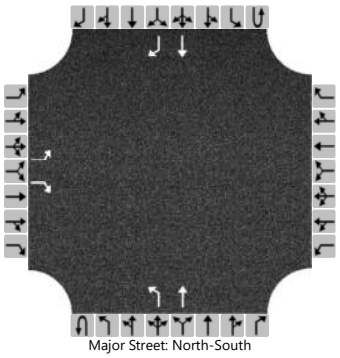
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 5 & Sand Hill
Jurisdiction	Sussex County
East/West Street	Sand Hill Rd
North/South Street	DE Route 5
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		54		139						168	265				334	116
Percent Heavy Vehicles (%)		2		8						11						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.28						4.21						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.37						2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		64		165						200						
Capacity, c (veh/h)		184		639						988						
v/c Ratio		0.35		0.26						0.20						
95% Queue Length, Q_{95} (veh)		1.5		1.0						0.8						
Control Delay (s/veh)		34.7		12.6						9.6						
Level of Service (LOS)		D		B						A						
Approach Delay (s/veh)		18.8								4.9						
Approach LOS		C														

HCS7 Two-Way Stop-Control Report

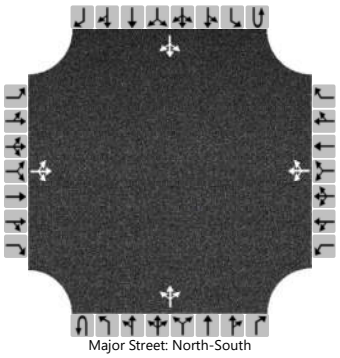
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	DE 5 & Mulberry/Atlantic
Jurisdiction	Sussex County
East/West Street	Mulberry / Atlantic St
North/South Street	DE Route 5
Peak Hour Factor	0.76
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		4	79	84		65	95	27		78	228	47		26	269	7
Percent Heavy Vehicles (%)		0	4	1		5	3	0		3				4		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.54	6.21		7.15	6.53	6.20		4.13				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.04	3.31		3.55	4.03	3.30		2.23				2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			220				246			103				34		
Capacity, c (veh/h)			308				156			1190				1186		
v/c Ratio			0.71				1.57			0.09				0.03		
95% Queue Length, Q_{95} (veh)			5.1				16.7			0.3				0.1		
Control Delay (s/veh)			41.0				338.0			8.3				8.1		
Level of Service (LOS)			E				F			A				A		
Approach Delay (s/veh)	41.0				338.0				2.5				1.0			
Approach LOS	E				F											

HCS7 Two-Way Stop-Control Report

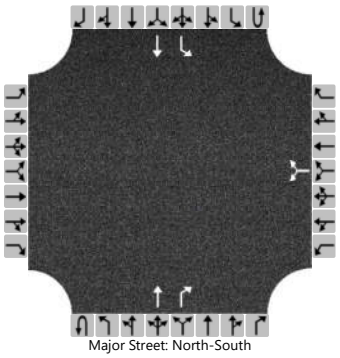
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/25/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	Shingle Point Rd & Access
Jurisdiction	Sussex County
East/West Street	Site Access
North/South Street	Shingle Point Rd
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	1	0	1	1	0
Configuration							LR				T	R		L	T	
Volume (veh/h)						83		37			29	141		64	38	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized										No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							150							80		
Capacity, c (veh/h)							776							1352		
v/c Ratio							0.19							0.06		
95% Queue Length, Q_{95} (veh)							0.7							0.2		
Control Delay (s/veh)							10.7							7.8		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						10.7								5.1		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

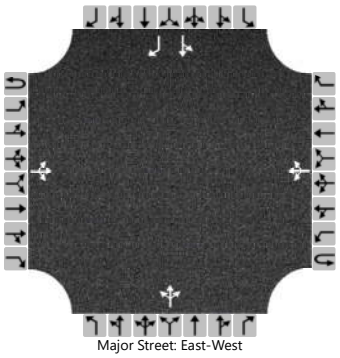
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Summer Saturday Midday
Intersection Orientation	East-West
Project Description	2030 Build with Committed Dev Only

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration			LTR				LTR				LTR			LT		R
Volume (veh/h)		110	462	8		46	499	46		5	0	3		43	2	128
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		117				49					9			48		136
Capacity, c (veh/h)		1004				1075					100			101		535
v/c Ratio		0.12				0.05					0.08			0.47		0.25
95% Queue Length, Q_{95} (veh)		0.4				0.1					0.3			2.1		1.0
Control Delay (s/veh)		9.1				8.5					44.2			68.9		14.0
Level of Service (LOS)		A				A					E			F		B
Approach Delay (s/veh)	2.9				1.2				44.2				28.3			
Approach LOS									E				D			

Case 1B

2030 Future Conditions

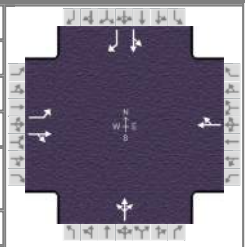
With-Development

With Committed Developments, Only

With Improvements by Others

HCS7 Signalized Intersection Results Summary

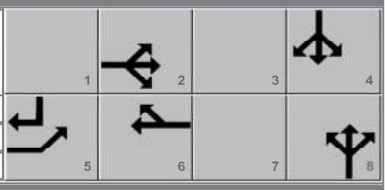
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction		Time Period	Weekday AM	PHF	0.92
Urban Street	US 9	Analysis Year	2030 Build, Committed Dev	Analysis Period	1> 7:00
Intersection	US 9 & Shingle Point Ro…	File Name	US 9 & Shingle Point_AM.xus		
Project Description	2030 Build with Committed Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	120	718	3		780	37	1	1	8	68	1	202

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.5	73.9	19.6	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



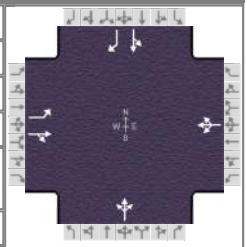
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		8.3		8.0		7.0
Phase Duration, s	12.5	93.4		80.9		26.6		26.6
Change Period, (*Y+R c*), s	7.0	7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s	3.0	0.0		0.0		3.2		3.2
Queue Clearance Time (*g s*), s	5.5					2.8		19.2
Green Extension Time (*g e*), s	0.1	0.0		0.0		0.6		0.4
Phase Call Probability	0.99					1.00		1.00
Max Out Probability	0.00					0.00		0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	130	784			888			11			75	220
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1589	1554			1628			1400			1432	1431
Queue Service Time (*g s*), s	3.5	34.2			55.4			0.0			4.8	17.2
Cycle Queue Clearance Time (*g c*), s	3.5	34.2			55.4			0.8			5.5	17.2
Green Ratio (*g/C*)	0.68	0.72			0.62			0.16			0.16	0.21
Capacity (*c*), veh/h	226	1119			1002			262			293	300
Volume-to-Capacity Ratio (*X*)	0.576	0.700			0.886			0.042			0.256	0.733
Back of Queue (*Q*), ft/ln (95 th percentile)	97.7	408.5			754.5			13.5			86.4	261.3
Back of Queue (*Q*), veh/ln (95 th percentile)	3.7	15.1			28.4			0.5			3.5	10.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh	24.3	9.5			19.5			42.3			44.3	44.3
Incremental Delay (*d 2*), s/veh	0.9	3.7			11.4			0.0			0.2	2.8
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	25.1	13.2			30.9			42.3			44.5	47.1
Level of Service (LOS)	C	B			C			D			D	D
Approach Delay, s/veh / LOS	14.9	B		30.9	C		42.3	D		46.4	D	
Intersection Delay, s/veh / LOS	26.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.63	B	1.89	B	1.72	B	1.95	B
Bicycle LOS Score / LOS	2.00	B	1.95	B	0.51	A	0.97	A

HCS7 Signalized Intersection Results Summary

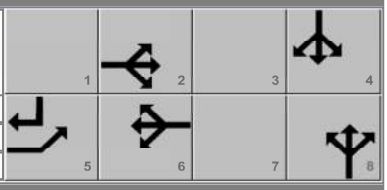
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction		Time Period	Weekday PM	PHF	0.92
Urban Street	US 9	Analysis Year	2030 Build, Committed Dev	Analysis Period	1> 7:00
Intersection	US 9 & Shingle Point Ro…	File Name	US 9 & Shingle Point_PM.xus		
Project Description	2030 Build with Committed Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	221	758	6	6	805	85	1	1	6	46	4	139

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	11.3	59.7	8.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



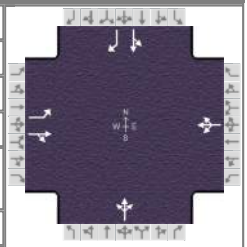
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		8.3		8.0		7.0
Phase Duration, s	18.3	85.0		66.7		15.0		15.0
Change Period, (*Y+R c*), s	7.0	7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s	3.0	0.0		0.0		3.2		3.2
Queue Clearance Time (*g s*), s	11.1					2.5		10.0
Green Extension Time (*g e*), s	0.2	0.0		0.0		0.2		0.0
Phase Call Probability	1.00					1.00		1.00
Max Out Probability	0.02					0.11		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	240	830			974			9			54	151
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1654	1639			1649			1529			1390	1402
Queue Service Time (*g s*), s	9.1	22.6			15.5			0.0			3.2	8.0
Cycle Queue Clearance Time (*g c*), s	9.1	22.6			58.0			0.5			3.7	8.0
Green Ratio (*g/C*)	0.73	0.78			0.60			0.08			0.08	0.19
Capacity (*c*), veh/h	270	1278			1022			163			180	270
Volume-to-Capacity Ratio (*X*)	0.891	0.650			0.953			0.053			0.301	0.560
Back of Queue (*Q*), ft/ln (95 th percentile)	268.9	217.7			800.3			9.1			58.8	154.7
Back of Queue (*Q*), veh/ln (95 th percentile)	10.7	8.4			30.8			0.4			2.2	5.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh	32.4	4.9			19.7			42.6			44.0	36.6
Incremental Delay (*d 2*), s/veh	13.6	2.6			18.9			0.1			0.3	1.6
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	46.0	7.5			38.6			42.6			44.4	38.2
Level of Service (LOS)	D	A			D			D			D	D
Approach Delay, s/veh / LOS	16.1	B		38.6	D		42.6	D		39.8	D	
Intersection Delay, s/veh / LOS	28.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.61	B	1.88	B	1.72	B	1.95	B
Bicycle LOS Score / LOS	2.25	B	2.09	B	0.50	A	0.83	A

HCS7 Signalized Intersection Results Summary

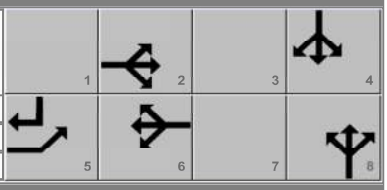
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction		Time Period	Saturday Midday	PHF	0.94
Urban Street	US 9	Analysis Year	2030 Build, Committed	Analysis Period	1> 7:00
Intersection	US 9 & Shingle Point Ro…	File Name	US 9 & Shingle Point_SAT.xus		
Project Description	2030 Build with Committed Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	462	8	46	499	46	5	0	3	43	2	128

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.8	63.6	10.6	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		8.3		8.0		7.0
Phase Duration, s	11.8	82.4		70.6		17.6		17.6
Change Period, ($Y+R_c$), s	7.0	7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s	3.0	0.0		0.0		3.2		3.2
Queue Clearance Time (g_s), s	4.3					2.5		10.6
Green Extension Time (g_e), s	0.1	0.0		0.0		0.2		0.1
Phase Call Probability	0.96					1.00		1.00
Max Out Probability	0.21					0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	117	500			629			9			48	136
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1654	1717			1645			1490			1450	1483
Queue Service Time (g_s), s	2.3	10.1			0.6			0.0			2.6	8.6
Cycle Queue Clearance Time (g_c), s	2.3	10.1			21.0			0.5			3.0	8.6
Green Ratio (*g/C*)	0.70	0.75			0.64			0.11			0.11	0.15
Capacity (*c*), veh/h	510	1295			1085			216			224	228
Volume-to-Capacity Ratio (*X*)	0.230	0.386			0.579			0.039			0.214	0.596
Back of Queue (*Q*), ft/ln (95 th percentile)	25.6	112.8			281.8			8.6			47.4	136.5
Back of Queue (*Q*), veh/ln (95 th percentile)	1.0	4.4			11.3			0.3			1.9	5.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00			0.00	0.00
Uniform Delay (d_1), s/veh	7.8	4.3			10.4			40.2			41.3	39.4
Incremental Delay (d_2), s/veh	0.1	0.9			2.3			0.0			0.2	1.3
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	7.9	5.1			12.7			40.2			41.5	40.7
Level of Service (LOS)	A	A			B			D			D	D
Approach Delay, s/veh / LOS	5.7	A		12.7	B		40.2	D		40.9	D	
Intersection Delay, s/veh / LOS	13.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.62	B	1.87	B	1.72	B	1.95	B
Bicycle LOS Score / LOS	1.51	B	1.52	B	0.50	A	0.79	A

Case 2A

2030 Future Conditions

Without-Development

With Committed + Pending Developments

HCS7 Two-Way Stop-Control Report

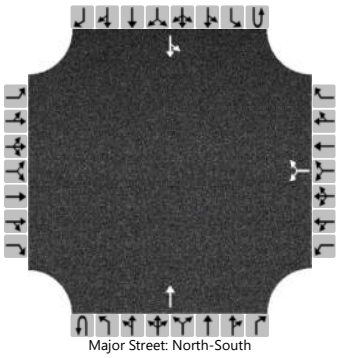
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (N)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				T			LT		
Volume (veh/h)						131		1			356			0	444	
Percent Heavy Vehicles (%)						4		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.44		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.54		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							155							0		
Capacity, c (veh/h)							291							1151		
v/c Ratio							0.53							0.00		
95% Queue Length, Q_{95} (veh)							2.9							0.0		
Control Delay (s/veh)							30.7							8.1		
Level of Service (LOS)							D							A		
Approach Delay (s/veh)						30.7								0.0		
Approach LOS						D										

HCS7 Two-Way Stop-Control Report

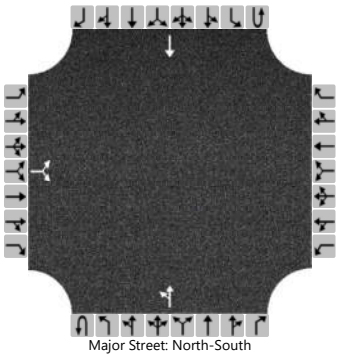
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (S)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT					T	
Volume (veh/h)		123		21						23	365				448	
Percent Heavy Vehicles (%)		5		5						14						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.24						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.33						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			169							27						
Capacity, c (veh/h)			274							982						
v/c Ratio			0.62							0.03						
95% Queue Length, Q_{95} (veh)			3.8							0.1						
Control Delay (s/veh)			37.2							8.8						
Level of Service (LOS)			E							A						
Approach Delay (s/veh)		37.2								0.8						
Approach LOS		E														

HCS7 Two-Way Stop-Control Report

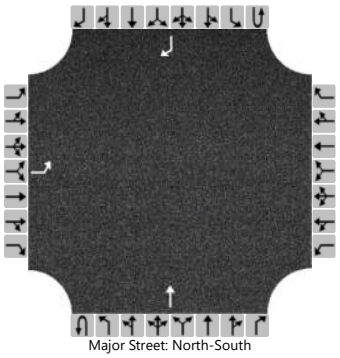
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (E)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	0		0	0	0	0	0	1	0	0	0	0	1
Configuration		L									T					R
Volume (veh/h)		0									132					132
Percent Heavy Vehicles (%)		0														
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1														
Critical Headway (sec)		6.40														
Base Follow-Up Headway (sec)		3.5														
Follow-Up Headway (sec)		3.50														

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0														
Capacity, c (veh/h)		841														
v/c Ratio		0.00														
95% Queue Length, Q_{95} (veh)		0.0														
Control Delay (s/veh)		9.3														
Level of Service (LOS)		A														
Approach Delay (s/veh)																
Approach LOS																

HCS7 Two-Way Stop-Control Report

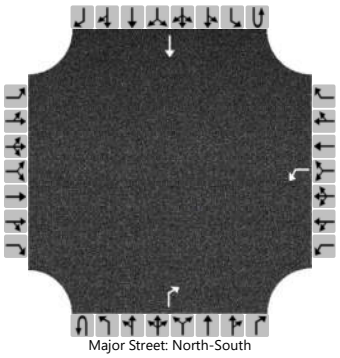
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (W)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	0	0	0	0	1	0	0	1	0
Configuration						L						R			T	
Volume (veh/h)						23						144			127	
Percent Heavy Vehicles (%)						14										
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized												No				
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1										
Critical Headway (sec)						6.54										
Base Follow-Up Headway (sec)						3.5										
Follow-Up Headway (sec)						3.63										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						27										
Capacity, c (veh/h)						815										
v/c Ratio						0.03										
95% Queue Length, Q_{95} (veh)						0.1										
Control Delay (s/veh)						9.6										
Level of Service (LOS)						A										
Approach Delay (s/veh)						9.6										
Approach LOS						A										

HCS7 Two-Way Stop-Control Report

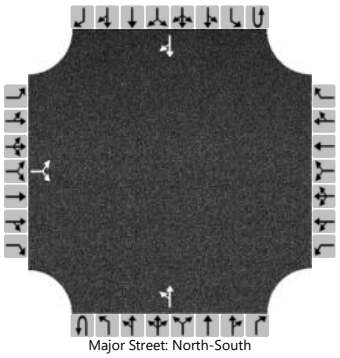
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	Shingle Point & Briarwood
Jurisdiction	Sussex County
East/West Street	Briarwood Rd
North/South Street	Shingle Point Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		17		50						60	134				119	21
Percent Heavy Vehicles (%)		0		3						17						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.23						4.27						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.33						2.35						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			83							74						
Capacity, c (veh/h)			749							1318						
v/c Ratio			0.11							0.06						
95% Queue Length, Q_{95} (veh)			0.4							0.2						
Control Delay (s/veh)			10.4							7.9						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.4								2.8						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

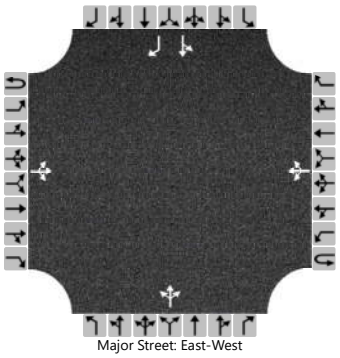
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2021
Time Analyzed	Weekday AM
Intersection Orientation	East-West
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration			LTR				LTR				LTR			LT		R
Volume (veh/h)		119	718	3		0	780	37		1	1	8		68	1	188
Percent Heavy Vehicles (%)		6				0				0	0	13		0	0	4
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.16				4.10				7.10	6.50	6.33		7.10	6.50	6.24
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.25				2.20				3.50	4.00	3.42		3.50	4.00	3.34

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		131				0					11			76		207
Capacity, c (veh/h)		740				837					82			37		345
v/c Ratio		0.18				0.00					0.13			2.08		0.60
95% Queue Length, Q_{95} (veh)		0.6				0.0					0.4			8.3		3.7
Control Delay (s/veh)		10.9				9.3					55.9			733.7		29.9
Level of Service (LOS)		B				A					F			F		D
Approach Delay (s/veh)	4.5				0.0				55.9				218.9			
Approach LOS									F				F			

HCS7 Two-Way Stop-Control Report

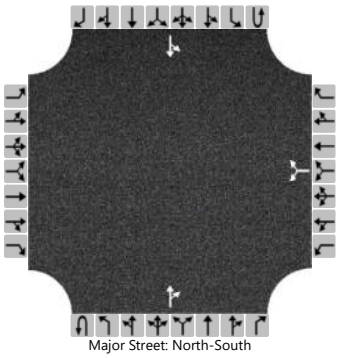
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Prettyman Rd
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	DE 30
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						1		115			269	4		116	346	
Percent Heavy Vehicles (%)						0		6						4		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.26						4.14		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.35						2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							140							140		
Capacity, c (veh/h)							693							1219		
v/c Ratio							0.20							0.11		
95% Queue Length, Q_{95} (veh)							0.8							0.4		
Control Delay (s/veh)							11.5							8.3		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					11.5								3.0			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

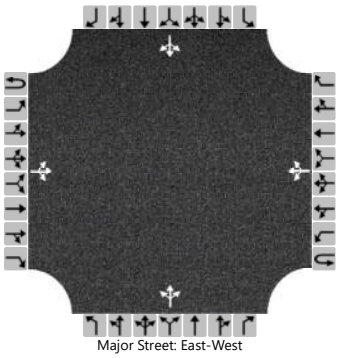
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	East-West
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	Prettyman & Pettyjohn
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	Pettyjohn Rd
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		9	122	1		24	98	10		1	24	38		2	13	9
Percent Heavy Vehicles (%)		0				0				0	0	0		0	20	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.70	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.18	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		10				27					71				27	
Capacity, c (veh/h)		1479				1458					741				648	
v/c Ratio		0.01				0.02					0.10				0.04	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.3				0.1	
Control Delay (s/veh)		7.5				7.5					10.4				10.8	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.6				1.5				10.4				10.8			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

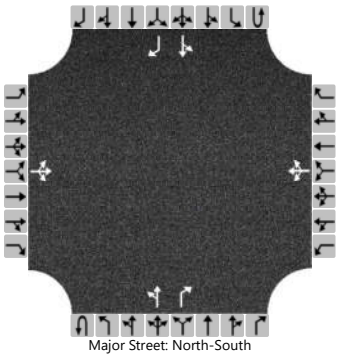
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 5 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	Shingle Point Rd
North/South Street	DE Route 5
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	1	0	0	1	1
Configuration			LTR				LTR			LT		R		LT		R
Volume (veh/h)		86	32	31		13	18	6		22	340	39		5	383	111
Percent Heavy Vehicles (%)		3	9	7		0	0	0		11				20		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized										No				No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.59	6.27		7.10	6.50	6.20		4.21				4.30		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.08	3.36		3.50	4.00	3.30		2.30				2.38		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			184				46			27				6		
Capacity, c (veh/h)			233				206			927				1006		
v/c Ratio			0.79				0.22			0.03				0.01		
95% Queue Length, Q_{95} (veh)			5.8				0.8			0.1				0.0		
Control Delay (s/veh)			61.2				27.4			9.0				8.6		
Level of Service (LOS)			F				D			A				A		
Approach Delay (s/veh)		61.2				27.4				0.8				0.1		
Approach LOS		F				D										

HCS7 Two-Way Stop-Control Report

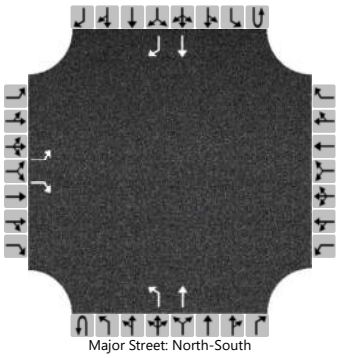
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 5 & Sand Hill
Jurisdiction	Sussex County
East/West Street	Sand Hill Rd
North/South Street	DE Route 5
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		289		249						147	278				243	119
Percent Heavy Vehicles (%)		7		25						8						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.47		6.45						4.18						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.56		3.53						2.27						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		344		296						175						
Capacity, c (veh/h)		231		698						1097						
v/c Ratio		1.49		0.42						0.16						
95% Queue Length, Q_{95} (veh)		20.4		2.1						0.6						
Control Delay (s/veh)		280.8		13.9						8.9						
Level of Service (LOS)		F		B						A						
Approach Delay (s/veh)		157.3								4.0						
Approach LOS		F														

HCS7 Two-Way Stop-Control Report

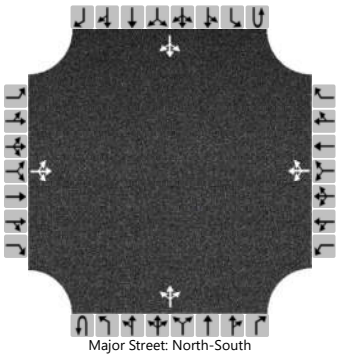
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 5 & Mulberry/Atlantic
Jurisdiction	Sussex County
East/West Street	Mulberry / Atlantic St
North/South Street	DE Route 5
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		2	109	76		91	69	16		117	314	101		32	233	2
Percent Heavy Vehicles (%)		0	7	7		4	3	6		0				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.57	6.27		7.14	6.53	6.26		4.10				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.06	3.36		3.54	4.03	3.35		2.20				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			205				193			129				35		
Capacity, c (veh/h)			270				111			1318				1099		
v/c Ratio			0.76				1.74			0.10				0.03		
95% Queue Length, Q_{95} (veh)			5.6				15.1			0.3				0.1		
Control Delay (s/veh)			51.1				432.8			8.0				8.4		
Level of Service (LOS)			F				F			A				A		
Approach Delay (s/veh)	51.1				432.8				2.6				1.3			
Approach LOS	F				F											

HCS7 Two-Way Stop-Control Report

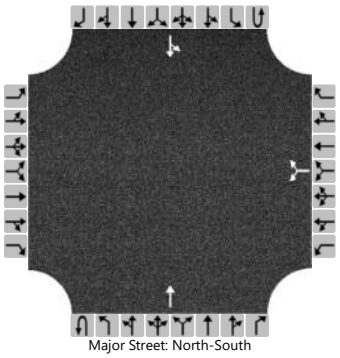
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (N)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				T			LT		
Volume (veh/h)						120		3			459			1	411	
Percent Heavy Vehicles (%)						5		33						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.45		6.53						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.55		3.60						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							138							1		
Capacity, c (veh/h)							276							1060		
v/c Ratio							0.50							0.00		
95% Queue Length, Q_{95} (veh)							2.6							0.0		
Control Delay (s/veh)							30.4							8.4		
Level of Service (LOS)							D							A		
Approach Delay (s/veh)						30.4								0.0		
Approach LOS						D										

HCS7 Two-Way Stop-Control Report

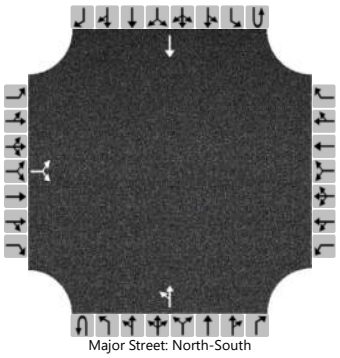
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (S)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT					T	
Volume (veh/h)		139		17						30	451				400	
Percent Heavy Vehicles (%)		3		0						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			175							34						
Capacity, c (veh/h)			266							1122						
v/c Ratio			0.66							0.03						
95% Queue Length, Q_{95} (veh)			4.2							0.1						
Control Delay (s/veh)			41.3							8.3						
Level of Service (LOS)			E							A						
Approach Delay (s/veh)		41.3								0.8						
Approach LOS		E														

HCS7 Two-Way Stop-Control Report

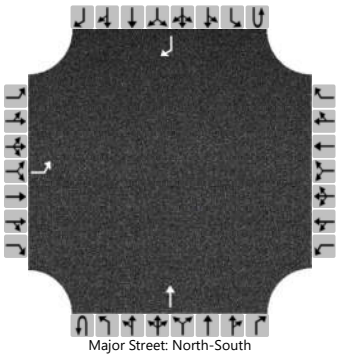
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (E)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	0		0	0	0	0	0	1	0	0	0	0	1
Configuration		L									T					R
Volume (veh/h)		1									131					123
Percent Heavy Vehicles (%)		0														
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1														
Critical Headway (sec)		6.40														
Base Follow-Up Headway (sec)		3.5														
Follow-Up Headway (sec)		3.50														

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1														
Capacity, c (veh/h)		850														
v/c Ratio		0.00														
95% Queue Length, Q_{95} (veh)		0.0														
Control Delay (s/veh)		9.2														
Level of Service (LOS)		A														
Approach Delay (s/veh)		9.2														
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

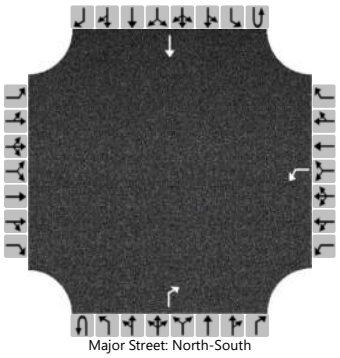
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (W)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	0	0	0	0	1	0	0	1	0
Configuration						L						R			T	
Volume (veh/h)						30						156			131	
Percent Heavy Vehicles (%)						0										
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized												No				
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1										
Critical Headway (sec)						6.40										
Base Follow-Up Headway (sec)						3.5										
Follow-Up Headway (sec)						3.50										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						34										
Capacity, c (veh/h)						850										
v/c Ratio						0.04										
95% Queue Length, Q_{95} (veh)						0.1										
Control Delay (s/veh)						9.4										
Level of Service (LOS)						A										
Approach Delay (s/veh)						9.4										
Approach LOS						A										

HCS7 Two-Way Stop-Control Report

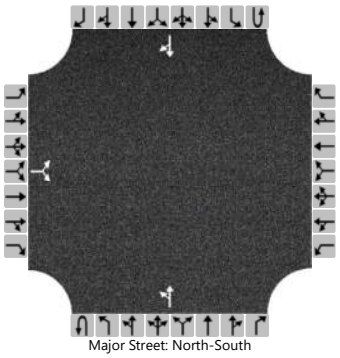
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	Shingle Point & Briarwood
Jurisdiction	Sussex County
East/West Street	Briarwood Rd
North/South Street	Shingle Point Rd
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		17		56						47	136				124	22
Percent Heavy Vehicles (%)		0		6						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.26						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.35						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			76							49						
Capacity, c (veh/h)			805							1441						
v/c Ratio			0.09							0.03						
95% Queue Length, Q_{95} (veh)			0.3							0.1						
Control Delay (s/veh)			9.9							7.6						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.9								2.2						
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

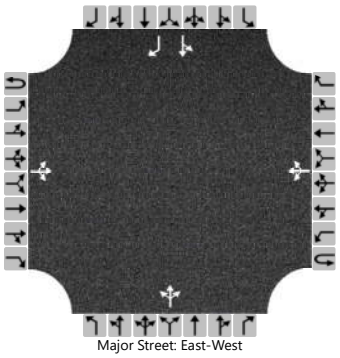
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	East-West
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration			LTR				LTR				LTR			LT		R
Volume (veh/h)		204	758	6		6	805	85		1	1	6		46	4	130
Percent Heavy Vehicles (%)		1				0				0	0	0		0	25	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.11				4.10				7.10	6.50	6.20		7.10	6.75	6.26
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.21				2.20				3.50	4.00	3.30		3.50	4.23	3.35

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		222				7					9			54		141
Capacity, c (veh/h)		716				810					37			16		322
v/c Ratio		0.31				0.01					0.23			3.36		0.44
95% Queue Length, Q_{95} (veh)		1.3				0.0					0.8			7.5		2.1
Control Delay (s/veh)		12.3				9.5					129.8			1545.0		24.6
Level of Service (LOS)		B				A					F			F		C
Approach Delay (s/veh)	8.2				0.2				129.8				446.9			
Approach LOS									F				F			

HCS7 Two-Way Stop-Control Report

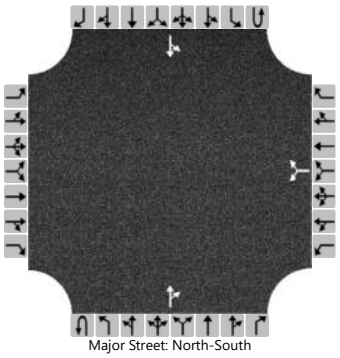
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Prettyman Rd
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	DE 30
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						2		181			288	3		113	300	
Percent Heavy Vehicles (%)						0		4						2		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.24						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.34						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							220							136		
Capacity, c (veh/h)							676							1208		
v/c Ratio							0.33							0.11		
95% Queue Length, Q_{95} (veh)							1.4							0.4		
Control Delay (s/veh)							12.9							8.4		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						12.9								3.1		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

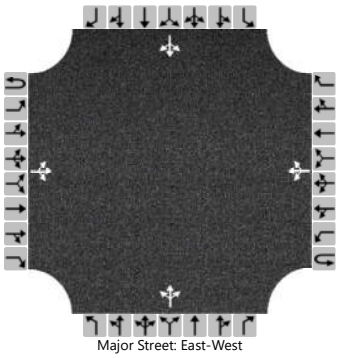
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	East-West
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	Prettyman & Pettyjohn
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	Pettyjohn Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	94	3		45	160	5		3	12	36		11	19	19
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				47					54				52	
Capacity, c (veh/h)		1415				1503					770				616	
v/c Ratio		0.01				0.03					0.07				0.08	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.2				0.3	
Control Delay (s/veh)		7.6				7.5					10.0				11.4	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.8				1.8				10.0				11.4			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

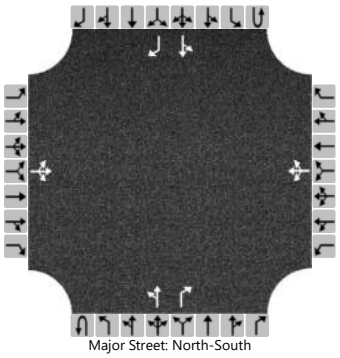
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 5 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	Shingle Point Rd
North/South Street	DE Route 5
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	1	0	0	1	1
Configuration			LTR				LTR			LT		R		LT		R
Volume (veh/h)		107	13	9		27	20	12		15	371	31		9	343	115
Percent Heavy Vehicles (%)		0	0	29		4	0	0		8				11		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized										No				No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.49		7.14	6.50	6.20		4.18				4.21		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.56		3.54	4.00	3.30		2.27				2.30		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			150				69			17				10		
Capacity, c (veh/h)			236				253			1005				1048		
v/c Ratio			0.64				0.27			0.02				0.01		
95% Queue Length, Q_{95} (veh)			3.9				1.1			0.1				0.0		
Control Delay (s/veh)			43.6				24.4			8.6				8.5		
Level of Service (LOS)			E				C			A				A		
Approach Delay (s/veh)		43.6				24.4				0.5				0.2		
Approach LOS		E				C										

HCS7 Two-Way Stop-Control Report

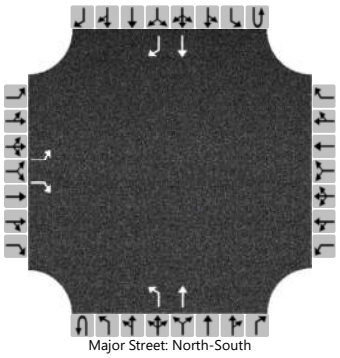
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 5 & Sand Hill
Jurisdiction	Sussex County
East/West Street	Sand Hill Rd
North/South Street	DE Route 5
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		164		171						234	242				294	287
Percent Heavy Vehicles (%)		2		8						11						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.28						4.21						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.37						2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		195		204						279						
Capacity, c (veh/h)		139		680						863						
v/c Ratio		1.40		0.30						0.32						
95% Queue Length, Q_{95} (veh)		12.7		1.3						1.4						
Control Delay (s/veh)		277.3		12.5						11.2						
Level of Service (LOS)		F		B						B						
Approach Delay (s/veh)		142.1								7.3						
Approach LOS		F														

HCS7 Two-Way Stop-Control Report

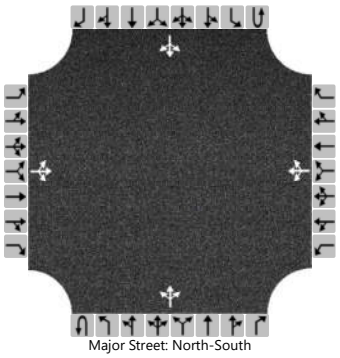
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	DE 5 & Mulberry/Atlantic
Jurisdiction	Sussex County
East/West Street	Mulberry / Atlantic St
North/South Street	DE Route 5
Peak Hour Factor	0.76
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		4	79	77		167	95	27		114	275	47		26	297	7
Percent Heavy Vehicles (%)		0	4	1		5	3	0		3				4		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.54	6.21		7.15	6.53	6.20		4.13				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.04	3.31		3.55	4.03	3.30		2.23				2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			211				380			150				34		
Capacity, c (veh/h)			215				67			1153				1125		
v/c Ratio			0.98				5.63			0.13				0.03		
95% Queue Length, Q_{95} (veh)			8.6				42.5			0.4				0.1		
Control Delay (s/veh)			103.6				2206.4			8.6				8.3		
Level of Service (LOS)			F				F			A				A		
Approach Delay (s/veh)	103.6				2206.4				3.3				1.0			
Approach LOS	F				F											

HCS7 Two-Way Stop-Control Report

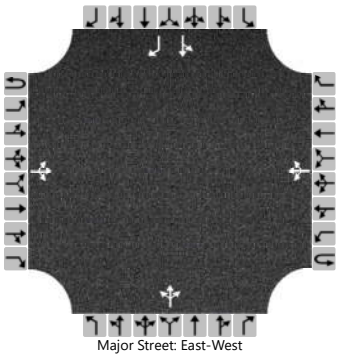
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Summer Saturday Midday
Intersection Orientation	East-West
Project Description	2030 No-Build w/ Committed + Pending Dev

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration			LTR				LTR				LTR			LT		R
Volume (veh/h)		101	462	8		46	499	46		5	0	3		43	2	122
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		107				49					9			48		130
Capacity, c (veh/h)		1004				1075					106			106		535
v/c Ratio		0.11				0.05					0.08			0.45		0.24
95% Queue Length, Q_{95} (veh)		0.4				0.1					0.3			2.0		0.9
Control Delay (s/veh)		9.0				8.5					41.8			64.6		13.9
Level of Service (LOS)		A				A					E			F		B
Approach Delay (s/veh)	2.7				1.2				41.8				27.5			
Approach LOS									E				D			

Case 2A

2030 Future Conditions

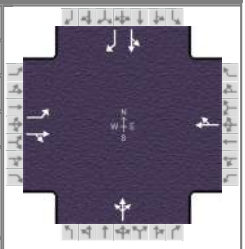
Without-Development

With Committed + Pending Developments

With Improvements by Others

HCS7 Signalized Intersection Results Summary

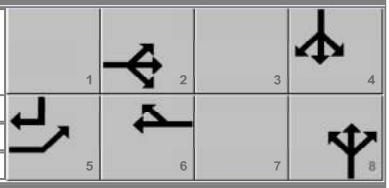
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction		Time Period	Weekday AM	PHF	0.92
Urban Street	US 9	Analysis Year	2030 No-Build, Committed + Pending	Analysis Period	1> 7:00
Intersection	US 9 & Shingle Point Ro…	File Name	US 9 & Shingle Point_AM.xus		
Project Description	2030 No-Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	119	718	3		780	37	1	1	8	68	1	188

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.4	75.2	18.4	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



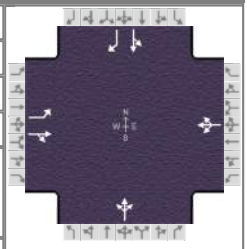
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		8.3		8.0		7.0
Phase Duration, s	12.4	94.6		82.2		25.4		25.4
Change Period, (*Y+R c*), s	7.0	7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s	3.0	0.0		0.0		3.2		3.2
Queue Clearance Time (*g s*), s	5.3					2.8		18.0
Green Extension Time (*g e*), s	0.1	0.0		0.0		0.5		0.4
Phase Call Probability	0.99					1.00		1.00
Max Out Probability	0.00					0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	129	784			888			11			75	204
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1589	1554			1628			1400			1432	1431
Queue Service Time (*g s*), s	3.3	33.0			53.8			0.0			4.8	16.0
Cycle Queue Clearance Time (*g c*), s	3.3	33.0			53.8			0.8			5.6	16.0
Green Ratio (*g/C*)	0.69	0.73			0.63			0.15			0.15	0.20
Capacity (*c*), veh/h	239	1134			1020			248			279	284
Volume-to-Capacity Ratio (*X*)	0.541	0.691			0.871			0.044			0.268	0.720
Back of Queue (*Q*), ft/ln (95 th percentile)	93	389			722.1			13.7			87.7	244.5
Back of Queue (*Q*), veh/ln (95 th percentile)	3.6	14.4			27.1			0.5			3.5	9.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh	22.9	8.8			18.4			43.3			45.4	45.0
Incremental Delay (*d 2*), s/veh	0.7	3.5			10.1			0.0			0.2	1.7
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	23.6	12.3			28.6			43.3			45.5	46.6
Level of Service (LOS)	C	B			C			D			D	D
Approach Delay, s/veh / LOS	13.9	B		28.6	C		43.3	D		46.4	D	
Intersection Delay, s/veh / LOS	24.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.63	B	1.88	B	1.72	B	1.95	B
Bicycle LOS Score / LOS	1.99	B	1.95	B	0.51	A	0.95	A

HCS7 Signalized Intersection Results Summary

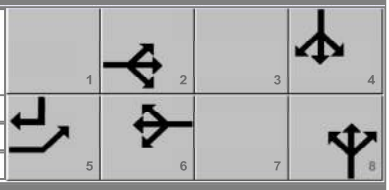
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction		Time Period	Weekday PM	PHF	0.92
Urban Street	US 9	Analysis Year	2030 No-Build, Committed + Pending	Analysis Period	1> 7:00
Intersection	US 9 & Shingle Point Ro…	File Name	US 9 & Shingle Point_PM.xus		
Project Description	2030 No-Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	204	758	6	6	805	85	1	1	6	46	4	130

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	7.4	63.6	8.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



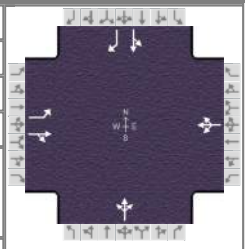
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		8.3		8.0		7.0
Phase Duration, s	14.4	85.0		70.6		15.0		15.0
Change Period, (*Y+R c*), s	7.0	7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s	3.0	0.0		0.0		3.2		3.2
Queue Clearance Time (*g s*), s	7.0					2.5		10.0
Green Extension Time (*g e*), s	0.3	0.0		0.0		0.2		0.0
Phase Call Probability	1.00					1.00		1.00
Max Out Probability	0.00					0.10		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	222	830			974			9			54	141
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1654	1639			1649			1529			1390	1402
Queue Service Time (*g s*), s	5.0	22.6			7.2			0.0			3.2	8.0
Cycle Queue Clearance Time (*g c*), s	5.0	22.6			52.5			0.5			3.7	8.0
Green Ratio (*g/C*)	0.73	0.78			0.64			0.08			0.08	0.16
Capacity (*c*), veh/h	257	1278			1083			163			180	218
Volume-to-Capacity Ratio (*X*)	0.861	0.650			0.899			0.053			0.301	0.650
Back of Queue (*Q*), ft/ln (95 th percentile)	158.8	217.7			669.6			9.1			58.8	160.9
Back of Queue (*Q*), veh/ln (95 th percentile)	6.3	8.4			25.8			0.4			2.2	6.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh	25.9	4.9			16.2			42.6			44.0	39.7
Incremental Delay (*d 2*), s/veh	4.3	2.6			11.8			0.1			0.3	5.3
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	30.3	7.5			28.0			42.6			44.4	45.0
Level of Service (LOS)	C	A			C			D			D	D
Approach Delay, s/veh / LOS	12.3	B		28.0	C		42.6	D		44.8	D	
Intersection Delay, s/veh / LOS	22.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.61	B	1.87	B	1.72	B	1.95	B
Bicycle LOS Score / LOS	2.22	B	2.09	B	0.50	A	0.81	A

HCS7 Signalized Intersection Results Summary

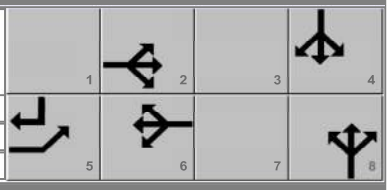
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction		Time Period	Saturday Midday	PHF	0.94
Urban Street	US 9	Analysis Year	2030 No-Build, Committed + Pending	Analysis Period	1> 7:00
Intersection	US 9 & Shingle Point Ro…	File Name	US 9 & Shingle Point_SAT.xus		
Project Description	2030 No-Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	101	462	8	46	499	46	5	0	3	43	2	122

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.7	64.1	10.2	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



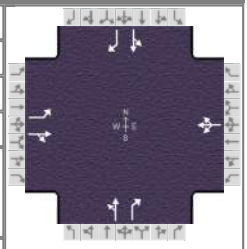
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		8.3		8.0		7.0
Phase Duration, s	11.7	82.8		71.1		17.2		17.2
Change Period, (*Y+R c*), s	7.0	7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s	3.0	0.0		0.0		3.2		3.2
Queue Clearance Time (*g s*), s	4.0					2.5		10.2
Green Extension Time (*g e*), s	0.1	0.0		0.0		0.2		0.1
Phase Call Probability	0.95					0.99		0.99
Max Out Probability	0.09					0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	107	500			629			9			48	130
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1654	1717			1646			1492			1450	1483
Queue Service Time (*g s*), s	2.0	9.9			0.1			0.0			2.6	8.2
Cycle Queue Clearance Time (*g c*), s	2.0	9.9			20.7			0.5			3.1	8.2
Green Ratio (*g/C*)	0.71	0.76			0.64			0.10			0.10	0.15
Capacity (*c*), veh/h	515	1301			1093			211			218	222
Volume-to-Capacity Ratio (*X*)	0.209	0.384			0.575			0.040			0.219	0.586
Back of Queue (*Q*), ft/ln (95 th percentile)	22.8	108.8			277.5			8.7			47.7	2.5
Back of Queue (*Q*), veh/ln (95 th percentile)	0.9	4.3			11.1			0.3			1.9	0.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh	7.5	4.1			10.2			40.5			41.7	39.6
Incremental Delay (*d 2*), s/veh	0.1	0.9			2.2			0.0			0.2	0.9
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	7.6	5.0			12.4			40.6			41.9	40.6
Level of Service (LOS)	A	A			B			D			D	D
Approach Delay, s/veh / LOS	5.4	A		12.4	B		40.6	D		40.9	D	
Intersection Delay, s/veh / LOS	13.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.62	B	1.87	B	1.72	B	1.95	B
Bicycle LOS Score / LOS	1.49	A	1.52	B	0.50	A	0.78	A

HCS7 Signalized Intersection Results Summary

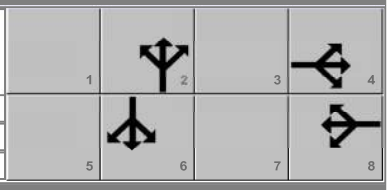
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 28, 2022	Area Type	Other
Jurisdiction	Sussex County	Time Period	Weekday AM	PHF	0.81
Urban Street	DE 5	Analysis Year	2030 No Build with Committed + Pending Dev	Analysis Period	1> 7:00
Intersection	DE 5 & Shingle Point Rd	File Name	DE 5 & Shingle Point_AM_EBL.xus		
Project Description	2030 No Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	86	32	31	13	18	6	22	340	39	5	383	111

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	62.0	14.0	0.0	0.0	0.0	0.0	
Yellow	5.0	5.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



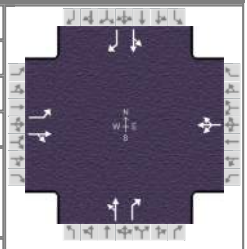
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		8.0		7.0		7.0
Phase Duration, s		21.0		21.0		69.0		69.0
Change Period, ($Y+R_c$), s		7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.1		3.1		0.0		0.0
Queue Clearance Time (g_s), s		13.4		6.2				
Green Extension Time (g_e), s		0.3		0.3		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	106	78			46			447	48		479	137
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1369	1489			1509			1673	1391		1501	1340
Queue Service Time (g_s), s	6.8	4.2			0.0			0.0	1.0		0.0	3.2
Cycle Queue Clearance Time (g_c), s	11.4	4.2			4.2			9.9	1.0		13.2	3.2
Green Ratio (*g/C*)	0.16	0.16			0.16			0.69	0.69		0.69	0.69
Capacity (*c*), veh/h	227	237			294			1190	954		1069	919
Volume-to-Capacity Ratio (*X*)	0.469	0.329			0.155			0.376	0.050		0.448	0.149
Back of Queue (*Q*), ft/ln (95 th percentile)	99.9	68.7			38.6			145.4	12.4		193.4	37.2
Back of Queue (*Q*), veh/ln (95 th percentile)	3.9	2.6			1.5			5.7	0.5		6.8	1.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00	0.11		0.00	0.17
Uniform Delay (d_1), s/veh	38.9	33.6			32.7			6.0	4.6		6.5	5.0
Incremental Delay (d_2), s/veh	0.6	0.3			0.1			0.9	0.1		1.4	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0			0.0	0.0		0.0	0.0
Control Delay (*d*), s/veh	39.5	33.9			32.8			6.9	4.7		7.9	5.3
Level of Service (LOS)	D	C			C			A	A		A	A
Approach Delay, s/veh / LOS	37.1	D		32.8	C		6.7	A		7.3	A	
Intersection Delay, s/veh / LOS	12.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.94	B	1.94	B	1.63	B	1.86	B
Bicycle LOS Score / LOS	0.79	A	0.56	A	1.30	A	1.50	B

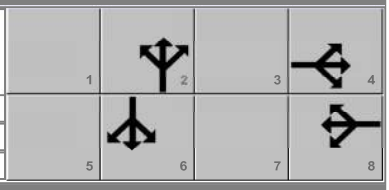
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 28, 2022	Area Type	Other
Jurisdiction	Sussex County	Time Period	Weekday PM	PHF	0.86
Urban Street	DE 5	Analysis Year	2030 No Build with Committed + Pending Dev	Analysis Period	1> 7:00
Intersection	DE 5 & Shingle Point Rd	File Name	DE 5 & Shingle Point_PM_EBL.xus		
Project Description	2030 No Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	107	13	9	27	20	12	15	371	31	9	343	115

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	62.6	13.4	0.0	0.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	5.0	5.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0		



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		8.0		7.0		7.0
Phase Duration, s		20.4		20.4		69.6		69.6
Change Period, ($Y+R_c$), s		7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.0		3.0		0.0		0.0
Queue Clearance Time (g_s), s		13.2		5.4				
Green Extension Time (g_e), s		0.3		0.3		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	124	26			69			449	36		409	134
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1392	1476			1528			1607	1425		1671	1341
Queue Service Time (g_s), s	7.8	1.4			1.1			0.0	0.7		0.0	3.0
Cycle Queue Clearance Time (g_c), s	11.2	1.4			3.4			10.5	0.7		8.8	3.0
Green Ratio (*g/C*)	0.15	0.15			0.15			0.70	0.70		0.70	0.70
Capacity (*c*), veh/h	236	220			286			1159	991		1203	932
Volume-to-Capacity Ratio (*X*)	0.527	0.116			0.239			0.387	0.036		0.340	0.143
Back of Queue (*Q*), ft/ln (95 th percentile)	115.4	22.4			60.8			150.5	8.6		126.4	35.1
Back of Queue (*Q*), veh/ln (95 th percentile)	4.6	0.8			2.4			5.6	0.3		4.9	1.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00	0.08		0.00	0.16
Uniform Delay (d_1), s/veh	39.0	33.1			34.0			5.8	4.3		5.5	4.6
Incremental Delay (d_2), s/veh	0.7	0.1			0.2			1.0	0.1		0.8	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0			0.0	0.0		0.0	0.0
Control Delay (*d*), s/veh	39.6	33.2			34.1			6.8	4.4		6.3	5.0
Level of Service (LOS)	D	C			C			A	A		A	A
Approach Delay, s/veh / LOS	38.5	D		34.1	C		6.6	A		6.0	A	
Intersection Delay, s/veh / LOS	11.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.94	B	1.94	B	1.63	B	1.85	B
Bicycle LOS Score / LOS	0.74	A	0.60	A	1.29	A	1.38	A

HCS7 Roundabouts Report

General Information

Analyst	T. Lord
Agency or Co.	Pennoni
Date Performed	2/1/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Project Description	2030 No-Build with Committ...

Site Information

Intersection	DE 5 & Sand Hill Road
E/W Street Name	Sand Hill Road
N/S Street Name	DE 5
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.84
Jurisdiction	Sussex County

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0
Lane Assignment			LR								LT				TR	
Volume (V), veh/h	0	289		249					0	147	278		0		243	119
Percent Heavy Vehicles, %	0	7		25					0	8	1		0		8	3
Flow Rate (v_{PCE}), pc/h	0	368		371					0	189	334		0		312	146
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1								1				1			
Pedestrians Crossing, p/h	0								0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763						4.9763			4.9763	
Follow-Up Headway (s)		2.6087						2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		739						523			458	
Entry Volume, veh/h		641						506			431	
Circulating Flow (v_c), pc/h	312			891			368			189		
Exiting Flow (v_{ex}), pc/h	0			335			702			683		
Capacity (c_{pce}), pc/h		1004						948			1138	
Capacity (c), veh/h		870						917			1070	
v/c Ratio (x)		0.74						0.55			0.40	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		18.4						11.4			7.6	
Lane LOS		C						B			A	
95% Queue, veh		6.8						3.5			2.0	
Approach Delay, s/veh	18.4						11.4			7.6		
Approach LOS	C						B			A		
Intersection Delay, s/veh | LOS	13.2						B					

HCS7 Roundabouts Report

General Information

Analyst	T. Lord
Agency or Co.	Pennoni
Date Performed	2/1/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Project Description	2030 No-Build with Committ...

Site Information

Intersection	DE 5 & Sand Hill Road
E/W Street Name	Sand Hill Road
N/S Street Name	DE 5
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.84
Jurisdiction	Sussex County

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0
Lane Assignment			LR								LT				TR	
Volume (V), veh/h	0	164		171					0	234	242		0		294	287
Percent Heavy Vehicles, %	0	2		8					0	10	3		0		4	3
Flow Rate (v_{PCE}), pc/h	0	199		220					0	306	297		0		364	352
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1								1				1			
Pedestrians Crossing, p/h	0								0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763						4.9763			4.9763	
Follow-Up Headway (s)		2.6087						2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

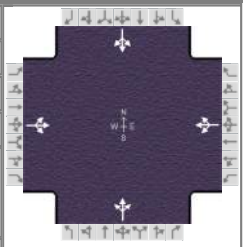
Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		419						603			716	
Entry Volume, veh/h		399						567			692	
Circulating Flow (v_c), pc/h	364			802			199			306		
Exiting Flow (v_{ex}), pc/h	0			658			496			584		
Capacity (c_{pce}), pc/h		952						1126			1010	
Capacity (c), veh/h		906						1058			976	
v/c Ratio (x)		0.44						0.54			0.71	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		9.3						9.9			15.7	
Lane LOS		A						A			C	
95% Queue, veh		2.3						3.3			6.2	
Approach Delay, s/veh	9.3						9.9			15.7		
Approach LOS	A						A			C		
Intersection Delay, s/veh | LOS	12.2						B					

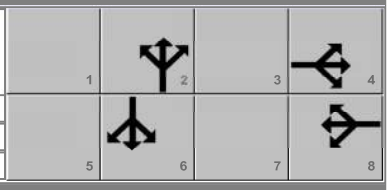
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction	Sussex County	Time Period	Weekday AM	PHF	0.91
Urban Street	DE 5	Analysis Year	2030 No Build with Committed + Pending Dev	Analysis Period	1> 7:00
Intersection	DE 5 & Mulberry St/Atla…	File Name	DE 5 & Mulberry_AM.xus		
Project Description	2030 No-Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	2	109	76	91	69	16	117	314	101	32	233	2

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	58.7	17.3	0.0	0.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	5.0	5.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0		



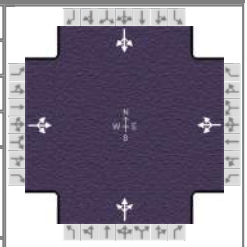
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		24.3		24.3		65.7		65.7
Change Period, (*Y+R c*), s		7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.4		3.4		0.0		0.0
Queue Clearance Time (*g s*), s		13.3		16.7				
Green Extension Time (*g e*), s		0.7		0.5		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.02		0.17				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		205			193			585			293	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1531			1176			1492			1624	
Queue Service Time (*g s*), s		0.0			3.4			12.2			0.0	
Cycle Queue Clearance Time (*g c*), s		11.3			14.7			19.3			6.3	
Green Ratio (*g/C*)		0.19			0.19			0.65			0.65	
Capacity (*c*), veh/h		334			286			1022			1104	
Volume-to-Capacity Ratio (*X*)		0.615			0.675			0.572			0.266	
Back of Queue (*Q*), ft/ln (95 th percentile)		200.7			195.6			267.5			107.6	
Back of Queue (*Q*), veh/ln (95 th percentile)		7.6			7.6			10.4			4.1	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00			0.00			0.00	
Uniform Delay (*d 1*), s/veh		34.0			35.3			8.6			6.5	
Incremental Delay (*d 2*), s/veh		0.7			1.4			2.3			0.6	
Initial Queue Delay (*d 3*), s/veh		0.0			0.0			0.0			0.0	
Control Delay (*d*), s/veh		34.7			36.7			11.0			7.1	
Level of Service (LOS)		C			D			B			A	
Approach Delay, s/veh / LOS	34.7	C		36.7	D		11.0	B		7.1	A	
Intersection Delay, s/veh / LOS	17.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.71	B	1.71	B	1.64	B	1.64	B
Bicycle LOS Score / LOS	0.83	A	0.81	A	1.45	A	0.97	A

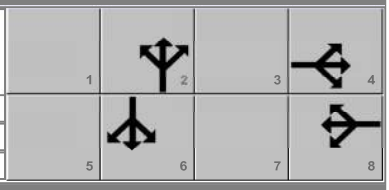
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction	Sussex County	Time Period	Weekday PM	PHF	0.76
Urban Street	DE 5	Analysis Year	2030 No Build with Committed + Pending Dev	Analysis Period	1> 7:00
Intersection	DE 5 & Mulberry St/Atla…	File Name	DE 5 & Mulberry_PM.xus		
Project Description	2030 No-Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	4	79	77	167	95	27	114	275	47	26	297	7

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	48.0	28.0	0.0	0.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	5.0	5.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0		



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		35.0		35.0		55.0		55.0
Change Period, (*Y+R c*), s		7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.4		3.4		0.0		0.0
Queue Clearance Time (*g s*), s		11.6		29.5				
Green Extension Time (*g e*), s		1.4		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		211			380			574			434	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1600			1236			1414			1704	
Queue Service Time (*g s*), s		0.0			17.9			15.0			0.0	
Cycle Queue Clearance Time (*g c*), s		9.6			27.5			28.6			13.6	
Green Ratio (*g/C*)		0.31			0.31			0.53			0.53	
Capacity (*c*), veh/h		539			448			805			952	
Volume-to-Capacity Ratio (*X*)		0.391			0.849			0.713			0.456	
Back of Queue (*Q*), ft/ln (95 th percentile)		164.5			381.9			381.3			242.4	
Back of Queue (*Q*), veh/ln (95 th percentile)		6.4			14.9			15.0			9.5	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00			0.00			0.00	
Uniform Delay (*d 1*), s/veh		24.7			31.9			16.3			13.0	
Incremental Delay (*d 2*), s/veh		0.2			13.6			5.3			1.6	
Initial Queue Delay (*d 3*), s/veh		0.0			0.0			0.0			0.0	
Control Delay (*d*), s/veh		24.8			45.5			21.6			14.6	
Level of Service (LOS)		C			D			C			B	
Approach Delay, s/veh / LOS	24.8		C	45.5		D	21.6		C	14.6		B
Intersection Delay, s/veh / LOS	25.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.69	B	1.69	B	1.66	B	1.66	B
Bicycle LOS Score / LOS	0.83	A	1.12	A	1.43	A	1.20	A

Case 2B

2030 Future Conditions

With-Development

With Committed + Pending Developments

HCS7 Two-Way Stop-Control Report

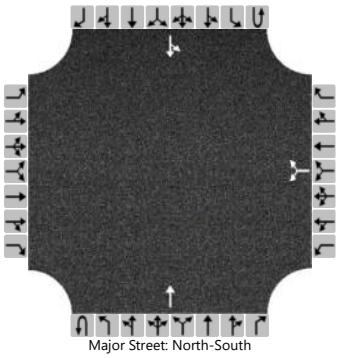
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (N)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				T			LT		
Volume (veh/h)						250		1			375			0	444	
Percent Heavy Vehicles (%)						4		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.44		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.54		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							295							0		
Capacity, c (veh/h)							282							1130		
v/c Ratio							1.05							0.00		
95% Queue Length, Q_{95} (veh)							11.4							0.0		
Control Delay (s/veh)							107.2							8.2		
Level of Service (LOS)							F							A		
Approach Delay (s/veh)						107.2								0.0		
Approach LOS						F										

HCS7 Two-Way Stop-Control Report

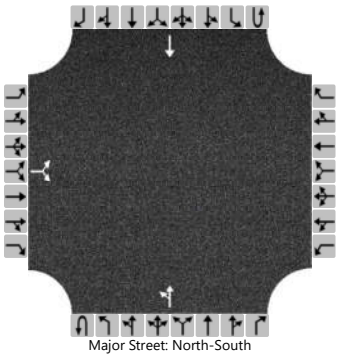
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (S)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT					T	
Volume (veh/h)		141		21						23	386				510	
Percent Heavy Vehicles (%)		5		5						14						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.24						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.33						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			191							27						
Capacity, c (veh/h)			237							921						
v/c Ratio			0.80							0.03						
95% Queue Length, Q_{95} (veh)			6.0							0.1						
Control Delay (s/veh)			62.3							9.0						
Level of Service (LOS)			F							A						
Approach Delay (s/veh)		62.3								0.8						
Approach LOS		F														

HCS7 Two-Way Stop-Control Report

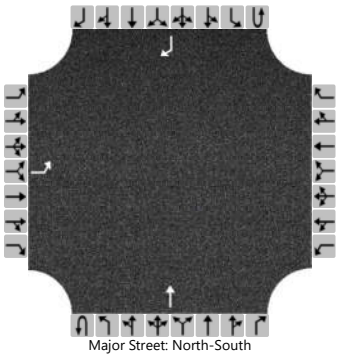
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (E)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	0		0	0	0	0	0	1	0	0	0	0	1
Configuration		L									T					R
Volume (veh/h)		0									171					251
Percent Heavy Vehicles (%)		0														
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1														
Critical Headway (sec)		6.40														
Base Follow-Up Headway (sec)		3.5														
Follow-Up Headway (sec)		3.50														

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0														
Capacity, c (veh/h)		792														
v/c Ratio		0.00														
95% Queue Length, Q_{95} (veh)		0.0														
Control Delay (s/veh)		9.5														
Level of Service (LOS)		A														
Approach Delay (s/veh)																
Approach LOS																

HCS7 Two-Way Stop-Control Report

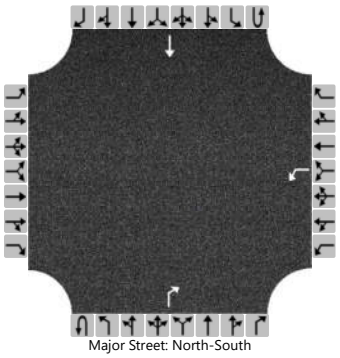
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (W)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	0	0	0	0	1	0	0	1	0
Configuration						L						R			T	
Volume (veh/h)						23						162			184	
Percent Heavy Vehicles (%)						14										
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized												No				
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1										
Critical Headway (sec)						6.54										
Base Follow-Up Headway (sec)						3.5										
Follow-Up Headway (sec)						3.63										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						27										
Capacity, c (veh/h)						746										
v/c Ratio						0.04										
95% Queue Length, Q_{95} (veh)						0.1										
Control Delay (s/veh)						10.0										
Level of Service (LOS)						B										
Approach Delay (s/veh)						10.0										
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

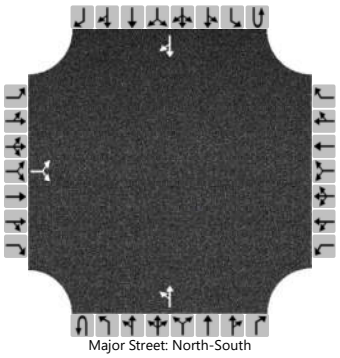
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	Shingle Point & Briarwood
Jurisdiction	Sussex County
East/West Street	Briarwood Rd
North/South Street	Shingle Point Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		22		50						60	147				159	38
Percent Heavy Vehicles (%)		0		3						17						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.23						4.27						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.33						2.35						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			89							74						
Capacity, c (veh/h)			665							1240						
v/c Ratio			0.13							0.06						
95% Queue Length, Q_{95} (veh)			0.5							0.2						
Control Delay (s/veh)			11.2							8.1						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		11.2								2.7						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

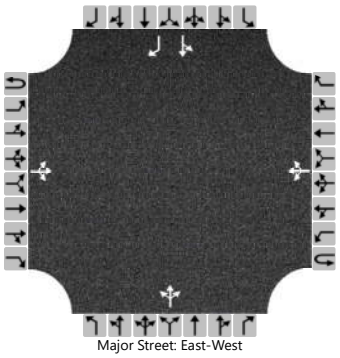
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	East-West
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration			LTR				LTR				LTR			LT		R
Volume (veh/h)		132	718	3		0	780	37		1	1	8		68	1	228
Percent Heavy Vehicles (%)		6				0				0	0	13		0	0	4
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.16				4.10				7.10	6.50	6.33		7.10	6.50	6.24
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.25				2.20				3.50	4.00	3.42		3.50	4.00	3.34

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		145				0					11			76		251
Capacity, c (veh/h)		740				837					57			34		345
v/c Ratio		0.20				0.00					0.19			2.26		0.73
95% Queue Length, Q_{95} (veh)		0.7				0.0					0.6			8.6		5.5
Control Delay (s/veh)		11.0				9.3					83.2			831.4		38.9
Level of Service (LOS)		B				A					F			F		E
Approach Delay (s/veh)	5.0				0.0				83.2				223.0			
Approach LOS									F				F			

HCS7 Two-Way Stop-Control Report

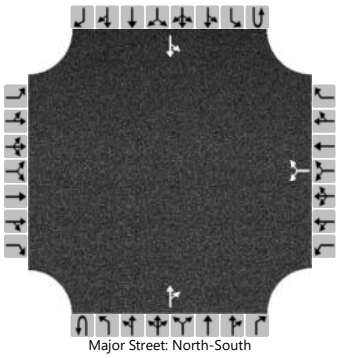
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Prettyman Rd
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	DE 30
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						1		131			274	4		163	361	
Percent Heavy Vehicles (%)						0		6						4		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.26						4.14		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.35						2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							159							196		
Capacity, c (veh/h)							684							1213		
v/c Ratio							0.23							0.16		
95% Queue Length, Q_{95} (veh)							0.9							0.6		
Control Delay (s/veh)							11.8							8.5		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					11.8								3.9			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

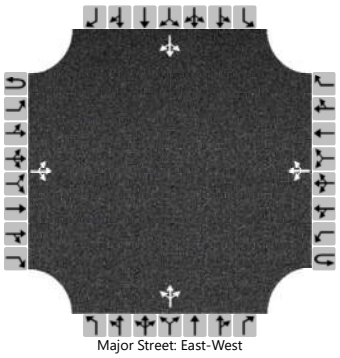
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	East-West
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	Prettyman & Pettyjohn
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	Pettyjohn Rd
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		9	169	1		24	114	10		1	24	38		2	13	9
Percent Heavy Vehicles (%)		0				0				0	0	0		0	20	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.70	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.18	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		10				27					71				27	
Capacity, c (veh/h)		1457				1395					684				599	
v/c Ratio		0.01				0.02					0.10				0.05	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.3				0.1	
Control Delay (s/veh)		7.5				7.6					10.9				11.3	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.4				1.4				10.9				11.3			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

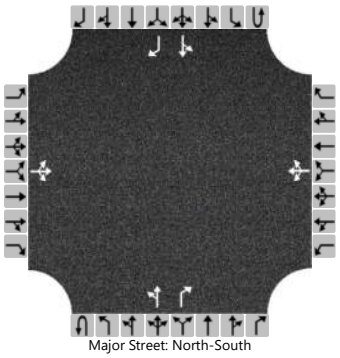
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 5 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	Shingle Point Rd
North/South Street	DE Route 5
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	1	0	0	1	1
Configuration			LTR				LTR			LT		R		LT		R
Volume (veh/h)		143	32	31		13	18	6		22	340	39		5	383	130
Percent Heavy Vehicles (%)		3	9	7		0	0	0		11				20		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized										No				No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.59	6.27		7.10	6.50	6.20		4.21				4.30		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.08	3.36		3.50	4.00	3.30		2.30				2.38		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			254				46			27				6		
Capacity, c (veh/h)			220				201			908				1006		
v/c Ratio			1.16				0.23			0.03				0.01		
95% Queue Length, Q_{95} (veh)			12.2				0.8			0.1				0.0		
Control Delay (s/veh)			155.5				28.2			9.1				8.6		
Level of Service (LOS)			F				D			A				A		
Approach Delay (s/veh)		155.5				28.2				0.8				0.1		
Approach LOS		F				D										

HCS7 Two-Way Stop-Control Report

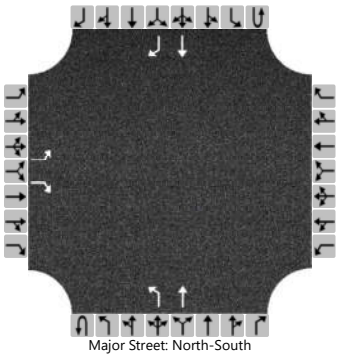
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 5 & Sand Hill
Jurisdiction	Sussex County
East/West Street	Sand Hill Rd
North/South Street	DE Route 5
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		289		254						162	320				257	119
Percent Heavy Vehicles (%)		7		25						8						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.47		6.45						4.18						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.56		3.53						2.27						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		344		302						193						
Capacity, c (veh/h)		196		683						1082						
v/c Ratio		1.76		0.44						0.18						
95% Queue Length, Q_{95} (veh)		23.9		2.3						0.6						
Control Delay (s/veh)		401.5		14.4						9.0						
Level of Service (LOS)		F		B						A						
Approach Delay (s/veh)		220.4								4.1						
Approach LOS		F														

HCS7 Two-Way Stop-Control Report

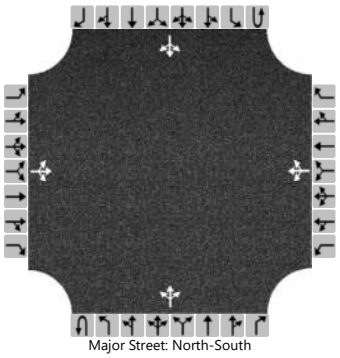
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 5 & Mulberry/Atlantic
Jurisdiction	Sussex County
East/West Street	Mulberry / Atlantic St
North/South Street	DE Route 5
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		2	109	78		91	69	16		122	351	101		32	245	2
Percent Heavy Vehicles (%)		0	7	7		4	3	6		0				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.57	6.27		7.14	6.53	6.26		4.10				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.06	3.36		3.54	4.03	3.35		2.20				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			208				193			134				35		
Capacity, c (veh/h)			247				89			1304				1062		
v/c Ratio			0.84				2.17			0.10				0.03		
95% Queue Length, Q_{95} (veh)			6.7				17.2			0.3				0.1		
Control Delay (s/veh)			65.9				636.8			8.1				8.5		
Level of Service (LOS)			F				F			A				A		
Approach Delay (s/veh)	65.9				636.8				2.6				1.3			
Approach LOS	F				F											

HCS7 Two-Way Stop-Control Report

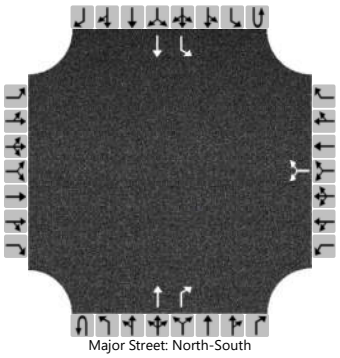
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/25/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	Shingle Point Rd & Access
Jurisdiction	Sussex County
East/West Street	Site Access
North/South Street	Shingle Point Rd
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	1	0	1	1	0
Configuration							LR				T	R		L	T	
Volume (veh/h)						126		57			146	41		19	146	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized										No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							229							24		
Capacity, c (veh/h)							648							1328		
v/c Ratio							0.35							0.02		
95% Queue Length, Q_{95} (veh)							1.6							0.1		
Control Delay (s/veh)							13.6							7.8		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						13.6								1.0		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

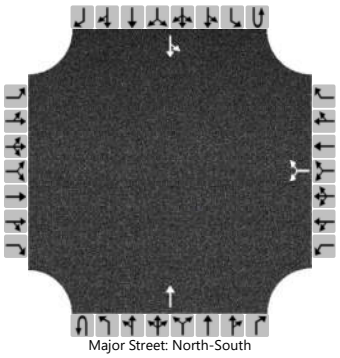
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (N)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				T			LT		
Volume (veh/h)						199		3			459			1	411	
Percent Heavy Vehicles (%)						5		33						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.45		6.53						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.55		3.60						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							227							1		
Capacity, c (veh/h)							275							1060		
v/c Ratio							0.83							0.00		
95% Queue Length, Q_{95} (veh)							6.7							0.0		
Control Delay (s/veh)							58.8							8.4		
Level of Service (LOS)							F							A		
Approach Delay (s/veh)						58.8								0.0		
Approach LOS						F										

HCS7 Two-Way Stop-Control Report

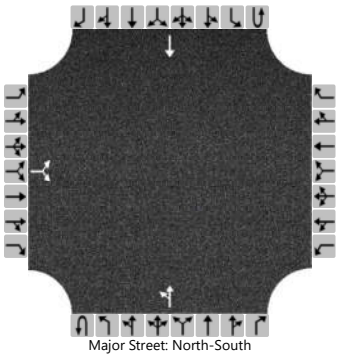
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (S)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT					T	
Volume (veh/h)		202		17						30	521				441	
Percent Heavy Vehicles (%)		3		0						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			246							34						
Capacity, c (veh/h)			219							1079						
v/c Ratio			1.12							0.03						
95% Queue Length, Q_{95} (veh)			11.4							0.1						
Control Delay (s/veh)			143.7							8.4						
Level of Service (LOS)			F							A						
Approach Delay (s/veh)		143.7								0.8						
Approach LOS		F														

HCS7 Two-Way Stop-Control Report

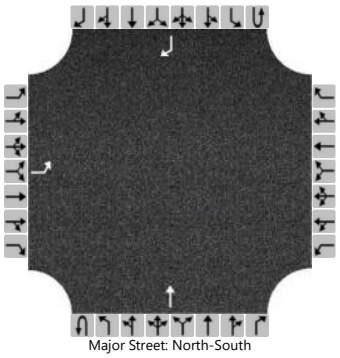
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (E)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	0		0	0	0	0	0	1	0	0	0	0	1
Configuration		L									T					R
Volume (veh/h)		1									264					202
Percent Heavy Vehicles (%)		0														
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1														
Critical Headway (sec)		6.40														
Base Follow-Up Headway (sec)		3.5														
Follow-Up Headway (sec)		3.50														

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1														
Capacity, c (veh/h)		699														
v/c Ratio		0.00														
95% Queue Length, Q_{95} (veh)		0.0														
Control Delay (s/veh)		10.2														
Level of Service (LOS)		B														
Approach Delay (s/veh)	10.2															
Approach LOS	B															

HCS7 Two-Way Stop-Control Report

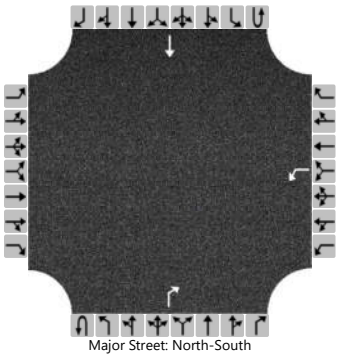
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Shingle Point (W)
Jurisdiction	Sussex County
East/West Street	Shingle Point Road
North/South Street	DE Route 30
Peak Hour Factor	0.89
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	0	0	0	0	1	0	0	1	0
Configuration						L						R			T	
Volume (veh/h)						30						219			169	
Percent Heavy Vehicles (%)						0										
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized												No				
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1										
Critical Headway (sec)						6.40										
Base Follow-Up Headway (sec)						3.5										
Follow-Up Headway (sec)						3.50										

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						34										
Capacity, c (veh/h)						804										
v/c Ratio						0.04										
95% Queue Length, Q_{95} (veh)						0.1										
Control Delay (s/veh)						9.7										
Level of Service (LOS)						A										
Approach Delay (s/veh)						9.7										
Approach LOS						A										

HCS7 Two-Way Stop-Control Report

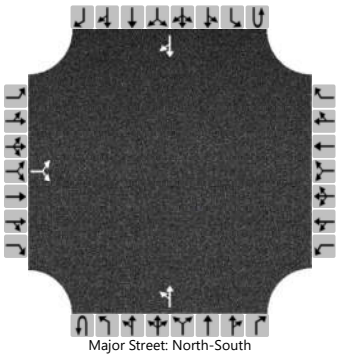
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	Shingle Point & Briarwood
Jurisdiction	Sussex County
East/West Street	Briarwood Rd
North/South Street	Shingle Point Rd
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		35		56						47	181				151	33
Percent Heavy Vehicles (%)		0		6						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.26						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.35						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			95							49						
Capacity, c (veh/h)			700							1394						
v/c Ratio			0.14							0.04						
95% Queue Length, Q_{95} (veh)			0.5							0.1						
Control Delay (s/veh)			10.9							7.7						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.9								1.8						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

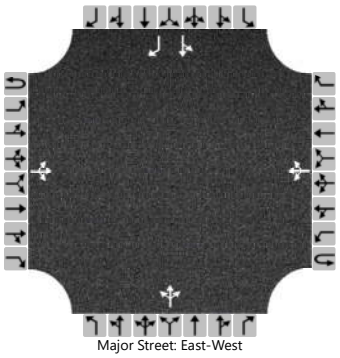
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	East-West
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration			LTR				LTR				LTR			LT		R
Volume (veh/h)		249	758	6		6	805	85		1	1	6		46	4	157
Percent Heavy Vehicles (%)		1				0				0	0	0		0	25	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.11				4.10				7.10	6.50	6.20		7.10	6.75	6.26
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.21				2.20				3.50	4.00	3.30		3.50	4.23	3.35

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		271				7					9			54		171
Capacity, c (veh/h)		716				810					19			11		322
v/c Ratio		0.38				0.01					0.45			5.15		0.53
95% Queue Length, Q_{95} (veh)		1.8				0.0					1.3			8.0		2.9
Control Delay (s/veh)		13.0				9.5					299.3			2566.5		28.1
Level of Service (LOS)		B				A					F			F		D
Approach Delay (s/veh)	10.1				0.2				299.3				641.2			
Approach LOS									F				F			

HCS7 Two-Way Stop-Control Report

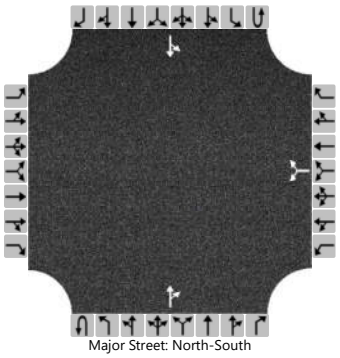
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 30 & Prettyman Rd
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	DE 30
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						2		235			304	3		144	310	
Percent Heavy Vehicles (%)						0		4						2		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.24						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.34						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							286							173		
Capacity, c (veh/h)							659							1189		
v/c Ratio							0.43							0.15		
95% Queue Length, Q_{95} (veh)							2.2							0.5		
Control Delay (s/veh)							14.6							8.5		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					14.6								3.8			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

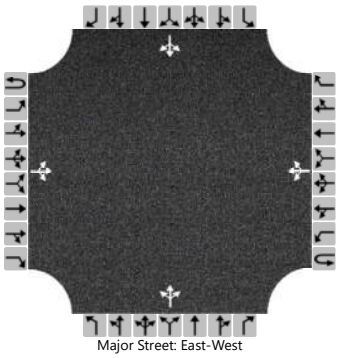
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	East-West
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	Prettyman & Pettyjohn
Jurisdiction	Sussex County
East/West Street	Prettyman Rd
North/South Street	Pettyjohn Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	125	3		45	214	5		3	12	36		11	19	19
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				47					54				52	
Capacity, c (veh/h)		1349				1462					713				550	
v/c Ratio		0.01				0.03					0.08				0.09	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.2				0.3	
Control Delay (s/veh)		7.7				7.5					10.5				12.2	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.6				1.5				10.5				12.2			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

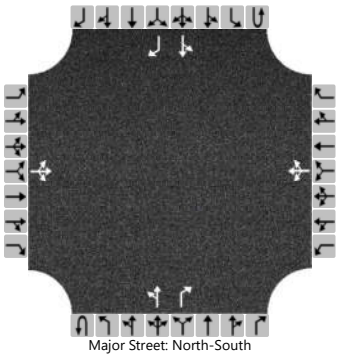
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 5 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	Shingle Point Rd
North/South Street	DE Route 5
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	1	0	0	1	1
Configuration			LTR				LTR			LT		R		LT		R
Volume (veh/h)		144	13	9		27	20	12		15	371	31		9	343	179
Percent Heavy Vehicles (%)		0	0	29		4	0	0		8				11		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized										No				No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.49		7.14	6.50	6.20		4.18				4.21		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.56		3.54	4.00	3.30		2.27				2.30		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			193				69			17				10		
Capacity, c (veh/h)			230				236			943				1048		
v/c Ratio			0.84				0.29			0.02				0.01		
95% Queue Length, Q_{95} (veh)			6.5				1.2			0.1				0.0		
Control Delay (s/veh)			69.2				26.4			8.9				8.5		
Level of Service (LOS)			F				D			A				A		
Approach Delay (s/veh)		69.2				26.4				0.5				0.2		
Approach LOS		F				D										

HCS7 Two-Way Stop-Control Report

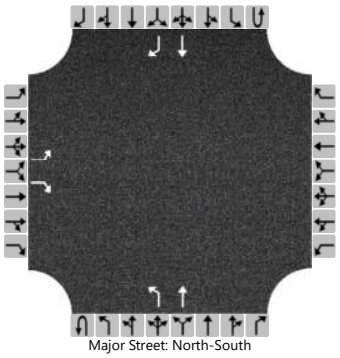
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 5 & Sand Hill
Jurisdiction	Sussex County
East/West Street	Sand Hill Rd
North/South Street	DE Route 5
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		164		187						243	270				342	287
Percent Heavy Vehicles (%)		2		8						11						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.28						4.21						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.37						2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		195		223						289						
Capacity, c (veh/h)		114		631						821						
v/c Ratio		1.71		0.35						0.35						
95% Queue Length, Q_{95} (veh)		15.0		1.6						1.6						
Control Delay (s/veh)		420.2		13.8						11.8						
Level of Service (LOS)		F		B						B						
Approach Delay (s/veh)		203.7								7.7						
Approach LOS		F														

HCS7 Two-Way Stop-Control Report

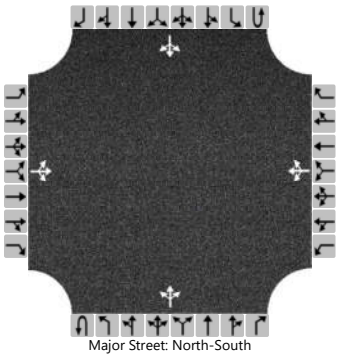
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	DE 5 & Mulberry/Atlantic
Jurisdiction	Sussex County
East/West Street	Mulberry / Atlantic St
North/South Street	DE Route 5
Peak Hour Factor	0.76
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		4	79	84		167	95	27		118	299	47		26	338	7
Percent Heavy Vehicles (%)		0	4	1		5	3	0		3				4		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.54	6.21		7.15	6.53	6.20		4.13				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.04	3.31		3.55	4.03	3.30		2.23				2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			220				380			155				34		
Capacity, c (veh/h)			168				42			1101				1095		
v/c Ratio			1.31				9.02			0.14				0.03		
95% Queue Length, Q_{95} (veh)			12.9				45.4			0.5				0.1		
Control Delay (s/veh)			229.1				3791.0			8.8				8.4		
Level of Service (LOS)			F				F			A				A		
Approach Delay (s/veh)	229.1				3791.0				3.5				0.9			
Approach LOS	F				F											

HCS7 Two-Way Stop-Control Report

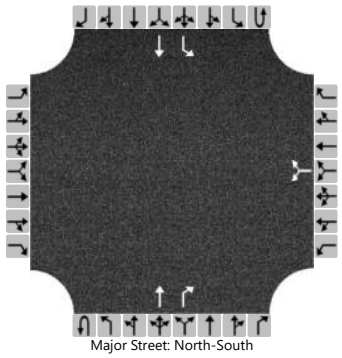
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/25/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Intersection Orientation	North-South
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	Shingle Point Rd & Access
Jurisdiction	Sussex County
East/West Street	Site Access
North/South Street	Shingle Point Rd
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	1	0	1	1	0
Configuration							LR				T	R		L	T	
Volume (veh/h)						83		37			70	141		64	64	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized										No						
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							150							80		
Capacity, c (veh/h)							701							1295		
v/c Ratio							0.21							0.06		
95% Queue Length, Q_{95} (veh)							0.8							0.2		
Control Delay (s/veh)							11.5							8.0		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						11.5								4.2		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

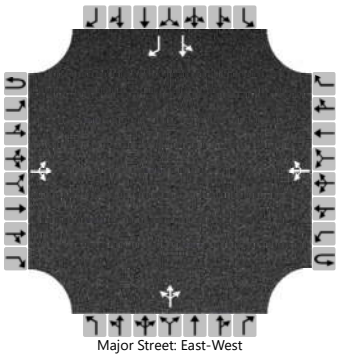
General Information

Analyst	T. Lord
Agency/Co.	Pennoni
Date Performed	1/7/2022
Analysis Year	2030
Time Analyzed	Summer Saturday Midday
Intersection Orientation	East-West
Project Description	2030 Build w/ Committed + Pending Dev

Site Information

Intersection	US 9 & Shingle Point Rd
Jurisdiction	Sussex County
East/West Street	US 9
North/South Street	Shingle Point / French
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration			LTR				LTR				LTR			LT		R
Volume (veh/h)		137	462	8		46	499	46		5	0	3		43	2	152
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		146				49					9			48		162
Capacity, c (veh/h)		1004				1075					82			89		535
v/c Ratio		0.15				0.05					0.10			0.54		0.30
95% Queue Length, Q_{95} (veh)		0.5				0.1					0.3			2.4		1.3
Control Delay (s/veh)		9.2				8.5					54.1			84.5		14.6
Level of Service (LOS)		A				A					F			F		B
Approach Delay (s/veh)	3.5				1.2				54.1				30.6			
Approach LOS									F				D			

Case 2B

2030 Future Conditions

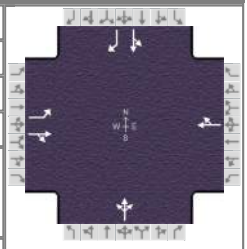
With-Development

With Committed + Pending Developments

With Improvements by Others

HCS7 Signalized Intersection Results Summary

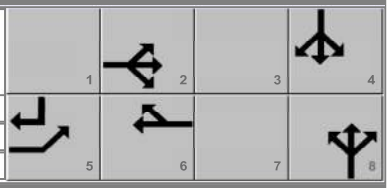
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction		Time Period	Weekday AM	PHF	0.92
Urban Street	US 9	Analysis Year	2030 No-Build, Committed + Pending	Analysis Period	1> 7:00
Intersection	US 9 & Shingle Point Ro…	File Name	US 9 & Shingle Point_AM.xus		
Project Description	2030 Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	132	718	3		780	37	1	1	8	68	1	228

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.1	71.2	21.7	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



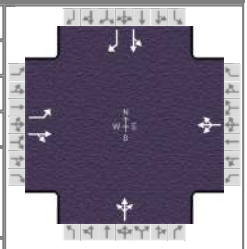
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		8.3		8.0		7.0
Phase Duration, s	13.1	91.3		78.2		28.7		28.7
Change Period, (*Y+R c*), s	7.0	7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s	3.0	0.0		0.0		3.2		3.2
Queue Clearance Time (*g s*), s	6.0					2.8		21.3
Green Extension Time (*g e*), s	0.1	0.0		0.0		0.6		0.4
Phase Call Probability	0.99					1.00		1.00
Max Out Probability	0.00					0.00		0.07

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	143	784			888			11			75	248
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1589	1554			1628			1399			1432	1431
Queue Service Time (*g s*), s	4.0	36.3			58.6			0.0			4.7	19.3
Cycle Queue Clearance Time (*g c*), s	4.0	36.3			58.6			0.8			5.4	19.3
Green Ratio (*g/C*)	0.66	0.70			0.59			0.18			0.18	0.23
Capacity (*c*), veh/h	204	1092			965			286			319	332
Volume-to-Capacity Ratio (*X*)	0.702	0.718			0.920			0.038			0.235	0.747
Back of Queue (*Q*), ft/ln (95 th percentile)	116.4	442.6			826.9			13.2			84.3	290.4
Back of Queue (*Q*), veh/ln (95 th percentile)	4.4	16.4			31.1			0.5			3.4	11.3
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh	27.1	10.7			21.9			40.6			42.5	42.8
Incremental Delay (*d 2*), s/veh	1.6	4.1			15.1			0.0			0.1	4.3
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	28.8	14.8			37.0			40.6			42.6	47.2
Level of Service (LOS)	C	B			D			D			D	D
Approach Delay, s/veh / LOS	16.9	B		37.0	D		40.6	D		46.1	D	
Intersection Delay, s/veh / LOS	29.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.64	B	1.89	B	1.72	B	1.95	B
Bicycle LOS Score / LOS	2.02	B	1.95	B	0.51	A	1.02	A

HCS7 Signalized Intersection Results Summary

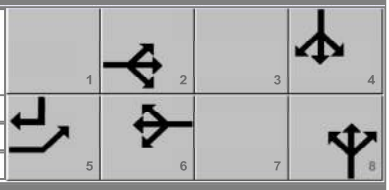
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction		Time Period	Weekday PM	PHF	0.92
Urban Street	US 9	Analysis Year	2030 Build, Committed + Pending	Analysis Period	1> 7:00
Intersection	US 9 & Shingle Point Ro…	File Name	US 9 & Shingle Point_PM.xus		
Project Description	2030 Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	249	758	6	6	805	85	1	1	6	46	4	157

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	13.8	57.2	8.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



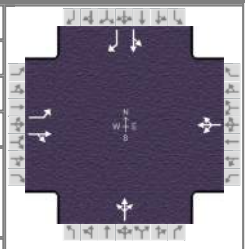
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		8.3		8.0		7.0
Phase Duration, s	20.8	85.0		64.2		15.0		15.0
Change Period, ($Y+R_c$), s	7.0	7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s	3.0	0.0		0.0		3.2		3.2
Queue Clearance Time (g_s), s	13.7					2.5		10.0
Green Extension Time (g_e), s	0.2	0.0		0.0		0.2		0.0
Phase Call Probability	1.00					1.00		1.00
Max Out Probability	0.29					0.12		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	271	830			974			9			54	171
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1654	1639			1649			1529			1390	1402
Queue Service Time (g_s), s	11.7	22.6			16.5			0.0			3.2	8.0
Cycle Queue Clearance Time (g_c), s	11.7	22.6			57.2			0.5			3.7	8.0
Green Ratio (*g/C*)	0.73	0.78			0.57			0.08			0.08	0.22
Capacity (*c*), veh/h	301	1278			978			163			180	306
Volume-to-Capacity Ratio (*X*)	0.899	0.650			0.995			0.053			0.301	0.557
Back of Queue (*Q*), ft/ln (95 th percentile)	309.4	217.7			917.9			9.1			58.8	169.7
Back of Queue (*Q*), veh/ln (95 th percentile)	12.3	8.4			35.3			0.4			2.2	6.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00			0.00	0.00
Uniform Delay (d_1), s/veh	33.4	4.9			22.3			42.6			44.0	34.8
Incremental Delay (d_2), s/veh	19.1	2.6			27.7			0.1			0.3	1.4
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	52.5	7.5			50.0			42.6			44.4	36.1
Level of Service (LOS)	D	A			D			D			D	D
Approach Delay, s/veh / LOS	18.5	B		50.0	D		42.6	D		38.1	D	
Intersection Delay, s/veh / LOS	33.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.61	B	1.89	B	1.72	B	1.95	B
Bicycle LOS Score / LOS	2.30	B	2.09	B	0.50	A	0.86	A

HCS7 Signalized Intersection Results Summary

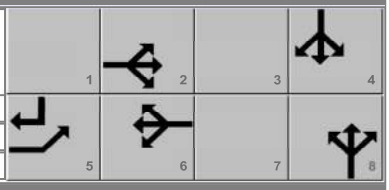
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction		Time Period	Saturday Midday	PHF	0.94
Urban Street	US 9	Analysis Year	2030 Build, Committed + Pending	Analysis Period	1> 7:00
Intersection	US 9 & Shingle Point Ro…	File Name	US 9 & Shingle Point_SAT.xus		
Project Description	2030 Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	137	462	8	46	499	46	5	0	3	43	2	152

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.0	61.9	12.2	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



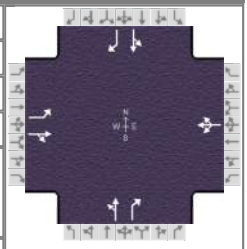
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		4
Case Number	1.0	4.0		8.3		8.0		7.0
Phase Duration, s	12.0	80.8		68.9		19.2		19.2
Change Period, ($Y+R_c$), s	7.0	7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s	3.0	0.0		0.0		3.2		3.2
Queue Clearance Time (g_s), s	5.0					2.5		12.1
Green Extension Time (g_e), s	0.0	0.0		0.0		0.3		0.0
Phase Call Probability	0.98					1.00		1.00
Max Out Probability	1.00					0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	146	500			629			9			48	162
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1654	1717			1645			1485			1450	1483
Queue Service Time (g_s), s	3.0	10.7			2.4			0.0			2.5	10.1
Cycle Queue Clearance Time (g_c), s	3.0	10.7			22.2			0.5			3.0	10.1
Green Ratio (*g/C*)	0.69	0.74			0.62			0.12			0.12	0.17
Capacity (*c*), veh/h	488	1268			1057			239			247	254
Volume-to-Capacity Ratio (*X*)	0.299	0.394			0.595			0.036			0.194	0.637
Back of Queue (*Q*), ft/ln (95 th percentile)	35.8	127.2			299.2			8.4			46.4	167.7
Back of Queue (*Q*), veh/ln (95 th percentile)	1.4	5.0			12.0			0.3			1.9	6.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00			0.00	0.00
Uniform Delay (d_1), s/veh	8.9	4.8			11.4			38.8			39.9	38.6
Incremental Delay (d_2), s/veh	0.1	0.9			2.5			0.0			0.1	3.4
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0			0.0			0.0	0.0
Control Delay (*d*), s/veh	9.0	5.7			13.9			38.8			40.0	41.9
Level of Service (LOS)	A	A			B			D			D	D
Approach Delay, s/veh / LOS	6.5	A		13.9	B		38.8	D		41.5	D	
Intersection Delay, s/veh / LOS	14.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.62	B	1.88	B	1.72	B	1.94	B
Bicycle LOS Score / LOS	1.55	B	1.52	B	0.50	A	0.83	A

HCS7 Signalized Intersection Results Summary

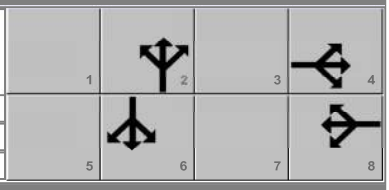
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 28, 2022	Area Type	Other
Jurisdiction	Sussex County	Time Period	Weekday AM	PHF	0.81
Urban Street	DE 5	Analysis Year	2030 Build with Committed + Pending Dev	Analysis Period	1> 7:00
Intersection	DE 5 & Shingle Point Rd	File Name	DE 5 & Shingle Point_AM_EBL.xus		
Project Description	2030 Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	143	32	31	13	18	6	22	340	39	5	383	130

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	57.8	18.2	0.0	0.0	0.0	0.0	
Yellow	5.0	5.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



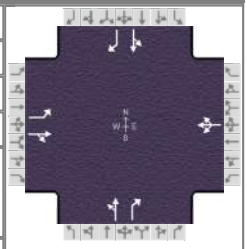
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		8.0		7.0		7.0
Phase Duration, s		25.2		25.2		64.8		64.8
Change Period, ($Y+R_c$), s		7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.1		3.1		0.0		0.0
Queue Clearance Time (g_s), s		17.7		6.0				
Green Extension Time (g_e), s		0.3		0.5		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.14		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	177	78			46			447	48		479	160
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1369	1489			1543			1675	1391		1501	1340
Queue Service Time (g_s), s	11.2	3.9			0.0			0.0	1.2		0.0	4.4
Cycle Queue Clearance Time (g_c), s	15.7	3.9			4.0			11.4	1.2		15.2	4.4
Green Ratio (*g/C*)	0.20	0.20			0.20			0.64	0.64		0.64	0.64
Capacity (*c*), veh/h	294	306			371			1113	889		1000	856
Volume-to-Capacity Ratio (*X*)	0.600	0.254			0.123			0.402	0.054		0.479	0.187
Back of Queue (*Q*), ft/ln (95 th percentile)	164.3	63.9			36.1			178.2	15.1		232.5	54.4
Back of Queue (*Q*), veh/ln (95 th percentile)	6.4	2.4			1.4			7.0	0.6		8.1	2.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00	0.14		0.00	0.24
Uniform Delay (d_1), s/veh	36.8	30.0			29.2			7.9	6.1		8.6	6.7
Incremental Delay (d_2), s/veh	0.7	0.2			0.1			1.1	0.1		1.6	0.5
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0			0.0	0.0		0.0	0.0
Control Delay (*d*), s/veh	37.5	30.1			29.3			9.0	6.2		10.2	7.1
Level of Service (LOS)	D	C			C			A	A		B	A
Approach Delay, s/veh / LOS	35.3	D		29.3	C		8.7	A		9.5	A	
Intersection Delay, s/veh / LOS	14.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.93	B	1.93	B	1.64	B	1.87	B
Bicycle LOS Score / LOS	0.91	A	0.56	A	1.30	A	1.54	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 28, 2022	Area Type	Other
Jurisdiction	Sussex County	Time Period	Weekday PM	PHF	0.86
Urban Street	DE 5	Analysis Year	2030 Build with Committed + Pending Dev	Analysis Period	1> 7:00
Intersection	DE 5 & Shingle Point Rd	File Name	DE 5 & Shingle Point_PM_EBL.xus		
Project Description	2030 Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	144	13	9	27	20	12	15	371	31	9	343	179

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

								1	2	3	4	
Green	60.0	16.0	0.0	0.0	0.0	0.0						
Yellow	5.0	5.0	0.0	0.0	0.0	0.0						
Red	2.0	2.0	0.0	0.0	0.0	0.0	5	6	7	8		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		8.0		7.0		7.0
Phase Duration, s		23.0		23.0		67.0		67.0
Change Period, ($Y+R_c$), s		7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.0		3.0		0.0		0.0
Queue Clearance Time (g_s), s		15.8		5.3				
Green Extension Time (g_e), s		0.3		0.4		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.02		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	167	26			69			449	36		409	208
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1392	1476			1524			1608	1425		1671	1341
Queue Service Time (g_s), s	10.5	1.3			0.9			0.0	0.8		0.0	5.5
Cycle Queue Clearance Time (g_c), s	13.8	1.3			3.3			11.4	0.8		9.7	5.5
Green Ratio (*g/C*)	0.18	0.18			0.18			0.67	0.67		0.67	0.67
Capacity (*c*), veh/h	278	263			330			1112	949		1154	893
Volume-to-Capacity Ratio (*X*)	0.601	0.097			0.208			0.404	0.038		0.355	0.233
Back of Queue (*Q*), ft/ln (95 th percentile)	153.8	21.4			58.2			172.6	9.8		145.3	66.9
Back of Queue (*Q*), veh/ln (95 th percentile)	6.2	0.8			2.3			6.4	0.4		5.6	2.6
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00			0.00			0.00	0.09		0.00	0.30
Uniform Delay (d_1), s/veh	37.6	30.9			31.7			6.9	5.1		6.6	5.9
Incremental Delay (d_2), s/veh	0.8	0.1			0.1			1.1	0.1		0.9	0.6
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0			0.0	0.0		0.0	0.0
Control Delay (*d*), s/veh	38.4	31.0			31.8			8.0	5.2		7.5	6.6
Level of Service (LOS)	D	C			C			A	A		A	A
Approach Delay, s/veh / LOS	37.4	D		31.8	C		7.8	A		7.2	A	
Intersection Delay, s/veh / LOS	12.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.93	B	1.93	B	1.64	B	1.86	B
Bicycle LOS Score / LOS	0.81	A	0.60	A	1.29	A	1.51	B

HCS7 Roundabouts Report

General Information

Analyst	T. Lord
Agency or Co.	Pennoni
Date Performed	2/1/2022
Analysis Year	2030
Time Analyzed	Weekday AM
Project Description	2030 Build with Committed...

Site Information

Intersection	DE 5 & Sand Hill Road
E/W Street Name	Sand Hill Road
N/S Street Name	DE 5
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.84
Jurisdiction	Sussex County

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0
Lane Assignment			LR								LT				TR	
Volume (V), veh/h	0	289		254					0	162	320		0		257	119
Percent Heavy Vehicles, %	0	7		25					0	8	1		0		8	3
Flow Rate (v_{PCE}), pc/h	0	368		378					0	208	385		0		330	146
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1								1				1			
Pedestrians Crossing, p/h	0								0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763						4.9763			4.9763	
Follow-Up Headway (s)		2.6087						2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		746						593			476	
Entry Volume, veh/h		646						574			447	
Circulating Flow (v_c), pc/h	330			961			368			208		
Exiting Flow (v_{ex}), pc/h	0			354			753			708		
Capacity (c_{pce}), pc/h		986						948			1116	
Capacity (c), veh/h		854						917			1049	
v/c Ratio (x)		0.76						0.63			0.43	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		19.8						13.4			8.1	
Lane LOS		C						B			A	
95% Queue, veh		7.3						4.5			2.2	
Approach Delay, s/veh	19.8						13.4			8.1		
Approach LOS	C						B			A		
Intersection Delay, s/veh | LOS	14.5						B					

HCS7 Roundabouts Report

General Information

Analyst	T. Lord
Agency or Co.	Pennoni
Date Performed	2/1/2022
Analysis Year	2030
Time Analyzed	Weekday PM
Project Description	2030 Build with Committed...

Site Information

Intersection	DE 5 & Sand Hill Road
E/W Street Name	Sand Hill Road
N/S Street Name	DE 5
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.84
Jurisdiction	Sussex County

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0
Lane Assignment			LR								LT				TR	
Volume (V), veh/h	0	164		187					0	243	270		0		342	287
Percent Heavy Vehicles, %	0	2		8					0	10	3		0		4	3
Flow Rate (v_{PCE}), pc/h	0	199		240					0	318	331		0		423	352
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1								1				1			
Pedestrians Crossing, p/h	0								0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763						4.9763			4.9763	
Follow-Up Headway (s)		2.6087						2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

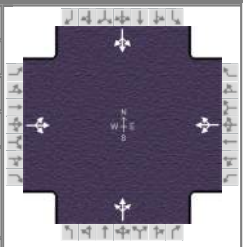
Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		439						649			775	
Entry Volume, veh/h		417						610			748	
Circulating Flow (v_c), pc/h	423			848			199			318		
Exiting Flow (v_{ex}), pc/h	0			670			530			663		
Capacity (c_{pce}), pc/h		896						1126			998	
Capacity (c), veh/h		852						1060			964	
v/c Ratio (x)		0.49						0.58			0.78	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		10.7						10.8			19.3	
Lane LOS		B						B			C	
95% Queue, veh		2.7						3.8			8.0	
Approach Delay, s/veh	10.7						10.8			19.3		
Approach LOS	B						B			C		
Intersection Delay, s/veh | LOS	14.3						B					

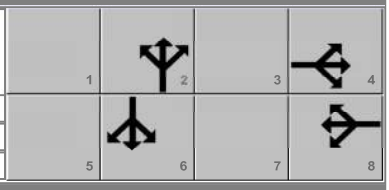
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction	Sussex County	Time Period	Weekday AM	PHF	0.91
Urban Street	DE 5	Analysis Year	2030 Build with Committed + Pending Dev	Analysis Period	1> 7:00
Intersection	DE 5 & Mulberry St/Atla…	File Name	DE 5 & Mulberry_AM.xus		
Project Description	2030 Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	2	109	78	91	69	16	122	351	101	32	245	2

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	58.6	17.4	0.0	0.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	5.0	5.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0		



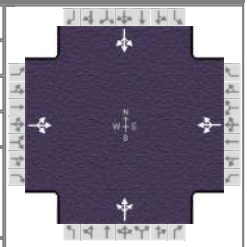
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		24.4		24.4		65.6		65.6
Change Period, (*Y+R c*), s		7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.4		3.4		0.0		0.0
Queue Clearance Time (*g s*), s		13.5		16.8				
Green Extension Time (*g e*), s		0.7		0.5		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.02		0.18				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		208			193			631			307	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1529			1169			1496			1621	
Queue Service Time (*g s*), s		0.0			3.4			14.7			0.0	
Cycle Queue Clearance Time (*g c*), s		11.5			14.8			22.0			6.7	
Green Ratio (*g/C*)		0.19			0.19			0.65			0.65	
Capacity (*c*), veh/h		336			286			1023			1101	
Volume-to-Capacity Ratio (*X*)		0.619			0.675			0.617			0.279	
Back of Queue (*Q*), ft/ln (95 th percentile)		202.4			195.8			298.9			114.2	
Back of Queue (*Q*), veh/ln (95 th percentile)		7.7			7.6			11.6			4.4	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00			0.00			0.00	
Uniform Delay (*d 1*), s/veh		33.9			35.3			9.1			6.6	
Incremental Delay (*d 2*), s/veh		0.7			1.5			2.8			0.6	
Initial Queue Delay (*d 3*), s/veh		0.0			0.0			0.0			0.0	
Control Delay (*d*), s/veh		34.6			36.7			11.9			7.3	
Level of Service (LOS)		C			D			B			A	
Approach Delay, s/veh / LOS	34.6	C		36.7	D		11.9	B		7.3	A	
Intersection Delay, s/veh / LOS	18.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.71	B	1.71	B	1.64	B	1.64	B
Bicycle LOS Score / LOS	0.83	A	0.81	A	1.53	B	0.99	A

HCS7 Signalized Intersection Results Summary

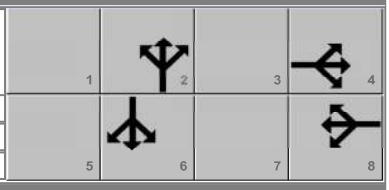
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Jan 26, 2022	Area Type	Other
Jurisdiction	Sussex County	Time Period	Weekday PM	PHF	0.88
Urban Street	DE 5	Analysis Year	2030 Build with Committed + Pending Dev	Analysis Period	1> 7:00
Intersection	DE 5 & Mulberry St/Atla…	File Name	DE 5 & Mulberry_PM.xus		
Project Description	2030 Build with Committed + Pending Dev				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	4	79	84	167	95	27	118	299	47	26	338	7

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	50.8	25.2	0.0	0.0	0.0	0.0	
Yellow	5.0	5.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		32.2		32.2		57.8		57.8
Change Period, ($Y+R_c$), s		7.0		7.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.4		3.4		0.0		0.0
Queue Clearance Time (g_s), s		10.9		24.7				
Green Extension Time (g_e), s		1.2		0.5		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		190			328			527			422	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1586			1276			1460			1723	
Queue Service Time (g_s), s		0.0			13.8			8.8			0.0	
Cycle Queue Clearance Time (g_c), s		8.9			22.7			21.1			12.2	
Green Ratio (*g/C*)		0.28			0.28			0.56			0.56	
Capacity (*c*), veh/h		484			420			875			1016	
Volume-to-Capacity Ratio (*X*)		0.392			0.782			0.603			0.415	
Back of Queue (*Q*), ft/ln (95 th percentile)		154			311.5			299.2			218.3	
Back of Queue (*Q*), veh/ln (95 th percentile)		6.0			12.2			11.8			8.5	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00			0.00			0.00	
Uniform Delay (d_1), s/veh		26.6			32.2			12.9			11.2	
Incremental Delay (d_2), s/veh		0.2			6.7			3.1			1.3	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (*d*), s/veh		26.8			38.8			15.9			12.4	
Level of Service (LOS)		C			D			B			B	
Approach Delay, s/veh / LOS	26.8	C		38.8	D		15.9	B		12.4	B	
Intersection Delay, s/veh / LOS	21.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.70	B	1.70	B	1.66	B	1.66	B
Bicycle LOS Score / LOS	0.80	A	1.03	A	1.36	A	1.18	A

Case 2B

2030 Future Conditions

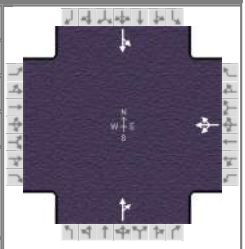
With-Development

With Committed + Pending Developments

With Improvements by Others & Improvements by Developer

HCS7 Signalized Intersection Results Summary

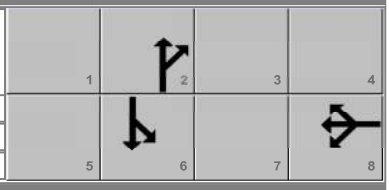
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Feb 1, 2022	Area Type	Other
Jurisdiction	Sussex County, DE	Time Period	Weekday AM	PHF	0.85
Urban Street	DE 30	Analysis Year	2030 Build, Committed+ Pending	Analysis Period	1> 7:00
Intersection	DE 30 & Shingle Point R…	File Name	DE 30 & Shingle Point_AM.xus		
Project Description	2030 Build, Committed+ Pending				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				250	0	1		356	171	1	444	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	93	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	65.6	20.4	0.0	0.0	0.0	0.0	
Yellow	5.0	5.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



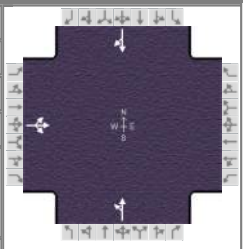
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2		6
Case Number				12.0		8.0		8.0
Phase Duration, s				27.4		72.6		72.6
Change Period, (*Y+R c*), s				7.0		7.0		7.0
Max Allow Headway (*MAH*), s				3.1		0.0		0.0
Queue Clearance Time (*g s*), s				20.0				
Green Extension Time (*g e*), s				0.4		0.0		0.0
Phase Call Probability				1.00				
Max Out Probability				0.02				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18		2	12	1	6	
Adjusted Flow Rate (*v*), veh/h					295			620			524	
Adjusted Saturation Flow Rate (*s*), veh/h/ln					1601			1486			1613	
Queue Service Time (*g s*), s					18.0			25.6			0.0	
Cycle Queue Clearance Time (*g c*), s					18.0			25.6			16.5	
Green Ratio (*g/C*)					0.20			0.66			0.66	
Capacity (*c*), veh/h					326			975			1095	
Volume-to-Capacity Ratio (*X*)					0.906			0.636			0.478	
Back of Queue (*Q*), ft/ln (95 th percentile)					330.6			331.6			243.9	
Back of Queue (*Q*), veh/ln (95 th percentile)					12.8			12.0			9.0	
Queue Storage Ratio (*RQ*) (95 th percentile)					0.00			0.00			0.00	
Uniform Delay (*d 1*), s/veh					38.9			11.0			8.7	
Incremental Delay (*d 2*), s/veh					14.7			2.5			1.5	
Initial Queue Delay (*d 3*), s/veh					0.0			0.0			0.0	
Control Delay (*d*), s/veh					53.5			13.5			10.2	
Level of Service (LOS)					D			B			B	
Approach Delay, s/veh / LOS	0.0			53.5		D	13.5		B	10.2		B
Intersection Delay, s/veh / LOS	20.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.73	B	1.74	B	1.35	A	1.35	A
Bicycle LOS Score / LOS			0.97	A	1.51	B	1.35	A

HCS7 Signalized Intersection Results Summary

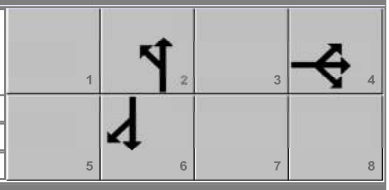
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Feb 1, 2022	Area Type	Other
Jurisdiction	Sussex County, DE	Time Period	Weekday AM	PHF	0.85
Urban Street	DE 30	Analysis Year	2030 Build, Committed+ Pending	Analysis Period	1> 7:00
Intersection	DE 30 & Shingle Point R…	File Name	DE 30 & Shingle Point_AM.xus		
Project Description	2030 Build, Committed+ Pending				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	141	0	21				23	386			510	184

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	71.8	14.2	0.0	0.0	0.0	0.0	
Yellow	5.0	5.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



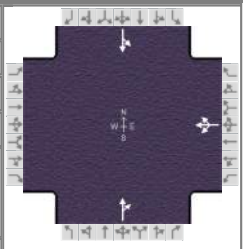
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		12.0				8.0		8.0
Phase Duration, s		21.2				78.8		78.8
Change Period, ($Y+R_c$), s		7.0				7.0		7.0
Max Allow Headway (*MAH*), s		3.1				0.0		0.0
Queue Clearance Time (g_s), s		13.9						
Green Extension Time (g_e), s		0.3				0.0		0.0
Phase Call Probability		0.99						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14				5	2			6	16
Adjusted Flow Rate (*v*), veh/h		191						481			816	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1564						1359			1517	
Queue Service Time (g_s), s		11.9						3.7			36.8	
Cycle Queue Clearance Time (g_c), s		11.9						40.5			36.8	
Green Ratio (*g/C*)		0.14						0.72			0.72	
Capacity (*c*), veh/h		222						1014			1090	
Volume-to-Capacity Ratio (*X*)		0.859						0.475			0.749	
Back of Queue (*Q*), ft/ln (95 th percentile)		214						175.1			450.4	
Back of Queue (*Q*), veh/ln (95 th percentile)		8.2						6.4			16.6	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00						0.00			0.00	
Uniform Delay (d_1), s/veh		41.9						6.1			11.4	
Incremental Delay (d_2), s/veh		3.7						1.6			3.5	
Initial Queue Delay (d_3), s/veh		0.0						0.0			0.0	
Control Delay (*d*), s/veh		45.7						7.7			14.9	
Level of Service (LOS)		D						A			B	
Approach Delay, s/veh / LOS	45.7	D		0.0			7.7	A		14.9	B	
Intersection Delay, s/veh / LOS	16.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.74	B	1.73	B	1.34	A	1.34	A
Bicycle LOS Score / LOS	0.80	A			1.28	A	1.83	B

HCS7 Signalized Intersection Results Summary

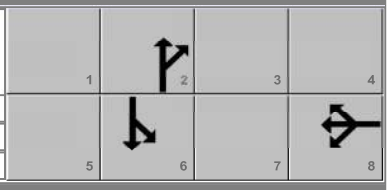
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Feb 1, 2022	Area Type	Other
Jurisdiction	Sussex County, DE	Time Period	Weekday PM	PHF	0.89
Urban Street	DE 30	Analysis Year	2030 Build, Committed+ Pending	Analysis Period	1> 7:00
Intersection	DE 30 & Shingle Point R…	File Name	DE 30 & Shingle Point_PM.xus		
Project Description	2030 Build, Committed+ Pending				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				199	0	3		459	264	1	411	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	79	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	69.6	16.4	0.0	0.0	0.0	0.0	
Yellow	5.0	5.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



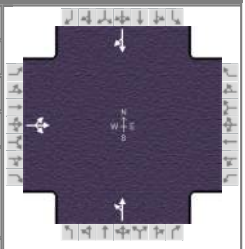
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2		6
Case Number				12.0		8.0		8.0
Phase Duration, s				23.4		76.6		76.6
Change Period, ($Y+R_c$), s				7.0		7.0		7.0
Max Allow Headway (*MAH*), s				3.1		0.0		0.0
Queue Clearance Time (g_s), s				16.2				
Green Extension Time (g_e), s				0.2		0.0		0.0
Phase Call Probability				1.00				
Max Out Probability				0.03				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18		2	12	1	6	
Adjusted Flow Rate (*v*), veh/h					227			812			463	
Adjusted Saturation Flow Rate (*s*), veh/h/ln					1560			1591			1681	
Queue Service Time (g_s), s					14.2			27.0			0.0	
Cycle Queue Clearance Time (g_c), s					14.2			27.0			11.6	
Green Ratio (*g/C*)					0.16			0.70			0.70	
Capacity (*c*), veh/h					256			1107			1206	
Volume-to-Capacity Ratio (*X*)					0.886			0.734			0.384	
Back of Queue (*Q*), ft/ln (95 th percentile)					273.8			242.6			168	
Back of Queue (*Q*), veh/ln (95 th percentile)					10.4			9.4			6.5	
Queue Storage Ratio (*RQ*) (95 th percentile)					0.00			0.00			0.00	
Uniform Delay (d_1), s/veh					40.9			6.6			6.4	
Incremental Delay (d_2), s/veh					13.9			3.1			0.9	
Initial Queue Delay (d_3), s/veh					0.0			0.0			0.0	
Control Delay (*d*), s/veh					54.7			9.7			7.3	
Level of Service (LOS)					D			A			A	
Approach Delay, s/veh / LOS	0.0			54.7		D	9.7		A	7.3		A
Intersection Delay, s/veh / LOS	15.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.73	B	1.74	B	1.34	A	1.34	A
Bicycle LOS Score / LOS			0.86	A	1.83	B	1.25	A

HCS7 Signalized Intersection Results Summary

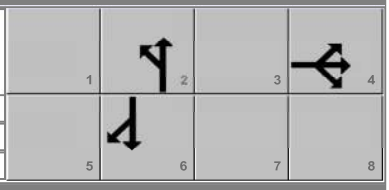
General Information				Intersection Information	
Agency	Pennoni			Duration, h	0.250
Analyst	T. Lord	Analysis Date	Feb 1, 2022	Area Type	Other
Jurisdiction	Sussex County, DE	Time Period	Weekday PM	PHF	0.89
Urban Street	DE 30	Analysis Year	2030 Build, Committed+ Pending	Analysis Period	1> 7:00
Intersection	DE 30 & Shingle Point R…	File Name	DE 30 & Shingle Point_PM.xus		
Project Description	2030 Build, Committed+ Pending				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	202	0	17				30	521			441	169

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	68.8	17.2	0.0	0.0	0.0	0.0	
Yellow	5.0	5.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		12.0				8.0		8.0
Phase Duration, s		24.2				75.8		75.8
Change Period, ($Y+R_c$), s		7.0				7.0		7.0
Max Allow Headway (*MAH*), s		3.1				0.0		0.0
Queue Clearance Time (g_s), s		16.8						
Green Extension Time (g_e), s		0.3				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14				5	2			6	16
Adjusted Flow Rate (*v*), veh/h		246						619			685	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1619						1537			1591	
Queue Service Time (g_s), s		14.8						2.3			31.7	
Cycle Queue Clearance Time (g_c), s		14.8						33.9			31.7	
Green Ratio (*g/C*)		0.17						0.69			0.69	
Capacity (*c*), veh/h		278						1096			1095	
Volume-to-Capacity Ratio (*X*)		0.885						0.565			0.626	
Back of Queue (*Q*), ft/ln (95 th percentile)		263.1						255.3			455.1	
Back of Queue (*Q*), veh/ln (95 th percentile)		10.4						9.8			17.5	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00						0.00			0.00	
Uniform Delay (d_1), s/veh		40.5						7.8			16.0	
Incremental Delay (d_2), s/veh		7.0						2.1			2.2	
Initial Queue Delay (d_3), s/veh		0.0						0.0			0.0	
Control Delay (*d*), s/veh		47.5						9.9			18.2	
Level of Service (LOS)		D						A			B	
Approach Delay, s/veh / LOS	47.5	D		0.0			9.9	A		18.2	B	
Intersection Delay, s/veh / LOS	19.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.74	B	1.73	B	1.34	A	1.34	A
Bicycle LOS Score / LOS	0.89	A			1.51	B	1.62	B

Appendix I

Traffic Signal Warrant Worksheets

Case 2B
DE Route 30 & Shingle Point Road

Case 2B: DE 30 & Shingle Point Road

Traffic Signal Warrant Analysis Workbook

2/10/2022

STUDY AND ANALYSIS INFORMATION

Municipality:	Sussex County	**Analysis Date:**	1/26/2022
County:		**Conducted By:**	TML
PennDOT Engineering District:		**Agency/Company Name:**	Pennoni

Analysis Information

Data Collection Date:	10/5/2021
Day of the Week:	Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Major Street Information

Major Street Name and Route Number:	DE 30
Major Street Approach #1 Direction:	N-Bound
Major Street Approach #2 Direction:	S-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach:	1	**LANE(S)**
Speed Limit or 85th Percentile Speed on the Major Street:	40	**MPH**

Minor Street Information

Minor Street Name and Route Number:	Shingle Point Rd
Minor Street Approach #1 Direction:	E-Bound
Minor Street Approach #2 Direction:	W-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach:	1	**LANE(S)**

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	**Yes**	**No**
Warrant 2, Four-Hour Vehicular Volume	**Yes**	**No**
Warrant 3, Peak Hour	**Yes**	**No**
Warrant 4, Pedestrian Volume	**No**	**N/A**
Warrant 5, School Crossing	**No**	**N/A**
Warrant 6, Coordinated Signal System	**No**	**N/A**
Warrant 7, Crash Experience	**Yes**	**No**
Warrant 8, Roadway Network	**No**	**N/A**
Warrant 9, Intersection Near a Grade Crossing	**No**	**N/A**
Warrant PA-1, ADT Volume Warrant	**No**	**N/A**
Warrant PA-2, Midblock and Trail Crossings	**No**	**N/A**

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM			0		
6:15 AM	6:29 AM			0		
6:30 AM	6:44 AM			0		
6:45 AM	6:59 AM			0		
7:00 AM	7:14 AM			0		
7:15 AM	7:29 AM			0		
7:30 AM	7:44 AM			0		
7:45 AM	7:59 AM			0		
8:00 AM	8:14 AM	409	444	853	162	251
8:15 AM	8:29 AM			0		
8:30 AM	8:44 AM			0		
8:45 AM	8:59 AM			0		
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM			0		
3:15 PM	3:29 PM			0		
3:30 PM	3:44 PM			0		
3:45 PM	3:59 PM			0		
4:00 PM	4:14 PM			0		
4:15 PM	4:29 PM			0		
4:30 PM	4:44 PM			0		
4:45 PM	4:59 PM			0		
5:00 PM	5:14 PM	551	412	963	219	202
5:15 PM	5:29 PM			0		
5:30 PM	5:44 PM			0		
5:45 PM	5:59 PM			0		
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		960	856	1816	381	453

MUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No

Combination of Conditions A and B Necessary?*: No

**Only applicable for Warrant 1 if after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems. See Section 4C.02 of the 2009 MUTCD for application.*

Condition A - Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or More	1	600	480	420	336	150	120	105	84
2 or More	2 or More	600	480	420	336	200	160	140	112
1	2 or More	500	400	350	280	200	160	140	112

Condition B - Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or More	1	900	720	630	504	75	60	53	42
2 or More	2 or More	900	720	630	504	100	80	70	56
1	2 or More	750	600	525	420	100	80	70	56

Condition A Evaluation

Number of Unique Hours Met: 2 **Condition A Satisfied?** No

Condition B Evaluation

Number of Unique Hours Met: 2 **Condition B Satisfied?** No

Combination of Condition A and Condition B Evaluation

Number of Unique Hours Met for Condition A: N/A

Number of Unique Hours Met for Condition B: N/A

Combination of Condition A and Condition B Satisfied? N/A

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

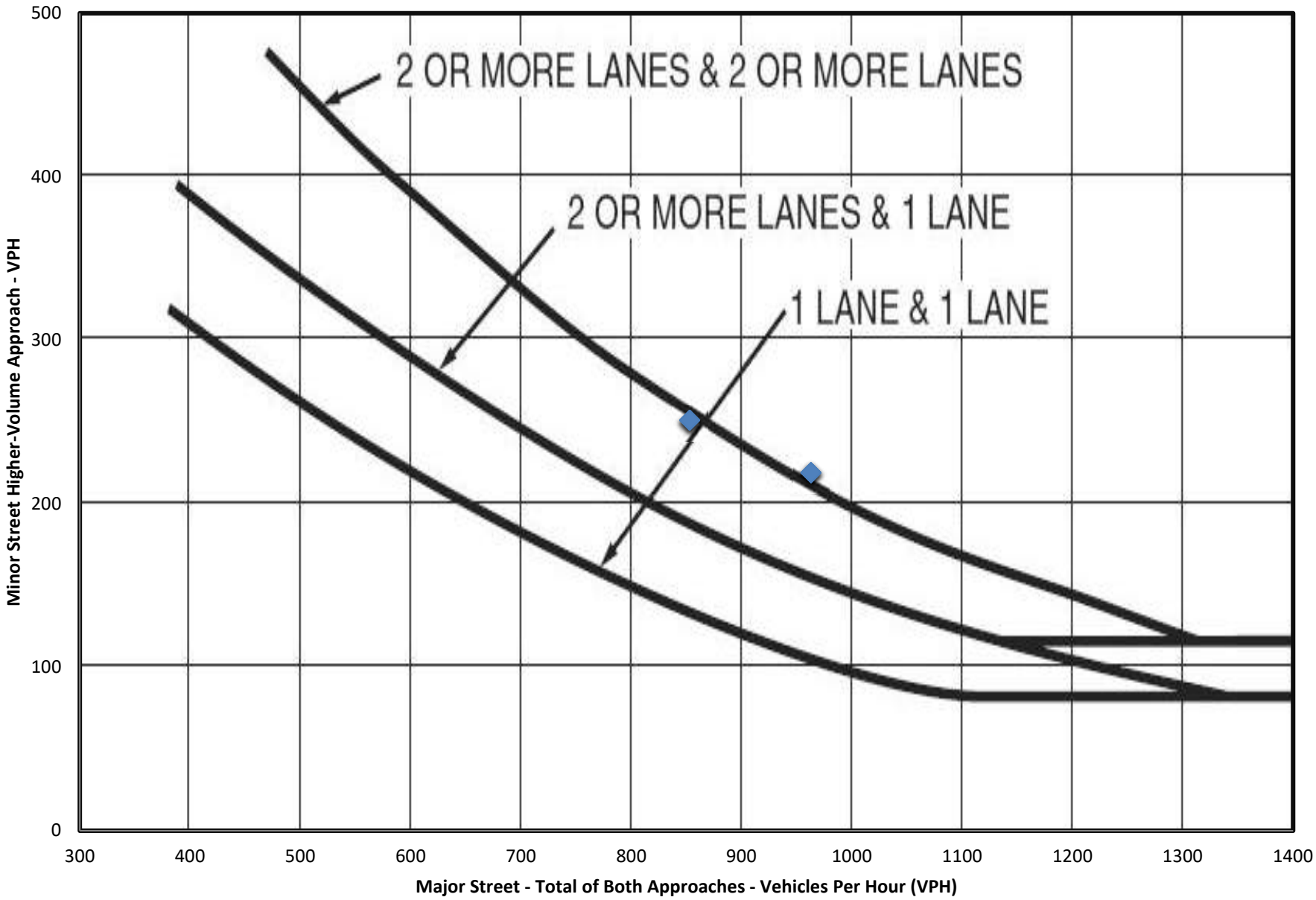
Total Number of Unique Hours Met On Figure 4C-1
2

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	0	0	
6:30 AM	0	0	
6:45 AM	0	0	
7:00 AM	0	0	
7:15 AM	853	251	Met
7:30 AM	853	251	Met
7:45 AM	853	251	Met
8:00 AM	853	251	Met
8:15 AM	0	0	
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	0	0	
3:30 PM	0	0	
3:45 PM	0	0	
4:00 PM	0	0	
4:15 PM	963	219	Met
4:30 PM	963	219	Met
4:45 PM	963	219	Met
5:00 PM	963	219	Met
5:15 PM	0	0	
5:30 PM	0	0	
5:45 PM	0	0	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	N/A

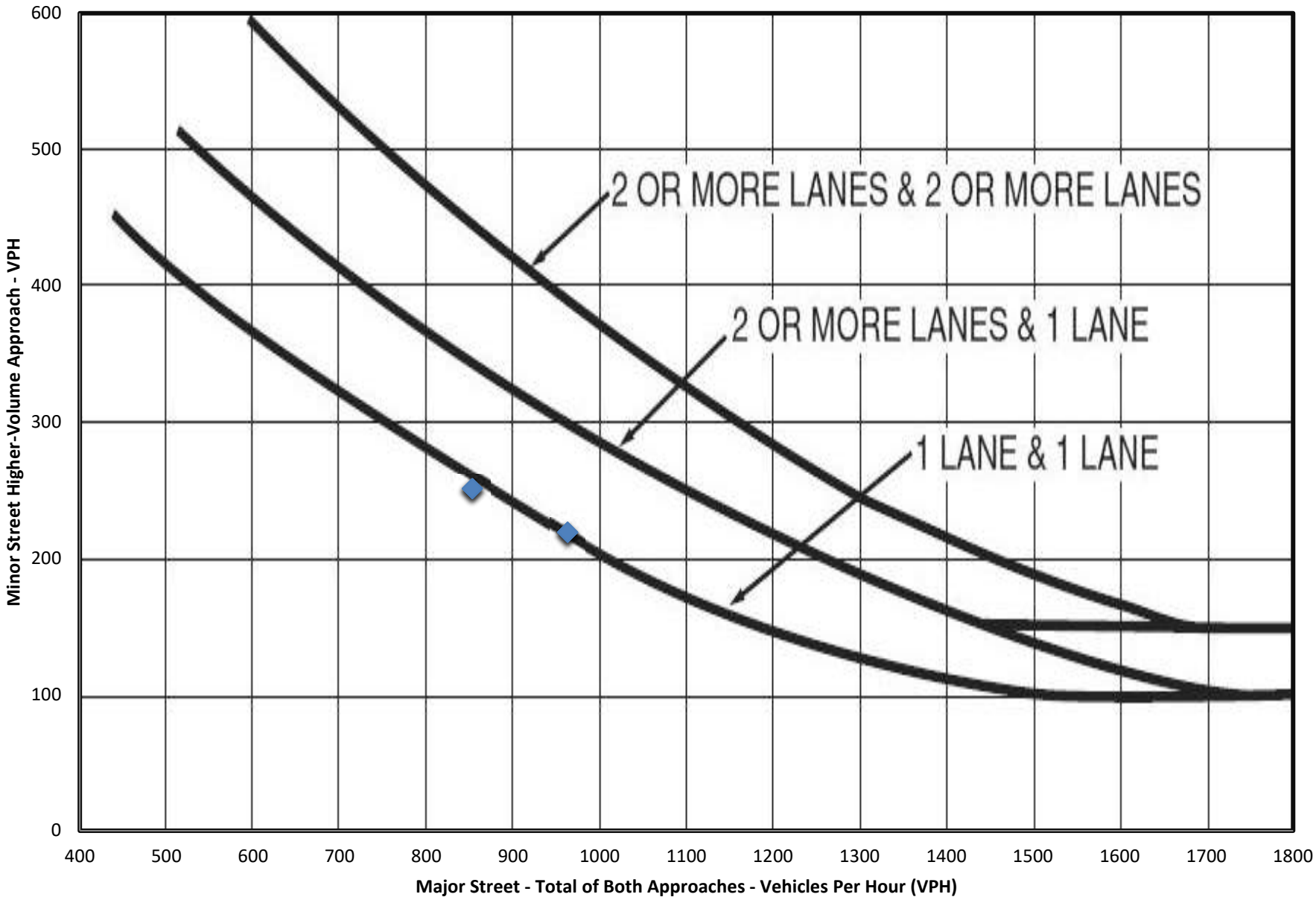
Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A
**If applicable, attach all supporting calculations and documentation.*	

Total Number of Unique Hours Met On Figure 4C-3
0

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	0	0	
6:30 AM	0	0	
6:45 AM	0	0	
7:00 AM	0	0	
7:15 AM	853	251	
7:30 AM	853	251	
7:45 AM	853	251	
8:00 AM	853	251	
8:15 AM	0	0	

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	0	0	
3:30 PM	0	0	
3:45 PM	0	0	
4:00 PM	0	0	
4:15 PM	963	219	
4:30 PM	963	219	
4:45 PM	963	219	
5:00 PM	963	219	
5:15 PM	0	0	
5:30 PM	0	0	
5:45 PM	0	0	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-3. Warrant 3, Peak Hour



2021 Existing
US Route 9 & Shingle Point Road

2021 Existing: US 9 & Shingle Point Road
Traffic Signal Warrant Analysis Workbook

2/10/2022

STUDY AND ANALYSIS INFORMATION

Municipality:	Sussex County	**Analysis Date:**	1/26/2022
County:		**Conducted By:**	TML
PennDOT Engineering District:		**Agency/Company Name:**	Pennoni

Analysis Information

Data Collection Date:	10/5/2021
Day of the Week:	Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Major Street Information

Major Street Name and Route Number:	US 9
Major Street Approach #1 Direction:	E-Bound
Major Street Approach #2 Direction:	W-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach:	1	**LANE(S)**
Speed Limit or 85th Percentile Speed on the Major Street:	50	**MPH**

Minor Street Information

Minor Street Name and Route Number:	Shingle Point Rd
Minor Street Approach #1 Direction:	S-Bound
Minor Street Approach #2 Direction:	N-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach:	1	**LANE(S)**

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	**Yes**	**No**
Warrant 2, Four-Hour Vehicular Volume	**Yes**	**No**
Warrant 3, Peak Hour	**Yes**	**No**
Warrant 4, Pedestrian Volume	**No**	**N/A**
Warrant 5, School Crossing	**No**	**N/A**
Warrant 6, Coordinated Signal System	**No**	**N/A**
Warrant 7, Crash Experience	**Yes**	**No**
Warrant 8, Roadway Network	**No**	**N/A**
Warrant 9, Intersection Near a Grade Crossing	**No**	**N/A**
Warrant PA-1, ADT Volume Warrant	**No**	**N/A**
Warrant PA-2, Midblock and Trail Crossings	**No**	**N/A**

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (E-Bound)	Major Street Approach #2 (W-Bound)	Major Street Combined	Minor Street Approach #1 (S-Bound)	Minor Street Approach #2 (N-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM			0		
6:15 AM	6:29 AM			0		
6:30 AM	6:44 AM			0		
6:45 AM	6:59 AM			0		
7:00 AM	7:14 AM	165	99	264	18	4
7:15 AM	7:29 AM	175	137	312	23	4
7:30 AM	7:44 AM	151	166	317	27	1
7:45 AM	7:59 AM	156	177	333	38	0
8:00 AM	8:14 AM	144	122	266	20	5
8:15 AM	8:29 AM	177	107	284	23	0
8:30 AM	8:44 AM	142	122	264	17	1
8:45 AM	8:59 AM	124	116	240	23	2
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

Traffic Signal Warrant Analysis Workbook

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (E-Bound)	Major Street Approach #2 (W-Bound)	Major Street Combined	Minor Street Approach #1 (S-Bound)	Minor Street Approach #2 (N-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM			0		
3:15 PM	3:29 PM			0		
3:30 PM	3:44 PM			0		
3:45 PM	3:59 PM			0		
4:00 PM	4:14 PM	139	173	312	25	2
4:15 PM	4:29 PM	181	170	351	22	3
4:30 PM	4:44 PM	170	147	317	11	2
4:45 PM	4:59 PM	158	162	320	21	1
5:00 PM	5:14 PM	152	160	312	17	0
5:15 PM	5:29 PM	116	142	258	19	0
5:30 PM	5:44 PM	133	154	287	6	0
5:45 PM	5:59 PM	122	109	231	9	2
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
	Approach Totals:	2405	2263	4668	319	27

MUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes

Combination of Conditions A and B Necessary?*: Yes

**Only applicable for Warrant 1 if after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems. See Section 4C.02 of the 2009 MUTCD for application.*

Condition A - Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or More	1	600	480	420	336	150	120	105	84
2 or More	2 or More	600	480	420	336	200	160	140	112
1	2 or More	500	400	350	280	200	160	140	112

Condition B - Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or More	1	900	720	630	504	75	60	53	42
2 or More	2 or More	900	720	630	504	100	80	70	56
1	2 or More	750	600	525	420	100	80	70	56

Condition A Evaluation

Number of Unique Hours Met: N/A **Condition A Satisfied?** N/A

Condition B Evaluation

Number of Unique Hours Met: N/A **Condition B Satisfied?** N/A

Combination of Condition A and Condition B Evaluation

Number of Unique Hours Met for Condition A: 1

Number of Unique Hours Met for Condition B: 4

Combination of Condition A and Condition B Satisfied? No

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

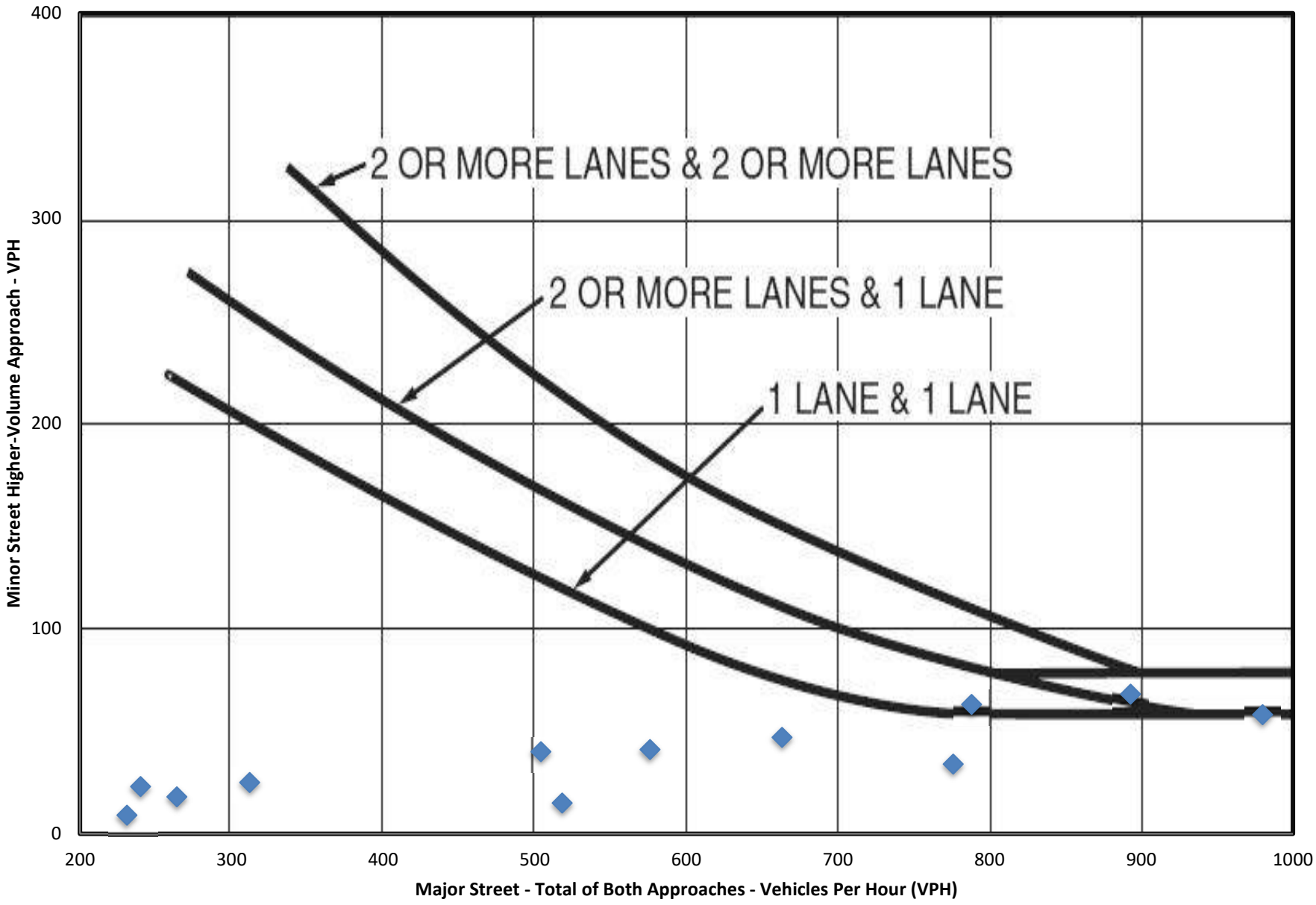
Total Number of Unique Hours Met On Figure 4C-2
3

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	264	18	
6:30 AM	576	41	
6:45 AM	893	68	Met
7:00 AM	1226	106	Met
7:15 AM	1228	108	Met
7:30 AM	1200	108	Met
7:45 AM	1147	98	Met
8:00 AM	1054	83	Met
8:15 AM	788	63	Met
8:30 AM	504	40	
8:45 AM	240	23	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	312	25	
3:30 PM	663	47	
3:45 PM	980	58	
4:00 PM	1300	79	Met
4:15 PM	1300	71	Met
4:30 PM	1207	68	Met
4:45 PM	1177	63	Met
5:00 PM	1088	51	
5:15 PM	776	34	
5:30 PM	518	15	
5:45 PM	231	9	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	N/A

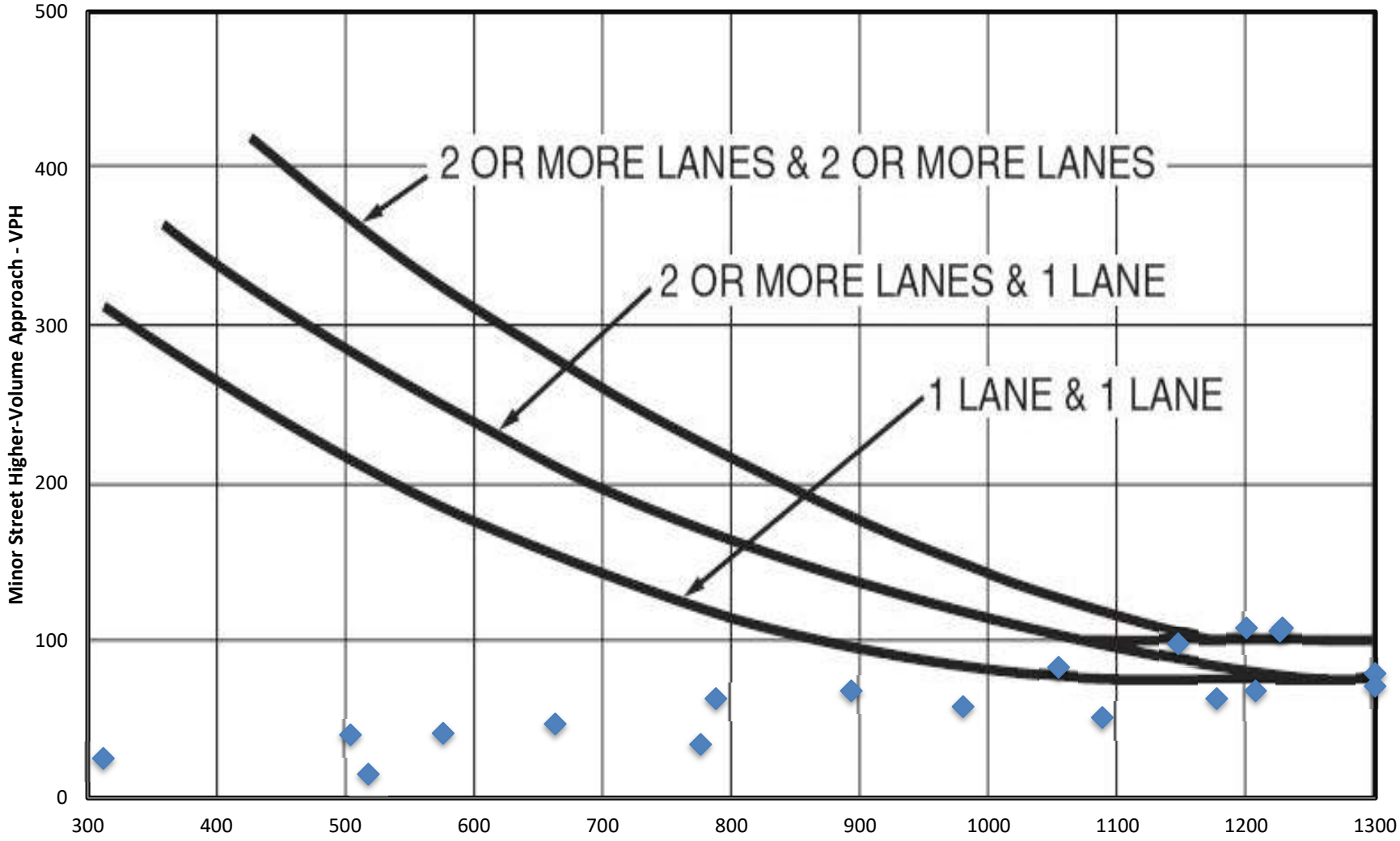
Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A
**If applicable, attach all supporting calculations and documentation.*	

Total Number of Unique Hours Met On Figure 4C-4
3

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	264	18	
6:30 AM	576	41	
6:45 AM	893	68	
7:00 AM	1226	106	Met
7:15 AM	1228	108	Met
7:30 AM	1200	108	Met
7:45 AM	1147	98	Met
8:00 AM	1054	83	Met
8:15 AM	788	63	

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
8:30 AM	504	40	
8:45 AM	240	23	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	312	25	
3:30 PM	663	47	
3:45 PM	980	58	
4:00 PM	1300	79	Met
4:15 PM	1300	71	
4:30 PM	1207	68	
4:45 PM	1177	63	
5:00 PM	1088	51	
5:15 PM	776	34	
5:30 PM	518	15	
5:45 PM	231	9	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



Case 2A
DE Route 5 & Shingle Point Road

Case 2A: DE Route 5 & Shingle Point Rd
Traffic Signal Warrant Analysis Workbook

2/10/2022

STUDY AND ANALYSIS INFORMATION

Municipality:	Sussex County	**Analysis Date:**	1/26/2022
County:		**Conducted By:**	TML
PennDOT Engineering District:		**Agency/Company Name:**	Pennoni

Analysis Information

Data Collection Date:	10/5/2021
Day of the Week:	Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Major Street Information

Major Street Name and Route Number:	DE 5
Major Street Approach #1 Direction:	N-Bound
Major Street Approach #2 Direction:	S-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach:	1	**LANE(S)**
Speed Limit or 85th Percentile Speed on the Major Street:	50	**MPH**

Minor Street Information

Minor Street Name and Route Number:	Shingle Point Rd
Minor Street Approach #1 Direction:	E-Bound
Minor Street Approach #2 Direction:	W-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach:	1	**LANE(S)**

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	**Yes**	**No**
Warrant 2, Four-Hour Vehicular Volume	**Yes**	**No**
Warrant 3, Peak Hour	**Yes**	**No**
Warrant 4, Pedestrian Volume	**No**	**N/A**
Warrant 5, School Crossing	**No**	**N/A**
Warrant 6, Coordinated Signal System	**No**	**N/A**
Warrant 7, Crash Experience	**Yes**	**No**
Warrant 8, Roadway Network	**No**	**N/A**
Warrant 9, Intersection Near a Grade Crossing	**No**	**N/A**
Warrant PA-1, ADT Volume Warrant	**No**	**N/A**
Warrant PA-2, Midblock and Trail Crossings	**No**	**N/A**

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM			0		
6:15 AM	6:29 AM			0		
6:30 AM	6:44 AM			0		
6:45 AM	6:59 AM			0		
7:00 AM	7:14 AM			0		
7:15 AM	7:29 AM			0		
7:30 AM	7:44 AM			0		
7:45 AM	7:59 AM			0		
8:00 AM	8:14 AM	362	388	750	149	37
8:15 AM	8:29 AM			0		
8:30 AM	8:44 AM			0		
8:45 AM	8:59 AM			0		
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM			0		
3:15 PM	3:29 PM			0		
3:30 PM	3:44 PM			0		
3:45 PM	3:59 PM			0		
4:00 PM	4:14 PM			0		
4:15 PM	4:29 PM			0		
4:30 PM	4:44 PM			0		
4:45 PM	4:59 PM			0		
5:00 PM	5:14 PM	386	352	738	129	59
5:15 PM	5:29 PM			0		
5:30 PM	5:44 PM			0		
5:45 PM	5:59 PM			0		
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		748	740	1488	278	96

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

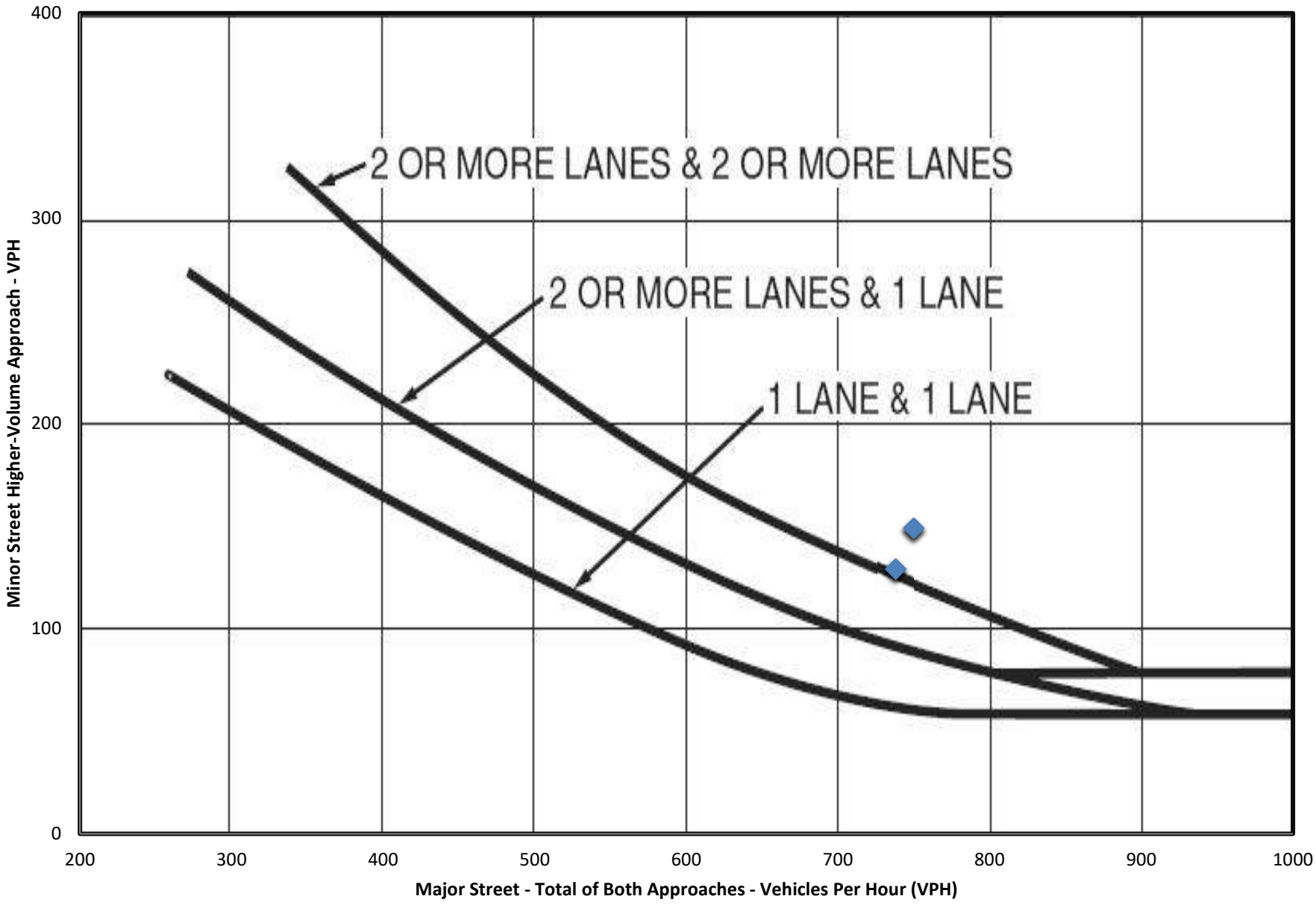
Total Number of Unique Hours Met On Figure 4C-2
2

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	0	0	
6:30 AM	0	0	
6:45 AM	0	0	
7:00 AM	0	0	
7:15 AM	750	149	Met
7:30 AM	750	149	Met
7:45 AM	750	149	Met
8:00 AM	750	149	Met
8:15 AM	0	0	
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	0	0	
3:30 PM	0	0	
3:45 PM	0	0	
4:00 PM	0	0	
4:15 PM	738	129	Met
4:30 PM	738	129	Met
4:45 PM	738	129	Met
5:00 PM	738	129	Met
5:15 PM	0	0	
5:30 PM	0	0	
5:45 PM	0	0	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	N/A

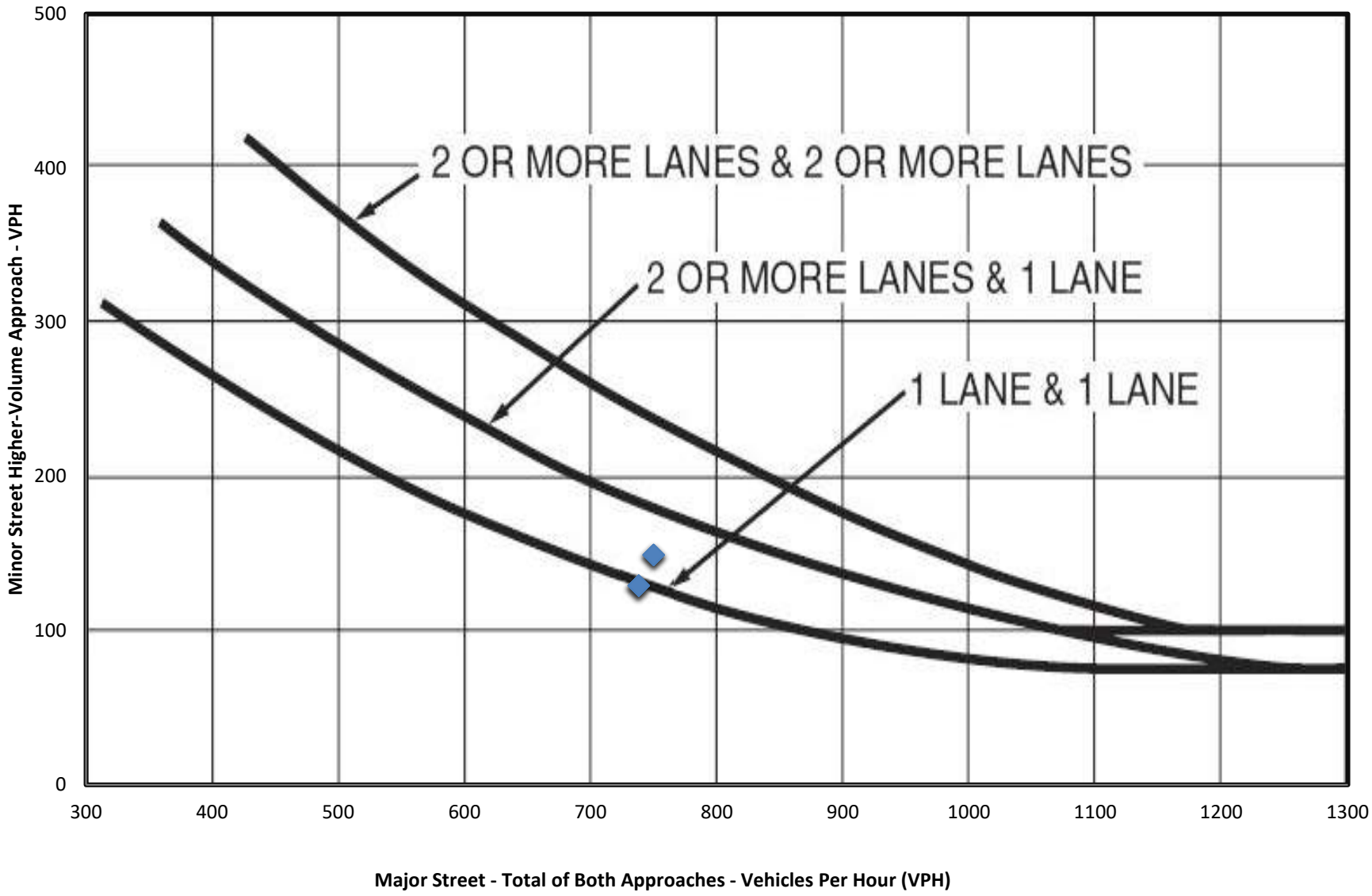
Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A
**If applicable, attach all supporting calculations and documentation.*	

Total Number of Unique Hours Met On Figure 4C-4
1

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	0	0	
6:30 AM	0	0	
6:45 AM	0	0	
7:00 AM	0	0	
7:15 AM	750	149	Met
7:30 AM	750	149	Met
7:45 AM	750	149	Met
8:00 AM	750	149	Met
8:15 AM	0	0	

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	0	0	
3:30 PM	0	0	
3:45 PM	0	0	
4:00 PM	0	0	
4:15 PM	738	129	
4:30 PM	738	129	
4:45 PM	738	129	
5:00 PM	738	129	
5:15 PM	0	0	
5:30 PM	0	0	
5:45 PM	0	0	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



Case 1A
DE Route 5 & Mulberry St / Atlantic St

Case 1A: DE 5 & Mulberry St

Traffic Signal Warrant Analysis Workbook

2/10/2022

STUDY AND ANALYSIS INFORMATION

Municipality:	Sussex County	**Analysis Date:**	1/26/2022
County:		**Conducted By:**	TML
PennDOT Engineering District:		**Agency/Company Name:**	Pennoni

Analysis Information

Data Collection Date:	10/5/2021
Day of the Week:	Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Major Street Information

Major Street Name and Route Number:	DE 5
Major Street Approach #1 Direction:	N-Bound
Major Street Approach #2 Direction:	S-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach:	1	**LANE(S)**
Speed Limit or 85th Percentile Speed on the Major Street:	25	**MPH**

Minor Street Information

Minor Street Name and Route Number:	Mulberry Street
Minor Street Approach #1 Direction:	E-Bound
Minor Street Approach #2 Direction:	W-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach:	1	**LANE(S)**

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	**Yes**	**No**
Warrant 2, Four-Hour Vehicular Volume	**Yes**	**No**
Warrant 3, Peak Hour	**Yes**	**No**
Warrant 4, Pedestrian Volume	**No**	**N/A**
Warrant 5, School Crossing	**No**	**N/A**
Warrant 6, Coordinated Signal System	**No**	**N/A**
Warrant 7, Crash Experience	**Yes**	**No**
Warrant 8, Roadway Network	**No**	**N/A**
Warrant 9, Intersection Near a Grade Crossing	**No**	**N/A**
Warrant PA-1, ADT Volume Warrant	**No**	**N/A**
Warrant PA-2, Midblock and Trail Crossings	**No**	**N/A**

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM			0		
6:15 AM	6:29 AM			0		
6:30 AM	6:44 AM			0		
6:45 AM	6:59 AM			0		
7:00 AM	7:14 AM			0		
7:15 AM	7:29 AM			0		
7:30 AM	7:44 AM			0		
7:45 AM	7:59 AM			0		
8:00 AM	8:14 AM	370	238	608	187	131
8:15 AM	8:29 AM			0		
8:30 AM	8:44 AM			0		
8:45 AM	8:59 AM			0		
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM			0		
3:15 PM	3:29 PM			0		
3:30 PM	3:44 PM			0		
3:45 PM	3:59 PM			0		
4:00 PM	4:14 PM			0		
4:15 PM	4:29 PM			0		
4:30 PM	4:44 PM			0		
4:45 PM	4:59 PM			0		
5:00 PM	5:14 PM	325	261	586	160	187
5:15 PM	5:29 PM			0		
5:30 PM	5:44 PM			0		
5:45 PM	5:59 PM			0		
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		695	499	1194	347	318

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

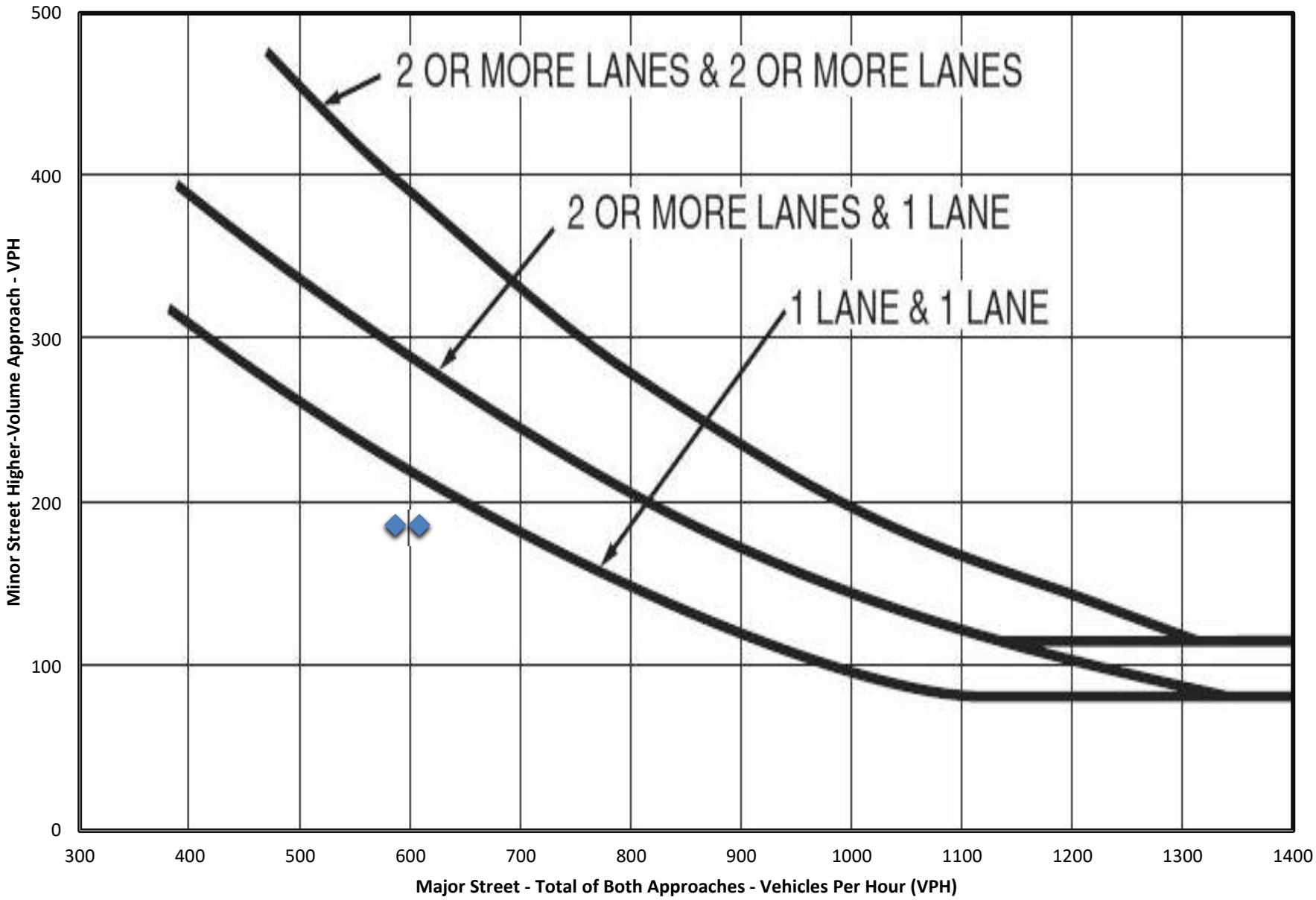
Total Number of Unique Hours Met On Figure 4C-1
0

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	0	0	
6:30 AM	0	0	
6:45 AM	0	0	
7:00 AM	0	0	
7:15 AM	608	187	
7:30 AM	608	187	
7:45 AM	608	187	
8:00 AM	608	187	
8:15 AM	0	0	
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	0	0	
3:30 PM	0	0	
3:45 PM	0	0	
4:00 PM	0	0	
4:15 PM	586	187	
4:30 PM	586	187	
4:45 PM	586	187	
5:00 PM	586	187	
5:15 PM	0	0	
5:30 PM	0	0	
5:45 PM	0	0	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	N/A

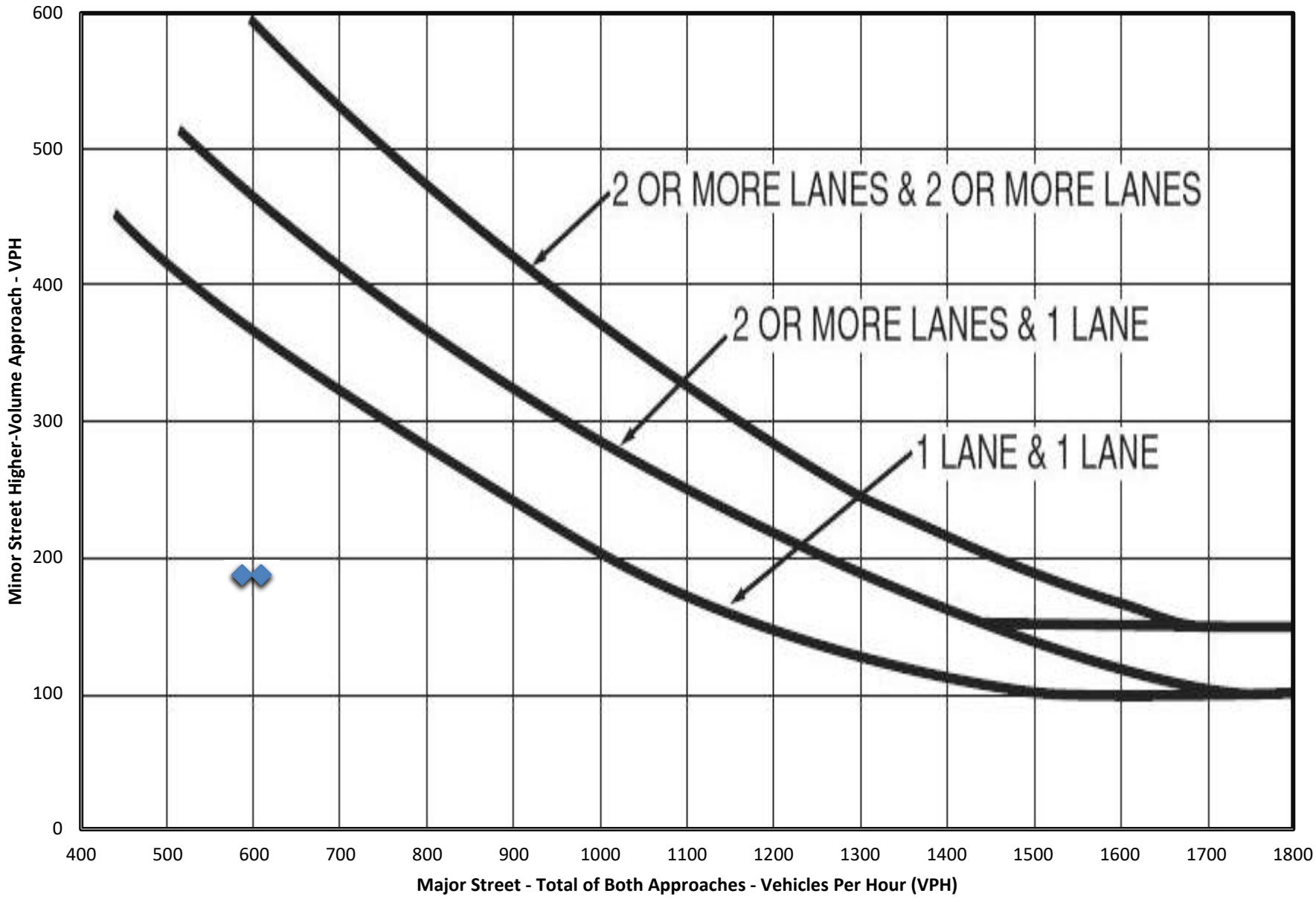
Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A
**If applicable, attach all supporting calculations and documentation.*	

Total Number of Unique Hours Met On Figure 4C-3
0

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	0	0	
6:30 AM	0	0	
6:45 AM	0	0	
7:00 AM	0	0	
7:15 AM	608	187	
7:30 AM	608	187	
7:45 AM	608	187	
8:00 AM	608	187	
8:15 AM	0	0	

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	0	0	
3:30 PM	0	0	
3:45 PM	0	0	
4:00 PM	0	0	
4:15 PM	586	187	
4:30 PM	586	187	
4:45 PM	586	187	
5:00 PM	586	187	
5:15 PM	0	0	
5:30 PM	0	0	
5:45 PM	0	0	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-3. Warrant 3, Peak Hour



Case 2A
DE Route 5 & Mulberry St / Atlantic St

Case 2A: DE 5 & Mulberry St

Traffic Signal Warrant Analysis Workbook

2/10/2022

STUDY AND ANALYSIS INFORMATION

Municipality:	Sussex County	**Analysis Date:**	1/26/2022
County:		**Conducted By:**	TML
PennDOT Engineering District:		**Agency/Company Name:**	Pennoni

Analysis Information

Data Collection Date:	10/5/2021
Day of the Week:	Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Major Street Information

Major Street Name and Route Number:	DE 5
Major Street Approach #1 Direction:	N-Bound
Major Street Approach #2 Direction:	S-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach:	1	**LANE(S)**
Speed Limit or 85th Percentile Speed on the Major Street:	25	**MPH**

Minor Street Information

Minor Street Name and Route Number:	Mulberry Street
Minor Street Approach #1 Direction:	E-Bound
Minor Street Approach #2 Direction:	W-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach:	1	**LANE(S)**

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	**Yes**	**No**
Warrant 2, Four-Hour Vehicular Volume	**Yes**	**No**
Warrant 3, Peak Hour	**Yes**	**No**
Warrant 4, Pedestrian Volume	**No**	**N/A**
Warrant 5, School Crossing	**No**	**N/A**
Warrant 6, Coordinated Signal System	**No**	**N/A**
Warrant 7, Crash Experience	**Yes**	**No**
Warrant 8, Roadway Network	**No**	**N/A**
Warrant 9, Intersection Near a Grade Crossing	**No**	**N/A**
Warrant PA-1, ADT Volume Warrant	**No**	**N/A**
Warrant PA-2, Midblock and Trail Crossings	**No**	**N/A**

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM			0		
6:15 AM	6:29 AM			0		
6:30 AM	6:44 AM			0		
6:45 AM	6:59 AM			0		
7:00 AM	7:14 AM			0		
7:15 AM	7:29 AM			0		
7:30 AM	7:44 AM			0		
7:45 AM	7:59 AM			0		
8:00 AM	8:14 AM	532	267	799	187	176
8:15 AM	8:29 AM			0		
8:30 AM	8:44 AM			0		
8:45 AM	8:59 AM			0		
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM			0		
3:15 PM	3:29 PM			0		
3:30 PM	3:44 PM			0		
3:45 PM	3:59 PM			0		
4:00 PM	4:14 PM			0		
4:15 PM	4:29 PM			0		
4:30 PM	4:44 PM			0		
4:45 PM	4:59 PM			0		
5:00 PM	5:14 PM	436	330	766	160	289
5:15 PM	5:29 PM			0		
5:30 PM	5:44 PM			0		
5:45 PM	5:59 PM			0		
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		968	597	1565	347	465

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

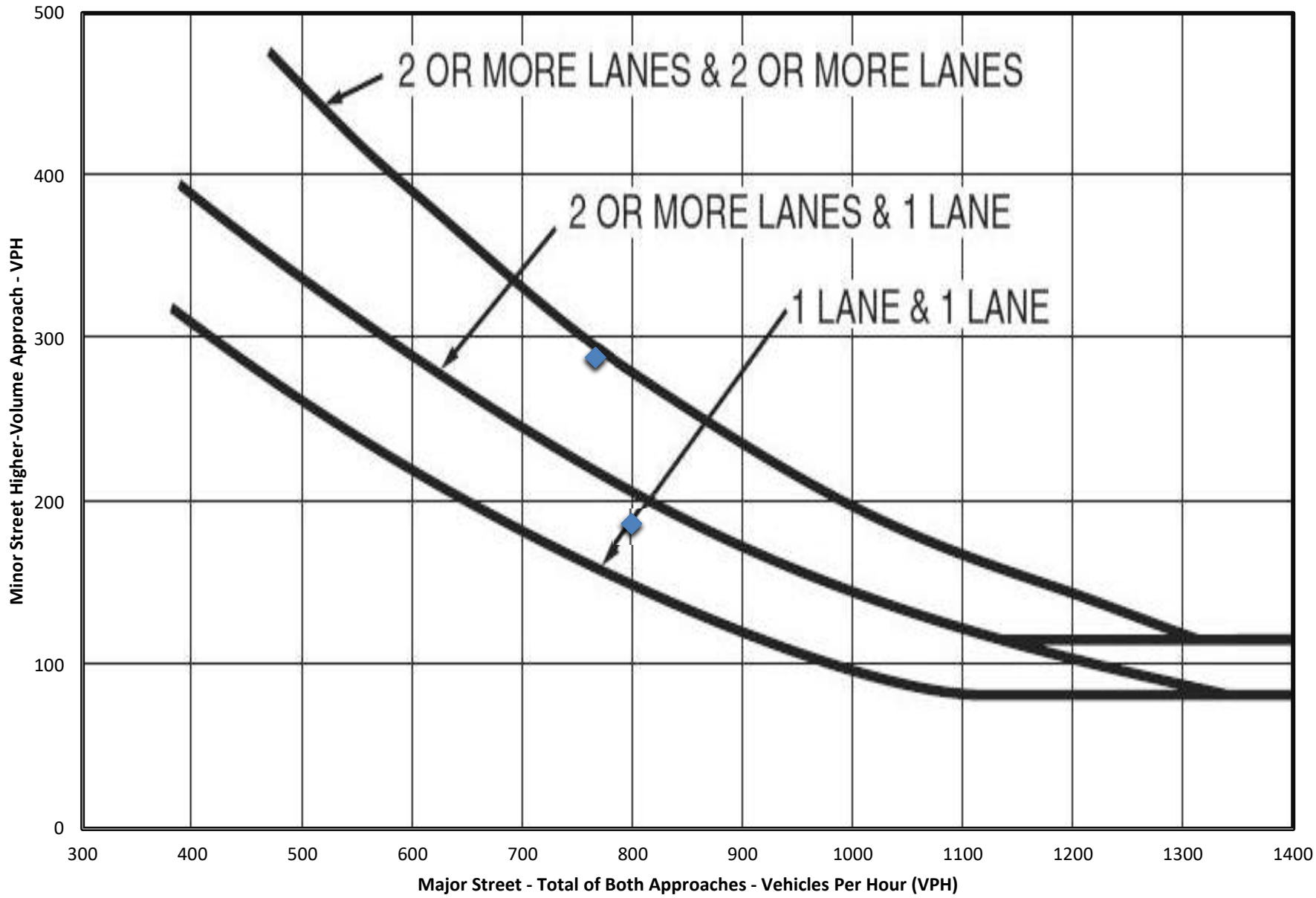
Total Number of Unique Hours Met On Figure 4C-1
2

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	0	0	
6:30 AM	0	0	
6:45 AM	0	0	
7:00 AM	0	0	
7:15 AM	799	187	Met
7:30 AM	799	187	Met
7:45 AM	799	187	Met
8:00 AM	799	187	Met
8:15 AM	0	0	
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	0	0	
3:30 PM	0	0	
3:45 PM	0	0	
4:00 PM	0	0	
4:15 PM	766	289	Met
4:30 PM	766	289	Met
4:45 PM	766	289	Met
5:00 PM	766	289	Met
5:15 PM	0	0	
5:30 PM	0	0	
5:45 PM	0	0	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	N/A

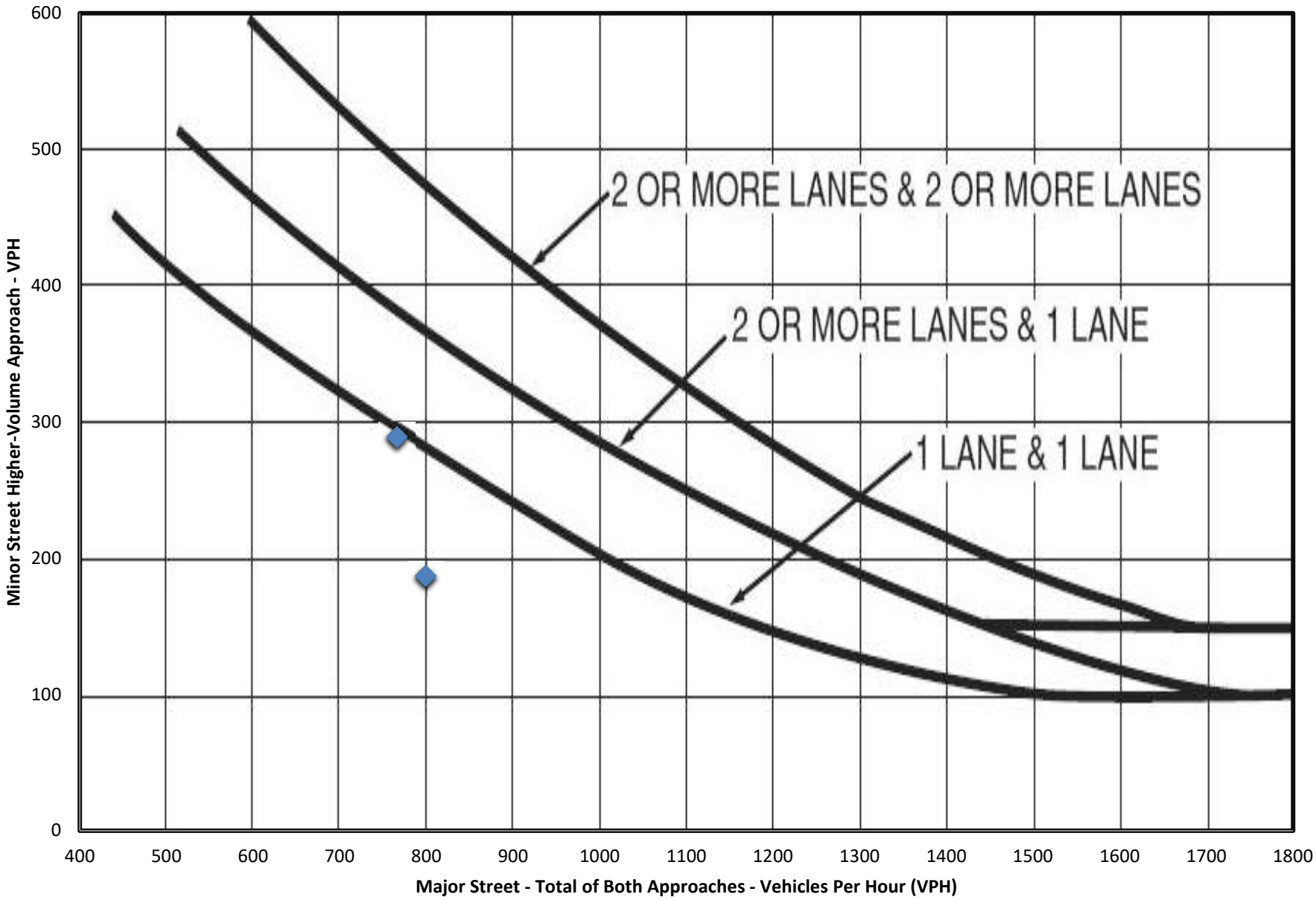
Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A
**If applicable, attach all supporting calculations and documentation.*	

Total Number of Unique Hours Met On Figure 4C-3
1

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	0	0	
6:30 AM	0	0	
6:45 AM	0	0	
7:00 AM	0	0	
7:15 AM	799	187	
7:30 AM	799	187	
7:45 AM	799	187	
8:00 AM	799	187	
8:15 AM	0	0	

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	0	0	
3:30 PM	0	0	
3:45 PM	0	0	
4:00 PM	0	0	
4:15 PM	766	289	Met
4:30 PM	766	289	Met
4:45 PM	766	289	Met
5:00 PM	766	289	Met
5:15 PM	0	0	
5:30 PM	0	0	
5:45 PM	0	0	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-3. Warrant 3, Peak Hour



Appendix J

Auxiliary Lane Worksheets

December 3, 2020 V2020.3

DelDOT Auxiliary Lane Worksheet

Roadway Information and Entrance

Manually Update Cell	XX
Auto-Calculated Cells	XX

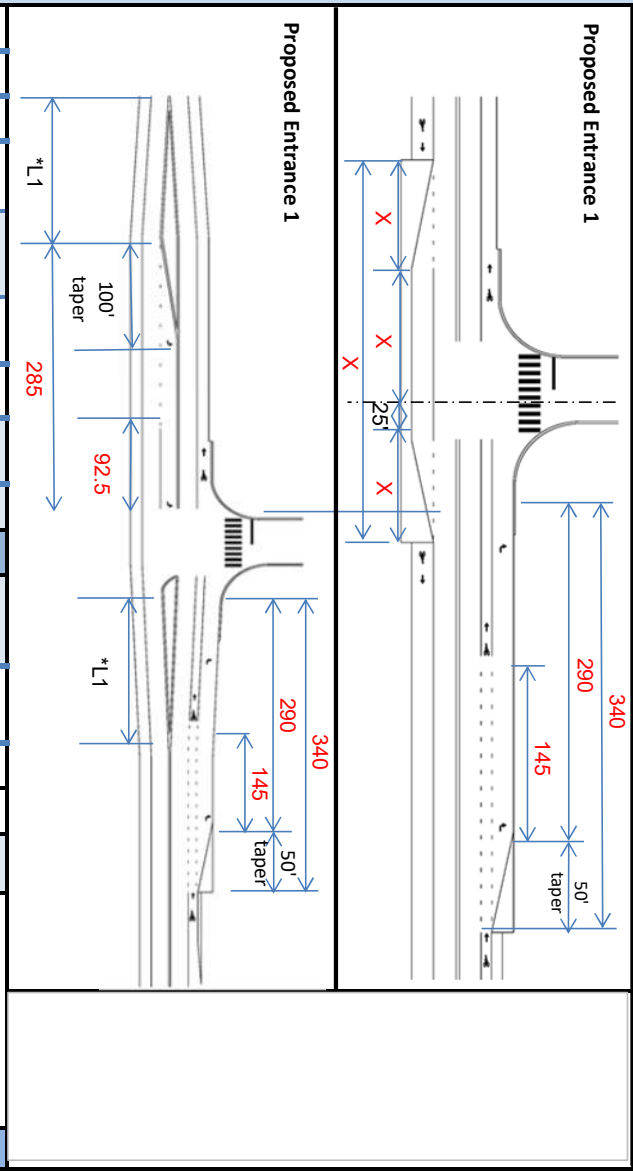
Name of Project			Four Winds Farm	Date of Submittal			2/9/2022				
Maintenance Road No. (i.e. K234A)			S249	Road Name			Shingle Point Rd				
Signalized / Unsignalized			Unsignalized	Posted Speed Limit			50				
Roadway ADT (From DelDOT Traffic Manual)			1264	Traffic Pattern Group			7				
Left Approach Site ADT	983	Committed Development ADT	714	Total Left Approach ADT	1697	Right Approach Site ADT	2188	Committed Development ADT	714	Total Right Approach ADT	2902
Total Number of Through Lanes (Does Not Include Turn Lanes)			2 lanes	Number of intersection legs			3				
Roadway Functional Classification			Local	Calculation for (specify leg)			Proposed Entrance 1				
Left-Approach Projected 10 yr Roadway ADT + Total Site + Committed Development ADT			3163	Right-Approach Projected 10 yr Roadway ADT + Total Site + Committed Development ADT			4368				
K Factor			17.82	D Factor			62.32				

Left Turn Information

Left Turn VPH	64
Left Turn Approach Grade	0.0%
Heavy Vehicle %	5
10 Yr Opposing Vol. (Manual Input - Veh/hr)	0
10 Yr Opposing Volume (Calculated)	163 Veh/hr
10 Yr Opposing Volume (Calculated Vol.)	163 Veh/hr
Left Turn Length	285 ft

Right Turn Information

Right Turn ADT	Over 400
Right Turn Approach Grade	0.0%
Effective Radius of Entrance	R≤50'
Right Turn Length	340 ft



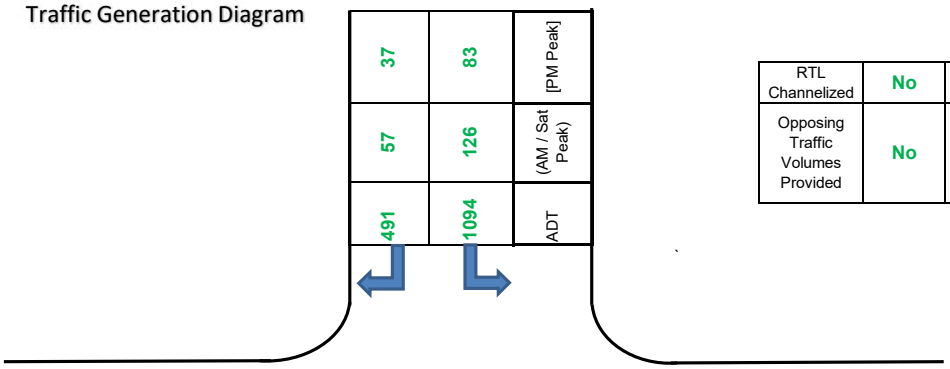
Four Winds Farm

NOTE:
This worksheet is for Right Turn Auxiliary Lanes, and Unsignalized Left Turn Auxiliary Lanes. If a signal analysis is required, please refer to signalized intersection analysis spreadsheet (Tab 6).
*L1 - See Typical Entrance Diagram located at: http://www.deldot.gov/information/business/subdivisions/Typical_Entrance_Diagrams.pdf

Case 1B: with Committed Developments only

December 3, 2020

Traffic Generation Diagram



RTL Channelized	No		
Opposing Traffic Volumes Provided	No	Opposing based on [AM / Sat] / (PM)	

[PM Peak]	(AM / Sat Peak)	ADT
64	19	492

ADT	(AM / Sat Peak)	[PM Peak]
1094	41	141

Roadway AADT From DelDOT Traffic Summary:	1264
Committed Development AADT:	714

Notes:
1. Fill in the volumes on the Traffic Generation Diagram tab consistent with the Traffic Generation Diagram created for the Record Plan.
 a. If the proposed entrance will create the fourth leg to an existing entrance, separate Auxiliary Lane Worksheets shall be completed and submitted for review of both the proposed entrance and the existing entrance.
 b. If the entrance is an existing access point, right turning ADT and peak hour volumes shall include site traffic and existing roadway traffic executing the right-turning movement
2. If opposing roadway traffic volumes were collected, include in the worksheet.
3. If the opposing right-turn movement is channelized, a reduction may be included in the worksheet. Submit justification for reduction to DelDOT's Development Coordination Section for review.
4. In the **Aux Lane Inputs - Tab 2**, fill in the cells with **GREEN** text.
 a. If opposing roadway traffic volumes were collected and/or the opposing right-turn movement is channelized, the Left Turn VPH should be the same peak hour as the peak hour chosen for the opposing through and right turn volumes within the Traffic Generation Diagram tab.
5. Utilize the AM/Sat peak box above for the AM or Saturday peak hour volumes.
 a. If both AM and Saturday peak hour volumes have been evaluated, please submit one worksheet with the AM peak hour volumes and a second worksheet with the Saturday peak hour volumes.
6. If the opposing right-turn movement is channelized, a reduction of 100% can be applied to the opposing right-turning volumes (vph) resulting in a decrease to the projected 10-year opposing volumes (vph). Although a right-turn movement may be channelized, DelDOT Subdivision Engineer may limit the reduction due to site design constraints. A channelized right-turning movement shall encompass the following characteristics:
 a. A right-turn lane meeting the criteria set forth in Section 5.2.9.1 of the Development Coordination Manual
 b. A channelized island designed in accordance with Section 5.2.5.5 of the Development Coordination Manual

December 3, 2020 V2020.3

DelDOT Auxiliary Lane Worksheet

Roadway Information and Entrance

Manually Update Cell	XX
Auto-Calculated Cells	XX

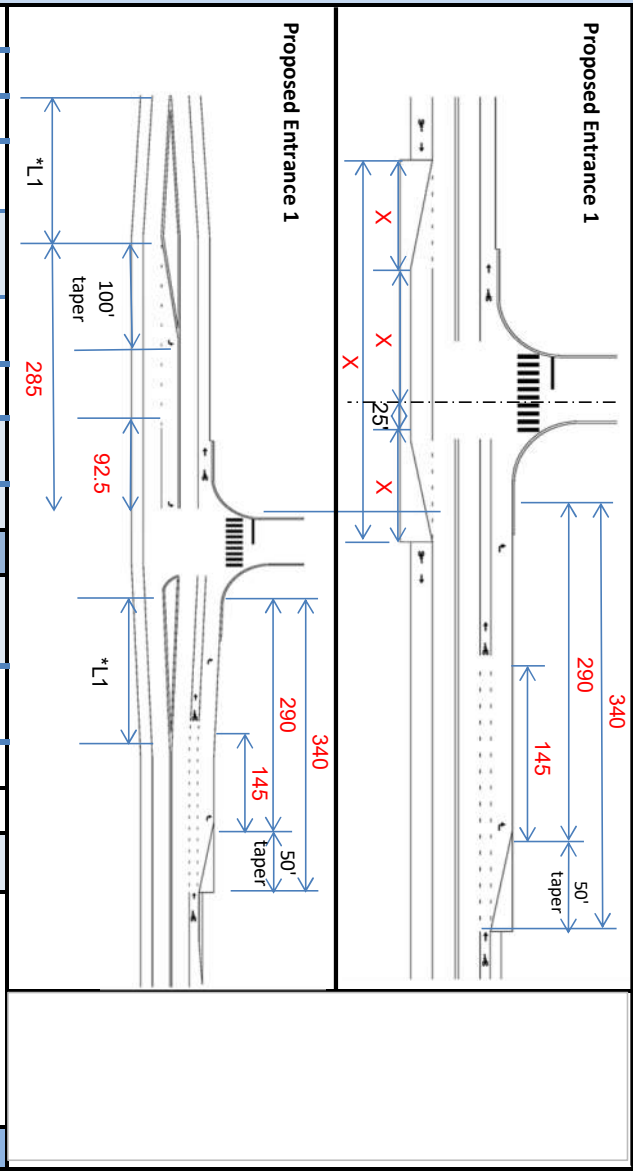
Name of Project			Four Winds Farm	Date of Submittal			2/9/2022
Maintenance Road No. (i.e. K234A)			S249	Road Name			Shingle Point Rd
Signalized / Unsignalized			Unsignalized	Posted Speed Limit			50
Roadway ADT (From DelDOT Traffic Manual)			1264	Traffic Pattern Group			7
Left Approach Site ADT	983	Committed Development ADT	1645	Total Left Approach ADT	2628	Right Approach Site ADT	2188
Committed Development ADT	1645	Total Right Approach ADT	3833				
Total Number of Through Lanes (Does Not Include Turn Lanes)			2 lanes	Number of intersection legs			3
Roadway Functional Classification			Local	Calculation for (specify leg)			Proposed Entrance 1
Left-Approach Projected 10 yr Roadway ADT + Total Site + Committed Development ADT			4094	Right-Approach Projected 10 yr Roadway ADT + Total Site + Committed Development ADT			5299
K Factor			17.82	D Factor			62.32

Left Turn Information

Left Turn VPH	64
Left Turn Approach Grade	0.0%
Heavy Vehicle %	5
10 Yr Opposing Vol. (Manual Input - Veh/hr)	0
10 Yr Opposing Volume (Calculated)	163 Veh/hr
10 Yr Opposing Volume (Calculated Vol.)	163 Veh/hr
Left Turn Length	285 ft

Right Turn Information

Right Turn ADT	Over 400
Right Turn Approach Grade	0.0%
Effective Radius of Entrance	R≤50'
Right Turn Length	340 ft



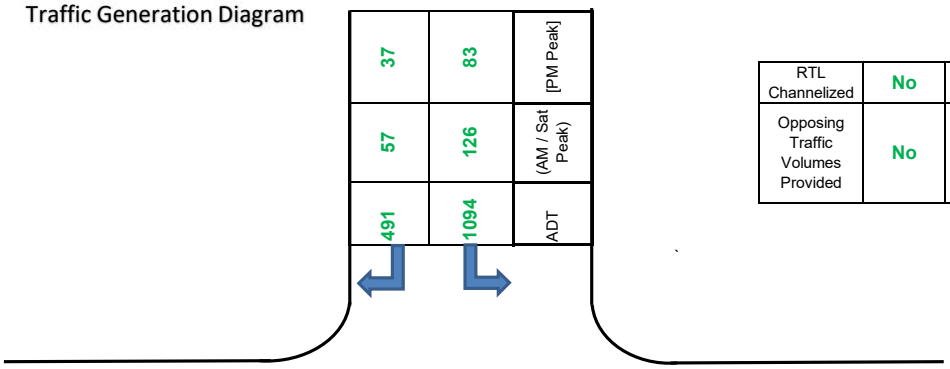
Four Winds Farm

NOTE:
This worksheet is for Right Turn Auxiliary Lanes, and Unsignalized Left Turn Auxiliary Lanes. If a signal analysis is required, please refer to signalized intersection analysis spreadsheet (Tab 6).
*L1 - See Typical Entrance Diagram located at: http://www.deldot.gov/information/business/subdivisions/Typical_Entrance_Diagrams.pdf

Case 2B: with Committed + Pending Developments

December 3, 2020

Traffic Generation Diagram



RTL Channelized	No		
Opposing Traffic Volumes Provided	No	Opposing based on [AM / Sat] / (PM)	

[PM Peak]	(AM / Sat Peak)	ADT
64	19	492

ADT	(AM / Sat Peak)	[PM Peak]
1094	41	141

Roadway AADT From DelDOT Traffic Summary:	1264
Committed Development AADT:	1645

Notes:
1. Fill in the volumes on the Traffic Generation Diagram tab consistent with the Traffic Generation Diagram created for the Record Plan.
  a. If the proposed entrance will create the fourth leg to an existing entrance, separate Auxiliary Lane Worksheets shall be completed and submitted for review of both the proposed entrance and the existing entrance.
  b. If the entrance is an existing access point, right turning ADT and peak hour volumes shall include site traffic and existing roadway traffic executing the right-turning movement
2. If opposing roadway traffic volumes were collected, include in the worksheet.
3. If the opposing right-turn movement is channelized, a reduction may be included in the worksheet. Submit justification for reduction to DelDOT's Development Coordination Section for review.
4. In the **Aux Lane Inputs - Tab 2**, fill in the cells with **GREEN** text.
  a. If opposing roadway traffic volumes were collected and/or the opposing right-turn movement is channelized, the Left Turn VPH should be the same peak hour as the peak hour chosen for the opposing through and right turn volumes within the Traffic Generation Diagram tab.
5. Utilize the AM/Sat peak box above for the AM or Saturday peak hour volumes.
  a. If both AM and Saturday peak hour volumes have been evaluated, please submit one worksheet with the AM peak hour volumes and a second worksheet with the Saturday peak hour volumes.
6. If the opposing right-turn movement is channelized, a reduction of 100% can be applied to the opposing right-turning volumes (vph) resulting in a decrease to the projected 10-year opposing volumes (vph). Although a right-turn movement may be channelized, DelDOT Subdivision Engineer may limit the reduction due to site design constraints. A channelized right-turning movement shall encompass the following characteristics:
  a. A right-turn lane meeting the criteria set forth in Section 5.2.9.1 of the Development Coordination Manual
  b. A channelized island designed in accordance with Section 5.2.5.5 of the Development Coordination Manual

TAB 5

UTILITIES

February 7, 2022

Mr. Alan M. Decktor
Pennoni
18072 Davidson Drive
Milton, DE 19968

RE: Four Winds Ability to Serve Letter, Tax Parcel 235-25.00-39.00

With reference to your request concerning Water and Wastewater Service (collectively, "Service") for the proposed Four Winds Subdivision project consisting of approximately 336 single family homes on Shingle Point Road in Broadkill Hundred, Sussex County, Delaware known as Tax Parcel Number 235-25.00-39.00 (the "Property"), please be advised as follows:

Subject to the following conditions, Artesian Water Company, Inc. and Artesian Wastewater Management, Inc. (collectively, "Artesian") is willing and able to provide Service to the Property that meets all applicable State of Delaware, Delaware Department of Natural Resources and Environmental Control, and Sussex County standards. Artesian has existing water and wastewater Certificates of Public Convenience and Necessity ("CPCNs") from the Delaware Public Service Commission.

Based on current conditions and subject to the development entity and Artesian entering Water and Wastewater Service Agreements (collectively, "Agreements") that addresses the financial terms of the provision of Service for the Property, in accordance with Artesian's tariff as approved by the Delaware Public Service Commission, Artesian is willing and able to provide the required Service for this Property.

This letter shall expire if Agreements are not executed within one year of the date of this letter

Yours very truly,

ARTESIAN WATER COMPANY, INC.

Adam Gould
Manager of Systems Planning and Design

TAB 6

WETLANDS

LEGEND

BOUNDARY OF FEDERALLY REGULATED WETLANDS (USACOE)

BOUNDARY OF DNREC (STATE) REGULATED TIDAL WETLAND

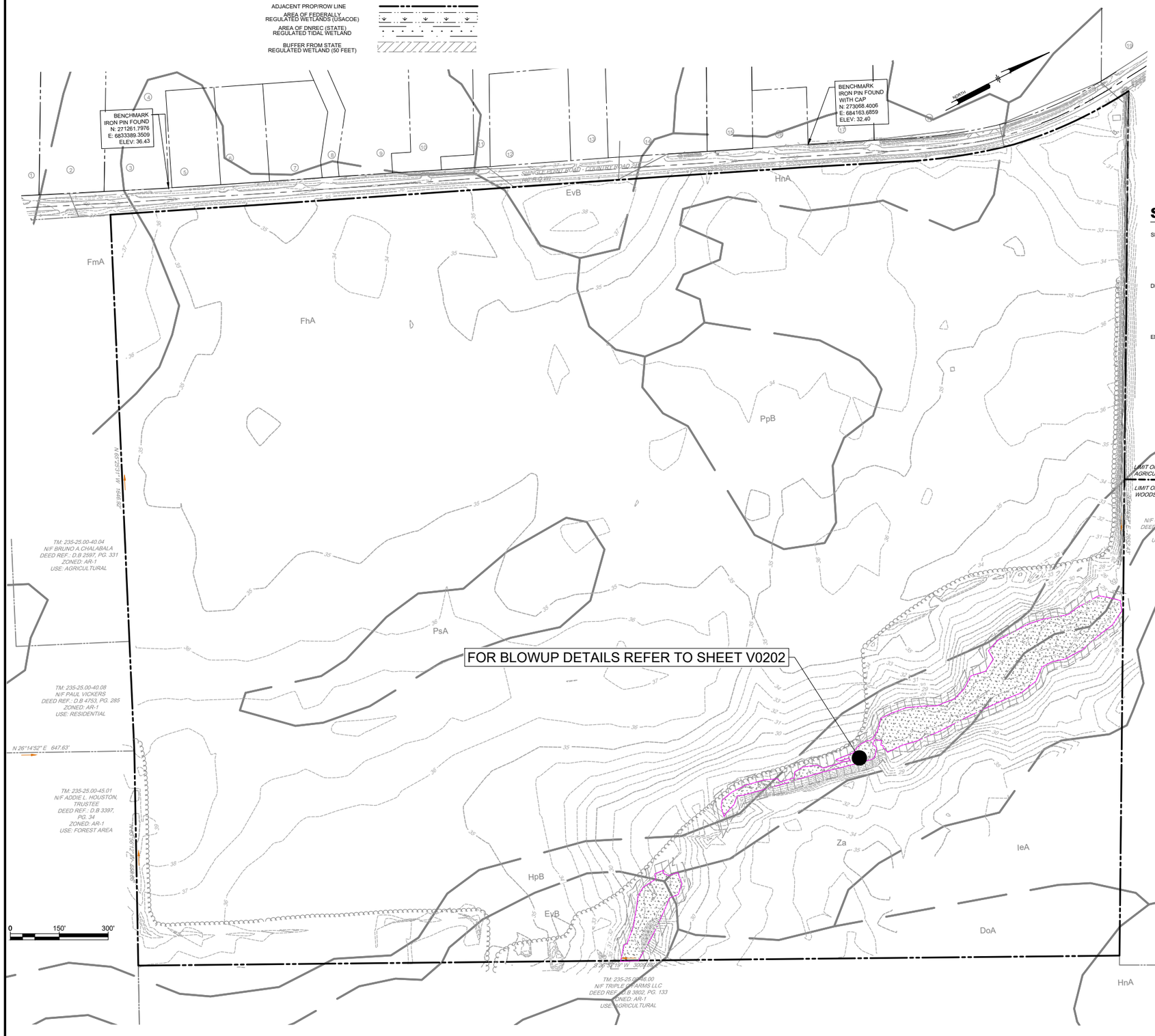
PROPERTY LINE

ADJACENT PROP/ROW LINE

AREA OF FEDERALLY REGULATED WETLANDS (USACOE)

AREA OF DNREC (STATE) REGULATED TIDAL WETLAND

BUFFER FROM STATE REGULATED WETLAND (50 FEET)



EXISTING CONDITION NOTES:

1. ELEVATIONS ARE BASED ON NAVD 88, AND DE STATE PLANE COORDINATE SYSTEM NAD 83 HORIZONTAL DATUM.
2. UNLESS SPECIFICALLY STATED OR SHOWN HEREON TO THE CONTRARY, THIS SURVEY IS MADE SUBJECT TO AND DOES NOT LOCATE OR DELINEATE:
   - 2.1. RIGHTS OR INTEREST OF THE UNITED STATES OF AMERICA OR STATE OF DELAWARE OVER LANDS NOW OR FORMERLY FLOWED BY TIDEWATER, BUT NO LONGER VISIBLE OR PHYSICALLY EVIDENT, OR LANDS CONTAINING ANY ANIMAL, MARINE OR BOTANICAL SPECIES REGULATED BY OR UNDER THE JURISDICTION OR ANY FEDERAL, STATE, OR LOCAL AGENCY.
   - 2.2. BUILDING SETBACK LINES, ZONING REGULATIONS OR LINES ESTABLISHED BY ANY FEDERAL, STATE OR LOCAL AGENCY WHICH MAY AFFECT THE BUILDING OR DEVELOPMENT POTENTIAL OF THE SUBJECT PROPERTY
   - 2.3. ANY SUBSURFACE OR SUBTERRANEAN CONDITION, EASEMENTS OR RIGHTS, INCLUDING, BUT NOT LIMITED TO MINERAL OR MINING RIGHTS, OR THE LOCATION OF OR RIGHTS TO ANY SUBSURFACE STRUCTURES, CONTAINERS OR FACILITIES OR ANY OTHER NATURAL OR MAN-MADE SUBSURFACE CONDITION WHICH MAY OR MAY NOT AFFECT THE USE OR DEVELOPMENT POTENTIAL OF THE SUBJECT PROPERTY.
3. THIS SITE IS ZONED AR-1 (AGRICULTURAL RESIDENTIAL),
4. A SMALL AREA OF NON TIDAL PALESTINE FORESTED WETLANDS (FEDERALLY REGULATED) MEASURING 2.96 ACRES WAS DELINEATED ON SUBJECT PROPERTY BY PENNONI ASSOCIATES, INC. IN MARCH 2022.
5. EXISTING STORMWATER FLOWS OVERLAND TOWARDS THE WETLANDS IN THE REAR OF THE SITE PROPOSED STORMWATER RUNOFF WILL BE HANDLED BY THE PROPOSED STORMWATER FACILTIES.

REFERENCE:
1. EXISTING CONDITIONS SURVEY PERFORMED BY PENNONI ASSOCIATES INC. IN APRIL OF 2021.

FLOOD ZONE INFORMATION:
1. BASED UPON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) NUMBER 10005C0325L, 10005C0310L, AND 10005C0164J, MAP REVISED JUNE 20, 2018, THE PROPERTY IS LOCATED IN AN AREA DESIGNATED AS FLOOD ZONE "X" (UNSHADED).

SITE INFORMATION:

SITE ADDRESS:
SPRING GARDEN, LLC.
TAX MAP: 235-25.00-39.00
16793 ISLAND FARM LAND
MILTON, DE 19968

DEVELOPER:
RIBERA DEVELOPMENT, LLC.
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108
(443) 871-0486

ENGINEER, PLANNER & SURVEYOR CONSULTANTS:
PENNONI ASSOCIATES INC.
18072 DAVIDSON DRIVE
MILTON, DELAWARE 19968
(302) 684-8030

TAX ID TABLE

(1) TM: 235-25.00-27.00 N/F ROBERT & SANDRA DAVIDSON DEED REF.: D.B 3263, PG. 335 ZONED: AR-1 USE: RESIDENTIAL	(11) TM: 235-25.00-30.06 N/F ANTHONY & JESSICA SAVINI DEED REF.: D.B 5617, PG. 118 ZONED: AR-1 USE: AGRICULTURAL
(2) TM: 235-25.00-29.00 N/F PATRICIA A. PERRY DEED REF.: D.B 1922, PG. 310 ZONED: AR-1 USE: RESIDENTIAL	(12) TM: 235-25.00-32.00 N/F ROBERT& ANGELA NATRIN DEED REF.: D.B 5633, PG. 230 ZONED: AR-1 USE: RESIDENTIAL
(3) TM: 235-25.00-30.01 N/F BRIAN & TRACY MENGEL DEED REF.: D.B 5633, PG. 230 ZONED: AR-1 USE: RESIDENTIAL	(13) TM: 235-25.00-31.00 N/F DONALD & MARY FLY DEED REF.: D.B 0, PG. 0 ZONED: AR-1 USE: RESIDENTIAL
(4) TM: 235-25.00-30.11 N/F UNKNOWN DEED REF.: D.B4996, PG.256 ZONED: AR-1 USE: AGRICULTURAL	(14) TM: 235-25.00-33.00 N/F ANTHONY & JESSICA SAVINI DEED REF.: D.B 5617, PG. 118 ZONED: AR-1 USE: AGRICULTURAL
(5) TM: 235-25.00-30.04 N/F PHILLIP & KAREN RAMMENGEL DEED REF.: D.B 4189, PG. 310 ZONED: AR-1 USE: RESIDENTIAL	(15) TM: 235-25.00-34.01 N/F JOSEPH & JANET CALLAWAY DEED REF.: D.B 4954, PG. 327 ZONED: AR-1 USE: RESIDENTIAL / AGRICULTURAL
(6) TM: 235-25.00-30.05 N/F TIMOTHY & VALERIE BIGGS DEED REF.: D.B 5633, PG. 230 ZONED: AR-1 USE: RESIDENTIAL	(16) TM: 235-25.00-34.00 N/F MICHSEL & KATHLEEN SHOEMAKER DEED REF.: D.B 3674, PG. 334 ZONED: AR-1 USE: RESIDENTIAL / AGRICULTURAL
(7) TM: 235-25.00-30.00 N/F SHELLACE A. JAMES DEED REF.: D.B 4996, PG. 346 ZONED: AR-1 USE: RESIDENTIAL	(17) TM: 235-25.00-34.04 N/F BRYAN CALLAWAY DEED REF.: D.B 4962, PG. 15 ZONED: AR-1 USE: RESIDENTIAL / AGRICULTURAL
(8) TM: 235-25.00-30.09 N/F SAVINI COMPLETE CONSTRUCTION INC. DEED REF.: D.B 4638, PG. 336 ZONED: AR-1 USE: INDUSTRIAL	(18) TM: 235-25.00-35.00 N/F BRYAN CALLAWAY DEED REF.: D.B 4943, PG. 259 ZONED: AR-1 USE: RESIDENTIAL / AGRICULTURAL
(9) TM: 235-25.00-30.07 N/F JAMES & JOAN BAKER DEED REF.: D.B 4354, PG. 158 ZONED: AR-1 USE: RESIDENTIAL	(19) TM: 235-25.00-36.00 N/F CD CAREY FARM LLC. DEED REF.: D.B 2785, PG. 103 ZONED: AR-1 USE: AGRICULTURAL
(10) TM: 235-25.00-30.12 N/F CHARLES & MARRY ANN SCHMID DEED REF.: D.B 4356, PG. 38 ZONED: AR-1 USE: RESIDENTIAL	

SITE DATA TABLE:

1.	TAX MAP NUMBER:	235-25.00-39.00
2.	DEVELOPER:	RIBERA DEVELOPMENT, LLC. 8684 VETERAN'S HIGHWAY, SUITE 203 MILLERSVILLE, MD 21108
3.	HUNDRED/ COUNTY:	INDIAN RIVER HUNDRED / SUSSEX COUNTY
4.	FLOOD ZONE:	THIS PROPERTY IS LOCATED ON THE FEMA FLOOD INSURANCE RATE MAP NUMBER 10005C0325L, 10005C0310L, AND 10005C0164J, MAP REVISED JUNE 20, 2018. AREA DESIGNATED AS FLOOD ZONE "X" (UNSHADED).
5.	TOPOGRAPHY:	HORIZONTAL: NAD83 VERTICAL: NAVD88 STATE PLANE DATUM

WETLANDS CERTIFICATION:
I, JOHN-THOMAS GRAUPENSPERGER, PWS, DO HEREBY STATE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF THAT THE INFORMATION CONTAINED IN THE PLANS SPECIFICATIONS AND REPORTS HAVE BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENVIRONMENTAL PRACTICES, IS TRUE AND CORRECT, AND IS IN CONFORMANCE WITH THE BOUNDARIES OF WATERS OF THE UNITED STATES INCLUDING WETLANDS SUBJECT TO THE CORPS OF ENGINEERS REGULATORY PROGRAM.

SIGNATURE DATE

JOHN-THOMAS GRAUPENSPERGER, PWS NO. 2339
PENNONI ASSOCIATES, INC
18072 DAVIDSON DRIVE
MILTON, DE 19968
OFFICE (302) 684-8030 - FAX (302) 684-8054
JGRAUPENSPERGER@PENNONI.COM

PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

FOUR WINDS FARM SUBDIVISION

TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE

WETLAND DELINEATION PLAN

RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS	BY

PROJECT	RIBER21001
DATE	2022-03-28
DRAWING SCALE	1"=150'
DRAWN BY	RPP
APPROVED BY	AMD

V0201

SHEET 1 OF 2

Point Table: Wetland A			
Point #	NORTHING	EASTING	Elevation
WFL A65	272498.62	685833.18	24.24
WLF	272402.93	685878.16	24.08
WLF	272396.07	685874.47	24.33
WLF	272374.50	685874.56	24.06
WLF	272362.76	685877.32	24.31
WLF A1	273272.55	685876.41	24.21
WLF A2	273226.53	685901.46	24.30
WLF A3	273172.79	685910.97	24.23
WLF A4	273109.11	685926.85	24.76
WLF A5	273050.75	685928.13	24.24
WLF A6	273011.45	685917.53	24.77
WLF A7	272976.06	685917.48	24.63
WLF A8	272939.60	685947.96	24.38
WLF A9	272884.78	685959.30	24.41
WLF A10	272838.08	685954.89	24.42
WLF A11	272783.88	685952.30	24.56
WLF A12	272707.12	685949.52	24.48
WLF A13	272639.44	685950.01	24.56
WLF A14	272599.67	685949.69	24.57
WLF A15	272525.38	685943.97	24.63

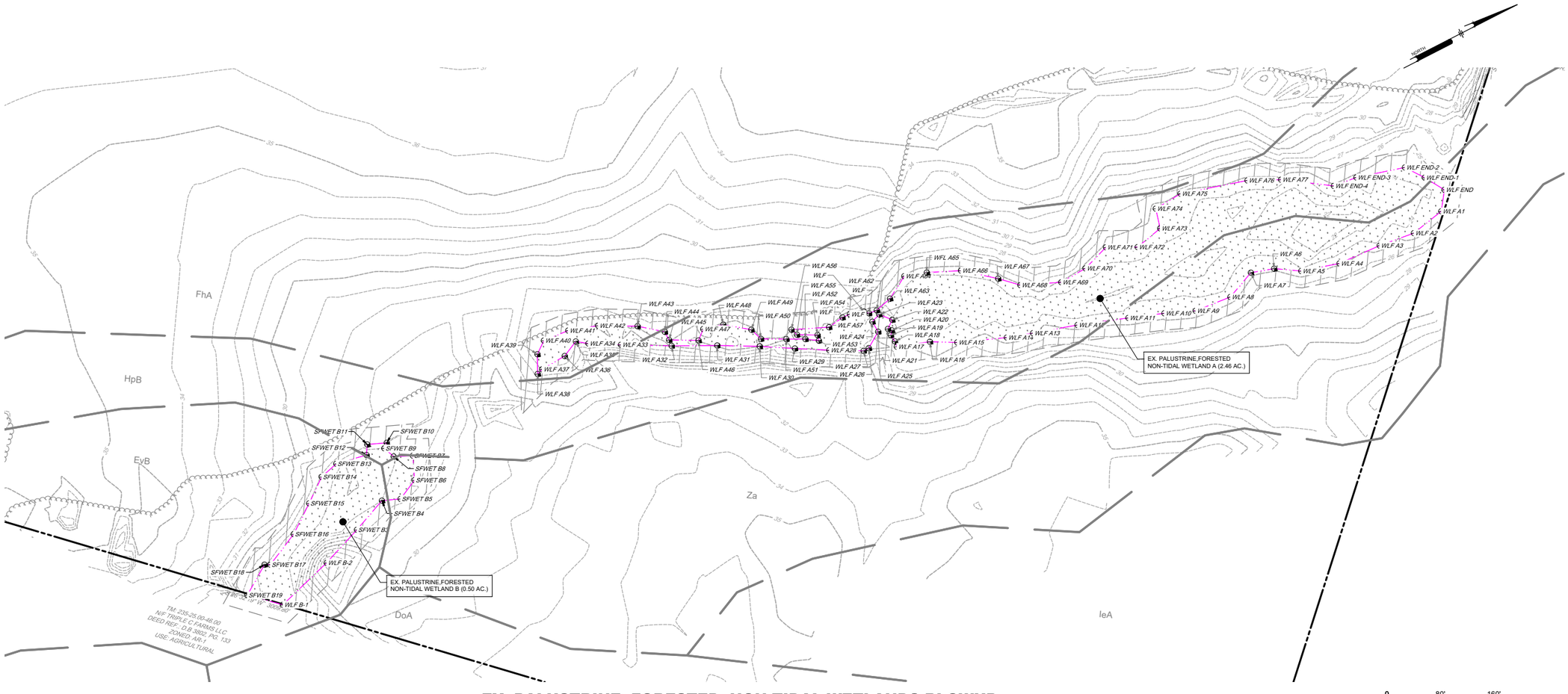
Point Table: Wetland A			
Point #	NORTHING	EASTING	Elevation
WLF A16	272485.28	685935.85	24.66
WLF A17	272435.29	685934.62	25.12
WLF A18	272433.86	685926.25	24.73
WLF A19	272429.45	685916.08	24.44
WLF A20	272432.09	685909.14	24.14
WLF A21	272426.73	685906.03	24.65
WLF A22	272435.50	685893.79	24.28
WLF A23	272417.70	685882.45	24.52
WLF A24	272405.72	685891.45	24.73
WLF A25	272411.67	685907.69	24.84
WLF A26	272393.57	685929.42	24.64
WLF A27	272385.19	685932.10	24.31
WLF A28	272334.90	685922.18	24.80
WLF A29	272284.56	685910.78	24.71
WLF A30	272233.30	685898.49	25.10
WLF A31	272170.98	685886.17	24.80
WLF A32	272103.70	685874.85	25.08
WLF A33	272029.41	685860.04	25.35
WLF A34	271981.71	685849.76	25.67
WLF A35	271963.67	685843.45	25.61

Point Table: Wetland A			
Point #	NORTHING	EASTING	Elevation
WLF A36	271943.58	685862.04	25.13
WLF A37	271906.90	685875.84	26.03
WLF A38	271899.10	685881.50	26.72
WLF A39	271903.83	685852.36	25.25
WLF A40	271916.87	685833.86	25.07
WLF A41	271955.42	685825.47	25.12
WLF A42	272000.80	685825.99	24.89
WLF A43	272058.66	685837.04	25.09
WLF A44	272097.25	685852.41	25.30
WLF A45	272101.56	685865.50	25.19
WLF A46	272144.84	685873.85	24.80
WLF A47	272154.64	685858.27	25.20
WLF A48	272185.46	685856.93	24.85
WLF A49	272225.39	685871.78	24.83
WLF A50	272237.22	685887.75	24.85
WLF A51	272274.36	685894.66	24.70
WLF A52	272302.58	685899.59	24.71
WLF A53	272322.05	685905.43	24.74
WLF A54	272321.49	685896.82	24.95
WLF A55	272291.26	685890.97	25.19

Point Table: Wetland A			
Point #	NORTHING	EASTING	Elevation
WLF A56	272284.41	685882.12	25.07
WLF A57	272340.56	685888.25	24.69
WLF A62	272415.12	685875.87	24.22
WLF A63	272437.73	685861.93	24.30
WLF A64	272464.61	685832.57	24.88
WLF A66	272549.53	685839.10	24.50
WLF A67	272602.22	685860.55	24.31
WLF A68	272633.21	685875.85	24.82
WLF A69	272694.21	685882.34	24.76
WLF A70	272733.55	685868.13	24.51
WLF A71	272769.18	685842.44	24.58
WLF A72	272815.93	685830.31	24.52
WLF A73	272854.03	685828.62	24.51
WLF A74	272852.58	685798.39	24.49
WLF A75	272892.97	685782.76	24.69
WLF A76	272994.99	685780.61	24.70
WLF A77	273044.72	685788.14	24.76
WLF END	273282.79	685845.60	24.18
WLF END-1	273256.87	685822.54	24.49
WLF END-2	273230.32	685802.37	24.34

Point Table: Wetland A			
Point #	NORTHING	EASTING	Elevation
WLF END-3	273156.24	685804.50	24.72
WLF END-4	273120.86	685811.12	24.80

Point Table: Wetland B			
Point #	NORTHING	EASTING	Elevation
SFWET B3	271592.37	686064.22	26.48
SFWET B4	271636.73	686027.77	26.00
SFWET B5	271664.66	686030.01	26.56
SFWET B6	271690.09	686006.08	27.16
SFWET B7	271694.06	685969.55	26.62
SFWET B8	271665.53	685965.76	25.89
SFWET B9	271653.84	685951.25	25.96
SFWET B10	271658.86	685943.81	25.99
SFWET B11	271629.73	685941.17	26.27
SFWET B12	271625.77	685956.48	25.70
SFWET B13	271579.10	685961.57	26.28
SFWET B14	271554.17	685977.14	26.68
SFWET B15	271528.86	686012.84	27.02
SFWET B16	271498.08	686054.18	26.55
SFWET B17	271455.84	686093.21	26.63
SFWET B18	271447.11	686091.61	26.73
SFWET B19	271413.89	686132.17	27.41
WLF B-1	271463.80	686155.54	26.79
WLF B-2	271539.14	686105.00	26.59



EX. PALUSTRINE, FORESTED, NON-TIDAL WETLANDS BLOWUP

SCALE: 1"=80'

PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

FOUR WINDS FARM SUBDIVISION
TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE

WETLAND DELINEATION BLOW UP AND DETAILS

RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	REVISIONS	BY

DATE

PROJECT	RIBER21001
DATE	2022-03-28
DRAWING SCALE	1"=80'
DRAWN BY	RP-P
APPROVED BY	AMD

V0202

SHEET 2 OF 2

18072 Davidson Drive
Milton, DE 19968
T: 302-684-8030
F: 302-684-8054

www.pennoni.com

RIBER 21001

RIBERA DEVELOPMENT, LLC
C/O John Stamato
8684 Veterans Highway, Suite 203
Millersville, Maryland 21108
(443) 871-0486
Johnstamato@riberadev.com

RE: WETLAND AND WATERCOURSE STUDY REPORT
FOUR WINDS FARM
TM#: 235-25.00-39.00
MILTON, SUSSEX COUNTY, DELAWARE

Dear Mr. Stomato,

Pennoni conducted a wetland and watercourse investigation and February 10, 2022 to determine if wetlands and watercourses are present within the subject property located at Tax Map Number 235-25.00-39.00 in, Milton, Sussex County, Delaware. The 168.9-acre site is presently used for agriculture except for the northeast corner of the property, which is forested.

Potential wetland and watercourse habitats located within the project study area were reviewed through the combined use of existing published data and a field investigation. Existing published data included 7.5-minute quadrangle USGS topographic mapping (Milton and Harbeson, DE, quadrangles); U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory Mapping; and NRCS Web Soil Survey website (http://websoilsurvey.nrcs.usda.gov). The USFWS NWI online database did not identify mapped wetlands within the project site. NRCS Web Soil Survey identified Zekiah sandy loam, frequently flooded (Za) soils within the forested portion of the project study area. Za soils are identified as hydric soils according to the Delaware USDA-NRCS Hydric Soils list. The lists of hydric soils were created by using National Soil Information System database selection criteria that were developed by the National Technical Committee for Hydric Soils. These criteria are selected soil properties that are documented in Soil Taxonomy and were designed primarily to generate a list of potentially hydric soils from the Soil Information Data System database. Hydric soils were examined and determined during the field investigation using USACE Delineation Manual, Regional Supplement, and Field Indicators of Hydric Soils in the United States V-8.1 (USDA-NRCS, 2017) as guidance.

The presence of wetland habitats within the project study area were evaluated using the Routine Wetland Delineation Method for small areas described in the US Army Corps of Engineers (USACE) Wetland Delineation, Technical Report Y-87-1 (1987), and the Atlantic and Gulf Coastal Region (Version 2.0) Regional Supplement to the U.S. Army Corps of Engineers Wetland Delineation Manual (November 2010).

The multi-parameter approach outlined in the USACE Delineation Manuals was followed to perform this wetland and watercourse investigation. Under this approach, three (3) criteria for the classification of an area as a wetland must be met. The three (3) criteria are:

- Hydrophytic vegetation must be present, which has the ability to grow, effectively compete, reproduce, and/or persist in saturated soil conditions.
- Hydric soils must be present as defined by indicator characteristics of prolonged anaerobic and saturated conditions.
- Hydrology must be present which results in periodic inundation or prolonged saturation of the biologically active portion of the soil.

The presence of waters of the United States and watercourses was also evaluated during the field investigation. As codified in 40 CFR 230.3(s), consistent with the pre-2015 regulatory regime until further notice, a waters of the United States is defined as:

All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters; all impoundments of waters otherwise defined as waters of the United States under this definition; tributaries of waters identified in paragraphs (s)(1) through (4) of this section; the territorial sea; and wetlands adjacent to waters (other than waters that are themselves wetlands) identified above.

Wetlands are regulated under the Federal Clean Water Act, Section 404 as waters of the United States of America. Delaware regulates all of its tidal wetlands and non-tidal wetlands that include 400 or more contiguous acres under the Delaware Wetlands Act (7 Del. Code, Chapter 66) and the Wetlands Regulations (7 DE Admin. Code 7502). Activities (dredging, draining, filling, construction of any kind, bulkheading, mining, drilling and excavation) in these wetlands require a Wetlands and Subaqueous Lands Permit Application Form for Subaqueous Lands, Wetlands, Marina, and 401 Water Quality Certification Projects issued by the Delaware Department of Natural Resources and Environmental Control (DNREC). In addition, a US Army Corps of Engineers (USACE) Nationwide Permit would be required for any dredging or filling of federally regulated waters of the US including wetlands.

Summary

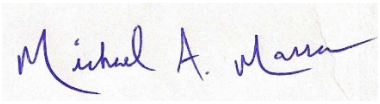
A wetland and watercourse investigation identified two non-tidal wetlands and no watercourses within the project study area. Approximately 2.96-acres of palustrine, forested, non-tidal wetlands extend north to south within the forested portion of the project site (See Wetland Delineation Plan (V0201 and V0202) Prepared by Pennoni Associates, Dated March .

No activities (dredging, draining, filling, construction of any kind, bulkheading, mining, drilling and excavation) are anticipated to take place within wetlands as a result of this project. Therefore, a Delaware Wetlands and Subaqueous Lands Permit Application Form for Subaqueous Lands, Wetlands, Marina, and 401 Water Quality Certification Projects and USACE Nationwide permit are not required for this project. As such, a jurisdictional determination conducted by the USACE Philadelphia District is not required for this project.

If you should have any questions concerning this report, or require additional information, please feel free to contact us at 717-620-5991.

Sincerely,

PENNONI



Michael A. Marra
Staff Environmental Scientist

John-Thomas Graupensperger, PWS (#2339)
Environmental Division Manager

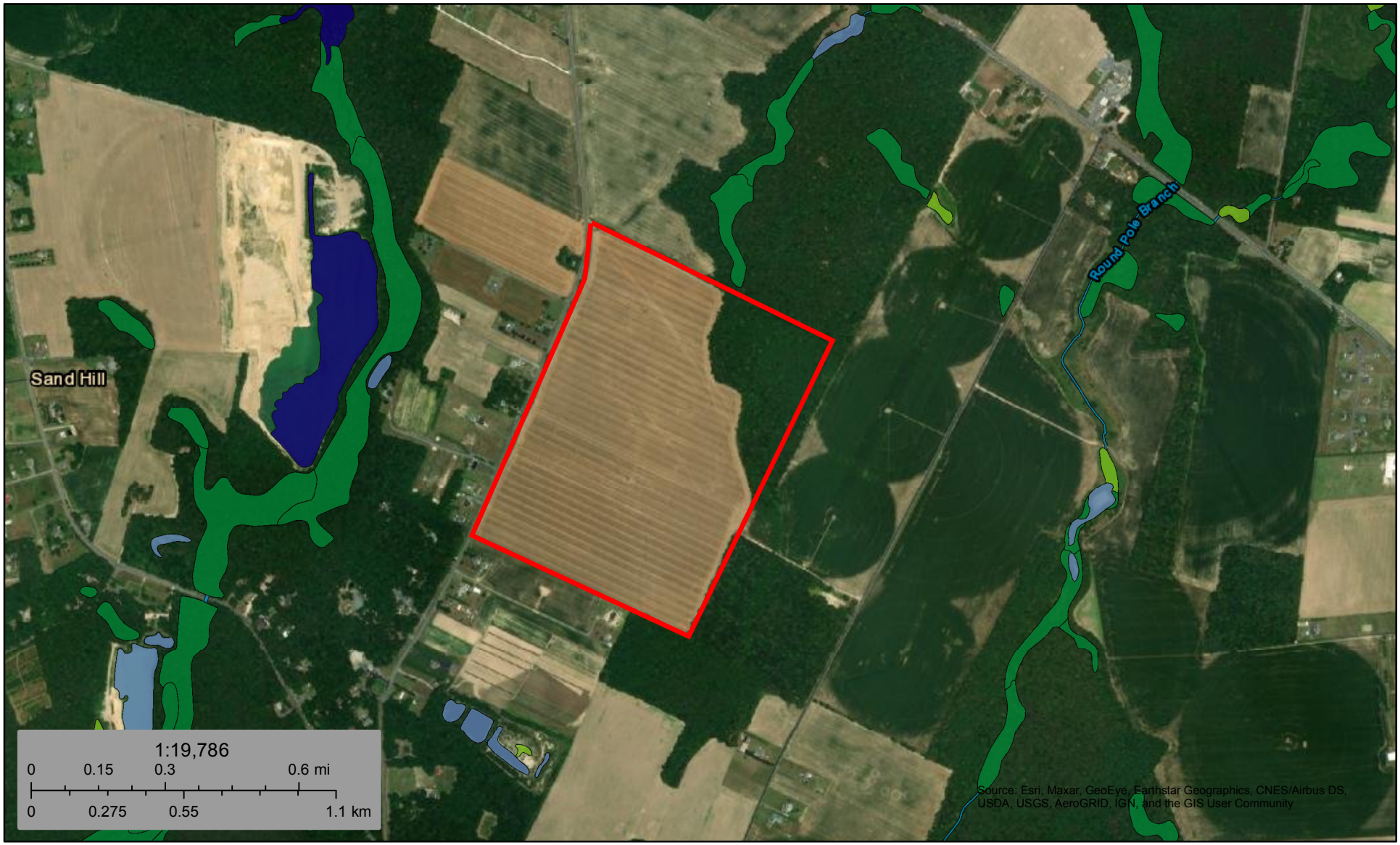
View of the Palustrine Forested Wetland located within the northeastern, forested portion of the project site. Photo facing east (February 2022).

View of the Palustrine Forested Wetland located within the northeastern, forested portion of the project site. Photo facing southeast (February 2022).

U.S. Fish and Wildlife Service

National Wetlands Inventory

RIBER 21001

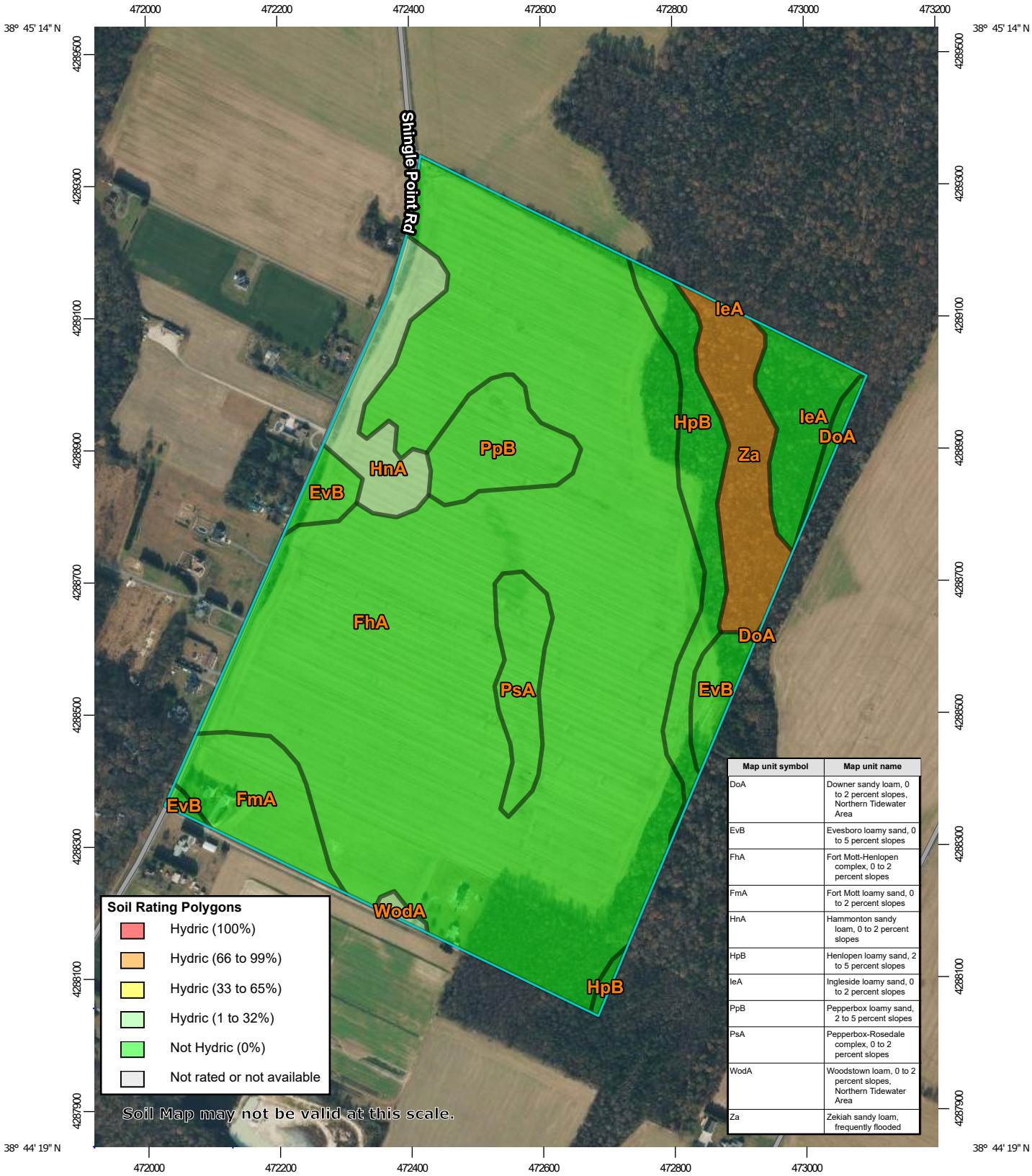


Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

Hydric Rating by Map Unit—Sussex County, Delaware

RIBER 21001



Map unit symbol	Map unit name
DoA	Downer sandy loam, 0 to 2 percent slopes, Northern Tidewater Area
EvB	Evesboro loamy sand, 0 to 5 percent slopes
FhA	Fort Mott-Henlopen complex, 0 to 2 percent slopes
FmA	Fort Mott loamy sand, 0 to 2 percent slopes
HnA	Hammonton sandy loam, 0 to 2 percent slopes
HpB	Henlopen loamy sand, 2 to 5 percent slopes
IeA	Ingleside loamy sand, 0 to 2 percent slopes
PpB	Pepperbox loamy sand, 2 to 5 percent slopes
PsA	Pepperbox-Rosedale complex, 0 to 2 percent slopes
WodA	Woodstown loam, 0 to 2 percent slopes, Northern Tidewater Area
Za	Zekiah sandy loam, frequently flooded

Map Scale: 1:8,270 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

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

USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

TAB 7

EXHIBITS

Cape Henlopen School District

Richard Crisci
Transportation Supervisor
Richard.Crisci@cape.k12.de.us

DISTRICT OFFICE
1270 KINGS HIGHWAY
LEWES, DE 19958
302-644-7900

March 17, 2022

To Whom It May Concern:

This letter is in response to a request that Cape Henlopen School District provide a bus stop for the proposed Four Winds Farm subdivision on Shingle Point Rd. in Milton. The district will create a bus stop at the proposed location by Pennoni at the entrance to the development with the intersection of Shingle Point Rd.

The district does not require a school bus shelter but does request the developer/builder consider a sidewalk and area for vehicles to park that will not impede the flow of traffic into and out of the development while students wait for the bus.

Please feel free to contact me if there are any further questions or concerns.

Cordially,

Richard Crisci
Transportation Supervisor

MAPPING & ADDRESSING

MEGAN NEHRBAS
MANAGER OF GEOGRAPHIC
INFORMATION SYSTEMS (GIS)
(302) 855-1176 T
(302) 853-5889 F

Sussex County
DELAWARE
sussexcountyde.gov

July 28, 2021

Pennoni

Attn: Alan M. Decktor, PE, ENV SP

RE: **Change of Sub Division Name(s)/Formally known as:**

ILEX BEACH FARM

I have received your request to change the subdivision previously approved as **ILEX BEACH FARM**, which is located in **Milton** (235-25.00-39.00). The name change has been approved and will now been known as:

FOUR WINDS FARM

Should you have any questions please contact the **Sussex County Addressing Department at 302-853-5888 or 302-855-1176.**

Sincerely,

Terri L Dukes

Terri L. Dukes
Addressing Technician II

CC: Christin Scott
Planning & Zoning

GEOGRAPHIC INFORMATION OFFICE

MEGAN NEHRBAS
SENIOR MANAGER OF GEOGRAPHIC INFORMATION SYSTEMS (GIS)
(302) 855-1176 T
(302) 853-5889 F

Sussex County
DELAWARE
sussexcountyde.gov

February 18, 2022

Alan M. Decktor, PE, ENV SP
Pennoni
18072 Davidson LN
Milton, DE 19968

RE: Four Winds Farm Approved Streets

Our office has received proposed street name(s) for your future subdivision, **Four Winds Farm**, located on parcel 235-25.00-39.00 in Milton, DE 19968. Based on our review the following proposed street name(s) have been **approved**:

Wisteria Blvd	Teaberry Ln	Honeysuckle Dr	Mayapple Dr
Laurel Dr	Elderberry Cir	Azalea Dr	Trillium Ln

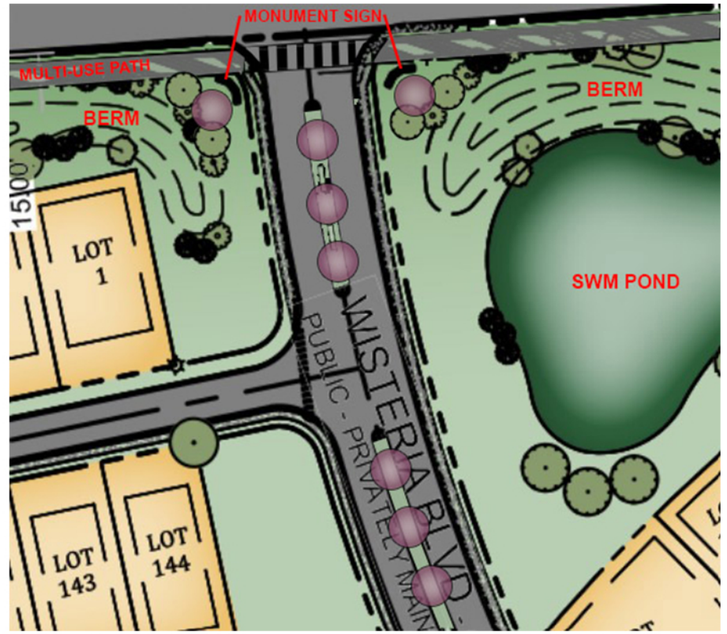
Use only road names **approved** and issued by this office on letterhead or you will be required to rerecord. Each street name is to be used only once.

Upon final approval of **Four Winds Farm** please forward a digital copy of the recorded site plan to my attention for the purpose of addressing. Should you have any questions, please contact the **Geographic Information Office** at 302-855-1176.

Sincerely,

Brian L. Tolley
GIS Specialist II

CC: Christin Scott, Office of Planning & Zoning



PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

A Livable Delaware plant must

- Pose no potential threat as an invasive plant
- Have no serious disease or insect problems
- Be hardy to Delaware
- Possess adaptable characteristics to landscape situations (i.e. drought resistant, tolerant of poor soils, etc.)

DELAWARE Native Plant Society

- **80% of Clubhouse and Entrnace Plantings will be Native Plants to Delaware.**

- **Native plants are better acclimated to our local conditions and experience better rates of success.**

- **Plantings are chosen for site conditions and ecological benefits.**

Plants for a Livable Delaware

Clubhouse and Entrance Areas

Benefits:

- Reduce stormwater runoff and flooding by intercepting and storing rainwater
- Improve water quality by filtering surface runoff and improving infiltration
- Improve air quality by absorbing pollutants through the leaves of trees
- Shade buildings and pavement, reducing energy demand for cooling in summer
- Buffer buildings from wind, reducing energy demand for heating in winter
- Capture carbon dioxide from the atmosphere and store it in plant tissues and soil
- Reduce soil erosion by diminishing the volume and velocity of rainfall as it falls through the canopy, lessening the impact of raindrops on bare surfaces
- Increase aesthetic value and increase property values

- Green Infrastructure Primer

(A Delaware Guide to using Natural Systems in Urban, Rural, and Coastal Settings)

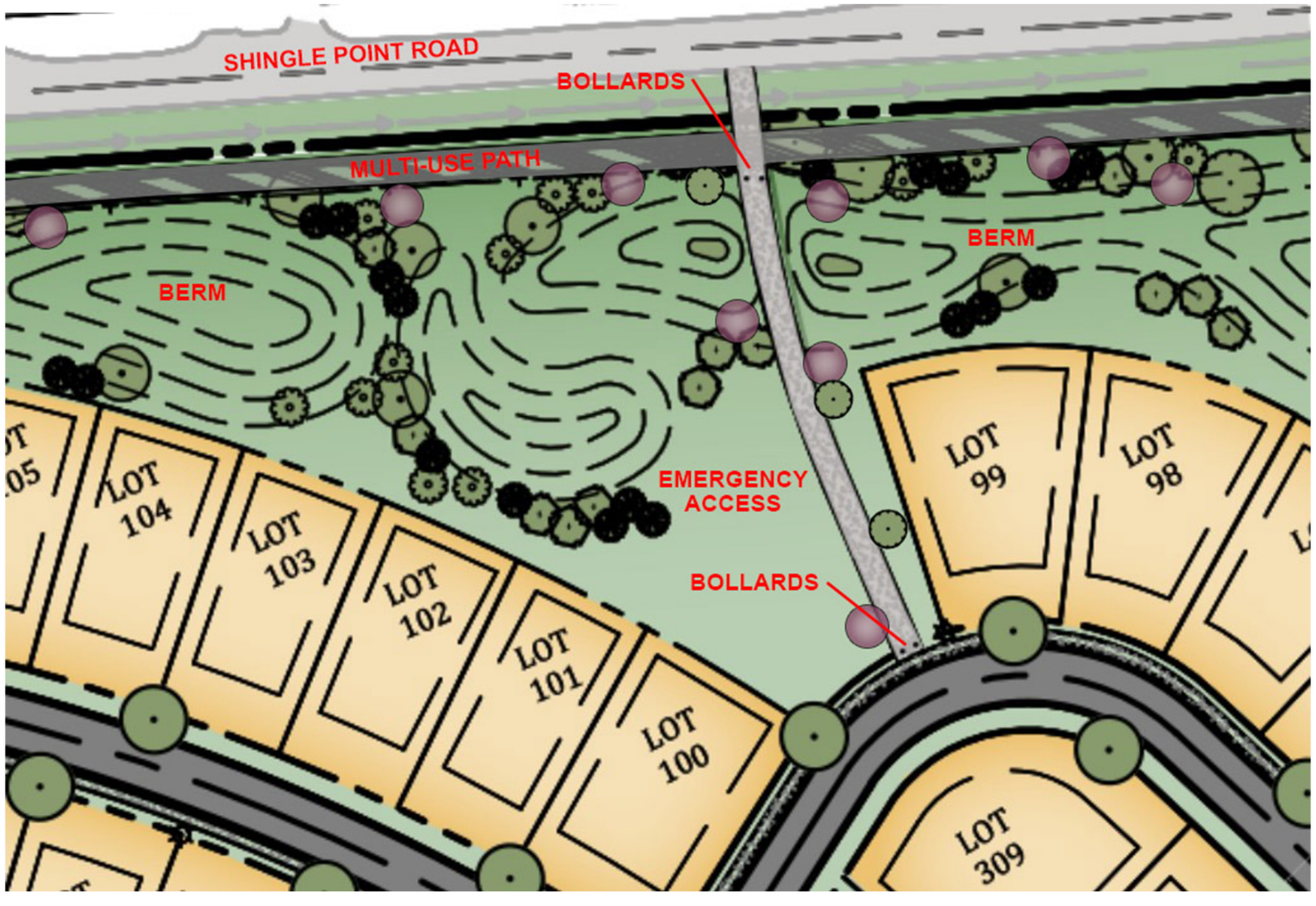
Green infrastructure is an important and underutilized tool for increasing community resilience to the effects of climate change and natural disasters.

— U.S. Department of Housing and Urban Development

Berms & Access

Pennoni

PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054



GRADING NOTES:

1. BEDDING REQUIREMENTS SPECIFIED HEREIN ARE TO BE CONSIDERED AS MINIMUMS FOR RELATIVELY DRY, STABLE EARTH CONDITIONS. ADDITIONAL BEDDING SHALL BE REQUIRED FOR ROCK TRENCHES AND WET AREAS. CONTRACTOR SHALL HAVE THE RESPONSIBILITY TO PROVIDE SUCH ADDITIONAL BEDDING AS MAY BE REQUIRED TO PROPERLY CONSTRUCT THE WORK.
2. COMPACTION OF THE BACKFILL OF ALL TRENCHES SHALL BE COMPACTED TO THE DENSITY OF 95% OF THEORETICAL MAXIMUM DRY DENSITY (ASTM D698). BACKFILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS, OR OTHER FOREIGN DEBRIS AND SHALL BE PLACED IN LIFTS NOT TO EXCEED 8 INCHES IN COMPACTED FILL THICKNESS. CORRECTION OF ANY TRENCH SETTLEMENT WITHIN A YEAR FROM THE DATE OF APPROVAL WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. MATERIAL THAT CANNOT BE COMPACTED AS REQUIRED SHALL BE BROUGHT TO THE ATTENTION OF A GEOTECHNICAL ENGINEER, OVER EXCAVATED, AND THEN REPLACED WITH SUITABLE FILL
3. THE CONTRACTOR WILL INSURE THAT POSITIVE AND ADEQUATE DRAINAGE IS MAINTAINED AT ALL TIMES WITHIN THE PROJECT LIMITS. THIS MAY INCLUDE, BUT NOT BE LIMITED TO, REPLACEMENT OR RECONSTRUCTION OF EXISTING DRAINAGE STRUCTURES THAT HAVE BEEN DAMAGED OR REMOVED OR REGRADING AS REQUIRED BY THE ENGINEER, EXCEPT FOR THOSE DRAINAGE ITEMS SHOWN AT SPECIFIC LOCATIONS AND HAVING SPECIFIC PAY ITEMS IN THE DETAILED ESTIMATE. NO SEPARATE PAYMENT WILL BE MADE FOR ANY COSTS INCURRED TO COMPLY WITH THIS REQUIREMENT.
4. THE CONTRACTOR SHALL PROVIDE ANY AND ALL EXCAVATION AND MATERIAL SAMPLES NECESSARY TO CONDUCT REQUIRED SOIL TESTS. ALL ARRANGEMENTS AND SCHEDULING FOR THE TESTING SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
5. SOILS TESTING AND ON-SITE INSPECTION SHALL BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER. THE SOILS ENGINEER SHALL PROVIDE COPIES OF TEST REPORTS TO THE CONTRACTOR, THE OWNER AND THE OWNER'S REPRESENTATIVE AND SHALL PROMPTLY NOTIFY THE OWNER, HIS REPRESENTATIVE AND THE CONTRACTOR, SHOULD WORK PERFORMED BY THE CONTRACTOR FAIL TO MEET BUILDING STANDARDS.
6. CONTRACTOR SHALL FURNISH AND MAINTAIN ALL NECESSARY BARRICADES AROUND THE WORK AREA AND SHALL PROVIDE PROTECTION AGAINST WATER DAMAGE AND SOIL EROSION.
7. MAXIMUM SIDEWALK CROSS SLOPE IS 2% AND MINIMUM SIDEWALK CROSS SLOPE IS 1% FOR ADA ACCESSIBLE AREAS. IF ANY SLOPES DIFFER, CONTACT DESIGN ENGINEER TO DETERMINE RESOLUTION.
8. VERTICAL ELEVATIONS ARE BASED ON NAVD 88.
9. ALL SLOPES MAXIMUM 3:1 UNLESS OTHERWISE NOTED.
10. CONTRACTOR IS RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE TOWARDS OUTLET AT ALL TIMES DURING CONSTRUCTION. PONDING OF WATER, EXCLUDING STORMWATER MANAGEMENT PONDS, AND LACK OF POSITIVE DRAINAGE WITHIN THE PROPERTY DURING GRADING, FILLING OR EXCAVATION, NO MATTER OF THE DESIGN OR THE STAKEOUT, IS FORBIDDEN WITHOUT THE PERMISSION OF THE DESIGN ENGINEER OR THEIR AUTHORIZED REPRESENTATIVE. CONTRACTOR IS RESPONSIBLE TO DISCUSS ALL GRADING AND DRAINAGE CONCERNS WITH THE DESIGN ENGINEER, PRIOR AND DURING APPLICATION TO ENSURE THAT POSITIVE DRAINAGE TOWARDS OUTLETS ARE ADDRESSED APPROPRIATELY AND SAFELY. DESIGN ENGINEER WILL BE HELD HARMLESS FROM CONCERNS ARISING FROM THE LACK OF POSITIVE DRAINAGE IF NOT NOTIFIED PRIOR TO ITS APPLICATION
11. CONTRACTOR IS RESPONSIBLE FOR REMOVING AND DISPOSING OF EXCESS DIRT FROM THE SITE

SITE INFORMATION:

SITE ADDRESS:
SPRING GARDEN, LLC.
TAX MAP: 235-25.00-39.00
16793 ISLAND FARM LAND
MILTON, DE 19968

DEVELOPER:
RIBERA DEVELOPMENT, LLC.
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108
(443) 871-0486

ENGINEER, PLANNER & SURVEYOR CONSULTANTS:
PENNONI ASSOCIATES INC.
18072 DAVIDSON DRIVE
MILTON, DELAWARE 19968
(302) 684-8030

THE STREET DESIGN LAYOUT, GRADING AND DRAINAGE ELEMENTS ARE SUBJECT TO SUSSEX COUNTY ENGINEERING DEPARTMENT REVIEW AND APPROVAL.

PENNONI ASSOCIATES INC.
18072 Davidson Drive
Milton, DE 19968
T 302.684.8030 F 302.684.8054

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

FOUR WINDS FARM SUBDIVISION

TAX ID 235-25.00-39.00
SHINGLE POINT ROAD (SCR 249), SUSSEX COUNTY, DE

BULK GRADING CONCEPT PLAN

RIBERA DEVELOPMENT, LLC
8684 VETERANS HIGHWAY, SUITE 203
MILLERSVILLE, MD 21108

NO.	DATE	REVISIONS	BY

PROJECT	RIBER21001
DATE	2022-03-28
DRAWING SCALE	1"=150'
DRAWN BY	RPP
APPROVED BY	AMD

CS1501

SHEET 1 OF 1

TAB 8

POESA

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Spring Garden Property
Shingle Point Road and Black Drive
Parcel #235-25.00-39.00
Milton, DE 19968

Submitted To:

John Stamato
Ribera Development, LLC
8684 Veterans Highway Suite #203
Millersville, MD 21108

Submitted By:

Pennoni Associates Inc.
1900 Market St.
#300
Philadelphia, PA 19103

Brendan Keegans
Graduate Geologist

Marc Chartier
Environmental Division Manager

Project No. RIBER21001

May 11, 2021

Project Summary Table

Area of Concern		Not Identified/ No Significant Finding	De minimis	ASTM Non-Scope	REC/ HREC/ CREC/ BER	Further Action Needed
3.0	USER PROVIDED INFORMATION	✔				
5.1	Fire Insurance Maps	✔				
5.2	Historical Aerial Photographs				✔	REC - Historical Agricultural Usage, BER - Former Structures
5.5	Historical Topographical Maps	✔				
6.1	Standard Environmental Record Sources, Federal and State	✔				
6.2	Regulatory Agency File and Records Review	✔				
6.3	Additional Environmental Records Sources – Regional and Local	✔				
7.0	SITE RECONNAISSANCE				✔	REC - Current Agricultural Usage
7.3	Hazardous Substances in Connection with Identified Uses	✔				
7.4	Storage Tanks	✔				
7.6	Other Observations	✔				
7.6.1	Wells	✔				

Area of Concern		Not Identified/ No Significant Finding	De minimis	ASTM Non-Scope	REC/ HREC/ CREC/ BER	Further Action Needed
7.6.2	Current Agricultural Activity				✔	REC - Current Agricultural Usage
7.7	Polychlorinated Biphenyls (PCBs)	✔				
7.8	Potential Vapor Migration Pathways	✔				
9.0	DATA GAPS AND DEVIATIONS	✔				

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APPENDICES

EXECUTIVE SUMMARY

On behalf of Ribera Development, LLC ("Client" or "User"), Pennoni has performed a Phase I Environmental Site Assessment (ESA) of an agricultural field, located at Shingle Point Road and Black Drive, Milton, DE ("subject property" or "site"). The subject property consists of an approximate 170 acres of farm and undeveloped land. The subject property is identified as parcel #235-25.00-39.00 on the Sussex County Parcel Viewer.

Pennoni conducted the ESA in general conformance with the scope and limitations of the ASTM International (ASTM) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E 1527-13. ASTM E 1527-13 is a voluntary consensus standard that constitutes "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice." The procedures included in the ASTM E 1527-13 standard comply with the United States Environmental Protection Agency (USEPA) 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries; Final Rule.

To identify **RECs**, **CRECs**, **HRECs**, and **BERs** in connection with the subject property, this ESA included a historical records review, site reconnaissance, interviews with owners, operators, and occupants of the subject property, interviews with local government officials, review of regulatory records held by state and federal agencies, a review of information provided by the User (i.e., the party seeking to complete an ESA of the subject property), and preparation of a report presenting Pennoni's findings, opinions, conclusions and supporting documentation. The ESA for the subject property did not include any testing or sampling of materials (e.g., soil, water, air, building materials).

CONCLUSIONS

Pennoni has drawn the following conclusions regarding **RECs**, **CRECs**, **HRECs**, and **BERs** relative to the site based on the ESA investigations documented herein.

Pennoni identified the following **REC** in connection with the subject property:

Current and Historical Agricultural Usage

Upon review of historic aerial photographs and the site inspection, the majority of the site is and has been comprised of agricultural fields since the earliest observed aerial photograph (1937) with undeveloped, wooded land making up the northeast corner of the site. The majority of the site land was and still is used for the farming of row crops. The use of pesticides, herbicides, and fertilizers were customary practice for crop growing. As such, there is potential that soils on the subject property are impacted with concentrations of lead, arsenic, organic pesticides, and/or herbicides. If a change in use of the subject property is planned, site soils should be evaluated for residual pesticide impacts.

Pennoni did not identify any **CRECs** or **HRECs** in connection with the subject property.

Pennoni identified the following **BER** in connection with the subject property:

Former Structures

Former apparent residential structures and a barn were observed on the site on historical aerial photographs until approximately 1961. The presence of such structures and absence of information regarding historical heating or waste water disposal at the site constitutes a **BER**. More specifically, the **BER** is associated with specific historical site operations and associated waste streams, potential septic systems, and/or underground storage tanks (USTs) associated with the former structures that may be (or may have been) present.

1.0 INTRODUCTION

Pennoni conducted the ESA in general conformance with the scope and limitations of the ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E 1527-13. The procedures included in the ASTM E 1527-13 standard comply with the USEPA 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries; Final Rule.

ASTM E 1527-13 is a voluntary consensus standard that constitutes "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice." The ASTM practice is intended to permit a User (i.e., the party seeking to complete an ESA of the subject property, in this case, Ribera Development, LLC, to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) liability (i.e., landowner liability protections or LLPs). The practice does not address whether requirements in addition to all appropriate inquiry have been met in order to qualify for LLPs (e.g., continuing obligations not to impede the integrity and effectiveness of activity and use limitations (AULs), the duty to take reasonable steps to prevent releases, or the duty to comply with legally required release reporting obligations).

ASTM E 1527-13 does not include any testing or sampling of materials (e.g., soil, water, air, building materials).

This report presents the findings, opinions, and conclusions, and supporting documentation for the ESA of the subject property, completed by Pennoni as of the date of this report. Information made available to Pennoni after this date, which would change the conclusions of this report, will be forwarded upon receipt.

1.1 Purpose

The purpose of the assessment was to identify recognized environmental conditions (RECs), controlled recognized environmental conditions (CRECs), historic recognized environmental conditions (HRECs), and business environmental risks (BERs) in connection with the subject property. A ***REC*** is defined as the presence or likely presence of any hazardous substance or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. A ***CREC*** is defined as a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. An ***HREC*** is defined as a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. A ***BER*** is defined as a risk which can have a material environmental or environmentally driven impact on the business associated with the current or

planned use of a parcel of commercial real estate, not necessarily limited to those environmental issues required to be investigated in this practice. Consideration of BER issues may involve addressing one or more non-scope considerations.

1.2 Scope of Work

This ESA for the subject property included a review of historical site documents, site reconnaissance, interviews with available site representatives, interviews with local, state, and federal government officials, review of information provided by the User, and preparation of this report presenting Pennoni's findings, opinions, conclusions and supporting documentation, as referenced in our Proposal # RIBER21001, dated March 30, 2021.

The environmental professional responsible for the preparation of this report has the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. The report was reviewed by Marc Chartier, Environmental Division Manager of Pennoni, who was supported by various staff, including Brendan Keegans, Graduate Geologist, also with Pennoni. Marc Chartier meets the definition of an "Environmental Professional" as defined in the ASTM standard and AAI regulation. The Environmental Professional Statement and Signature are presented in Section 11.0 section of this report. Mr. Chartier's qualifications are provided in Appendix E.

1.3 User Reliance

This report and findings, conclusions, and recommendations contained herein, are furnished for the sole use and benefit of the Client to aid in understanding the environmental condition and potential liabilities of the subject property. This report may not be assigned, quoted, reproduced, relied upon, or otherwise used without the express prior written consent of Pennoni.

All documents prepared by Pennoni Associates Inc. are the instruments of service in respect of the project. They are not intended or represented to be suitable for reuse by owner or others on extensions of the project or on any other project.

Any reuse without the written verification or adaptation by Pennoni Associates Inc. for the specific purpose intended will be at owner's sole risk and without liability or legal exposure to Pennoni Associates Inc. and owner shall indemnify and hold harmless Pennoni Associates Inc. from all claims, damages, losses, and expenses arising out of or resulting therefrom.

2.0 SUBJECT PROPERTY DESCRIPTION

The following tables provide a description of the subject property including its location, general characteristics, and current use. Current uses of adjoining properties and properties in the surrounding area are also described below. Copies of the topographic and tax maps depicting the subject property are included in Appendix A.

2.1 Subject Property Location and Legal Description

The following table summarizes the subject property location and legal description.

Property Location and Legal Description	
Site City	Milton
Site County	Sussex County
Site State	DE
Site Location	Shingle Point Road
Quadrangle	Harbeson, DE; Milton, DE USGS 7.5 Minute Quadrangles
Site Coordinates	-75.31533453° longitude and 38.74686914° latitude
Parcel #	235-25.00-39.00

2.2 Subject Property Characteristics

The following table summarizes the general characteristics of the subject property, including its current use and a description of structures, roads, and other improvements (i.e., heating/cooling system, sewage disposal, source of potable water, etc.) on the subject property.

Subject Property Characteristics	
Current Use of the Subject Property	
Site Acreage	170 acres
Site Occupant	Agricultural field
Site Structures	
Number of Stories	N/A; No Structures
Total Building Square Footage	N/A; No Structures
Current Use	Agricultural/Undeveloped Land
Construction Date	N/A; No Structures
Type of Heating	N/A; No Structures
Type of Cooling	N/A; No Structures
Site Utilities	
Sanitary Sewer Provider	N/A
Water Service Provider	Onsite Pumphouse
Electric Provider	N/A
Natural Gas Provider	N/A

2.3 Current Uses of Adjoining Properties and Properties in the Surrounding Area

Adjoining properties, and properties and roads in the area surrounding the subject property, are identified below.

Current Uses of Adjoining and Surrounding Properties	
Direction	**Current Use**
North	Farmland and wooded, undeveloped land
East	Farmland and wooded, undeveloped land
South	Residential properties and farmland
West	Residential properties and farmland

3.0 USER PROVIDED INFORMATION

No User Questionnaire was returned to Pennoni at the time of this report. Pennoni understands that the User has no knowledge of the environmental condition of the site.

4.0 PHYSICAL SETTING

Physical Setting	
Item	**Description**
Topography/Regional Drainage	
Source(s)	Harbeson, DE; Milton, DE USGS 7.5 Minute Quadrangles 7.5-minute USGS Topographic Map
Elevation	~35 feet above mean sea level
Regional Drainage	Surface water on the subject property is expected to drain to the west towards Diamond Pond and Ingraham Branch, which are located approximately 1,000 feet west of the site.
Water Migratory Pathways	Local topography slopes to the west. Surface water and groundwater, therefore, are expected to migrate from the properties located to the east. Storm drainage and surface water flow are expected to infiltrate the site, as it's vegetated and undeveloped.
Soils	
Source	United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) *Web Soil Survey* and the ERIS *Physical Settings Report* (Appendix B).
Soil Type(s)	The primary soil type on the site is the Fort Mott-Henlopen complex, which consists of loamy sand soils prominent in flats, fluviomarine terraces which are shallow in most places and are well suited for farmland. These soils exhibit moderate to moderately rapid permeability with a high available moisture capacity.
Underlying Formation	
Source	ERIS *Physical Settings Report* (Appendix B).
Description	The Chesapeake Group is typically composed of bluish gray silt with quartz sand and some shell beds.
Groundwater	
Groundwater Flow Direction	Groundwater is expected to flow to the west, parallel to the surface gradient. In order to further determine groundwater conditions on the subject property, however, a property-specific hydrogeologic investigation would be necessary.

5.0 HISTORICAL RECORDS

The purpose of consulting historical records is to develop a history of the previous uses of the subject property and surrounding area in order to help identify the likelihood of past uses having led to **RECs** in connection with the subject property.

ASTM E 1527-13 requires identification of obvious uses of the subject property from the present, back to the subject property's first developed use (including agricultural uses and placement of fill dirt), or back to 1940, whichever is earlier. As such, Pennoni reviewed as many of the standard historical sources (i.e., aerial photographs, fire insurance maps, property tax files, recorded land title records, USGS topographic maps, local street directories, building department records, zoning/land use records, etc.) as were necessary and both reasonably ascertainable and practically reviewable (i.e., publicly available, obtainable from its source within reasonable time and cost constraints). In addition, the historical sources must be determined to be sufficiently useful by the environmental professional.

Historical Resource	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2020
Historic Maps		✔		✔	✔	✔			✔	✔		✔	
Historical Aerial Photographs				✔		✔	✔	✔	✔	✔	✔	✔	
City Directories										✔	✔	✔	
Fire Insurance Maps													

5.1 Fire Insurance Maps

A historical map (i.e., Sanborn Fire Insurance Maps) inquiry was placed with ERIS for the subject property. However, Sanborn Fire Insurance Maps were not available for the subject property. A copy of documentation stating that there is no Sanborn Fire Insurance Map coverage for the subject property is included in Appendix B.

5.2 Historical Aerial Photographs

Available aerial photographs were obtained from ERIS to determine past uses and conditions of the subject property. Aerial photographs were reviewed for the years 1937, 1953, 1961, 1968, 1973, 1977, 1982, 1992, 2006, 2009, 2011, 2013, 2015, 2017, and 2018 with scales of 1"=500'. Copies of the aerial photographs reviewed by Pennoni are included in Appendix B. The following table is a summary of the aerial photographs reviewed:

Historical Aerial Photographs	
Year(s)	**Description**
1937	The majority of the subject property is observed to be an agricultural field complete with an apparent residence at the center of the property. The northeastern portion of the site appears wooded and undeveloped. Shingle Point Road is observed west of the subject property. Agricultural operations on undeveloped sites are considered a **REC**, as residual pesticides/herbicides contaminants may be present at concentrations above regulatory standards in shallow soils on the site.
1953	The apparent residence appears to have been demolished and in its place a single barn is observed. No other changes to the site or surrounding areas are observed.
1961	No structures are observed on site. The presence of former structures and absence of information regarding historical heating or waste water disposal at the site constitutes a **BER.** More specifically, the **BER** is associated with specific historical site operations and associated waste streams, potential septic systems, and/or USTs associated with the former structures that may be (or may have been) present. A portion of the northwestern woods are cleared. Single family homes have been constructed to the east and south of the subject property.
1968	No significant changes to the subject property and surrounding area are observed, except that the cleared area in the woods on the northwestern portion of the site appears to be re-vegetating.
1973	No significant changes to the subject property and surrounding area are observed.
1977	No significant changes to the subject property and surrounding area are observed.
1982	No significant changes to the subject property. Commercial greenhouses constructed to the west of the subject property.
1992	No significant changes to the subject property and surrounding area are observed. Present day irrigation system installed. Irrigation well likely to have been drilled.
2006	No significant changes to the subject property and surrounding area are observed.
2009	No significant changes to the subject property and surrounding area are observed.

Historical Aerial Photographs	
Year(s)	**Description**
2011	No significant changes to the subject property and surrounding area are observed.
2013	No significant changes to the subject property and surrounding area are observed.
2015	No significant changes to the subject property and surrounding area are observed.
2017	No significant changes to the subject property and surrounding area are observed.
2018	No significant changes to the subject property and surrounding area are observed.

5.3 Property Tax Files

Property tax files including records of past ownership, appraisals, maps, sketches, photos, or other information pertaining to the property were not determined to be reasonably ascertainable, practically reviewable, and/or sufficiently useful.

5.4 Recorded Land Title Records

Recorded land title records were not determined to be reasonably ascertainable, practically reviewable, and/or sufficiently useful.

5.5 Historical Topographical Maps

Pennoni obtained historic topographical maps from ERIS to review past uses and activities associated with the subject property. Historic topographical maps for Harbeson, DE; Milton, DE USGS 7.5 Minute Quadrangles quadrangle, which includes the subject property, were reviewed for the years 1917, 1918, 1938, 1944, 1955, 1981, 1985, 1992, and 2016.

Upon review, the elevation contours and surface features previously noted were confirmed. Also, to a lesser extent, the topographical maps depict the buildings and structures that have already been noted in the aerial photograph reviews and historical map review. No features or conditions considered materially significant for the purposes of this review were noted in historic topographical maps. Copies of the historical topographical maps reviewed by Pennoni are included inAppendix B.

5.6 City Directories

City Directories ("Directories") showing ownership and/or use of the subject property and surrounding properties by use of street address were obtained from ERIS to review past uses and activities associated with the subject property. Pennoni reviewed Directories for the years 1990, 1995, 2000, 2004, 2010, 2014, and 2018.

As the site does not have a physical street address, no relevant records were identified in the Directories. Copies of the Directories reviewed by Pennoni are included in Appendix B.

5.7 Previous Environmental Reports

No previous environmental reports for the site were identified, or provided for review, during this assessment.

6.0 REGULATORY AGENCY RECORDS REVIEW

As part of the ESA for the subject property, Pennoni reviewed both standard and additional environmental record sources for the subject property and surrounding area. Our environmental records review consisted of a review of the following:

- the ERIS Report (ERIS Report) for the subject property provided by ERIS
- information requested from the USEPA
- information requested from the Delaware Department of Natural Resources and Environmental Control (DNREC) AND Sussex County

6.1 Standard Environmental Record Sources, Federal and State

Pennoni contracted the services of ERIS to search both state and federal environmental databases to identify potential concerns that may be associated with either the subject site and/or surrounding properties. The ERIS Report provided listings, accompanied by a map, of facilities and operations with reported environmental concerns within the ASTM E 1527-13 specified search radius around the subject property.

The federal databases searched by the ERIS Report included the following:

- Federal National Priorities List (NPL) site list;
- Federal Delisted NPL site list;
- Federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list;
- Federal CERCLIS No Further Remedial Action Planned (NFRAP) site list;
- Federal Resource Conservation and Recovery Act (RCRA) Corrective Action (CORRACTS) facilities list;
- Federal Treatment, Storage, and Disposal (RCRA TSD) facilities list;
- Federal RCRA (RCRA GEN) generators list;
- Federal Institutional Control/Engineering Control (IC/EC) registries; and
- Federal Emergency Response Notification System (ERNS) list.

The ERIS Report also searched the following state database files:

- State Hazardous Waste Sites (SHWS) list;
- State Solid Waste Facility/Landfill (SWF/LF) site list;
- State Leaking Underground Storage Tank (LUST) site list;
- State Registered Underground and Aboveground Storage Tank (REG UST/AST) site list;

- State Institutional Control/Engineering Control (IC/EC) registries;
- State Voluntary Cleanup Program (VCP) sites list; and
- State Brownfields sites list.

The ERIS Report is presented in Appendix B. Complete listings and descriptions of the each of the databases search are included in the ERIS Report.

Regulatory Report Summary

Database	Search Radius	Target Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
SHWS	1.0	0	0	0	0	1	1
DSHW	1.0	0	0	0	0	1	1

6.1.1 Subject Property

The subject property was not identified on any of the databases included in the ERIS Report.

6.1.2 Vicinity Properties -- Facilities of Potential Concern

The ERIS Report identified the following facilities located adjacent to or in close proximity to the subject property. Based on the distance, elevation, and/or regulatory status of each property, impacts to the site are unlikely.

Surrounding Properties Summary

Database	Site Name	Address	Dist. (mi) / Dir.	Elev. diff. (ft)	Comments
SHWS	Lin Leigh Inc.	Route 30, Milton, DE 19968	0.58/W	-9	
DSHW	Lucas Development	DE 19968	0.97/ENE	0	

6.1.3 Orphan Sites

The unfiltered ERIS Report identified 0 orphan sites, or sites which could not be mapped due to inadequate address information.

6.2 Regulatory Agency File and Records Review

6.2.1 DNREC

Department of Environmental Protection Records Request		
Agency	**Date of Request**	**Agency Response**
DNREC FOIA Request	05/10/21	Pennoni submitted a request to DNREC for any files regarding spills, remediation, USTs, etc. at the site. No response to this inquiry has been received by Pennoni to date. Information received, which changes the findings of this report, will be forwarded upon receipt. A copy of this request is included in Appendix C.

6.2.2 USEPA

As the site has no physical address, querying USEPA's records was not possible.

6.3 Additional Environmental Records Sources – Regional and Local

Additional Environmental Records Sources – Regional and Local			
Records Source	**Date of Records Request**	**Method of Request**	**Findings**
Sussex County	05/10/21	Online	Pennoni submitted a request to Sussex County for any files regarding spills, remediation, USTs, etc. at the site. On May 10, Sussex County responded and indicated that environmental requests should be submitted to DNREC. A copy of this request is included in Appendix C.

7.0 SITE RECONNAISSANCE

Pennoni personnel completed an inspection of the subject property on April 16, 2021 to visually inspect the property for evidence of **RECs**. Pennoni was unescorted during the site reconnaissance. Photographs of the significant features observed during the site visit are provided in Appendix D.

Methodology and Limiting Conditions	
Personnel	Brendan Keegans
Site Inspection Date	April 16, 2021
Methodology	The site was observed by walking the surveyed property line.
Limiting Conditions	The pump house was not accessible during the site reconnaissance.

7.1 General Observations – Exterior Areas

The site is made up of farmland and undeveloped, wooded land. A pumphouse with associated motor/aboveground storage tank (AST) were observed during the site inspection. No evidence of any spills, stains, releases, etc. was observed.

7.2 General Observations – Interior Areas

As no structures are present on the site, no interior areas were present/inspected.

7.3 Hazardous Substances in Connection with Identified Uses

No substantial quantities of hazardous substances were observed on the subject property.

7.4 Storage Tanks

Pennoni observed observed an AST adjacent to irrigation well pump. The AST is painted grey with no visible markings. No staining and/or leaks were observed near the AST which stands alone in vegetation; the vegetation surrounding the tank appeared to be in fair condition.

7.5 Floor Drains and/or Sumps

No floor drains and/or sumps were observed on the subject property.

7.6 Other Observations

Based on the site reconnaissance, review of records, and historical usage of the subject property, Pennoni has identified the following conditions that may impact future development of this property or present the potential for future environmental liability.

Other Observations	
Stains or Corrosion	Not Observed
Pits, Ponds or Lagoons	Not Observed
Stained Soil or Pavement	Not Observed
Stressed Vegetation	Not Observed
Fill Material	Not Observed
Municipal Solid Waste	Not Observed
Regulated Waste Disposal	Not Observed
Biomedical Waste Disposal	Not Observed
Waste Water	Not Observed
Wells	Observed
Septic Systems	Not Observed
Current Agricultural Activity	Observed
Odors	Not Observed
Pools of Liquid	Not Observed
Drums/Containers	Not Observed
Unidentified Chemicals	Not Observed

7.6.1 Wells

Irrigation well onsite.

7.6.2 Current Agricultural Activity

During the site reconnaissance, it was evident that approximately 75% of the site was used for agricultural purposes. The northeastern corner of the site was wooded and undeveloped. There is potential that soils on the subject property are impacted with concentrations of lead, arsenic, organic pesticides, and/or herbicides associated with current and/or past pesticide application. As such, current agricultural usage is considered a **REC**.

7.7 Polychlorinated Biphenyls (PCBs)

PCBs are a class of compounds that were developed in the 1930s and became widely used in industry from the mid-1900s to the late 1970s. The flame resistance of PCBs made them ideal for use in electrical equipment and they did not break down or react with other chemicals, even under extreme conditions of high temperature and pressure. PCBs were commonly used, therefore, in hydraulic fluids, lubricating oils, and transformers, electric motors, switches, and capacitors (including fluorescent lighting ballasts), as well as in paints, plastics, and other household items.

Because PCBs persist in the environment and, because they are fat-soluble, they bio-accumulate in the food chain, the elimination of PCBs from distribution in commerce was mandated in federal legislation in the late 1970s. For economic reasons, however, the use of PCBs in existing equipment was allowed to continue for the useful or normal life of the equipment, as long as specific conditions were met. At present, many industrial facilities continue to rely upon PCB-containing equipment and transformers, while many commercial and residential structures continue to use lighting fixtures, switches, and other articles that contain some level of PCBs.

7.7.1 Transformers and Capacitors

No transformers or capacitors were observed on the subject property.

7.7.2 Elevators and Hydraulic Equipment

Elevators and hydraulic equipment that contain hydraulic fluid are a potential area of environmental concern due to the potential for PCBs to be present in the hydraulic fluid. No such equipment is present on the subject property.

7.8 Potential Vapor Migration Pathways

No structures are present on the subject property and no evidence of any volatile organic contamination was observed in the vicinity of the site; therefore, potential vapor migration on the subject property is not expected to be a concern.

8.0 INTERVIEWS

During this assessment, no site owners or operators were able to be interviewed.

9.0 DATA GAPS AND DEVIATIONS

According to the Standards and Practices for All Appropriate Inquiries, Phase I ESAs must identify data gaps that would affect the ability of the environmental professional to identify conditions indicative of releases or threatened releases of pollutants, contaminants, petroleum and petroleum products, and controlled substances on the subject properties and to explain the significance of these data gaps. The following issues represent instances when either the investigation was hindered in some way, or where some issue was identified as a potential for concern but insufficient information was available to draw a conclusion or rule out that the issue did not represent a **REC**.

- Pennoni was unable to interview the current owner/operator of the subject property, nor past owners of the site. However, the current and previous uses of the subject property are documented in the historical sources reviewed by Pennoni. Therefore, Pennoni does not consider this data gap to be a significant constraint on our ability to provide an opinion regarding **RECs** on the subject property.
- Historic property tax files, historic topographical maps, local street directories, building department records, and zoning/land use records were not reviewed by Pennoni as part of this ESA. Pennoni determined that these standard historical resources were not reasonably ascertainable, practically reviewable, and/or sufficiently useful. Therefore, Pennoni does not consider this data gap to be a significant constraint on our ability to provide an opinion regarding **RECs** on the subject property.
- As of the date of this report, Pennoni has not received responses from each file review request. Pennoni does not consider this data gap to be a significant constraint on our ability to provide an opinion regarding **RECs** on the subject property. Should a response indicate that records are present, Pennoni will communicate with the User.
- Pennoni was unable to access the water pump house during the site reconnaissance, however, Pennoni does not consider this data gap to be a significant constraint on our ability to provide an opinion regarding **RECs** on the subject property.

10.0 LIMITATIONS, EXCEPTIONS, SPECIAL TERMS AND CONDITIONS

Pennoni conducted an ESA of the subject property in general conformance with the scope and limitations of ASTM Standard E 1527-13. The ESA for the subject property did not deviate from this standard. Data gaps that would affect the ability of the environmental professional to identify conditions indicative of releases or threatened releases of pollutants, contaminants, petroleum and petroleum products are identified in Section 9.0 of this report. This ESA is presumed to be valid provided it has been completed less than 180 days prior to the acquisition of the subject property or the date of the intended transaction and within 180 days from the interviews, environmental lien search, regulatory records review, site reconnaissance and the environmental professional's declaration. Recognizing that the passage of time affects the information provided in the reports; our opinions relating to site conditions are based upon information that existed at the time our conclusions were formulated.

11.0 ENVIRONMENTAL PROFESSIONAL STATEMENT AND SIGNATURE

I declare that, to the best of my professional knowledge and belief, I meet the definition of an "environmental professional" as defined at 40 C.F.R. §312.10. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 C.F.R. Part 312.

_____

Marc Chartier
Environmental Division Manager

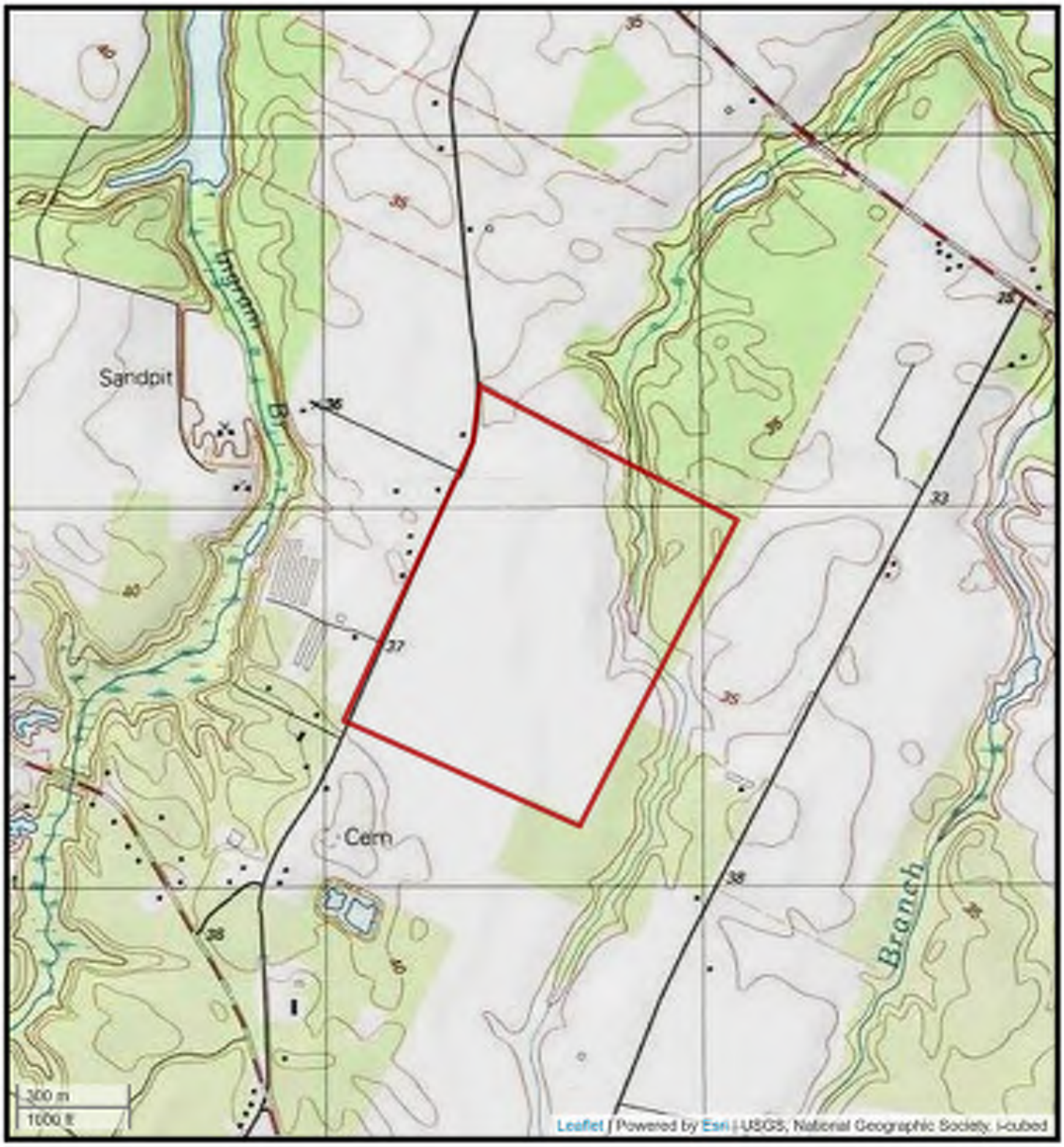
12.0 REFERENCES

The following documents, publications, maps, etc. were used as source materials for this Phase I ESA:

- USEPA 40 CFR Part 312 Standards and Practices for All Appropriate Inquiries; Final Rule, November 1, 2005.
- ASTM Standards on Environmental Site Assessments for Commercial Real Estate (E 1527-13), Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, 2013.
- Harbeson, DE; Milton, DE USGS 7.5 Minute Quadrangles quadrangle, USGS, 7.5 minute topographic quadrangle, 2016.
- Database Report, Report No. 21041200171, 04/14/21, obtained from ERIS.
- Fire Insurance Maps, Report No. 21041200171, 04/14/21, obtained from ERIS.
- Historical Aerial Photographs, Report No. 21041200171, 04/16/21, obtained from ERIS.
- Physical Setting Report, Report No. 21041200171, 04/14/21, obtained from ERIS.
- City Directory, Report No. 21041200171, 04/13/21, obtained from ERIS.
- Topographic Maps, Report No. 21041200171, 04/14/21, obtained from ERIS.

APPENDIX A

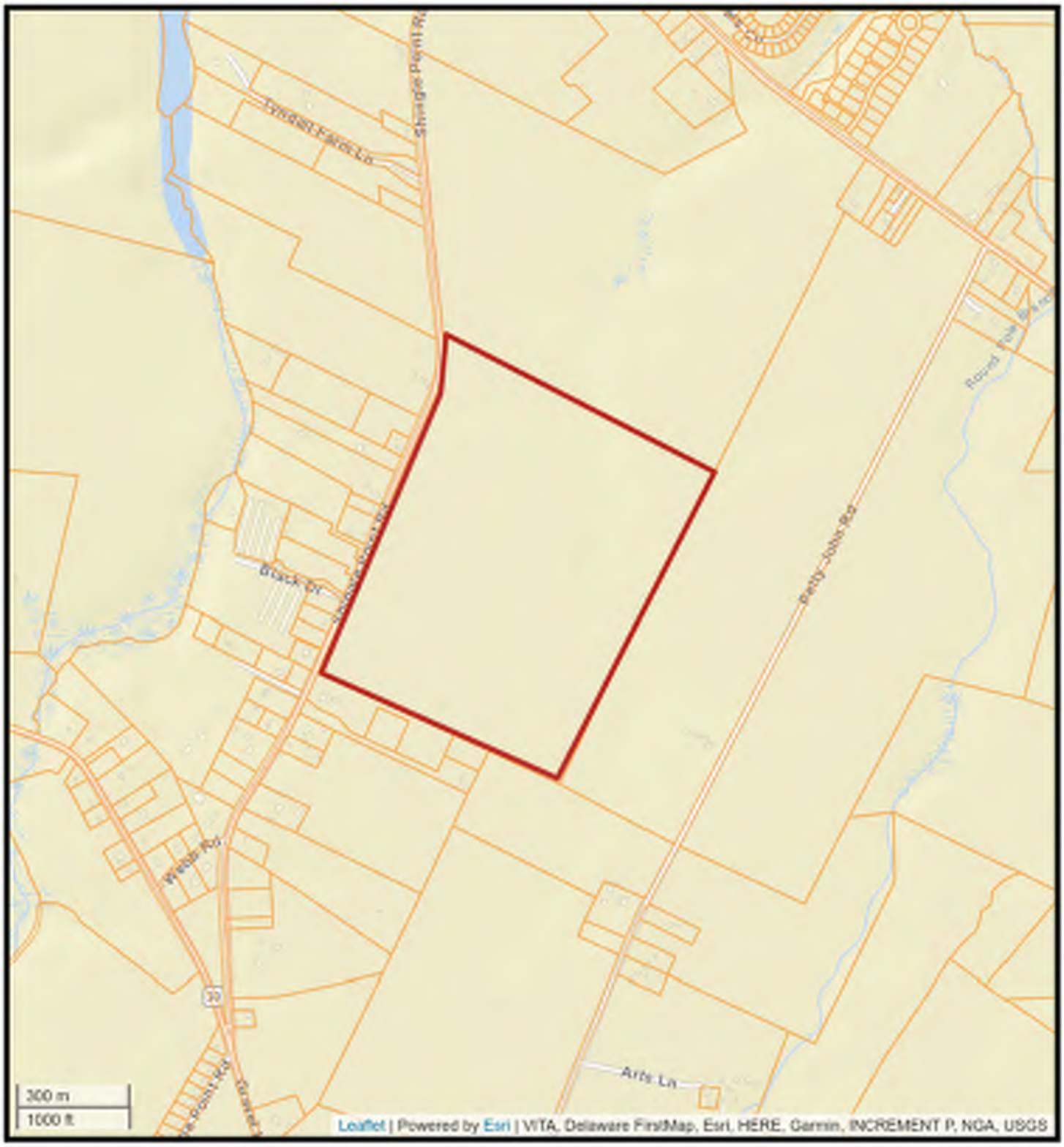
FIGURES



Pennoni

Topographic Map

Shingle Point Road and Black Drive
Milton, DE 19968
Project Number: RIBER21001
Report Date: May 11, 2021



Pennoni

Tax Map

Shingle Point Road and Callaway Acres Road
Milton, DE 19968
Project Number: RIBER21001
Report Date: May 11, 2021

APPENDIX B

ENVIRONMENTAL DATABASE REPORT

PSR
PHYSICAL SETTING REPORT

Property Information

Order Number:		21041200171p
Date Completed:		April 13, 2021
Project Number:		RIBER21001
Project Property:		RIBER21001 16902 County Road 249 Milton DE 19968
Coordinates:		
	Latitude:	38.74686914
	Longitude:	-75.31533453
	UTM Northing:	4288734.18579 Meters
	UTM Easting:	472597.575756 Meters
	UTM Zone:	UTM Zone 18S
	Elevation:	35.01 ft
	Slope Direction:	WNW

The ERIS ***Physical Setting Report - PSR*** provides comprehensive information about the physical setting around a site and includes a complete overview of topography and surface topology, in addition to hydrologic, geologic and soil characteristics. The location and detailed attributes of oil and gas wells, water wells, public water systems and radon are also included for review.

The compilation of both physical characteristics of a site and additional attribute data is useful in assessing the impact of migration of contaminants and subsequent impact on soils and groundwater.

Disclaimer

This Report does not provide a full environmental evaluation for the site or adjacent properties. Please see the terms and disclaimer at the end of the Report for greater detail.

Wells and Additional Sources Summary

Federal Sources

Public Water Systems Violations and Enforcement Data

Map Key	ID	Distance (ft)	Direction
	No records found		

Safe Drinking Water Information System (SDWIS)

Map Key	ID	Distance (ft)	Direction
	No records found		

USGS National Water Information System

Map Key	ID	Distance (ft)	Direction
	No records found		

State Sources

Oil and Gas Wells

Map Key	ID	Distance (ft)	Direction
	No records found		

Water Wells Database

Map Key	Permit No	Distance (ft)	Direction
1	106817	0.00	-
1	83467	0.00	-
1	61249	0.00	-
1	98154	0.00	-
1	79704	0.00	-
1	81823	0.00	-
1	74481	0.00	-
1	88068	0.00	-
1	61252	0.00	-
1	69366	0.00	-
1	75214	0.00	-
1	101404	0.00	-
1	74482	0.00	-
1	61254	0.00	-
1	50161	0.00	-
1	61256	0.00	-
1	109251	0.00	-
1	106486	0.00	-
1	87759	0.00	-
1	75923	0.00	-
1	101370	0.00	-
1	61240	0.00	-
1	74483	0.00	-
1	61257	0.00	-

Appendix

Federal Sources

FEMA National Flood Hazard Layer — **FEMA FLOOD**

The National Flood Hazard Layer (NFHL) data incorporates Flood Insurance Rate Map (FIRM) databases published by the Federal Emergency Management Agency (FEMA), and any Letters Of Map Revision (LOMRs) that have been issued against those databases since their publication date. The FIRM Database is the digital, geospatial version of the flood hazard information shown on the published paper FIRMs. The FIRM Database depicts flood risk information and supporting data used to develop the risk data. The FIRM Database is derived from Flood Insurance Studies (FISs), previously published FIRMs, flood hazard analyses performed in support of the FISs and FIRMs, and new mapping data, where available.

Indoor Radon Data — **INDOOR RADON**

Indoor radon measurements tracked by the Environmental Protection Agency(EPA) and the State Residential Radon Survey.

Public Water Systems Violations and Enforcement Data — **PWSV**

List of drinking water violations and enforcement actions from the Safe Drinking Water Information System (SDWIS) made available by the Drinking Water Protection Division of the US EPA's Office of Groundwater and Drinking Water. Enforcement sensitive actions are not included in the data released by the EPA. Address information provided in SWDIS may correspond either with the physical location of the water system, or with a contact address.

Radon Zone Level — **RADON ZONE**

Areas showing the level of Radon Zones (level 1, 2 or 3) by county. This data is maintained by the Environmental Protection Agency (EPA).

Safe Drinking Water Information System (SDWIS) — **SDWIS**

The Safe Drinking Water Information System (SDWIS) contains information about public water systems as reported to US Environmental Protection Agency (EPA) by the states. Addresses may correspond with the location of the water system, or with a contact address.

Soil Survey Geographic database — **SSURGO**

The Soil Survey Geographic database (SSURGO) contains information about soil as collected by the National Cooperative Soil Survey at the Natural Resources Conservation Service (NRCS). Soil maps outline areas called map units. The map units are linked to soil properties in a database. Each map unit may contain one to three major components and some minor components.

U.S. Fish & Wildlife Service Wetland Data — **US WETLAND**

The U.S. Fish & Wildlife Service Wetland layer represents the approximate location and type of wetlands and deepwater habitats in the United States.

USGS Current Topo — **US TOPO**

US Topo topographic maps are produced by the National Geospatial Program of the U.S. Geological Survey (USGS). The project was launched in late 2009, and the term "US Topo" refers specifically to quadrangle topographic maps published in 2009 and later.

USGS Geology — **US GEOLOGY**

Seamless maps depicting geological information provided by the United States Geological Survey (USGS).

USGS National Water Information System — **FED USGS**

The U.S. Geological Survey (USGS)'s National Water Information System (NWIS) is the nation's principal repository of water resources data. This database includes comprehensive information of well-construction details, time-series data for gage height, streamflow, groundwater level, and precipitation and water use data.

State Sources

Oil and Gas Wells — **OGW**

As of DE state regulatory agencies, FracTracker Alliance - state of Delaware confirmed not to have any

ERIS

FIRE INSURANCE MAPS

Project Property:	RIBER21001 16902 County Road 249 Milton DE 19968
Project No:	RIBER21001
Requested By:	Pennoni Associates Inc.
Order No:	21041200171
Date Completed:	April 13, 2021

Please note that no information was found for your site or adjacent properties.

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

ERIS

HISTORICAL AERIALS

Project Property:	RIBER21001 16902 County Road 249 Milton DE 19968
Requested By:	Pennoni Associates Inc.
Order No:	21041200171
Data Completed:	April 16,2021

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Date	Source	Scale	Comments
2018	National Agriculture Information Program	1" to 500'	
2017	National Agriculture Information Program	1" to 500'	
2015	National Agriculture Information Program	1" to 500'	
2013	National Agriculture Information Program	1" to 500'	
2011	National Agriculture Information Program	1" to 500'	
2009	National Agriculture Information Program	1" to 500'	
2006	National Agriculture Information Program	1" to 500'	
1992	US Geological Survey	1" to 500'	
1982	National High Altitude Photography	1" to 500'	
1977	US Geological Survey	1" to 500'	
1973	US Geological Survey	1" to 500'	
1968	Agriculture and Soil Conservation Service	1" to 500'	
1961	Agriculture and Soil Conservation Service	1" to 500'	
1953	US Geological Survey	1" to 500'	
1937	Agriculture and Soil Conservation Service	1" to 500'	

TOPOGRAPHIC MAPS

Project Property:	RIBER21001 16902 County Road 249 Milton DE 19968
Project No:	RIBER21001
Requested By:	Pennoni Associates Inc.
Order No:	21041200171
Date Completed:	April 13, 2021

Environmental Risk Information Services
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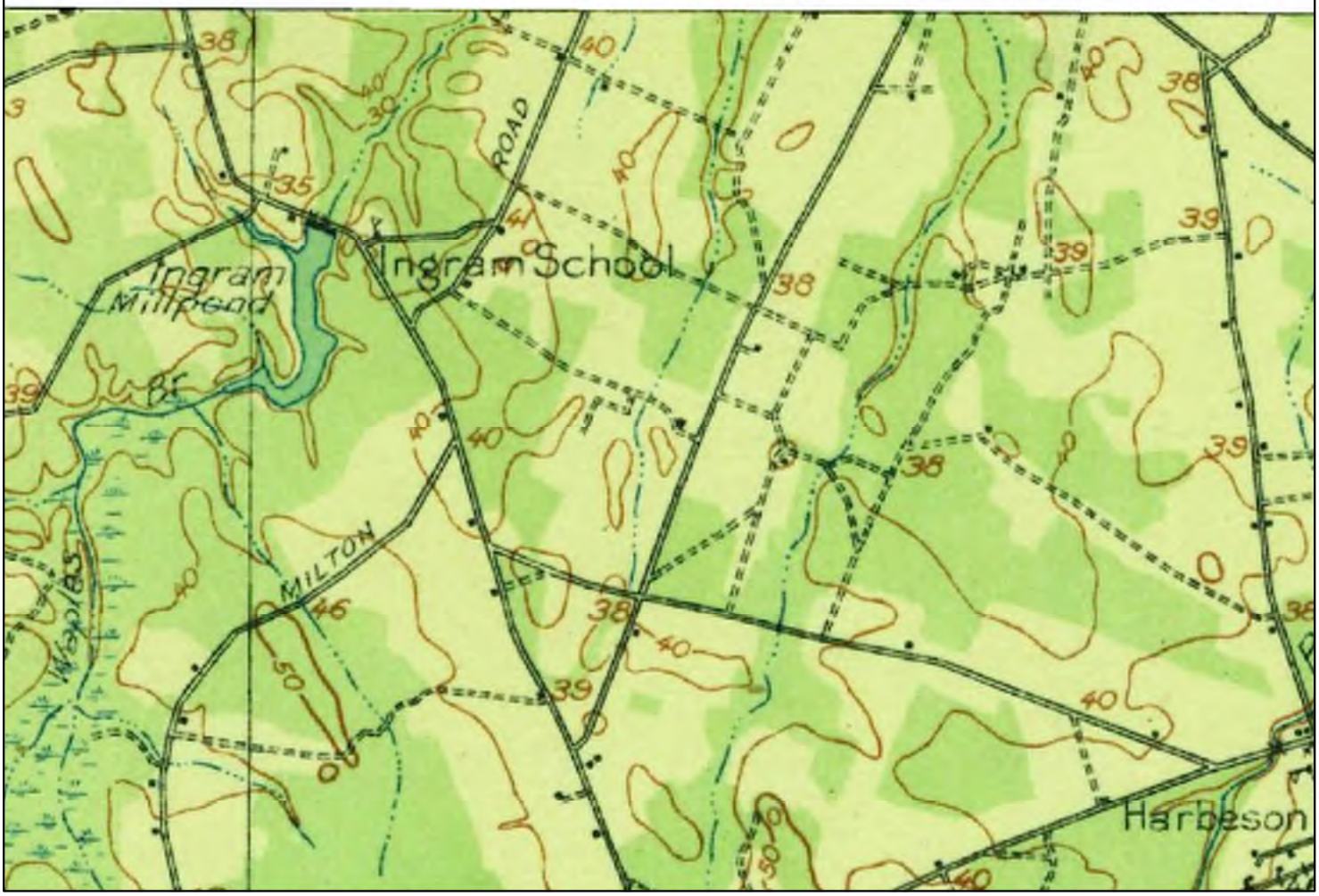
We have searched USGS collections of current topographic maps and historical topographic maps for the project property. Below is a list of maps found for the project property and adjacent area. Maps are from 7.5 and 15 minute topographic map series, if available.

Year	Map Series
2016	7.5
1992	7.5
1985	7.5
1981	7.5
1955	7.5
1944	7.5
1944	15
1938	15
1919	15
1918	15
1917	15



1917

0 0.2 0.4 0.8 Miles

Order No. 21041200171

Quadrangle(s): Millsboro,DE

Source: USGS 15 Minute Topographic Map

ERIS

CITY DIRECTORY

Project Property:	*RIBER21001* *16902 County Road 249* *Milton, DE 19968*
Project No:	*RIBER21001*
Requested By:	*Pennoni Associates Inc.*
Order No:	*21041200171*
Date Completed:	*April 15, 2021*

Environmental Risk Information Services
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1.866.517.5204 | info@erisinfo.com | erisinfo.com

April 15, 2021
RE: CITY DIRECTORY RESEARCH
RIBER21001
16902 County Road 249 Milton, DE

Thank you for contacting ERIS for an City Directory Search for the site described above. Our staff has conducted a reverse listing City Directory search to determine prior occupants of the subject site and adjacent properties. We have provided the nearest addresses(s) when adjacent addresses are not listed. If we have searched a range of addresses, all addresses in that range found in the Directory are included.

Note: Reverse Listing Directories generally are focused on more highly developed areas. Newly developed areas may be covered in the more recent years, but the older directories will tend to cover only the "central" parts of the city. To complete the search, we have either utilized the ACPL, Library of Congress, State Archives, and/or a regional library or history center as well as multiple digitized directories. These do not claim to be a complete collection of all reverse listing city directories produced.

ERIS has made every effort to provide accurate and complete information but shall not be held liable for missing, incomplete or inaccurate information. To complete this search we used the general range(s) below to search for relevant findings. If you believe there are additional addresses or streets that require searching please contact us at 866-517-5204.

Search Criteria:

16900-17000 of County Road 249
16900-17000 of Shingle Point Rd.

Search Results Summary

Date	Source	Comment
2018	DIGITAL BUSINESS DIRECTORY	
2014	DIGITAL BUSINESS DIRECTORY	
2010	DIGITAL BUSINESS DIRECTORY	
2004	DIGITAL BUSINESS DIRECTORY	
2000	CITY PUBLISHING CO	
1995	CITY PUBLISHING CO	
1990	CITY PUBLISHING CO	

DATABASE REPORT

Project Property:	*RIBER21001* *16902 County Road 249* *Milton DE 19968*
Project No:	*RIBER21001*
Report Type:	*Database Report*
Order No:	*21041200171*
Requested by:	*Pennoni Associates Inc.*
Date Completed:	*April 14, 2021*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Table of Contents

Executive Summary

Property Information:

Project Property:		*RIBER21001* *16902 County Road 249 Milton DE 19968*
Project No:		*RIBER21001*
Coordinates:		
	Latitude:	*38.74686914*
	Longitude:	*-75.31533453*
	UTM Northing:	*4,288,734.19*
	UTM Easting:	*472,597.58*
	UTM Zone:	*UTM Zone 18S*
Elevation:		*35 FT*

Order Information:

Order No:	*21041200171*
Date Requested:	*April 12, 2021*
Requested by:	*Pennoni Associates Inc.*
Report Type:	*Database Report*

Historicals/Products:

Aerial Photographs	*Historical Aerials (Boundaries)*
City Directory Search	*CD - 2 Street Search*
ERIS Xplorer	*ERIS Xplorer*
Excel Add-On	*Excel Add-On*
Fire Insurance Maps	*US Fire Insurance Maps*
Physical Setting Report (PSR)	*Physical Setting Report (PSR)*
Topographic Map	*Topographic Maps*

Executive Summary: Report Summary

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
Standard Environmental Records								
Federal								
DOE FUSRAP	Y	1	0	0	0	0	0	0
NPL	Y	1	0	0	0	0	0	0
PROPOSED NPL	Y	1	0	0	0	0	0	0
DELETED NPL	Y	0.5	0	0	0	0	-	0
SEMS	Y	0.5	0	0	0	0	-	0
ODI	Y	0.5	0	0	0	0	-	0
SEMS ARCHIVE	Y	0.5	0	0	0	0	-	0
CERCLIS	Y	0.5	0	0	0	0	-	0
IODI	Y	0.5	0	0	0	0	-	0
CERCLIS NFRAP	Y	0.5	0	0	0	0	-	0
CERCLIS LIENS	Y	PO	0	-	-	-	-	0
RCRA CORRACTS	Y	1	0	0	0	0	0	0
RCRA TSD	Y	0.5	0	0	0	0	-	0
RCRA LQG	Y	0.25	0	0	0	-	-	0
RCRA SQG	Y	0.25	0	0	0	-	-	0
RCRA VSQG	Y	0.25	0	0	0	-	-	0
RCRA NON GEN	Y	0.25	0	0	0	-	-	0
FED ENG	Y	0.5	0	0	0	0	-	0
FED INST	Y	0.5	0	0	0	0	-	0
LUCIS	Y	0.5	0	0	0	0	-	0
ERNS 1982 TO 1986	Y	PO	0	-	-	-	-	0
ERNS 1987 TO 1989	Y	PO	0	-	-	-	-	0
ERNS	Y	PO	0	-	-	-	-	0
FED BROWNFIELDS	Y	0.5	0	0	0	0	-	0
FEMA UST	Y	0.25	0	0	0	-	-	0
FRP	Y	0.25	0	0	0	-	-	0
HIST GAS STATIONS	Y	0.25	0	0	0	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
REFN	Y	0.25	0	0	0	-	-	0
BULK TERMINAL	Y	0.25	0	0	0	-	-	0
SEMS LIEN	Y	PO	0	-	-	-	-	0
SUPERFUND ROD	Y	1	0	0	0	0	0	0
State								
SHWS	Y	1	0	0	0	0	**1**	**1**
DSHW	Y	1	0	0	0	0	**1**	**1**
SWF	Y	0.5	0	0	0	0	-	0
ULD	Y	0.5	0	0	0	0	-	0
LUST	Y	0.5	0	0	0	0	-	0
LAST	Y	0.5	0	0	0	0	-	0
DELISTED LST	Y	0.5	0	0	0	0	-	0
UST	Y	0.25	0	0	0	-	-	0
AST	Y	0.25	0	0	0	-	-	0
DTNK	Y	0.25	0	0	0	-	-	0
INST	Y	0.5	0	0	0	0	-	0
VCP	Y	0.5	0	0	0	0	-	0
BROWNFIELDS	Y	0.5	0	0	0	0	-	0
Tribal								
INDIAN LUST	Y	0.5	0	0	0	0	-	0
INDIAN UST	Y	0.25	0	0	0	-	-	0
DELISTED ILST	Y	0.5	0	0	0	0	-	0
DELISTED IUST	Y	0.25	0	0	0	-	-	0
County	***No County standard environmental record sources available for this State.***							

Additional Environmental Records

Federal

PFAS NPL	Y	0.5	0	0	0	0	-	0
FINDS/FRS	Y	PO	0	-	-	-	-	0
TRIS	Y	PO	0	-	-	-	-	0
PFAS TRI	Y	0.5	0	0	0	0	-	0
PFAS WATER	Y	0.5	0	0	0	0	-	0
HMIRS	Y	0.125	0	0	-	-	-	0
NCDL	Y	0.125	0	0	-	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
TSCA	Y	0.125	0	0	-	-	-	0
HIST TSCA	Y	0.125	0	0	-	-	-	0
FTTS ADMIN	Y	PO	0	-	-	-	-	0
FTTS INSP	Y	PO	0	-	-	-	-	0
PRP	Y	PO	0	-	-	-	-	0
SCRD DRYCLEANER	Y	0.5	0	0	0	0	-	0
ICIS	Y	PO	0	-	-	-	-	0
FED DRYCLEANERS	Y	0.25	0	0	0	-	-	0
DELISTED FED DRY	Y	0.25	0	0	0	-	-	0
FUDS	Y	1	0	0	0	0	0	0
FORMER NIKE	Y	1	0	0	0	0	0	0
PIPELINE INCIDENT	Y	PO	0	-	-	-	-	0
MLTS	Y	PO	0	-	-	-	-	0
HIST MLTS	Y	PO	0	-	-	-	-	0
MINES	Y	0.25	0	0	0	-	-	0
SMCRA	Y	1	0	0	0	0	0	0
MRDS	Y	1	0	0	0	0	0	0
URANIUM	Y	1	0	0	0	0	0	0
ALT FUELS	Y	0.25	0	0	0	-	-	0
SSTS	Y	0.25	0	0	0	-	-	0
PCB	Y	0.5	0	0	0	0	-	0
State								
SPLC	Y	0.125	0	0	-	-	-	0
SPILLS	Y	0.125	0	0	-	-	-	0
DRYCLEANERS	Y	0.25	0	0	0	-	-	0
DELISTED DRYCLEANERS	Y	0.25	0	0	0	-	-	0
Tribal	***No Tribal additional environmental record sources available for this State.***							
County	***No County additional environmental record sources available for this State.***							
Total:			0	0	0	0	**2**	**2**

**** PO – Property Only***
**** 'Property and adjoining properties' database search radii are set at 0.25 miles.***

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number

No records found in the selected databases for the project property.

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
1	SHWS	Lin Leigh Inc.	Route 30 Milton DE 19968	W	0.58 / 3,037.81	-9	15
2	DSHW	Lucas Development	DE 19968	ENE	0.97 / 5,113.33	0	15

Executive Summary: Summary by Data Source

Standard

State

SHWS - Site Investigation & Restoration Branch (Hazardous Substance Release Sites) (SIRS)

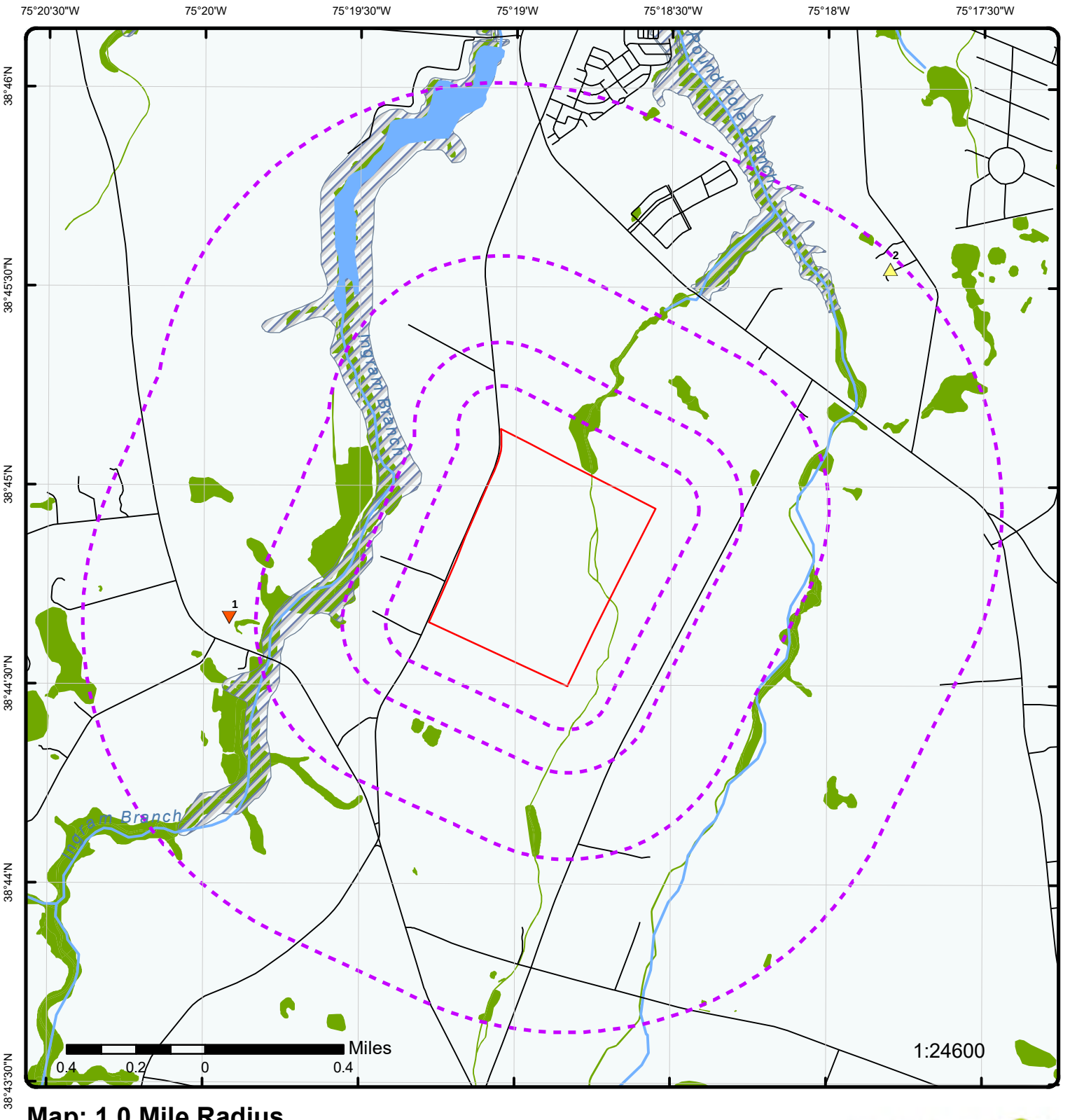
A search of the SHWS database, dated Feb 15, 2021 has found that there are 1 SHWS site(s) within approximately 1.00 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
Lin Leigh Inc.	Route 30 Milton DE 19968	W	0.58 / 3,037.81	1

DSHW - Delisted Site Investigation & Restoration Branch (Hazardous Substance Release Sites)

A search of the DSHW database, dated Feb 15, 2021 has found that there are 1 DSHW site(s) within approximately 1.00 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
Lucas Development	DE 19968	ENE	0.97 / 5,113.33	2



Map: 1.0 Mile Radius

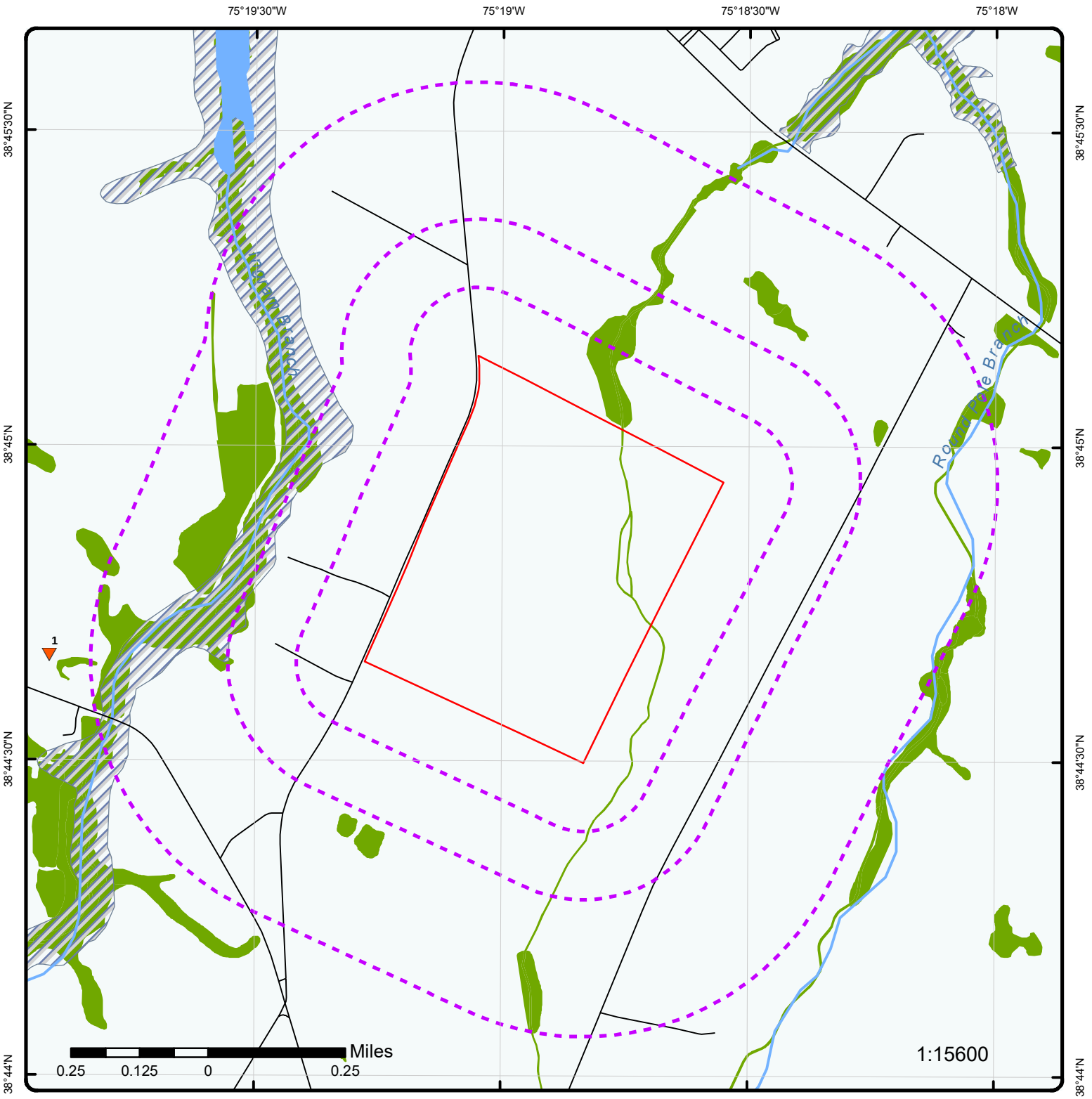
Order Number: 21041200171

Address: 16902 County Road 249, Milton, DE

ERIS

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	100 Year Flood Zone	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	500 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	Historic Fill	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI



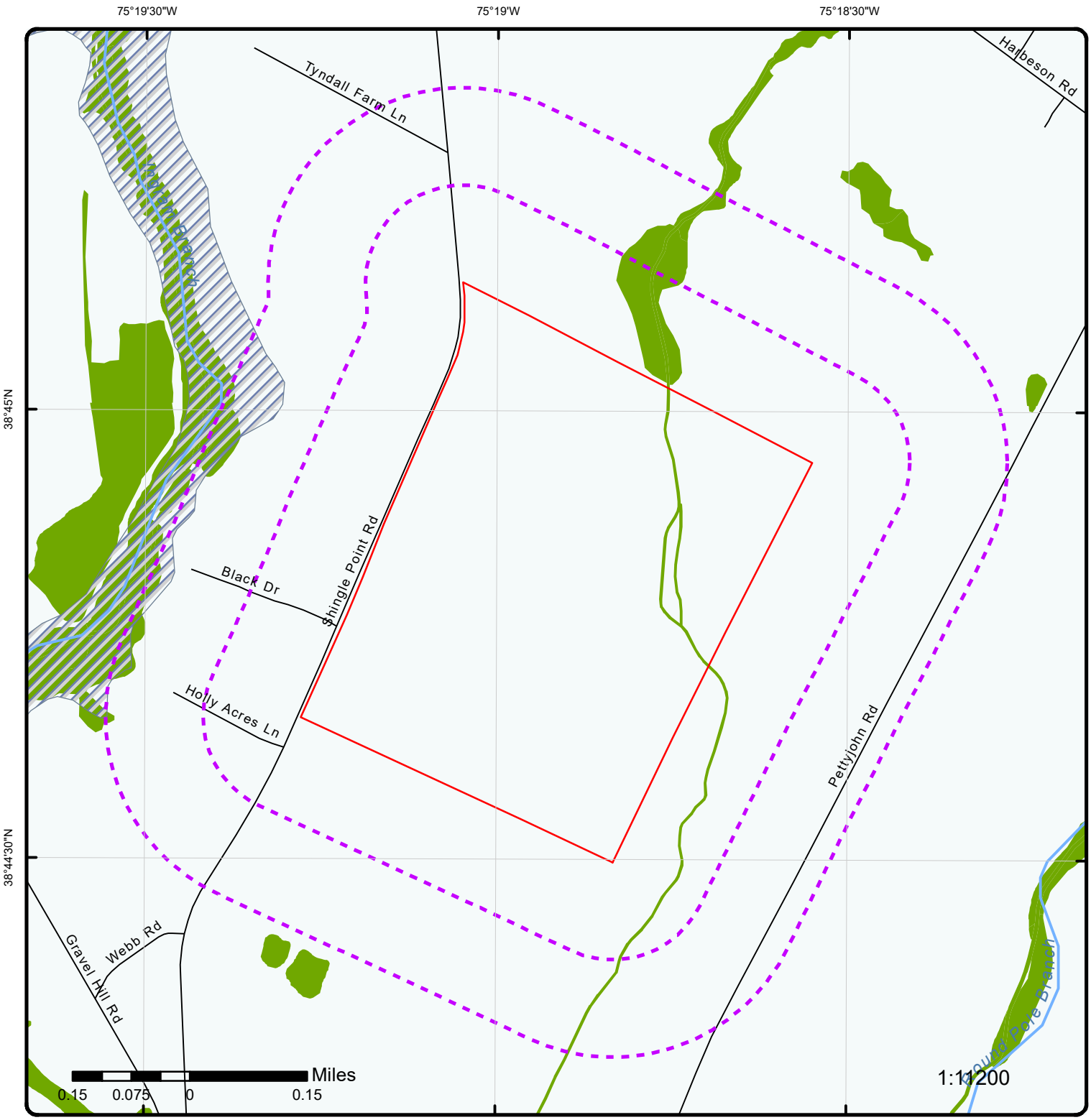
Map: 0.5 Mile Radius

Order Number: 21041200171

Address: 16902 County Road 249, Milton, DE

ERIS

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	100 Year Flood Zone	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	500 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	Historic Fill	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		



Map: 0.25 Mile Radius

Order Number: 21041200171

Address: 16902 County Road 249, Milton, DE

ERIS

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	100 Year Flood Zone	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	500 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	Historic Fill	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

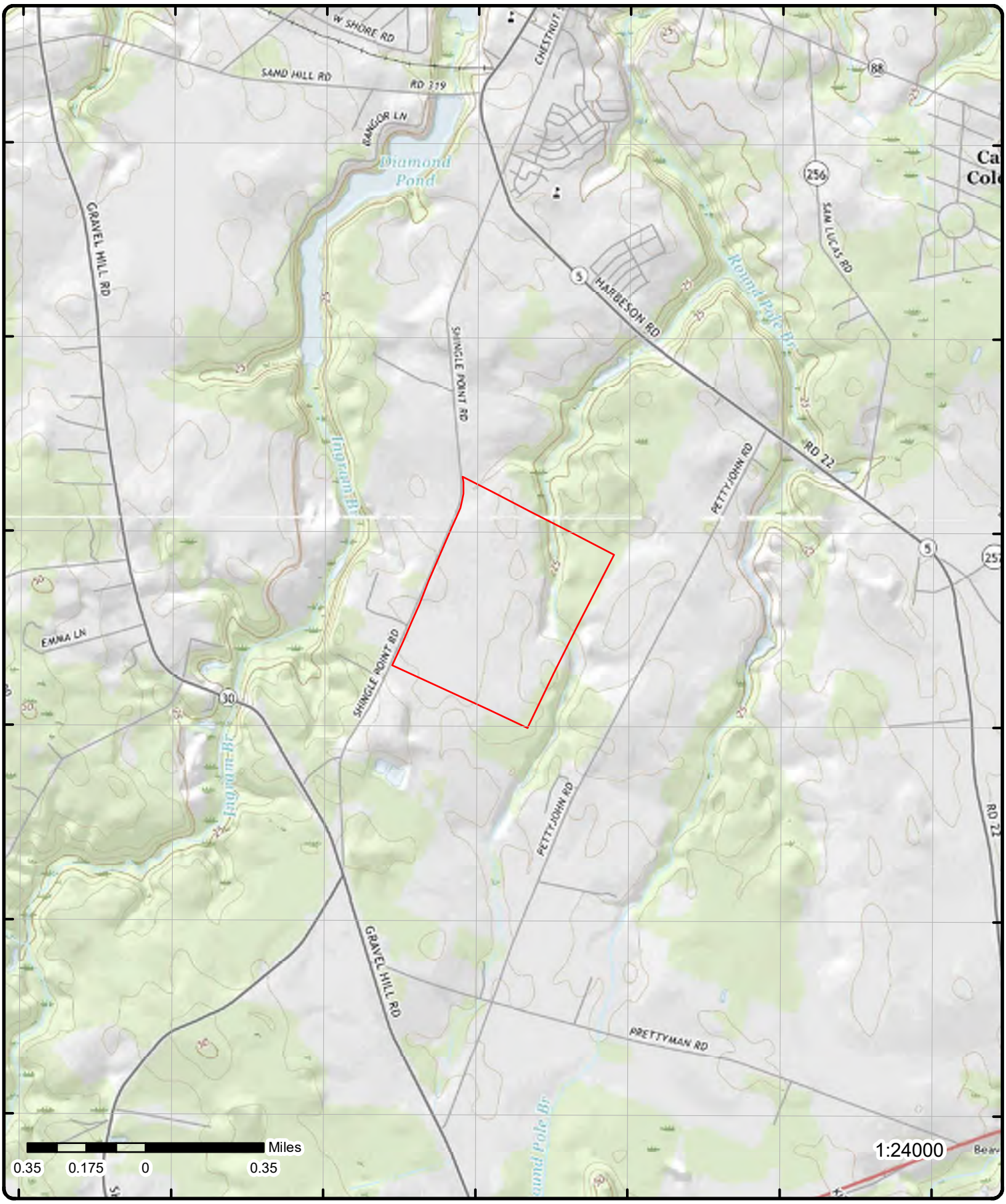
Source: © 2016 ESRI

Aerial **Year: 2002**

Order Number: 21041200171

Address: 16902 County Road 249, Milton, DE

Source: ESRI World Imagery



Topographic Map

Year: 2016

Order Number: 21041200171

Address: 16902 County Road 249, DE

Quadrangle(s): Harbeson, DE; Milton, DE

Source: USGS Topographic Map

Detail Report

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
1	1 of 1	W	0.58 / 3,037.81	25.53 / -9	Lin Leigh Inc. Route 30 Milton DE 19968	SHWS

DNREC Fac ID:	10056144	**Tax ID:**	
PI ID:	26939	**Care of:**	
Prog ID:	DE-0222	**County:**	Sussex
Ranking:		**State:**	Delaware
Rank Value:		**Town:**	
GMZ Start Date:		**PO Name:**	Milton
Cert Issue Date:		**Zip 5:**	19968
Site Type:	Debris Disposal Area	**Sewer District:**	
Category:	HSCA	**Basin:**	Delaware Bay
Haz Ranking Categ:		**Water Shed:**	Broadkill River
Location Type:	P	**DRBC Basin:**	Yes
X Coordinate:	207452.84	**Quad:**	HARBESON
Y Coordinate:	82586.47	**Senate District:**	6
Latitude:	38.744445	**Senator:**	Senator Ernesto B. Lopez
Longitude:	-75.331944	**House District:**	20
Latitude Degrees:	38	**School District:**	
Latitude Minutes:	44	**GMZ Name:**	
Latitude Seconds:	40.002000	**AGPRES District:**	
Longitude Degrees:	-75	**Water District:**	
Longitude Minutes:	19	**Modg ID:**	
Longitude Seconds:	54.998400	**Reference Point:**	Unknown
Display Name:		**Address State:**	DE
Additional Info:	HSCA	**Country:**	US
Horizontal Method:	Unknown		
Flood Plain Zone:			
Representative:	Representative Stephen T. Smyk		
Comments:			
Deed Restrictions Date:			
Deed Restrictions:			
Source:	Site Investigation and Restoration Site (SIRS); SIRB Sites - Total Inventory		
GMZ Restrictions:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
2	1 of 1	ENE	0.97 / 5,113.33	35.04 / 0	Lucas Development DE 19968	DSHW

DNREC Fac ID:	10056606	**PO Name:**	Milton
DNREC Interest ID:	27401	**PI Name:**	Lucas Development
Prog ID:	DE-1201	**Additional Info:**	Closed Site
Site Type:	Other	**Address1:**	Route 5 (CR56)
Category:		**Address2:**	
Haz Ranking Categ:	Closed Site	**City:**	Milton
Ranking:	Low Level 1 (L1)	**Address State:**	DE
Rank Value:	1	**Country:**	US
Cert Issue Date:		**Zip Code:**	19958
Location Type:	P	**Zip 5:**	19968
Tax ID:		**Care of:**	
Sewer District:		**County:**	Sussex
Fl Plain Zone Code:		**State:**	Delaware
Flood Plain Zone:		**Town:**	
Basin:	Delaware Bay	**X Coordinate:**	210430.85
Water Shed:	Broadkill River	**Y Coordinate:**	84271.28
DRBC Basin:	Yes	**Latitude:**	38.759118

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Quad:	MILTON	***Longitude:***	-75.296660
Senate District:	19	***Latitude Degrees:***	38
Senator:	Senator Brian Pettyjohn	***Latitude Minutes:***	45
House District:	36	***Latitude Seconds:***	32.824800
School District:		***Longitude Degrees:***	-75
AGPRES District:		***Longitude Minutes:***	17
Water District:		***Longitude Seconds:***	47.976000
Modg ID:		***Reference Point:***	Unknown
Display Name:	Price, Morgan	***Horizontal Method:***	Unknown
GMZ Start Date:			
Representative:	Representative Harvey R Kenton		
GMZ Name:			
Comments:	On February 13, 2012 the site was closed and the close out memo was completed.		
Original Source:	SHWS		
Record Date:	04-JUN-2018		

Unplottable Summary

Total: 4 Unplottable sites

DB	Company Name/Site Name	Address	City	Zip	ERIS ID
SHWS	Milton Rails to Trails	Between Federal Street & Chestnut Street South of Park	Milton DE	19968	822532635
SHWS	Lucas Development	Route 5 (CR56)	Milton DE	19968	891027591
SPILLS	Lewes Georgetown Hwy	Lewes Georgetown Hwy/ Shingle Point Rd Georgetown, DE 19947 ***Facility ID*	*Release ID:*** 4128 | 15742	DE		864600492
SPLC		POLLY BRANCH RD,BROWN & BLACK TRAILER	NULL DE	NULL	845369815

Unplottable Report

Site: ***Milton Rails to Trails***
Between Federal Street & Chestnut Street South of Park Milton DE 19968

SHWS

DNREC Fac ID:	10153791	***Tax ID:***	
PI ID:	442127	***Care of:***	
Prog ID:	DE-1460	***County:***	Sussex
Ranking:		***State:***	
Rank Value:		***Town:***	Milton
GMZ Start Date:		***PO Name:***	Milton
Cert Issue Date:	6/1/2016 0:00	***Zip 5:***	19968
Site Type:	Undeveloped Property	***Sewer District:***	
Category:	State Funded Brownfield	***Basin:***	Delaware Bay
Haz Ranking Categ:		***Water Shed:***	Broadkill River
Location Type:	P	***DRBC Basin:***	Yes
X Coordinate:	208478.97	***Quad:***	MILTON
Y Coordinate:	85520.89	***Senate District:***	6
Latitude:	38.769847	***Senator:***	Senator Ernesto B. Lopez
Longitude:	-75.315766	***House District:***	20
Latitude Degrees:	38	***School District:***	
Latitude Minutes:	46	***GMZ Name:***	
Latitude Seconds:	11.449200	***AGPRES District:***	
Longitude Degrees:	-75	***Water District:***	
Longitude Minutes:	18	***Modg ID:***	158-124
Longitude Seconds:	56.757600	***Reference Point:***	Facility/Interest Center
Display Name:		***Address State:***	DE
Additional Info:	State Funded Brownfield	***Country:***	US
Horizontal Method:	Satellite Photo Interpolation-SPOT		
Flood Plain Zone:			
Representative:	Representative Stephen T. Smyk		
Comments:			
Deed Restrictions Date:			
Deed Restrictions:			
Source:	Site Investigation and Restoration Site (SIRS); SIRB Sites - Certificate of Completion; SIRB Sites - Total Inventory		
GMZ Restrictions:			

Site: ***Lucas Development***
Route 5 (CR56) Milton DE 19968

SHWS

DNREC Fac ID:		***Tax ID:***	
PI ID:		***Care of:***	
Prog ID:	DE-1201	***County:***	
Ranking:		***State:***	
Rank Value:		***Town:***	
GMZ Start Date:		***PO Name:***	
Cert Issue Date:		***Zip 5:***	
Site Type:	Other	***Sewer District:***	
Category:	HSCA	***Basin:***	
Haz Ranking Categ:		***Water Shed:***	
Location Type:		***DRBC Basin:***	
X Coordinate:		***Quad:***	
Y Coordinate:		***Senate District:***	
Latitude:		***Senator:***	
Longitude:		***House District:***	
Latitude Degrees:		***School District:***	
Latitude Minutes:		***GMZ Name:***	
Latitude Seconds:		***AGPRES District:***	
Longitude Degrees:		***Water District:***	
Longitude Minutes:		***Modg ID:***	
Longitude Seconds:		***Reference Point:***	

Display Name:
Additional Info:
Horizontal Method:
Flood Plain Zone:
Representative:
Comments:
Deed Restrictions Date:
Deed Restrictions:
Source: SIRB Sites - Total Inventory
GMZ Restrictions:

Address State:
Country:

Site: ***Lewes Georgetown Hwy***
Lewes Georgetown Hwy/ Shingle Point Rd Georgetown, DE 19947 DE

SPILLS

Facility ID:	4128	***Release Duration:***	Continuous
Release ID:	15742	***Extremely Hazardous:***	NO
Release Date/Time:	6/27/2017 11:19:00 AM	***Public Notified:***	NO
Status:	Final	***Precautions:***	None
Estimated Quantity:	Equal To 35.00 GALLONS	***Extrmly Haz Rpt Date:***	
Est Quantity Unit:		***Report Date/Time:***	6/27/2017 11:19:00 AM
Released To:	Ground	***Date Posted:***	
Release to Water:		***Fac Contact:***	.
Release to Ground:		***Fac Contact Phone:***	.
Release to Air:		***Fac Contact Email:***	.

Release Location: Route 24 Lewes
Substance Released: FUEL OIL, [DIESEL]
Additional Information: PUNCTURED SADDLE TANK, 35 GALLONS SPILLED ON ROADWAY
Health Risks: FUEL OIL, [DIESEL]
The following chemical information was taken from the CAMEO Chemical database.
LIQUID: Irritating to skin and eyes. Harmful if swallowed. (USCG, 1999)
Release Details URL: https://apps.dnrec.state.de.us/derns/pub/ReleaseDetail.aspx?ReleaseID=2017-1374
Medical Attention:

FUEL OIL, [DIESEL]
The following chemical information was taken from the CAMEO Chemical database.
EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

SKIN: IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment.

INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.

INGESTION: DO NOT INDUCE VOMITING. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. Be prepared to transport the victim to a hospital if advised by a physician. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital. (NTP, 1992)

Site:
POLLY BRANCH RD,BROWN & BLACK TRAILER NULL DE NULL

SPLC

Complaint ID:	17833	***County:***	SX
Complaint Year:	1991	***OC Name:***	MARY JOHNSON
Complaint No:		***OC Company:***	NULL
Date:	3/28/1991	***OC DOB:***	
Time:	43:00.0	***OC Address:***	
Threat Pblic Hlth:	No	***OC City:***	
Nature:	DISCHARGE	***OC State:***	
Nature ID:	NULL	***OC ZIP:***	
Division:		***OC Phone1:***	
Section:		***OC Phone2:***	

Region:		***Report Name:***	
EPO Assigned:	708	***Report Company:***	
Env Prot Off ID:		***Report Address:***	
Ref To EPO:		***Report City:***	
Invstigate Dt:		***Report State:***	
Action:		***Report ZIP:***	
Actn Comment:	WARNED	***Report Phone1:***	
Dispositn:		***Report Phone2:***	
Reported:		***Report Email:***	
Time Spent:		***Ref To:***	
Desk Officer:		***Ref Date:***	
Dsk Offcr Com:		***Patrol Check:***	
EPO Comment:			

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ERIS updates databases as set out in ASTM Standard E1527-13, Section 8.1.8 Sources of Standard Source Information:

"Government information from nongovernmental sources may be considered current if the source updates the information at least every 90 days, or, for information that is updated less frequently than quarterly by the government agency, within 90 days of the date the government agency makes the information available to the public."

Standard Environmental Record Sources

Federal

Formerly Utilized Sites Remedial Action Program: DOE FUSRAP

The U.S. Department of Energy (DOE) established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from the Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations. The DOE Office of Legacy Management (LM) established long-term surveillance and maintenance (LTS&M) requirements for remediated FUSRAP sites. DOE evaluates the final site conditions of a remediated site on the basis of risk for different future uses. DOE then confirms that LTS&M requirements will maintain protectiveness.

Government Publication Date: Mar 4, 2017

National Priority List: NPL

National Priorities List (Superfund)-NPL: EPA's (United States Environmental Protection Agency) list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. The NPL, which EPA is required to update at least once a year, is based primarily on the score a site receives from EPA's Hazard Ranking System. A site must be on the NPL to receive money from the Superfund Trust Fund for remedial action.

Government Publication Date: Feb 23, 2021

National Priority List - Proposed: PROPOSED NPL

Includes sites proposed (by the EPA, the state, or concerned citizens) for addition to the NPL due to contamination by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

Government Publication Date: Feb 23, 2021

Deleted NPL: DELETED NPL

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Government Publication Date: Feb 23, 2021

SEMS List 8R Active Site Inventory: SEMS

The Superfund Program has deployed the Superfund Enterprise Management System (SEMS), which integrates multiple legacy systems into a comprehensive tracking and reporting tool. This inventory contains active sites evaluated by the Superfund program that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The Active Site Inventory Report displays site and location information at active SEMS sites. An active site is one at which site assessment, removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted.

Government Publication Date: Jan 28, 2021

Inventory of Open Dumps, June 1985: ODI

The Resource Conservation and Recovery Act (RCRA) provides for publication of an inventory of open dumps. The Act defines "open dumps" as facilities which do not comply with EPA's "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR 257).

Government Publication Date: Jun 1985

SEMS List 8R Archive Sites: SEMS ARCHIVE

The Superfund Enterprise Management System (SEMS) Archived Site Inventory displays site and location information at sites archived from SEMS. An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time.

Government Publication Date: Jan 28, 2021

Comprehensive Environmental Response, Compensation and Liability Information System - CERCLIS: CERCLIS

Superfund is a program administered by the United States Environmental Protection Agency (EPA) to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The EPA administers the Superfund program in cooperation with individual states and tribal governments; this database is made available by the EPA.

Government Publication Date: Oct 25, 2013

EPA Report on the Status of Open Dumps on Indian Lands: IODI

Public Law 103-399, The Indian Lands Open Dump Cleanup Act of 1994, enacted October 22, 1994, identified congressional concerns that solid waste open dump sites located on American Indian or Alaska Native (AI/AN) lands threaten the health and safety of residents of those lands and contiguous areas. The purpose of the Act is to identify the location of open dumps on Indian lands, assess the relative health and environment hazards posed by those sites, and provide financial and technical assistance to Indian tribal governments to close such dumps in compliance with Federal standards and regulations or standards promulgated by Indian Tribal governments or Alaska Native entities.

Government Publication Date: Dec 31, 1998

CERCLIS - No Further Remedial Action Planned: CERCLIS NFRAP

An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. The Archive designation means that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Government Publication Date: Oct 25, 2013

CERCLIS Liens: CERCLIS LIENS

A Federal Superfund lien exists at any property where EPA has incurred Superfund costs to address contamination ("Superfund site") and has provided notice of liability to the property owner. A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 30, 2014

RCRA CORRACTS-Corrective Action: RCRA CORRACTS

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. At these sites, the Corrective Action Program ensures that cleanups occur. EPA and state regulators work with facilities and communities to design remedies based on the contamination, geology, and anticipated use unique to each site.

Government Publication Date: Jan 22, 2021

RCRA non-CORRACTS TSD Facilities: RCRA TSD

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Government Publication Date: Jan 22, 2021

RCRA Generator List: RCRA LQG

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Government Publication Date: Jan 22, 2021

RCRA Small Quantity Generators List: RCRA SQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Small Quantity Generators (SQGs) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Government Publication Date: Jan 22, 2021

RCRA Very Small Quantity Generators List: RCRA VSQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Very Small Quantity Generators (VSQG) generate 100 kilograms or less per month of hazardous waste, or one kilogram or less per month of acutely hazardous waste. Additionally, VSQG may not accumulate more than 1,000 kilograms of hazardous waste at any time.

Government Publication Date: Jan 22, 2021

RCRA Non-Generators: RCRA NON GEN

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Non-Generators do not presently generate hazardous waste.

Government Publication Date: Jan 22, 2021

Federal Engineering Controls-ECs: FED ENG

Engineering controls (ECs) encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Feb 23, 2021

Federal Institutional Controls- ICs: FED INST

Institutional controls are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Although it is EPA's (United States Environmental Protection Agency) expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable, ICs play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site.

Government Publication Date: Feb 23, 2021

Land Use Control Information System: LUCIS

The LUCIS database is maintained by the U.S. Department of the Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

Government Publication Date: Sep 1, 2006

Emergency Response Notification System: ERNS 1982 TO 1986

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1982-1986

Emergency Response Notification System: ERNS 1987 TO 1989

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1987-1989

Emergency Response Notification System: ERNS

Database of oil and hazardous substances spill reports made available by the United States Coast Guard National Response Center (NRC). The NRC fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. These data contain initial incident data that has not been validated or investigated by a federal/state response agency.

Government Publication Date: Nov 9, 2020

The Assessment, Cleanup and Redevelopment Exchange System (ACRES) Brownfield Database: FED BROWNFIELDS

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 6, 2021

FEMA Underground Storage Tank Listing: FEMA UST

The Federal Emergency Management Agency (FEMA) of the Department of Homeland Security maintains a list of FEMA owned underground storage tanks.

Government Publication Date: Dec 31, 2017

Facility Response Plan: FRP

List of facilities that have submitted Facility Response Plans (FRP) to EPA. Facilities that could reasonably be expected to cause "substantial harm" to the environment by discharging oil into or on navigable waters are required to prepare and submit Facility Response Plans (FRPs). Harm is determined based on total oil storage capacity, secondary containment and age of tanks, oil transfer activities, history of discharges, proximity to a public drinking water intake or sensitive environments.

Government Publication Date: Dec 2, 2020

Historical Gas Stations: HIST GAS STATIONS

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

Government Publication Date: Jul 1, 1930

Petroleum Refineries: REFN

List of petroleum refineries from the U.S. Energy Information Administration (EIA) Refinery Capacity Report. Includes operating and idle petroleum refineries (including new refineries under construction) and refineries shut down during the previous year located in the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, and other U.S. possessions. Survey locations adjusted using public data.

Government Publication Date: Jul 10, 2020

Petroleum Product and Crude Oil Rail Terminals: BULK TERMINAL

List of petroleum product and crude oil rail terminals made available by the U.S. Energy Information Administration (EIA). Includes operable bulk petroleum product terminals located in the 50 States and the District of Columbia with a total bulk shell storage capacity of 50,000 barrels or more, and/or the ability to receive volumes from tanker, barge, or pipeline; also rail terminals handling the loading and unloading of crude oil that were active between 2017 and 2018. Petroleum product terminals comes from the EIA-815 Bulk Terminal and Blender Report, which includes working, shell in operation, and shell idle for several major product groupings. Survey locations adjusted using public data.

Government Publication Date: Apr 28, 2020

LIEN on Property: SEMS LIEN

The EPA Superfund Enterprise Management System (SEMS) provides LIEN information on properties under the EPA Superfund Program.

Government Publication Date: Jan 28, 2021

Superfund Decision Documents: SUPERFUND ROD

This database contains a listing of decision documents for Superfund sites. Decision documents serve to provide the reasoning for the choice of (or) changes to a Superfund Site cleanup plan. The decision documents include Records of Decision (ROD), ROD Amendments, Explanations of Significant Differences (ESD), along with other associated memos and files. This information is maintained and made available by the US EPA (Environmental Protection Agency).

Government Publication Date: Feb 23, 2021

State

Site Investigation & Restoration Branch (Hazardous Substance Release Sites) (SIRS): SHWS

State Equivalent CERCLIS. The Department of Natural Resources & Environmental Control (DNREC) has identified approximately 826 Sites in Delaware as potential hazardous substance release Sites. Delaware enacted its Hazardous Substance Cleanup Act (HSCA) in 1990 to address sites potentially contaminated with hazardous substance releases in the state that would not be addressed under the federal superfund program.
This database made available by Delaware Department of Natural Resources & Environmental Control - Delaware Environmental Navigator system.
This database is state equivalent CERCLIS.
Government Publication Date: Feb 15, 2021

Delisted Site Investigation & Restoration Branch (Hazardous Substance Release Sites): DSHW

This database contains a list of closed hazardous substance release sites that were removed from the Department of Natural Resources & Environmental Control (DNREC), Delaware Environmental Navigator system database.
Government Publication Date: Feb 15, 2021

Solid Waste Landfills: SWF

Solid and Hazardous Waste Management Branch in the Department of Natural Resources & Environmental Control (DNREC) permits and inspects landfills and transfer stations. Most of the municipal solid waste landfills and collection and transfer stations are owned and operated by the Delaware Solid Waste Authority (DSWA).
This list is maintained by Delaware Solid Waste Authority.
Government Publication Date: Feb 19, 2021

Unpermitted Landfills/Dumps: ULD

List of Unpermitted Landfills/Dumps in the state. This list is maintained by the Department of Natural Resources & Environmental Control (DNREC).
Government Publication Date: Mar 1, 2021

Leaking Underground Storage Tanks: LUST

List of leaking underground storage tank site locations across the state. The Tank Management Section in the Division of Waste and Hazardous Substances oversees or conducts the investigation and clean up of petroleum and chemical contamination when spills and releases occur on properties with UST or AST systems.
This database made available by Delaware Department of Natural Resources & Environmental Control - Delaware Environmental Navigator system.
Government Publication Date: Feb 1, 2021

Leaking Aboveground Storage Tanks: LAST

List of leaking aboveground storage tank site locations across the state. The Tank Management Section in the Department of Natural Resources & Environmental Control (DNREC) oversees or conducts the investigation and clean up of petroleum and chemical contamination when spills and releases occur on properties with UST or AST systems. This database made available by Delaware Department of Natural Resources & Environmental Control - Delaware Environmental Navigator system.
Government Publication Date: Feb 1, 2021

Delisted Leaking Storage Tanks: DELISTED LST

This database contains a list of closed leaking storage tank sites that were removed from the Tank Management Section in the Department of Natural Resources & Environmental Control (DNREC).
Government Publication Date: Feb 1, 2021

Underground Storage Tanks: UST

The Division of Waste and Hazardous Substances' Tank Management Section (TMS) regulates the installation, operation, maintenance, and closure of Underground Storage Tank (UST) systems in order to prevent contamination of soils and groundwater. The staff also permits the installation and operation of Vapor Recovery (VR) equipment, inspects Boilers and Pressure Vessels to protect public safety, and oversees the cleanup of releases from both UST and AST systems. The Department of Natural Resources & Environmental Control (DNREC) maintains a list of UST Sites.
Government Publication Date: Feb 1, 2021

Above Ground Storage Tanks: AST

The Division of Waste and Hazardous Substances' Tank Management Section (TMS) regulates the installation, operation, maintenance, and closure of Aboveground Storage Tank (AST) systems in order to prevent contamination of soils and groundwater. The staff also permits the installation and operation of Vapor Recovery (VR) equipment, inspects Boilers and Pressure Vessels to protect public safety, and oversees the cleanup of releases from both UST and AST systems. The Department of Natural Resources & Environmental Control (DNREC) maintains a list of AST Sites.
Government Publication Date: Feb 1, 2021

Delisted Storage Tanks: DTNK

This database contains a list of storage tank sites that were removed from the Division of Waste and Hazardous Substances' Tank Management Section (TMS), Department of Natural Resources & Environmental Control (DNREC).

Government Publication Date: Feb 1, 2021

All Sites with Deed Restrictions: INST

Institutional controls are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. This is a list of sites with deed restrictions within the Department of Natural Resources & Environmental Control (DNREC) and Site Investigation and Restoration Section (SIRS) data.

Government Publication Date: Feb 15, 2021

Voluntary Cleanup Program Sites: VCP

The Voluntary Cleanup Program (VCP) is available to all parties who may be liable for the contamination of a property, but who wish to settle their liabilities with the Department of Natural Resources and Environmental Control (DNREC) under the Hazardous Substance Cleanup Act (HSCA). This database made available by Delaware Department of Natural Resources & Environmental Control - Delaware Environmental Navigator system.

Government Publication Date: Feb 15, 2021

Certified Brownfield Sites: BROWNFIELDS

In 2004, the Brownfields Development Program was signed into law. Delaware's Brownfield Development Program encourages the cleanup and redevelopment of vacant, abandoned or underutilized properties which may be contaminated and welcomes your application for brownfield certification. This list is maintained by the Delaware Department of Natural Resources & Environmental Control.

Government Publication Date: Feb 15, 2021

Tribal

Leaking Underground Storage Tanks (LUSTs) on Indian Lands: INDIAN LUST

Leaking Underground Storage Tanks (LUSTs) on Tribal/Indian Lands in EPA Region 3, which includes Delaware.

Government Publication Date: May 4, 2018

Underground Storage Tanks (USTs) on Indian Lands: INDIAN UST

Listing of underground storage tanks (USTs) on Tribal/Indian Lands in EPA Region 3, which includes Delaware. There are no UST records in Delaware at thsi time.

Government Publication Date: May 4, 2018

Delisted Tribal Leaking Storage Tanks: DELISTED ILST

Leaking Underground Storage Tank facilities which have been removed from the Regional Tribal LUST lists made available by the EPA.

Government Publication Date: Apr 14, 2020

Delisted Tribal Underground Storage Tanks: DELISTED IUST

Underground Storage Tank facilities which have been removed from the Regional Tribal UST lists made available by the EPA.

Government Publication Date: Apr 14, 2020

County

No County standard environmental record sources available for this State.

Additional Environmental Record Sources

Federal

PFOA/PFOS Contaminated Sites: PFAS NPL

List of sites where PFOA or PFOS contaminants have been found in drinking water or soil. Made available by the Federal Environmental Protection Agency (EPA).

Government Publication Date: Mar 1, 2021

Facility Registry Service/Facility Index: FINDS/FRS

The Facility Registry Service (FRS) is a centrally managed database that identifies facilities, sites, or places subject to environmental regulations or of environmental interest. FRS creates high-quality, accurate, and authoritative facility identification records through rigorous verification and management procedures that incorporate information from program national systems, state master facility records, and data collected from EPA's Central Data Exchange registrations and data management personnel. This list is made available by the Environmental Protection Agency (US EPA).
Government Publication Date: Nov 2, 2020

Toxics Release Inventory (TRI) Program: TRIS

The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U. S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment. One of TRI's primary purposes is to inform communities about toxic chemical releases to the environment.
Government Publication Date: Feb 19, 2020

Perfluorinated Alkyl Substances (PFAS) Releases: PFAS TRI

List of Toxics Release Inventory (TRI) facilities at which the reported chemical is a Per- or polyfluorinated alkyl substance (PFAS) included in the Environmental Protection Agency (EPA)'s consolidated PFAS Master List of PFAS Substances. The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U.S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment.
Government Publication Date: Feb 19, 2020

Perfluorinated Alkyl Substances (PFAS) Water Quality: PFAS WATER

The Water Quality Portal (WQP) is a cooperative service sponsored by the United States Geological Survey (USGS), the Environmental Protection Agency (EPA), and the National Water Quality Monitoring Council (NWQMC). This listing includes records from the Water Quality Portal where the characteristic (environmental measurement) is in the Environmental Protection Agency (EPA)'s consolidated PFAS Master List of PFAS Substances.
Government Publication Date: Jul 20, 2020

Hazardous Materials Information Reporting System: HMIRS

US DOT - Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) Incidents Reports Database taken from Hazmat Intelligence Portal, U.S. Department of Transportation.
Government Publication Date: Sep 1, 2020

National Clandestine Drug Labs: NCDL

The U.S. Department of Justice ("the Department") provides this data as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy.
Government Publication Date: Oct 5, 2020

Toxic Substances Control Act: TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.
The CDR enables EPA to collect and publish information on the manufacturing, processing, and use of commercial chemical substances and mixtures (referred to hereafter as chemical substances) on the TSCA Chemical Substance Inventory (TSCA Inventory). This includes current information on chemical substance production volumes, manufacturing sites, and how the chemical substances are used. This information helps the Agency determine whether people or the environment are potentially exposed to reported chemical substances. EPA publishes submitted CDR data that is not Confidential Business Information (CBI).
Government Publication Date: Apr 11, 2019

Hist TSCA: HIST TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.
The 2006 IUR data summary report includes information about chemicals manufactured or imported in quantities of 25,000 pounds or more at a single site during calendar year 2005. In addition to the basic manufacturing information collected in previous reporting cycles, the 2006 cycle is the first time EPA collected information to characterize exposure during manufacturing, processing and use of organic chemicals. The 2006 cycle also is the first time manufacturers of inorganic chemicals were required to report basic manufacturing information.
Government Publication Date: Dec 31, 2006

FTTS Administrative Case Listing: FTTS ADMIN

An administrative case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

FTTS Inspection Case Listing: FTTS INSP

An inspection case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

Potentially Responsible Parties List: PRP

Early in the cleanup process, the Environmental Protection Agency (EPA) conducts a search to find the potentially responsible parties (PRPs). EPA looks for evidence to determine liability by matching wastes found at the site with parties that may have contributed wastes to the site.

Government Publication Date: Feb 23, 2021

State Coalition for Remediation of Drycleaners Listing: SCRD DRYCLEANER

The State Coalition for Remediation of Drycleaners (SCRD) was established in 1998, with support from the U.S. Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation. Coalition members are states with mandated programs and funding for drycleaner site remediation. Current members are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Government Publication Date: Nov 08, 2017

Integrated Compliance Information System (ICIS): ICIS

The Integrated Compliance Information System (ICIS) is a system that provides information for the Federal Enforcement and Compliance (FE&C) and the National Pollutant Discharge Elimination System (NPDES) programs. The FE&C component supports the Environmental Protection Agency's (EPA) Civil Enforcement and Compliance program activities. These activities include Compliance Assistance, Compliance Monitoring and Enforcement. The NPDES program supports tracking of NPDES permits, limits, discharge monitoring data and other program reports.

Government Publication Date: Jan 6, 2021

Drycleaner Facilities: FED DRYCLEANERS

A list of drycleaner facilities from Enforcement and Compliance History Online (ECHO) online search. The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

Government Publication Date: Feb 17, 2021

Delisted Drycleaner Facilities: DELISTED FED DRY

List of sites removed from the list of Drycleaner Facilities (sites in the EPA's Integrated Compliance Information System (ICIS) with NAIC or SIC codes identifying the business as a drycleaner establishment).

Government Publication Date: Feb 17, 2021

Formerly Used Defense Sites: FUDS

Formerly Used Defense Sites (FUDS) are properties that were formerly owned by, leased to, or otherwise possessed by and under the jurisdiction of the Secretary of Defense prior to October 1986, where the Department of Defense (DoD) is responsible for an environmental restoration. This list is published by the U.S. Army Corps of Engineers.

Government Publication Date: Jan 28, 2020

Former Military Nike Missile Sites: FORMER NIKE

This information was taken from report DRXTH-AS-IA-83A016 (Historical Overview of the Nike Missile System, 12/1984) which was performed by Environmental Science and Engineering, Inc. for the U.S. Army Toxic and Hazardous Materials Agency Assessment Division. The Nike system was deployed between 1954 and the mid-1970's. Among the substances used or stored on Nike sites were liquid missile fuel (JP-4); starter fluids (UDKH, aniline, and furfuryl alcohol); oxidizer (IRFNA); hydrocarbons (motor oil, hydraulic fluid, diesel fuel, gasoline, heating oil); solvents (carbon tetrachloride, trichloroethylene, trichloroethane, stoddard solvent); and battery electrolyte. The quantities of material a disposed of and procedures for disposal are not documented in published reports. Virtually all information concerning the potential for contamination at Nike sites is confined to personnel who were assigned to Nike sites. During deactivation most hardware was shipped to depot-level supply points. There were reportedly instances where excess materials were disposed of on or near the site itself at closure. There was reportedly no routine site decontamination.

Government Publication Date: Dec 1, 1984

PHMSA Pipeline Safety Flagged Incidents: PIPELINE INCIDENT

A list of flagged pipeline incidents made available by the U.S. Department of Transportation (US DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA regulations require incident and accident reports for five different pipeline system types.

Government Publication Date: Jul 7, 2020

Material Licensing Tracking System (MLTS): MLTS

A list of sites that store radioactive material subject to the Nuclear Regulatory Commission (NRC) licensing requirements. This list is maintained by the NRC. As of September 2016, the NRC no longer releases location information for sites. Site locations were last received in July 2016.

Government Publication Date: Aug 5, 2020

Historic Material Licensing Tracking System (MLTS) sites: HIST MLTS

A historic list of sites that have inactive licenses and/or removed from the Material Licensing Tracking System (MLTS). In some cases, a site is removed from the MLTS when the state becomes an "Agreement State". An Agreement State is a State that has signed an agreement with the Nuclear Regulatory Commission (NRC) authorizing the State to regulate certain uses of radioactive materials within the State.

Government Publication Date: Jan 31, 2010

Mines Master Index File: MINES

The Master Index File (MIF) contains mine identification numbers issued by the Department of Labor Mine Safety and Health Administration (MSHA) for mines active or opened since 1971. Note that addresses may or may not correspond with the physical location of the mine itself.

Government Publication Date: Nov 3, 2020

Surface Mining Control and Reclamation Act Sites: SMCRA

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by the Office of Surface Mining Reclamation and Enforcement (OSMRE) to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of Abandoned Mine Land (AML) impacts, as well as information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Government Publication Date: Dec 18, 2020

Mineral Resource Data System: MRDS

The Mineral Resource Data System (MRDS) is a collection of reports describing metallic and nonmetallic mineral resources throughout the world. Included are deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references. This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS. The USGS has ceased systematic updates of the MRDS database with their focus more recently on deposits of critical minerals while providing a well-documented baseline of historical mine locations from USGS topographic maps.

Government Publication Date: Mar 15, 2006

Uranium Mill Tailings Radiation Control Act Sites: URANIUM

The Legacy Management Office of the Department of Energy (DOE) manages radioactive and chemical waste, environmental contamination, and hazardous material at over 100 sites across the U.S. The L.M. Office manages this database of sites registered under the Uranium Mill Tailings Control Act (UMTRCA).

Government Publication Date: Mar 4, 2017

Alternative Fueling Stations: ALT FUELS

List of alternative fueling stations made available by the US Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Biodiesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE). The National Renewable Energy Laboratory (NREL) obtains information about new stations from trade media, Clean Cities coordinators, a Submit New Station form on the Station Locator website, and through collaborating with infrastructure equipment and fuel providers, original equipment manufacturers (OEMs), and industry groups.

Government Publication Date: Jan 18, 2021

Registered Pesticide Establishments: SSTS

List of active EPA-registered foreign and domestic pesticide-producing and device-producing establishments based on data from the Section Seven Tracking System (SSTS). The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 7 requires that facilities producing pesticides, active ingredients, or devices be registered. The list of establishments is made available by the EPA.

Government Publication Date: Mar 31, 2020

Polychlorinated Biphenyl (PCB) Notifiers: PCB

Facilities included in the national list of facilities that have notified the United States Environmental Protection Agency (EPA) of Polychlorinated Biphenyl (PCB) activities. Any company or person storing, transporting or disposing of PCBs or conducting PCB research and development must notify the EPA and receive an identification number.

Government Publication Date: Nov 19, 2020

State

Spills Database - ECU Complaints: SPLC

The ECU Spills database is the database, kept by the Environmental Crimes unit that handles citizen complaints. If a complaint is called in, involving a spill, then the EPO officer will go out to investigate.

Government Publication Date: Feb 28, 2018

Environmental Release Notification System (DERNS): SPILLS

List of releases and discharges included in the Environmental Release Notification System (DERNS). The Department of Natural Resources and Environmental Control (DNREC) maintains DERNS to notify the public of any releases or discharges of contaminants or pollutants that meet or exceed certain thresholds. DERNS includes petroleum and chemical contamination resulting from spills and releases which occur on properties with UST or AST systems.

Government Publication Date: Mar 31, 2021

Dry Cleaning Facilities: DRYCLEANERS

A list of drycleaner facility locations, provided by the Department of Natural Resources & Environmental Control, Division of Waste and Hazardous Substances in Delaware.

Government Publication Date: Feb 25, 2021

Delisted Drycleaners: DELISTED DRYCLEANERS

List of sites removed from the drycleaners database made available by the Department of Natural Resources & Environmental Control, Division of Waste and Hazardous Substances in Delaware.

Government Publication Date: Feb 25, 2021

Tribal

No Tribal additional environmental record sources available for this State.

County

No County additional environmental record sources available for this State.

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

APPENDIX C

SUPPORTING DOCUMENTATION

Marc Chartier

From: Brendan Keegans
Sent: Monday, May 10, 2021 3:24 PM
To: william.bdavis@delaware.gov
Subject: EPCRA Reporting; 5 Property Portfolio

Good afternoon Bill,

I hope you're well, and enjoying a pleasant start to your week!

Pennoni is conducting a Phase I Environmental Site Assessment (ESA) of the property listed below. The purpose of the ESA is to identify recognized environmental conditions (RECs) as defined in United States Environmental Protection Agency (U.S. EPA) rules under 40 CFR Part 312 Standards and Practices for All Appropriate Inquiries (AAI), and the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: E 1527-05, consisting of conditions indicative of releases or threatened releases of hazardous substances on, at, in or to the referenced property.

As such, we are interested in any information regarding illegal waste discharges, storage tanks, environmental contamination, remediation, and violations of environmental laws and/or permits on the following property and in the immediate vicinity (i.e., adjoining properties).

- **Parcel: 235-25.00-39.00; Shingle Point Rd., Milton, Delaware 19124**
- **Parcel: 234-18.00-31.00; Camp Arrowhead Rd., Lewes Delaware**
- **Parcels: MD16-182.00-01-20.00 & 21.00, 5-182.00-0207.00 & 08.00 & 2900 & 3000; Williamsville Rd.; Milford, Delaware**
- **Parcel: 235-20.00-63.02; Shingle Point Rd.; Milton, Delaware**
- **Parcel: 135-16.00 Portion of Parcel 23.00; Georgetown, Delaware**

Please feel free to contact me at (215)-254-7844 or at bkeegans@pennoni.com if you have any questions regarding this request.

Sincerely,

PENNONI ASSOCIATES INC.

Brendan Keegans

Pennoni
Direct: +1 (215) 254-7844
www.pennoni.com | bkeegans@Pennoni.com

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Marc Chartier

From: Mohammed, Sascha (DNREC) <Sascha.Mohammed@delaware.gov> on behalf of FOIA, DNREC (MailBox Resources) <DNREC.FOIA@delaware.gov>
Sent: Monday, May 10, 2021 4:23 PM
To: Brendan Keegans
Cc: Sobocinski, Lee (DNREC)
Subject: RE: FOIA request 21-0419 - 21-0423

Dear Mr. Keegans:

This email is to acknowledge that the Delaware Department of Natural Resources and Environmental Control (DNREC) received your Freedom of Information Act (FOIA) request on May 10, 2021. You requested:

Pennoni is conducting a Phase I Environmental Site Assessment (ESA) of the property listed below. The purpose of the ESA is to identify recognized environmental conditions (RECs) as defined in United States Environmental Protection Agency (U.S. EPA) rules under 40 CFR Part 312 Standards and Practices for All Appropriate Inquiries (AAI), and the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: E 1527-05, consisting of conditions indicative of releases or threatened releases of hazardous substances on, at, in or to the referenced property. As such, we are interested in any information regarding illegal waste discharges, storage tanks, environmental contamination, remediation, and violations of environmental laws and/or permits on the following property and in the immediate vicinity (i.e., adjoining properties). • 33422 Stiener Rd , Georgetown DE • 16293 County Road 249 , Milton DE • 16902 County Road 249 , Milton DE • 17 Ludenham Dr. , Milford • 23144 Camp Arrowhead Road , Lewes

In accordance with Delaware's FOIA statute, within 15 business days you will receive a further response from DNREC substantively responding to your FOIA request or otherwise responding consistent with Delaware's FOIA statute.

Thank you for your FOIA inquiry to DNREC.

From: bkeegans@pennoni.com <bkeegans@pennoni.com>
Sent: Monday, May 10, 2021 3:59 PM
To: FOIA, DNREC (MailBox Resources) <DNREC.FOIA@delaware.gov>
Subject: FOIA request

Request Date: Monday, May 10, 2021

Name: Brendan Keegans

Address: 1900 Market St. #300

City: Philadelphia
State: Pennsylvania
Zip Code: 19103

Phone: 2158164308

Email: bkeegans@pennoni.com

Request: Pennoni is conducting a Phase I Environmental Site Assessment (ESA) of the property listed below. The purpose of the ESA is to identify recognized environmental conditions (RECs) as defined in United States Environmental Protection Agency (U.S. EPA) rules under 40 CFR Part 312 Standards and Practices for All Appropriate Inquiries (AAI), and the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: E 1527-05, consisting of conditions indicative of releases or threatened releases of hazardous substances on, at, in or to the referenced property. As such, we are interested in any information regarding illegal waste discharges, storage tanks, environmental contamination, remediation, and violations of environmental laws and/or permits on the following property and in the immediate vicinity (i.e., adjoining properties). • 33422 Stiener Rd , Georgetown DE • 16293 County Road 249 , Milton DE • 16902 County Road 249 , Milton DE • 17 Ludenham Dr. , Milford • 23144 Camp Arrowhead Road , Lewes Please feel free to contact me at (215)-254-7844 or at bkeegans@pennoni.com if you have any questions regarding this request.
Cost: 0.25

From: Sussex County FOIA Records Center <sussexcode@mycusthelp.net>
Sent: Monday, May 10, 2021 3:29 PM
To: Brendan Keegans <bkeegans@Pennoni.com>
Subject: Open Records Request :: W001292-051021

Sussex County

Dear Brendan Keegans:

Sussex County has received your FOIA request. Your request was given the reference number W001292-051021 for tracking purposes.

Topic of Records Requested: Phase I ESA; 5 property package
Description of Records Requested: Dear Records Officer: I hope you're well, and enjoying a pleasant start to your week! Pennoni is conducting a Phase I Environmental Site Assessment (ESA) of the property listed below. The purpose of the ESA is to identify recognized environmental conditions (RECs) as defined in United States Environmental Protection Agency (U.S. EPA) rules under 40 CFR Part 312 Standards and Practices for All Appropriate Inquiries (AAI), and the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: E 1527-05, consisting of conditions indicative of releases or threatened releases of hazardous substances on, at, in or to the referenced property. As such, we are interested in any information regarding illegal waste discharges, storage tanks, environmental contamination, remediation, and violations of environmental laws and/or permits on the following property and in the immediate vicinity (i.e., adjoining properties). • Parcel: 235-25.00-39.00; Shingle Point Rd., Milton, Delaware 19124 • Parcel: 234-18.00-31.00; Camp Arrowhead Rd., Lewes Delaware • Parcels: MD16-182.00-01-20.00 & 21.00, 5-182.00-0207.00 & 08.00 & 2900 & 3000; Williamsville Rd.; Milford, Delaware • Parcel: 235-20.00-63.02; Shingle Point Rd.; Milton, Delaware • Parcel: 135-16.00 Portion of Parcel 23.00; Georgetown, Delaware Please feel free to

contact me at (215)-254-7844 or at bkeegans@pennoni.com if you have any questions regarding this request. Sincerely, PENNONI ASSOCIATES INC.

Your request will be forwarded to the relevant County department(s) to locate the public records you seek and determine any costs associated with satisfying your request. The County will respond within 15 business days about the availability of records, a cost estimate (if applicable) and request confirmation to proceed (if necessary).

You can monitor the progress of your request at the link below and will receive an email when your request has been completed.

Thank you for using the Sussex County FOIA Records Center.

Track the issue status and respond at:
https://SUSSEXCOUNTYDE.mycusthelp.com/webapp//_rs/RequestEdit.aspx?rid=1292

APPENDIX D

PHOTOGRAPHS

Photograph 1: Probable Map of Tree Stands in Wooded Area

Photograph 2: View of Farmland from the West

Photograph 3: View of Farmland from the West

Photograph 4: View of Irrigation System

Photograph 5: View of Farmland from the North

Photograph 6: View of Well Pumping System

Photograph 7: IMG 9641

Photograph 8: View of concrete pad that may have once held an AST or Pump

Photograph 9: View of AST adjacent to Well Pump

Photograph 10: View of US Motors Electric Well Pump

Photograph 11: View of Irrigation Switch

Photograph 12: IMG 9647

Photograph 13: View of Farmland from Northwest

Photograph 14: View of Pumphouse

APPENDIX E

QUALIFICATIONS

Marc Chartier, PG, LSRP

Senior Geologist/Division Manager

EDUCATION

BS, Western Washington University; Geology (2000)

PROFESSIONAL REGISRATONS

Licensed Geologist/Hydrogeologist: WA (#2998, exp. 2-27-22)

Registered Geologist: OR (#G2388, exp. 6-1-21)

Professional Geologist: CA (#9204, exp. 2-28-23)

Professional Geologist: PA (#004895, exp. 9-30-21)

Professional Geologist: FL (#PG3046, exp. 7-31-2022)

Licensed Site Remediation Professional: NJ (#573734, exp. 7-9-21)

CERTIFICATIONS

8-Hr. Hazwoper Refresher, OSHA/ASIH (exp. 4-15-22)

TRAINING

40-Hr, Hazardous Waste Site Safety Training, OSHA (2001)

Project Management (2015, no exp.)

PROFESSIONAL AFFILIATIONS

NA

HONORS/AWARDS

NA

EXPERIENCE SUMMARY

Mr. Chartier is a PG and a NJ LSRP with over 20 years of experience managing Phase I ESAs/Preliminary Assessments; Phase II ESAs/Site Investigations; Remedial Investigations; and the design and implementation of remedial actions relative to soil, groundwater, soil gas, and indoor air contamination.

Mr. Chartier is responsible for the management, growth, and development of the environmental division in Pennoni's Philadelphia, PA office. In addition to managing projects, his duties include managing and mentoring staff, QA/QC of work products, preparing proposals, and developing clients and new business.

REPRESENTATIVE PROJECTS

King's Christian School – Soil Remedial Action Permit Application, Cherry Hill, NJ (10/19 – Present)

Project Manager and LSRP – Managed the preparation of a soil remedial action permit application and a biennial certification inspection report for the site. The NJDEP Site Remediation Program case for the site had been closed via the establishment of a deed notice and issuance of a no further action letter in 2008; however, the establishment of the SRRA in 2012 required additional administrative closure activities in the form of a soil remedial action permit and a biennial certification inspection report. The compliance documentation was submitted to the NJDEP in November 2019 and approved by the NJDEP in June 2020. (KCHSX19001)

Westrum Development – Luxor Lansdale Remedial Investigation, Lansdale, PA (9/19 – Present)

Project Manager and PG – Previous site operations resulted in soil and groundwater impacted by TCE. Mr. Chartier managed remedial investigations including the installation and sampling of delineation monitoring wells, soil characterization activities, and vapor intrusion evaluation activities. The investigations are part of compliance demonstration in pursuit of a release of liability in accordance with PADEP Act 2 regulations. (WESTR18004)

Hightop Real Estate and Development – Former Auto Service Station, Philadelphia, PA (9/19 – Present)

PG – Mr. Chartier reviewed and approved the Final Report for the remediation of impacted soil and groundwater at the site in accordance with PADEP Act 2 regulations. The site soil and groundwater had been impacted by a former petroleum UST. The results of the remedial actions and associated sampling activities demonstrated compliance for a Site-Specific Standard with an Environmental Covenant. (HITOP 19001)

New Standard Living – Proposed Senior Living Facility PA/SI, Glassboro, NJ (6/19 – Present)

Project Manager – Managed the investigation of a 50-acre parcel of wooded, undeveloped land that the client was interested in purchasing for the development of a senior living facility. During the PA, historic fill material associated with neighboring site operations was observed to have encroached on the site. The results of subsequent SI activities indicated that the historic fill was contaminated and would require remediation in accordance with NJDEP regulations. Currently, Pennoni is assisting the client to sell the impacted portion of the site to the responsible party to be remediated accordingly. (NEWST19001)

Parking Authority of the City of Camden – Remedial Investigation of Former Heating Oil UST, Camden, NJ (5/19 – Present)
Project Manager and LSRP – Investigations conducted by previous consultants had indicated that a former 2,000-gallon heating oil UST had impacted soil and groundwater on the site to the extent that LNAPL was present. Further, the previous investigations and UST closure activities conducted by others had not been properly reported/submitted to the NJDEP. Pennoni was retained to document the previous investigations and actions in a NJDEP-compliant submittal and scope further remedial investigations/actions in pursuit of NJDEP case closure via the issuance of a RAO. Currently, Pennoni is planning a remedial investigation composed of the advancement of seven soil borings, supplemental soil sampling activities, installation of two additional monitoring wells, and one product recovery well. Mr. Chartier managed and reviewed the NJDEP submittal and scoped the supplemental investigations. (PACAX 19007)

Wolfson Group, Inc. – Casella Farm Field Remediation, Woolwich, NJ (2/19 – Present)
Project Manager and LSRP – The site is composed of over 250 acres of currently farmed land. Mr. Chartier managed investigations relative to historical pesticides impacts, and dieldrin was identified across much of the site at concentrations above the NJDEP's Residential Direct Contact Soil Remediation Standards; no exceedances of the Non-Residential Direct Contact Soil Remediation Standards were reported. As the site is to be developed for residential use, compliance of the most stringent standards must be demonstrated. Mr. Chartier is currently managing the remediation of dieldrin "hot spots" via excavation and disposal. Upon completion of the remedial actions, compliance will be demonstrated via statistical averaging methods. (WLVEX19002)

Urgent Care RE, LLC – Groundwater Remedial Investigation, Somerdale, NJ (2/19 – Present)
Project Manager and LSRP – During due diligence investigations conducted by a potential purchaser, benzene was identified in site groundwater at concentrations above the NJDEP GWQS. Pennoni was retained by the site owner to evaluate groundwater on the site. Mr. Chartier managed the groundwater investigation, which was composed of the installation and sampling of six site monitoring wells. The results of the groundwater investigation demonstrated that the source of groundwater contamination was located offsite. Accordingly, no further investigations were required. Mr. Chartier is currently managing the preparation of a Remedial Investigation Report, which will support the issuance of a RAO for the impacted groundwater. (URGNT 19001)

Vineland Housing Authority – Former UST Remediation, Vineland, NJ (10/18 – Present)
Project Manager and LSRP – Results of post UST removal investigations conducted in 2011 indicated that the former UST had impacted site soils, but groundwater was not impacted. No remedial actions were conducted. We were retained in 2018 to re-evaluate the site in the vicinity of the former UST and develop and oversee the appropriate remedial actions. Re-evaluation of soil in the vicinity of the former UST indicated that compliance could be demonstrated by statistical averaging and no remediation was required. The NJDEP issued an NFA determination for the UST in April 2019. (VINHA 18001)

Educational Testing Services – Former Heating Oil UST Remediation, Princeton, NJ (9/18 – Present)
Project Manager and LSRP – A previous consultant managed and oversaw the removal of a 10,000-gallon heating oil UST and some of the associated piping. No evidence of a release was observed, however, due to site constraints and professional judgement, the previous consultant refused to evaluate the remaining UST piping. Pennoni evaluated the remaining piping via a SI and demonstrated that it had not leaked or impacted the environment. The piping was subsequently abandoned in place. Mr. Chartier issued a RAO for the entire UST system in January 2019. (EDTSV 18006)

Bush Refrigeration - 1700 AWB, Site Remediation, Camden, NJ (6/18 – Present)
Project Manager and LSRP – Managed the due diligence investigation (PA/SI) and subsequent remediation of sitewide historic fill via the establishment of institutional and engineering controls (i.e., a deed restriction and a cap). Additionally, we demonstrated that groundwater on the site was impacted by an adjacent property. Currently, the site cap is being installed. Upon completion of the capping of the site, the deed restriction and capping, and documentation of an offsite source of groundwater contamination will be documented in a Remedial Investigation Report/Remedial Action Report with a Remedial Action Permit Application. Pending NJDEP issuance of a Remedial Action Permit for Soil, a Response Action Outcome will be issued, closing the NJDEP case associated with the site. (BUSHR 18001)

Blue Eagle Property Management – Ferry Terminal Building Remediation, Camden, NJ (2/18 – Present)
Project Manager and LSRP – Managed the remediation of sitewide historic fill via the establishment of institutional and engineering controls (i.e., a deed restriction and a cap). The remediation was documented in a Remedial Action Report. Mr. Chartier issued a RAO for the site in April 2019. (BEPMX 18002)

Urban Promise Ministries/Fellowship House of South Camden – Preliminary Assessment/Site Investigation/Remedial Action, Camden, NJ (9/17 – Present)
Quality Assurance Manager – Provided senior management and quality assurance review for a PA/SI associated with the procurement of a Response Action Outcome for the site's childcare facility license. A former UST, a former dry cleaner, and historic fill were identified in connection with the site. The results of the SI demonstrated that no further actions were required for the UST and the dry cleaner, but the historic fill required remediation in accordance with NJDEP Technical Requirements for Site Remediation. Pennoni issued a Response Action Outcome for the client in 2018 and is currently coordinating the transfer of the site's Remedial Action Permit to a new entity who is purchasing the site. (UPROX18001)

Delco Development – Barrington Commons Redevelopment, Barrington, NJ (8/17 – Present)
Project Manager and LSRP – During a PA/SI for the site, contaminated historic fill was identified as an AOC that required remediation in accordance with NJDEP regulations. The historic fill AOC was remediated by the establishment of institutional and engineering controls (i.e., a cap and a deed notice). Currently, Mr. Chartier is managing the preparation of a Remedial Action Report and Remedial Action Permit Application for the historic fill. Upon receipt of the remedial action permit, Mr. Chartier will issue a RAO for the site. (DELCX18001)

Boys and Girls Club of Mercer County – Centre Street Park Historic Remediation, Trenton, NJ (7/17 – Present)
Project Manager and LSRP – Managed the due diligence investigation (PA/SI) and subsequent remediation of sitewide historic fill via the establishment of institutional and engineering controls (i.e., a deed restriction and a cap). Upon completion of the capping of the site, the deed restriction and capping were documented in a Remedial Action Report with a Remedial Action Permit Application. The NJDEP is currently reviewing the Remedial Action Permit Application Upon receipt of a soil remedial action permit, a Response Action Outcome will be issued, closing the NJDEP case associated with the site. (BGCMC 17001)

Highmark Schools – Preliminary Assessment/Site Investigation/Remedial Action, Trenton, NJ (2015 – Present)
Project Manager and LSRP – The former industrial site had a Response Action Outcome issued by another LSRP/company for industrial site use; however, our client wanted to redevelop the site for use as a Charter School. The primary areas of concern on the site were historic fill, and contaminated groundwater associated with former gasoline USTs. During the redevelopment, the appropriate alternative/presumptive remedies were constructed to maintain the protection of the engineering controls for historic fill and the results of groundwater sampling demonstrated that no further remedial actions were required for groundwater. Accordingly, Mr. Chartier terminated the Groundwater Remedial Action Permit, revised the Soil Remedial Action Permit, and issued a Response Action Outcome for applicable AOCs.

Liberty Property Trust – Waterfront Redevelopment Remediation, Camden, NJ (2015 - Present)
Project Manager and LSRP – Conducted environmental due diligence investigations including a Phase I/II ESA, as well as a PA/SI in accordance with the NJDEP *Technical Requirements for Site Remediation* to evaluate the environmental condition of a 20-acre property on the Camden waterfront that is proposed to be redeveloped. Remedial investigations were conducted relative to four areas of concern on the site, and remedial actions were determined to be required for site wide historic fill, former rail lines, and a former discharge pit located on the site. The remedial actions implemented include a combination of source removal via excavation and disposal, the establishment of institutional and engineering controls, and monitored natural attenuation. In addition, as parcels within the project area are sold, Mr. Chartier has worked to administratively separate the parcels from the original NJDEP case, allowing for several site-specific Response Action Outcomes to be issued.

The Stavola Companies – Asphalt Plant Remedial Investigations, Tinton Falls, NJ (2015 - Present)
Project Manager and LSRP – Helped develop and coordinate the remedial investigation of groundwater impacted by chlorinated volatile organic compounds. In addition, Mr. Chartier reviewed the results of receptor evaluations for the site. Currently the site is

in a monitored natural attenuation program and a Remedial Action Permit for Groundwater is expected to be issued by the NJDEP within the next month. Upon receipt of the Groundwater Remedial Action Permit, Mr. Chartier will issue a RAO.

Stavola Realty – Former Dry Cleaner Remediation, Various Locations (2015 - Present)
Project Manager and LSRP – Helped develop and coordinate the delineation, remediation, and receptor mitigation measures associated with groundwater impacted by chlorinated volatile organic compounds at three former dry cleaner sites. The remedial actions included monitored natural attenuation and in-situ bioremediation via sock deployment and direct push injection activities. Currently, Pennoni is documenting the remedial actions in a Remedial Action Report. The Remedial Action Report will be submitted to the NJDEP with a Remedial Action Permit Application to enter a natural attenuation monitoring program.

The McKee Group – Schooner Island Marina UST Remediation (2015 - Present)
Project Manager and LSRP – Developed and coordinated the remediation of impacted soil and groundwater associated with three former gasoline USTs that were removed from the site in the late 1990s. Based on the results of latest data collected in 2015, the proposed remedy was no further action for soil, and monitored natural attenuation for groundwater. A Remedial Action Permit for Groundwater was procured in 2017, and a Response Action Outcome was submitted the same year. Currently, the site is in a natural attenuation monitoring program under the direction of Mr. Chartier as the Licensed Site Remediation Professional.

Harrison Street Real Estate – Former Dry Cleaner Remediation O&M, Cherry Hill, NJ (2015 - Present)
Project Manager – Mr. Chartier manages the routine groundwater monitoring and O&M of a sub-slab depressurization system on the site that mitigates vapor intrusion. The contaminant source was removed via a combination of excavation and disposal and in-situ bioremediation in 2012. The groundwater monitoring and O&M program is anticipated to be required until 2020.

Reisman Sorokac – Various Phase I ESAs, MS, TX, AZ, NV, NJ (2015 - Present)
Project Manager – Mr. Chartier manages various Phase I ESAs for due diligence investigations for a growing drug and alcohol treatment center. Phase I ESAs are conducted in accordance with ASTM International E1527-13.

Regency Centers – Chimney Rock Crossings Redevelopment, Bridgewater Township, NJ (2012 - Present)
Project Manager and LSRP – Developed, managed, and coordinated the execution of a site investigation, remedial investigation, and remediation of two former industrial sites that had been demolished and razed. Various remedial actions had been conducted by previous consultants. The primary areas of concern currently associated with the site include historic fill and groundwater impacted by chlorinated volatile organic compounds. The proposed remedy includes leaving the impacted media in place and restricting access to the impacts via the establishment of institutional and engineering controls, and the implementation of an in-situ groundwater remediation program. Currently Mr. Chartier is overseeing the capping/development of the property and outlining a groundwater remediation plan. Once the remediation is complete, and a Response Action Outcome will be issued.

Wu and Associates, Inc. – Former Dry Cleaner Remediation, Camden, NJ (5/18 – 9/18)
Project Manager – Managed Phase II due diligence investigations for a potential purchaser, which demonstrated that sitewide historic fill was present, and local impact to groundwater associated with former dry-cleaning activities were present. We recommended remediating the site in accordance with NJDEP regulations, and the site owner (seller) has taken the environmental responsibility for the remediation of the site.

Lakeside Business Park, LLC – Preliminary Assessment/Site Investigation, Gloucester Township, NJ (2/17 – 4/17)
Quality Assurance Manager – Provided senior management and quality assurance review for a PA/SI associated with the sale of the site. One area of concern, suspect historic fill, was identified during the PA. Results of the SI demonstrated that the area of concern had not adversely impacted the site. Accordingly, Pennoni's LSRP issued a Response Action Outcome for the project.

City of Trenton – Roberto Clemente Park Remediation (2015 - 2018)
Project Manager and LSRP – Reviewed the Remedial Action Workplan and Remedial Action Report for the remediation of contaminated historic fill at the site via the establishment of institutional and engineering controls. Approximately 1,000 tons of topsoil was imported to the site for use as a cap, but no environmental characterization data was available for the fill. Pennoni characterized the soil and confirmed that it was acceptable for use as an engineering control. The investigation was documented

in a Remedial Action Report. In 2018, Pennoni procured a Remedial Action Permit for Soil and issued a Response Action Outcome for the historic fill AOC.

The Stavola Companies – Asphalt Plant Remedial Investigations, Howell, NJ (2015 – 2017)
Quality Assurance Manager – Helped develop and coordinate the remedial investigation of groundwater impacted by chlorinated volatile organic compounds. In addition, Mr. Chartier reviewed the results of receptor evaluations for the site. Groundwater investigations conducted through the summer of 2017 demonstrated compliance with the NJDEP GWQS. As such, a Response Action Outcome was issued.

Quality Stone and Concrete Products - Remedial Investigation, Hazlet, NJ (2014)
Project Manager and LSRP - Three gasoline USTs were removed from the site in 1994 and the results of post-excavation sampling activities demonstrated that the USTs had not leaked. However, due to the presence of MTBE at levels above the groundwater trigger values in post-excavation soil samples, the NJDEP required a groundwater investigation. Accordingly, Mr. Chartier developed and implemented the groundwater investigation, the results of which, indicated that groundwater had not been impacted by the former USTs. A RAO was issued in 2014.

City of Camden - Preliminary Assessment/Site & Remedial Investigation, Camden, NJ (2011)
Project Manager - Responsible for the remediation of historic fill material on a community park in Camden, New Jersey, which will be improved with a new playground. The historic fill material was identified during a Preliminary Assessment and was determined to be contaminated during subsequent Site Investigation activities. The recommended remedial action was restricted site use via the implementation of institutional controls and engineering controls (i.e., a deed restriction and a site wide soil cap). Mr. Chartier managed the investigations relative to the suspect fill material and prepared the requisite reports in accordance with the NJDEP Tech Regs.

Bumble Bee Foods, LLC – Fuel Oil Spill Remediation, Cape May, NJ (2010 - 2015)
Project Manager, client contact, and operations/maintenance coordinator – Responsible for the remediation of a diesel fuel spill using a multi-phase extraction (MPX) system. The MPX system was designed to remediate the impacted media in a two-year period and is composed of nine extraction wells and a media management trailer.

The Stavola Companies – Asphalt Plant Remediation, Millville, NJ (2009 - 2012)
Project Manager and LSRP - Responsible for remedial investigations relative to several areas of concern identified by another consulting firm during the completion of Preliminary Assessment and Site Investigation activities on an operating asphalt production plant. Most of the areas of concern were shallow or surficial petroleum releases associated with leaky aboveground storage tanks or processing equipment. The results of the remedial investigations indicated that shallow soils on the subject property were impacted and impacts to a nearby sensitive receptor (freshwater wetlands) were likely. The results of subsequent investigations demonstrated that the wetlands had not been impacted. Mr. Chartier issued a Restricted Use Response Action Outcome for the site in 2012, which was contingent upon the maintenance of a deed notice and cap.

City of Vineland - Landfill Groundwater Remedial Investigation, Vineland, NJ (2009)
Mr. Chartier played a pivotal role in designing the groundwater investigation; acting as the liaison between the Client, the adjacent property representatives, and the NJDEP; and preparing the Remedial Investigation Report. In 2009, the owner of a closed municipal solid waste landfill requested to conduct a groundwater investigation after elevated concentrations of benzene were reported in a 180-foot-deep production well on a property adjacent to the landfill. The groundwater investigation consisted of the installation of seven additional site monitoring wells set at depths ranging from 20 feet below grade to 180 feet below grade, one groundwater sampling event, an aquifer study (aquifer response monitoring, pumping tests, fate and transport modeling, etc.), a receptor evaluation, and an evaluation of the reliability of laboratory data in accordance with the NJDEP Tech Regs. The results of the groundwater investigation indicated that the benzene concentrations reported in the production well on the adjacent property were not attributable to the landfill.

Robert Noble Manor, LLC - Remedial Investigations/Remedial Action Historic Fill Site, South Amboy, NJ (2009)
Project Manager - Conducted an environmental investigation of suspect fill/debris that was identified during geotechnical investigations on a property which was being developed into a residential senior citizens' apartment complex. The results of the environmental investigations indicated that the material met the definition of "historic fill" as defined by the NJDEP Tech Regs and was contaminated and would require remediation. The site was remediated by restricting site usage via a combination of institutional controls and engineering controls (i.e., a deed restriction and a site wide soil cap). Mr. Chartier managed the investigations relative to the suspect fill material and prepared the requisite reports in accordance with the NJDEP Tech Regs. A Restricted Use Response Action Outcome was issued in March 2011.

Garden State Highway Products, Inc. - Vapor Intrusion Investigation, Millville, NJ (2008 - 2014)
Project Manager - Developed and implemented a vapor intrusion investigation in accordance with NJDEP guidance. Demonstrated that vapor intrusion is not a concern on the site. Manage the maintenance of institutional and engineering controls associated with a PCE and chromium-impacted groundwater plume.

McDonalds, Inc. - Preliminary Assessment/Site Investigation/Remedial Investigation, Paterson, NJ (2007 - 2012)
Project manager – Responsible for an impacted groundwater plume remedial investigation. Monitored natural attenuation of a petroleum release associated with former gasoline USTs indicated the presence of tetrachloroethene (PCE) and trichloroethene (TCE) in groundwater on the site at concentrations above the NJDEP Ground Water Quality Standards. PCE and TCE were not contaminants of concern associated with the petroleum release. A Preliminary Assessment/Site Investigation to identify potential sources of PCE and/or TCE on the subject property was conducted. The results of the Preliminary Assessment/Site Investigation revealed no sources of PCE or TCE on the subject property. Further, the results of investigations conducted to date indicate that the PCE and TCE contamination may be associated with an offsite source up gradient of the subject property.

State of New Jersey - Remedial Investigations/Actions Historic Fill, Trenton, NJ (2006)
Coordinated and managed the characterization, delineation, and remediation of contaminated historic fill material. The suspect fill material was initially identified during geotechnical investigations, the results of which indicated that the material was structurally unsuitable. The results of subsequent environmental investigations indicated that the material was contaminated and would require remediation during site redevelopment. Remedial actions included the excavation and disposal of impacted soils and the collection and laboratory analysis of post excavation soil samples. A No Further Action letter was issued by the NJDEP in 2008.

US Silica Company – No. 2 Fuel Oil Remediation, Port Elizabeth, NJ (2005 - 2012)
Project manager – Responsible for the remediation of impacted soil and groundwater associated with an historic #2 fuel oil spill in the Pinelands Region of New Jersey. In late 2007, approximately 9,800 tons of soil were excavated and disposed, and 17,000 gallons of free phase product was removed from the subject property. Residual groundwater contamination was remediated via natural attenuation.

Ms. Marian Hare – Hardware Remediation, Collingswood, NJ (2005 - 2015)
Project Manager – Responsible for the remediation of impacted soil and groundwater associated with an out of service heating oil UST at a row home in Collingswood, NJ. In addition to managing the soil, groundwater, and vapor intrusion investigations and the proper closure of the UST, Mr. Chartier's responsibilities included procuring grant monies from the NJDEP UST Fund to cover project costs. Based on the results of the remedial investigations, it was evident that the UST had impacted soil and groundwater on the subject property and an adjacent property. An in-situ chemical oxidation injection program utilizing injection wells was installed in the basements of the affected properties was implemented to remediate the impacted soil and groundwater.

AIG, Inc. - Remedial Investigations/Actions Former Gas Station, Pennsauken, NJ (2004 - 2012)
Project Manager - Delineated soil and groundwater contamination associated with a former gas station. Remedial actions conducted to date consist of the excavation and disposal of shallow impacted soil (8'-12' below grade), the preparation of a deed notice for deep impacted soil (35'-50' below grade), a vapor intrusion investigation, and monitored natural attenuation with a classification exception area for residual impacted groundwater. Responsibilities included NJDEP compliance reporting and remedial design.

La Sammana Ventures, LLC - Flagship Resorts, La Sammana Hotel Remediation, Brigantine, NJ (2002 - 2015)
Project Manager – Responsible for the results of groundwater monitoring activities at a former gas station, now a hotel, indicate that residual soil contamination is impacting groundwater on the property. Between 2007 and 2011, an in-situ chemical oxidation plan was implemented. Approximately 36,000 gallons of chemical oxidation slurry was injected via 13 injection wells. Responsibilities included project management, design and oversight of the injection program, oversight of groundwater monitoring, management of the vapor intrusion investigation, and preparation of Remedial Action Progress Reports.

Delaware River Port Authority – Victor Building Remediation, Camden, NJ (2001 - 2015)
Former field technician and project manager – Responsible for extensive remediation project at a former industrial facility in Camden, NJ. Soil and groundwater on the site are contaminated with chlorinated solvents from at least two onsite sources and one offsite source. Remedial activities included source removal, injection of Hydrogen Release Compound, and installation of a subsurface grout slurry wall. Additionally, the results of indoor air quality investigations indicated that vapor intrusion in the building was a concern. As such, a negative pressure vapor mitigation system was installed under a portion of the building and effectively remediated vapor intrusion.

PUBLICATIONS AND PRESENTATIONS

NA

TAB 9

MAPS

Figure 1 of 19.

1

2017 Orthophoto

Four Winds Subdivision

RIBER21001

Pennoni

Subject Property

Other Tax Parcels

Date: 3/2/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\01 2017 Orthophoto.mxd

Figure 2 of 19.

2

2012 Orthophoto

Four Winds Subdivision

RIBER21001

Pennoni

Subject Property

Other Tax Parcels

Date: 3/2/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\02 2012 Orthophoto.mxd

Figure 3 of 19.

3

2007 Orthophoto

Four Winds Subdivision

RIBER21001

Pennoni

Subject Property

Other Tax Parcels

Date: 3/2/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\03 2007 Orthophoto.mxd

Figure 4 of 19.

4

2002 Orthophoto

Four Winds Subdivision

RIBER21001

Pennoni

Subject Property

Other Tax Parcels

Date: 3/2/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\04 2002 Orthophoto.mxd

Figure 5 of 19.

5

1997 Orthophoto

Four Winds Subdivision

RIBER21001

Pennoni

Subject Property

Other Tax Parcels

Date: 3/2/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\05 1997 Orthophoto.mxd

Figure 6 of 19.

6

1992 Orthophoto

Four Winds Subdivision

RIBER21001

Pennoni

Subject Property

Other Tax Parcels

Date: 3/2/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\06 1992 Orthophoto.mxd

Figure 7 of 19.

7

1968 Orthophoto

Four Winds Subdivision

RIBER21001

Pennoni

Subject Property

Other Tax Parcels

Date: 3/2/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\07 1968 Orthophoto.mxd

Figure 8 of 19.

8

1961 Orthophoto

Four Winds Subdivision

RIBER21001

Pennoni

Subject Property

Other Tax Parcels

Date: 3/2/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\08 1961 Orthophoto.mxd

Figure 9 of 19.

9

1954 Orthophoto

Four Winds Subdivision

RIBER21001

Pennoni

Subject Property

Other Tax Parcels

Date: 3/2/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\09 1954 Orthophoto.mxd

Figure 10 of 19.

10

1937 Orthophoto

Four Winds Subdivision

RIBER21001

Pennoni

Subject Property

Other Tax Parcels

Date: 3/2/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\10 1937 Orthophoto.mxd

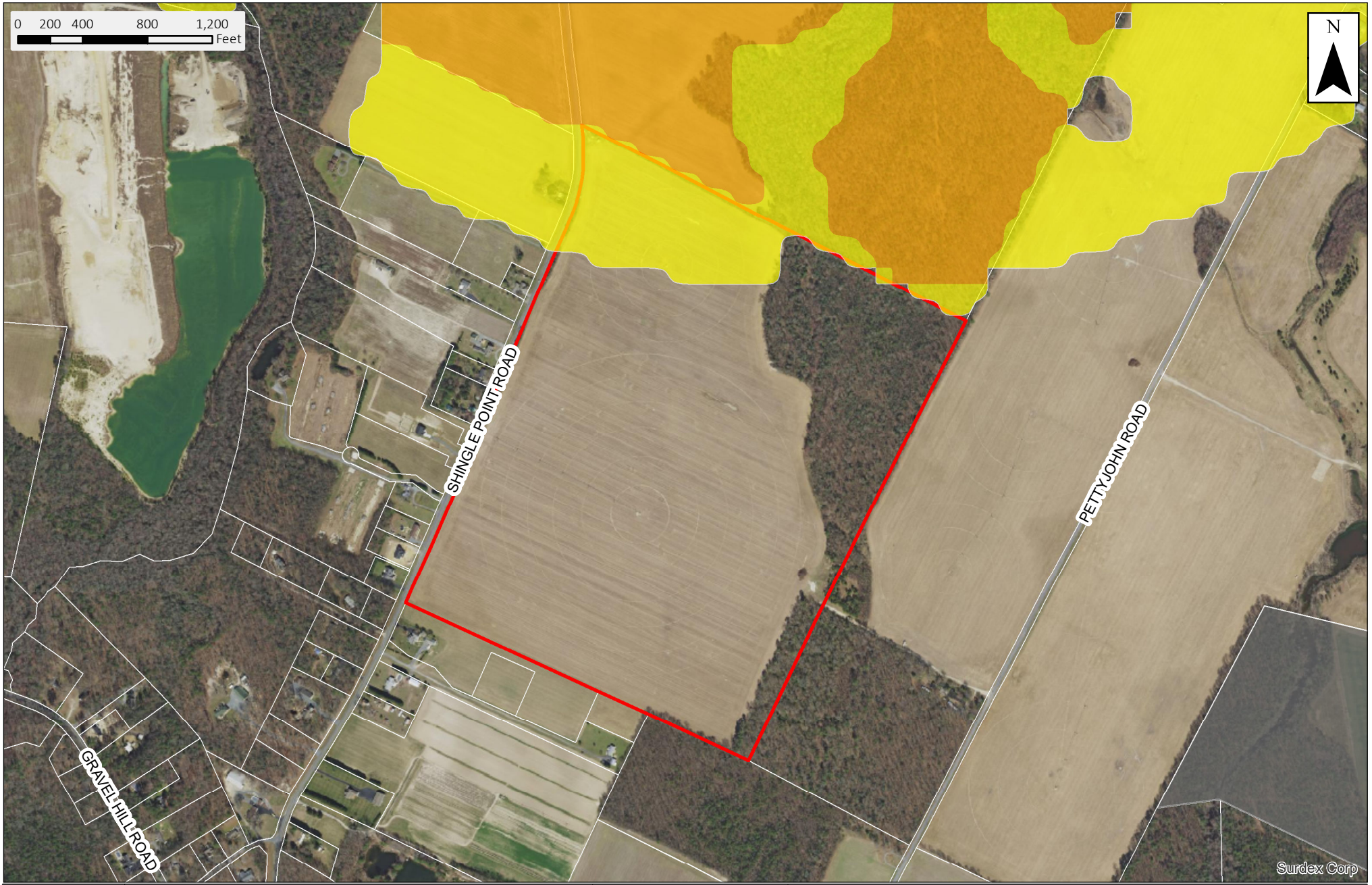

Figure 11 of 19.

11

2020 State Strategies & Investment Levels

Four Winds Subdivision

RIBER21001

Pennoni

Level 2
Level 3
Level 4 (Unshaded)
Out Of Play

Date: 3/3/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\11 2020 State Strategies.mxd

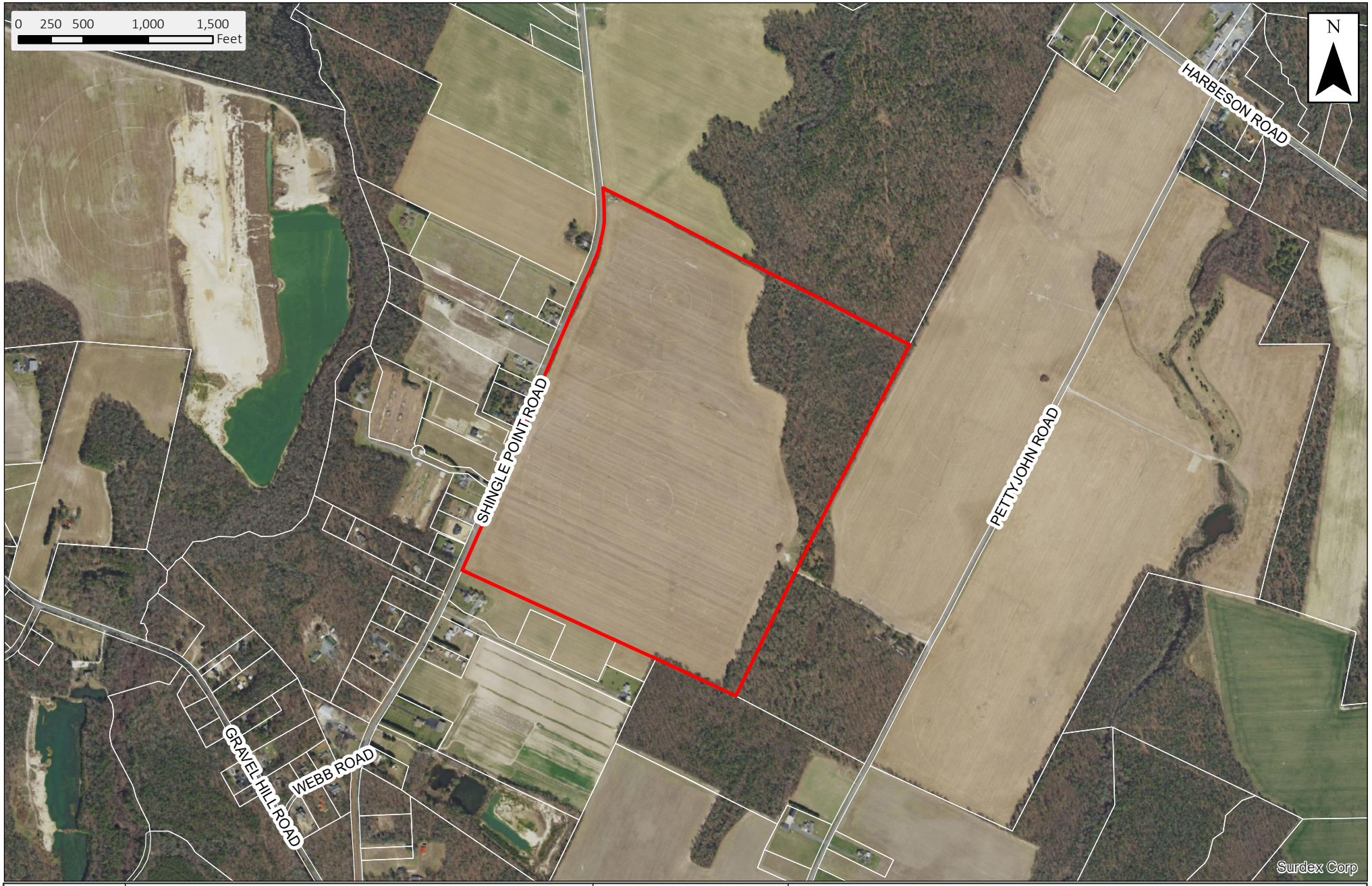

Figure 12 of 19.

12

County Zoning

Four Winds Subdivision

RIBER21001

Pennoni

AR-1 (Unshaded)

Date: 3/3/2022

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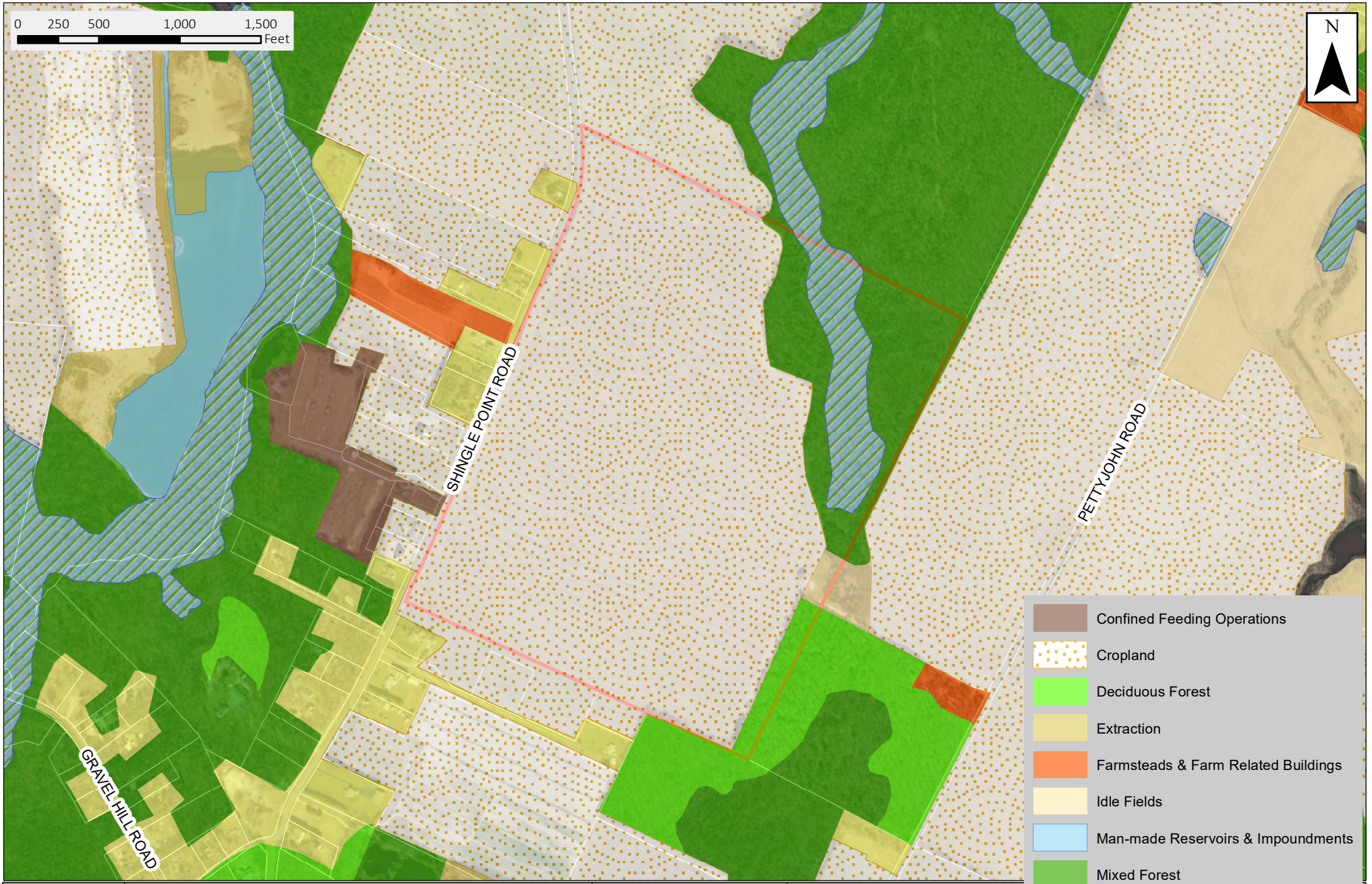


Figure 13 of 19.

13

Delaware Land Use Land Cover

Four Winds Subdivision

RIBER21001

Pennoni

Date: 3/3/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\13 Land Use Land Cover.mxd

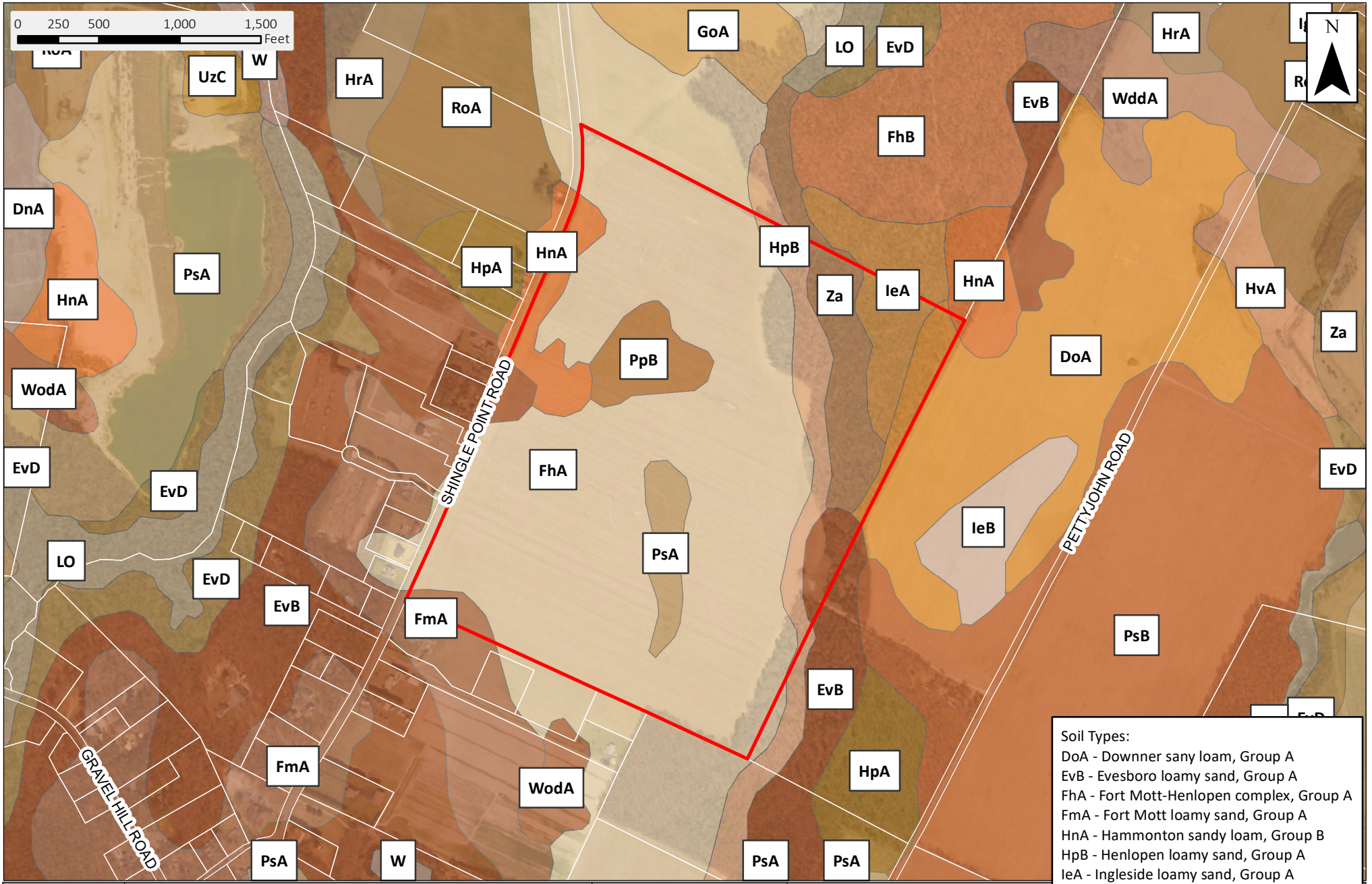


Figure 14 of 19.

14

NRCS Soils Mapping

Four Winds Subdivision

RIBER21001

Pennoni

Date: 3/4/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\14 NRCS Soils Mapping.mxd

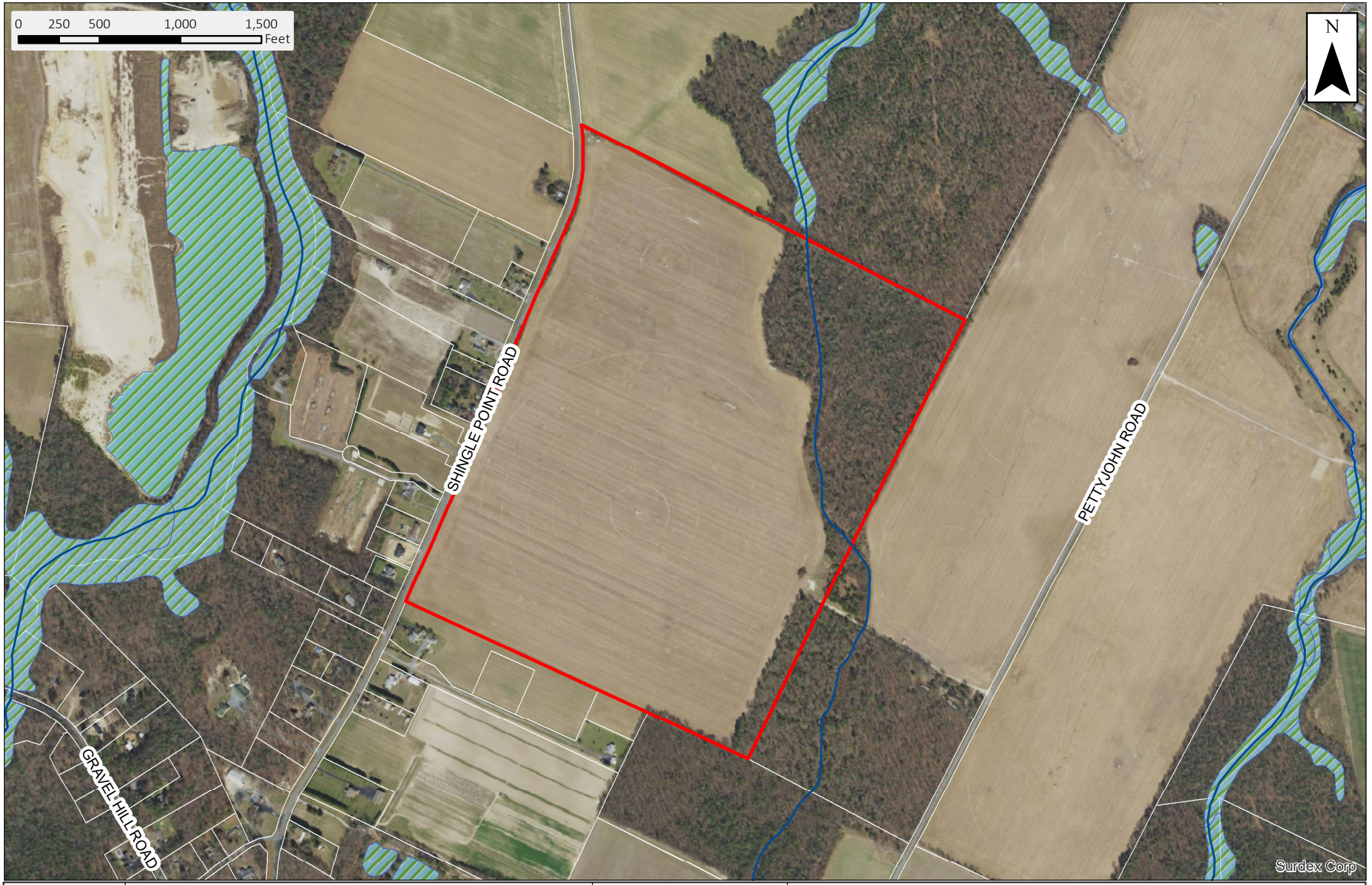


Figure 15 of 19.

15

State Wetlands Mapping

Four Winds Subdivision

RIBER21001

Pennoni

Streams

DNREC Wetlands

Date: 3/4/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\15 State Wetlands Mapping.mxd

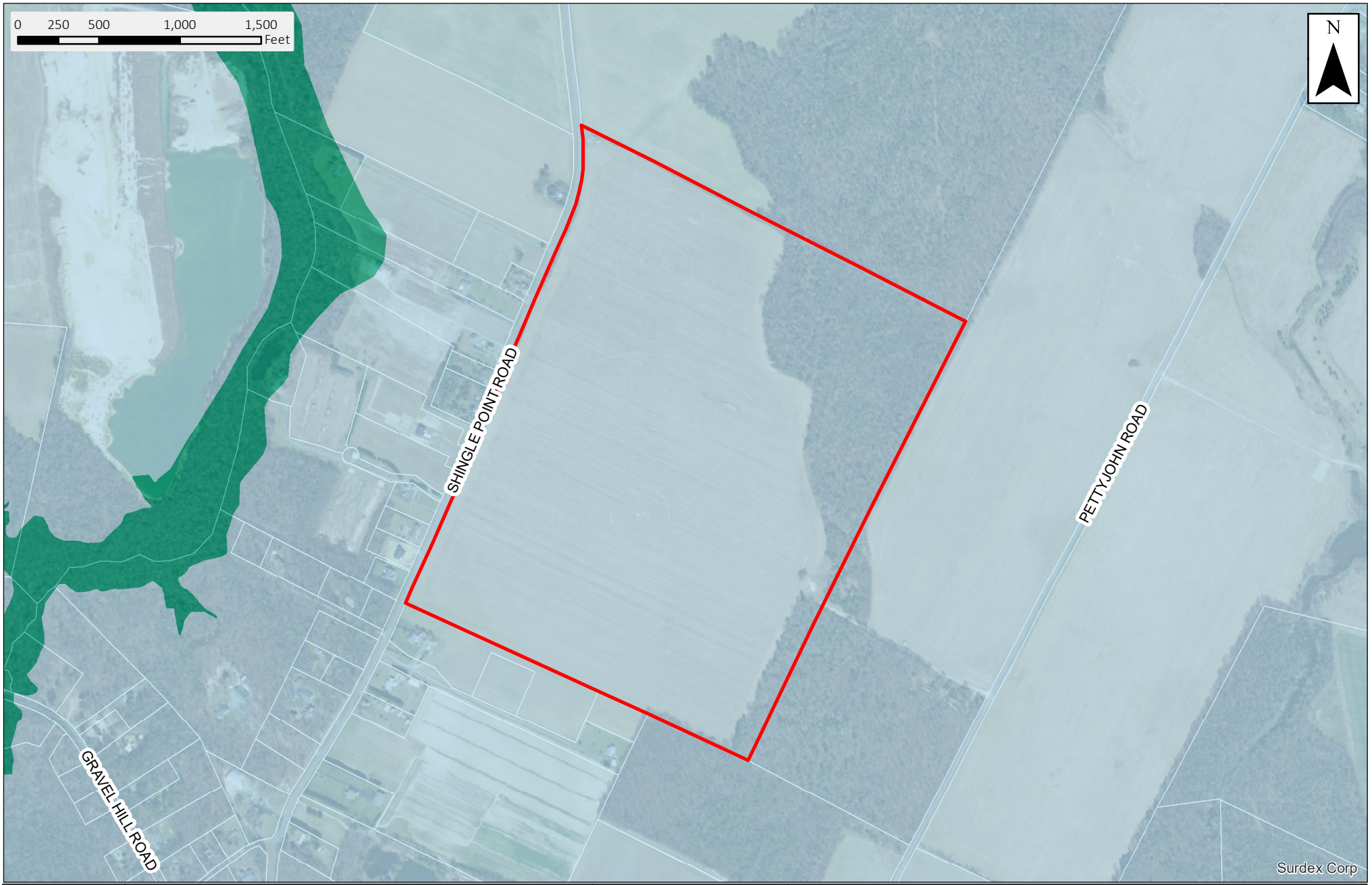


Figure 16 of 19.

16

FEMA Floodplain Mapping

Four Winds Subdivision

RIBER21001

Pennoni

Zone A

Zone X

Flood Map Refernces:
10005C0164J (1/6/05), 10005C0168K (3/16/15), 10005C0325L (6/20/18), 10005C0310L (6/20/18)

Date: 3/4/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\16 FEMA Floodplain Mapping.mxd

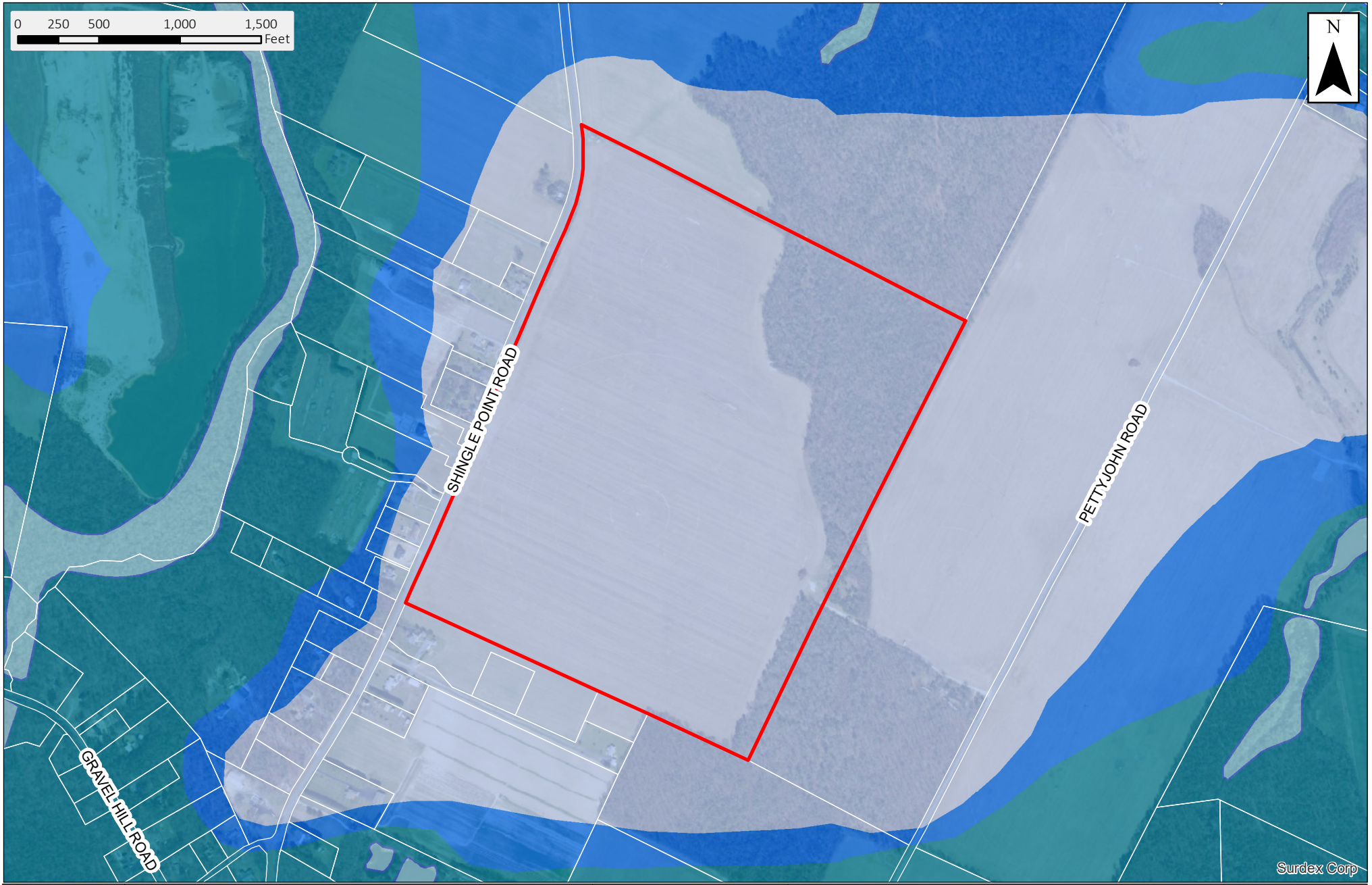


Figure 17 of 19.

17

Groundwater Recharge Potential

Four Winds Subdivision

RIBER21001

Pennoni

Good
Fair
Poor
Water Area

Date: 3/4/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\17 Groundwater Recharge Potential.mxd

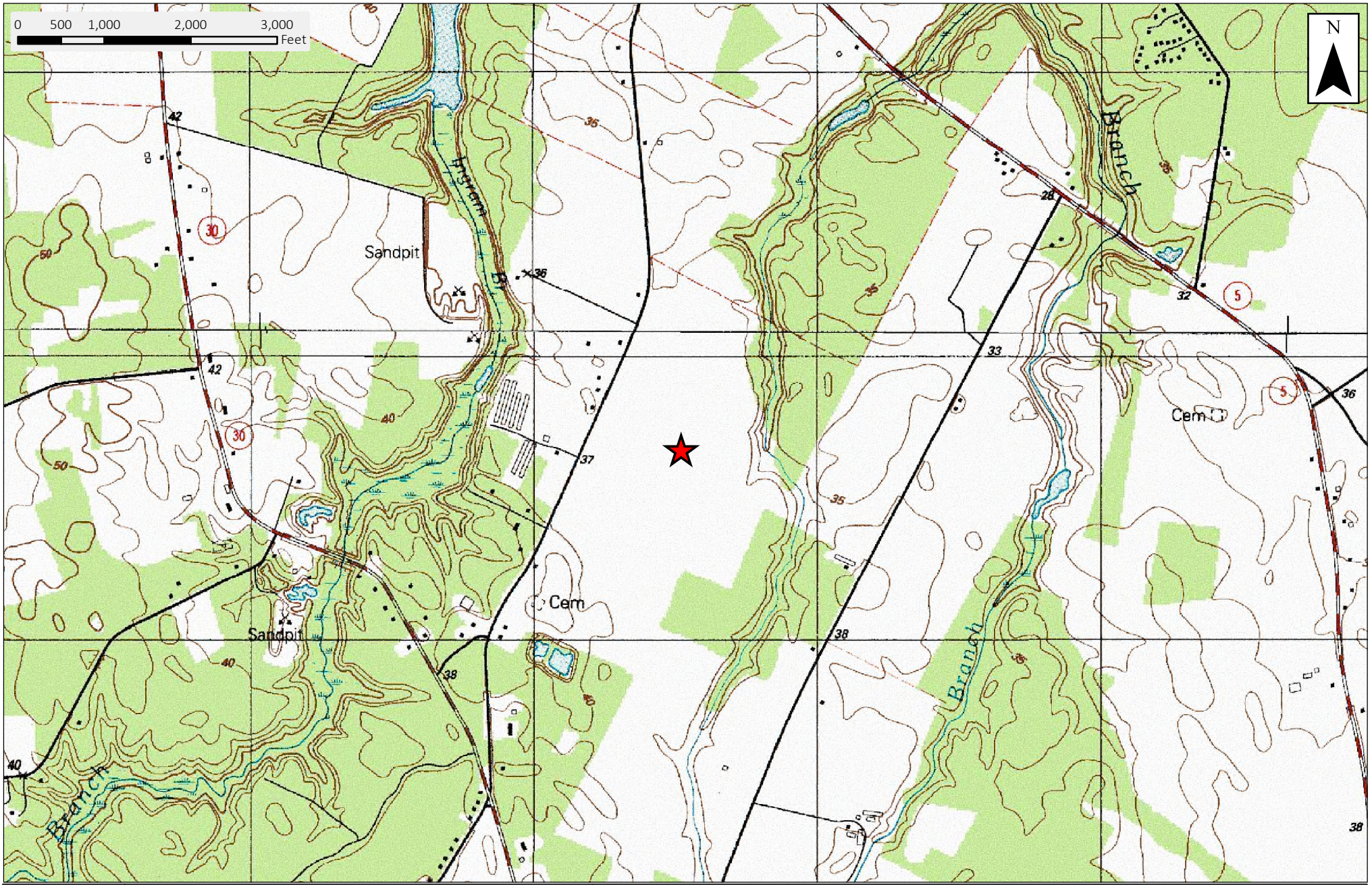


Figure 18 of 19.

18

USGS Topographic Map

Four Winds Subdivision

RIBER21001

Pennoni

Date: 3/4/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\18 USGS Topographic Map.mxd

Figure 19 of 19.	Area Subdivisions	Pennoni	Subject Property; Tax Parcels; Existing Communities; Proposed Developments; Town of Milton
19	Four Winds Subdivision		
	RIBER21001		

Date: 3/4/2022

Document Path: S:\Admin\GIS\Backup 12-22-21\GIS Projects\RIBER21001\19 Area Subdivisions.mxd

TAB 10

SOILS

Accent Environmental

PO BOX 788
MILLSBORO, DE 19966
302-352-1700
billgangloff@gmail.com
accentenvironmental.net

March 21, 2022

Mr. Alan M Decktor
Pennoni Associates Inc
18072 Davidson Drive
Milton, DE 19968

RE: Summary of preliminary soils investigation; Southeast side of Shingle Point Road (CR 249), Sussex County, DE; TM: 235-25.00-39.00; Four Winds Farm

Mr Decktor:

Accent Environmental, LLC was requested to perform a preliminary review of the soils within the above referenced parcel and associated with proposed future development of stormwater ponds.

Four soil borings were excavated across the site on March 18, 2022 and the locations are displayed on the enclosed site map (Map 1). The soils in the vicinity of Soil Boring 4 are moderately well drained with moderately to slowly permeable subsoil. The soils in the vicinity of Soil Borings 1 to 3 were somewhat well drained with moderate to slowly permeable subsoil.

Overall, the soils would be primarily suited for wet ponds due to the slower permeability of the subsoils across the site. There may be some areas suitable for shallow infiltration basins pending a more detailed investigation.

There were no wetlands or hydric soils observed within the agricultural portion of the parcel. Soils within the lower landscape positions of the northeast section of the parcel likely have hydric soils and wetlands. However, that portion of the parcel does not appear to be slated for development or disturbance. A formal wetland delineation was not performed.

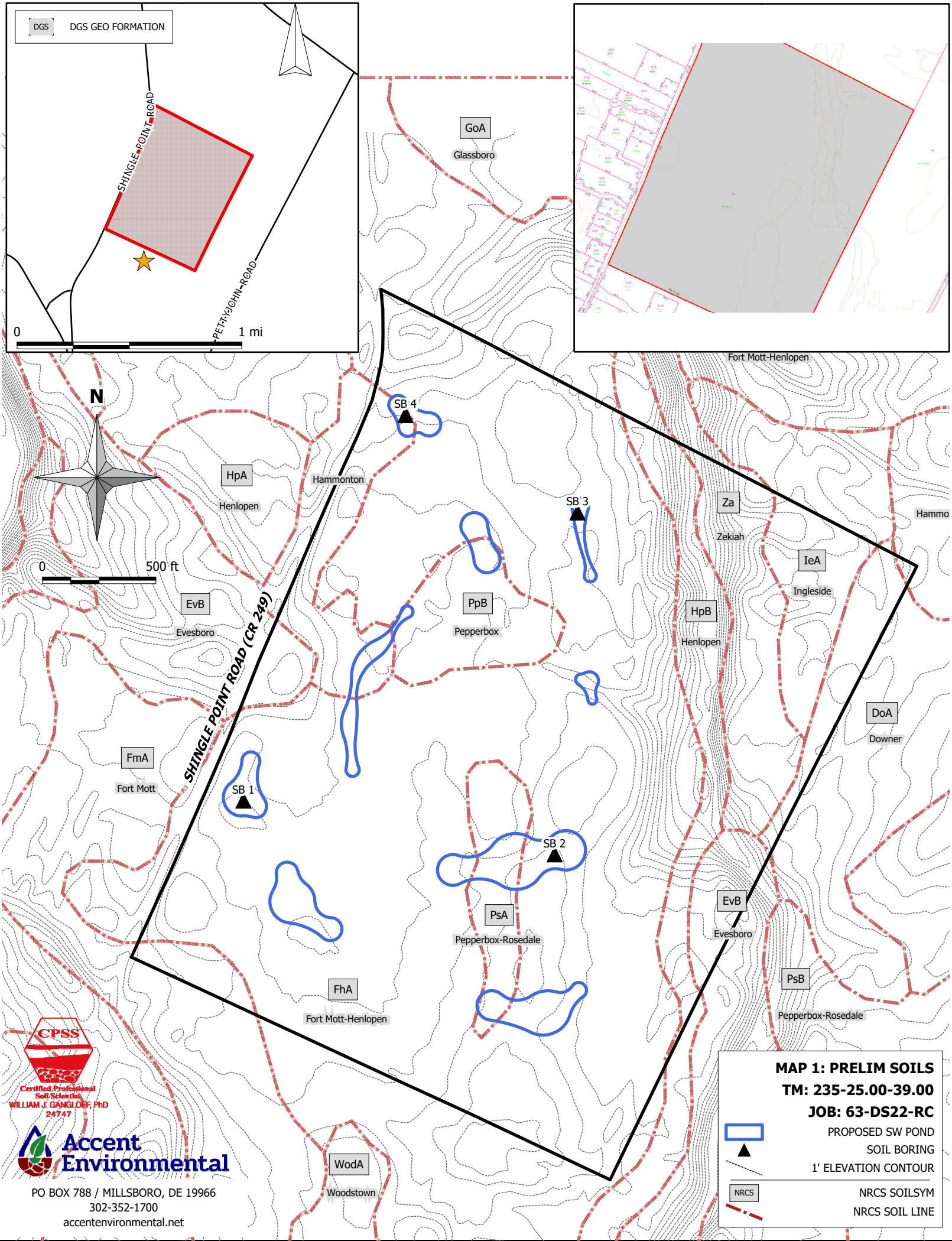
Feel free to contact me if you need additional information or have any questions concerning this information.

Sincerely,
for Accent Environmental, LLC

William J. Gangloff, PhD

CPSS
Certified Professional Soil Scientist
WILLIAM J. GANGLOFF, PhD
24747

DE Class D Evaluator #4455
ARCPACS CPSS/CPAg #24747
VA Professional Soil Scientist


DGS
DGS GEO FORMATION
SHINGLE POINT ROAD
PETTYJOHN ROAD
0
1 mi
N
0
500 ft
SHINGLE POINT ROAD (CR 249)
GoA
Glassboro
HpA
Henlopen
Hammonton
SB 4
SB 3
Za
Zekiah
Hammo
IeA
Ingleside
HpB
Henlopen
EvB
Evesboro
PpB
Pepperbox
DoA
Downer
FmA
Fort Mott
SB 1
SB 2
PsA
Pepperbox-Rosedale
EvB
Evesboro
PsB
Pepperbox-Rosedale
FhA
Fort Mott-Henlopen
WodA
Woodstown
Fort Mott-Henlopen
CPSS
Certified Professional Soil Scientist
WILLIAM J. GANGLOFF, PhD
24747
Accent Environmental
PO BOX 788 / MILLSBORO, DE 19966
302-352-1700
accentenvironmental.net
MAP 1: PRELIM SOILS
TM: 235-25.00-39.00
JOB: 63-DS22-RC
PROPOSED SW POND
SOIL BORING
1' ELEVATION CONTOUR
NRCS
NRCS SOILSYM
NRCS SOIL LINE

United States Department of Agriculture

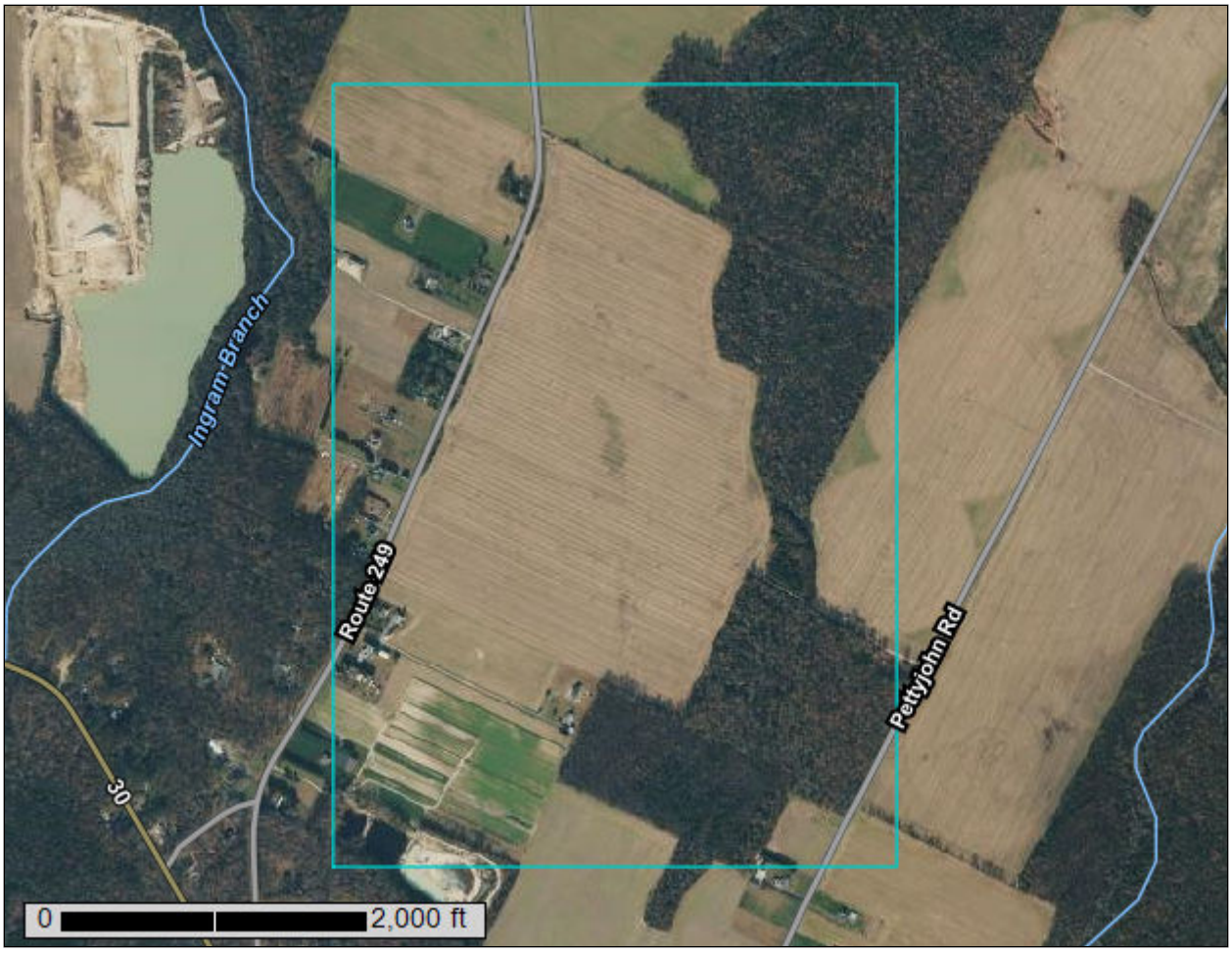
NRCS

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 Sussex County, Delaware

Four Winds Subdivision



March 21, 2022

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

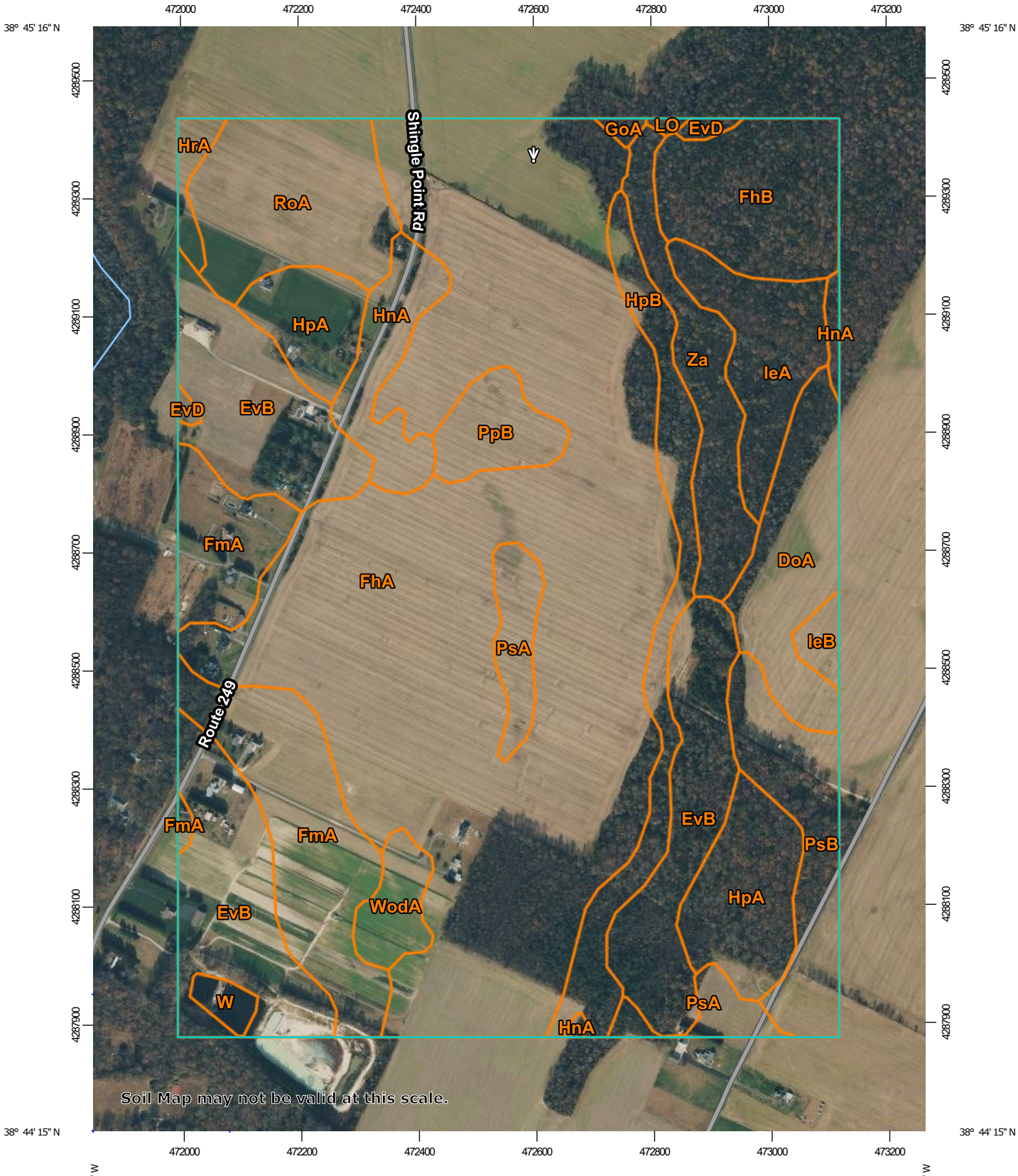
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:9,120 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

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 1:24,000.

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: Sussex County, Delaware
Survey Area Data: Version 22, Aug 26, 2021

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

Date(s) aerial images were photographed: Apr 1, 2020—Oct 1, 2020

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
DoA	Downer sandy loam, 0 to 2 percent slopes, Northern Tidewater Area	16.8	3.9%
EvB	Evesboro loamy sand, 0 to 5 percent slopes	57.0	13.1%
EvD	Evesboro loamy sand, 5 to 15 percent slopes	1.1	0.3%
FhA	Fort Mott-Henlopen complex, 0 to 2 percent slopes	165.9	38.2%
FhB	Fort Mott-Henlopen complex, 2 to 5 percent slopes	18.3	4.2%
FmA	Fort Mott loamy sand, 0 to 2 percent slopes	33.5	7.7%
GoA	Glassboro sandy loam, 0 to 2 percent slopes	0.6	0.1%
HnA	Hammonton sandy loam, 0 to 2 percent slopes	11.2	2.6%
HpA	Henlopen loamy sand, 0 to 2 percent slopes	21.0	4.8%
HpB	Henlopen loamy sand, 2 to 5 percent slopes	17.5	4.0%
HrA	Henlopen-Rosedale complex, 0 to 2 percent slopes	2.4	0.6%
IeA	Ingleside loamy sand, 0 to 2 percent slopes	13.3	3.1%
IeB	Ingleside loamy sand, 2 to 5 percent slopes	2.0	0.5%
LO	Longmarsh and Indiantown soils, frequently flooded	0.3	0.1%
PpB	Pepperbox loamy sand, 2 to 5 percent slopes	7.0	1.6%
PsA	Pepperbox-Rosedale complex, 0 to 2 percent slopes	9.0	2.1%
PsB	Pepperbox-Rosedale complex, 2 to 5 percent slopes	15.6	3.6%
RoA	Rosedale loamy sand, 0 to 2 percent slopes	21.3	4.9%
W	Water	1.8	0.4%
WodA	Woodstown loam, 0 to 2 percent slopes, Northern Tidewater Area	5.1	1.2%
Za	Zekiah sandy loam, frequently flooded	13.7	3.2%
Totals for Area of Interest		**434.6**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas

shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

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

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

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

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

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

Sussex County, Delaware

DoA—Downer sandy loam, 0 to 2 percent slopes, Northern Tidewater Area

Map Unit Setting

National map unit symbol: 2thwd
Elevation: 0 to 190 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 64 degrees F
Frost-free period: 190 to 250 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Downer and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Downer

Setting

Landform: Low hills, flats, knolls
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: sandy loam
BE - 10 to 16 inches: loamy sand
Bt - 16 to 28 inches: sandy loam
C1 - 28 to 48 inches: loamy sand
C2 - 48 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Galestown

Percent of map unit: 10 percent
Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ingleside

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hammonton

Percent of map unit: 5 percent
Landform: Flats, broad interstream divides
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

EvB—Evesboro loamy sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1qtg9
Elevation: 0 to 200 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Evesboro and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Evesboro

Setting

Landform: Flats, knolls, fluviomarine terraces, dunes
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex

Parent material: Sandy eolian deposits and/or fluviomarine sediments

Typical profile

Ap - 0 to 4 inches: loamy sand
E - 4 to 16 inches: loamy sand
Bw - 16 to 39 inches: loamy sand
C - 39 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Runclint

Percent of map unit: 10 percent
Landform: Flats, fluviomarine terraces, dunes, knolls
Landform position (three-dimensional): Rise
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Cedartown

Percent of map unit: 5 percent
Landform: Knolls, dunes, flats
Landform position (three-dimensional): Rise, talf
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Fort mott

Percent of map unit: 5 percent
Landform: Knolls, fluviomarine terraces, flats
Landform position (three-dimensional): Rise
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Galloway

Percent of map unit: 5 percent
Landform: Depressions, flats
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

EvD—Evesboro loamy sand, 5 to 15 percent slopes

Map Unit Setting

National map unit symbol: 1qtgc
Elevation: 0 to 200 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Evesboro and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Evesboro

Setting

Landform: Flats, knolls, fluviomarine terraces, dunes
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Sandy eolian deposits and/or fluviomarine sediments

Typical profile

Ap - 0 to 4 inches: loamy sand
E - 4 to 16 inches: loamy sand
Bw - 16 to 39 inches: loamy sand
C - 39 to 80 inches: sand

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Runclint

Percent of map unit: 10 percent
Landform: Flats, fluviomarine terraces, dunes, knolls
Landform position (three-dimensional): Rise
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Cedartown

Percent of map unit: 5 percent
Landform: Knolls, dunes, flats
Landform position (three-dimensional): Rise, talf
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Fort mott

Percent of map unit: 5 percent
Landform: Knolls, fluviomarine terraces, flats
Landform position (three-dimensional): Rise
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Galloway

Percent of map unit: 5 percent
Landform: Depressions, flats
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

FhA—Fort Mott-Henlopen complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1qtgh
Elevation: 20 to 70 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Fort mott and similar soils: 45 percent
Henlopen and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fort Mott

Setting

Landform: Flats, fluviomarine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits over fluviomarine sediments

Typical profile

Ap - 0 to 10 inches: loamy sand
E - 10 to 24 inches: loamy sand
Bt - 24 to 36 inches: sandy loam
C - 36 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.28 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Henlopen

Setting

Landform: Marine terraces, dunes
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy eolian deposits and loamy fluviomarine sediments

Typical profile

Ap - 0 to 10 inches: loamy sand
E - 10 to 46 inches: loamy sand
Bt - 46 to 62 inches: sandy loam
C - 62 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Ingleside

Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

Runclint

Percent of map unit: 5 percent
Landform: Dunes, knolls, flats
Hydric soil rating: No

Rosedale

Percent of map unit: 5 percent
Landform: Flats, knolls
Hydric soil rating: No

Downer

Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

FhB—Fort Mott-Henlopen complex, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1qtgj
Elevation: 20 to 70 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Fort mott and similar soils: 45 percent
Henlopen and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fort Mott

Setting

Landform: Flats, knolls, fluviomarine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Linear, convex

Across-slope shape: Linear, convex
Parent material: Sandy eolian deposits over fluviomarine sediments

Typical profile

Ap - 0 to 10 inches: loamy sand
E - 10 to 24 inches: loamy sand
Bt - 24 to 36 inches: sandy loam
C - 36 to 80 inches: loamy sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.28 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Henlopen

Setting

Landform: Marine terraces, dunes
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy eolian deposits and loamy fluviomarine sediments

Typical profile

Ap - 0 to 10 inches: loamy sand
E - 10 to 46 inches: loamy sand
Bt - 46 to 62 inches: sandy loam
C - 62 to 80 inches: sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Ingleside
Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

Runclint
Percent of map unit: 5 percent
Landform: Dunes, knolls, flats
Hydric soil rating: No

Rosedale
Percent of map unit: 5 percent
Landform: Flats, knolls
Hydric soil rating: No

Downer
Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

FmA—Fort Mott loamy sand, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 1qtgk
Elevation: 10 to 120 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Fort mott and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fort Mott

Setting
Landform: Flats, fluviomarine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits over fluviomarine sediments fluviomarine deposits

Typical profile
Ap - 0 to 10 inches: loamy sand
E - 10 to 24 inches: loamy sand

Bt - 24 to 36 inches: sandy loam
C - 36 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.28 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Ingleside

Percent of map unit: 5 percent
Landform: Flats, depressions, fluviomarine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Downer

Percent of map unit: 5 percent
Landform: Flats, fluviomarine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rosedale

Percent of map unit: 5 percent
Landform: Flats
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Runclint

Percent of map unit: 5 percent
Landform: Flats, fluviomarine terraces
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

GoA—Glassboro sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1qtgs
Elevation: 0 to 140 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Glassboro and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Glassboro

Setting

Landform: Drainageways, flats
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits

Typical profile

Ap - 0 to 11 inches: sandy loam
Bt1 - 11 to 16 inches: sandy loam
Bt2 - 16 to 21 inches: coarse sandy loam
Btg - 21 to 26 inches: coarse sandy loam
Cg - 26 to 40 inches: loamy coarse sand
C1 - 40 to 56 inches: coarse sand
C2 - 56 to 80 inches: coarse sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Hydric soil rating: No

Minor Components

Hurlock
Percent of map unit: 5 percent

Hammonton
Percent of map unit: 5 percent

Klej
Percent of map unit: 5 percent

Askecksy
Percent of map unit: 3 percent

Galloway
Percent of map unit: 2 percent

HnA—Hammonton sandy loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 1qth1
Elevation: 0 to 120 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Hammonton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hammonton

Setting
Landform: Flats, drainageways, depressions
Landform position (three-dimensional): Talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Loamy fluviomarine sediments

Typical profile
Ap - 0 to 11 inches: sandy loam
Bt - 11 to 30 inches: sandy loam
Cg - 30 to 80 inches: sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 20 to 40 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Hurlock, drained

Percent of map unit: 5 percent
Landform: Depressions, swales, flats
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Ingleside

Percent of map unit: 5 percent
Landform: Flats, fluviomarine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Klej

Percent of map unit: 5 percent
Landform: Flats, depressions
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Rosedale

Percent of map unit: 5 percent
Landform: Flats
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

HpA—Henlopen loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1qth3
Elevation: 20 to 70 feet

Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Henlopen and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Henlopen

Setting

Landform: Marine terraces, dunes
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy eolian deposits and loamy fluviomarine sediments

Typical profile

Ap - 0 to 10 inches: loamy sand
E - 10 to 46 inches: loamy sand
Bt - 46 to 62 inches: sandy loam
C - 62 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Ingleside

Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

Runclint

Percent of map unit: 5 percent
Landform: Dunes, knolls, flats
Hydric soil rating: No

Rosedale

Percent of map unit: 5 percent
Landform: Flats, knolls
Hydric soil rating: No

Fort mott

Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

HpB—Henlopen loamy sand, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1qth4
Elevation: 20 to 70 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Henlopen and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Henlopen

Setting

Landform: Marine terraces, dunes
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy eolian deposits and loamy fluviomarine sediments

Typical profile

Ap - 0 to 10 inches: loamy sand
E - 10 to 46 inches: loamy sand
Bt - 46 to 62 inches: sandy loam
C - 62 to 80 inches: sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Ingleside

Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

Runclint

Percent of map unit: 5 percent
Landform: Dunes, knolls, flats
Hydric soil rating: No

Rosedale

Percent of map unit: 5 percent
Landform: Flats, knolls
Hydric soil rating: No

Fort mott

Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

HrA—Henlopen-Rosedale complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1qth5
Elevation: 10 to 70 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Henlopen and similar soils: 50 percent
Rosedale and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Henlopen

Setting

Landform: Marine terraces, dunes
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy eolian deposits and loamy fluviomarine sediments

Typical profile

Ap - 0 to 10 inches: loamy sand
E - 10 to 46 inches: loamy sand
Bt - 46 to 62 inches: sandy loam

C - 62 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Rosedale

Setting

Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits over fluviomarine sediments

Typical profile

A - 0 to 9 inches: loamy sand
E - 9 to 25 inches: loamy sand
Bt - 25 to 38 inches: sandy loam
C - 38 to 68 inches: loamy sand
2Cg - 68 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: About 40 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Fort mott

Percent of map unit: 5 percent

Ingleside
Percent of map unit: 3 percent

Runclint
Percent of map unit: 2 percent

IeA—Ingleside loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1qthb
Elevation: 10 to 120 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ingleside and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ingleside

Setting

Landform: Flats, depressions, fluviomarine terraces
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave

Typical profile

Ap - 0 to 10 inches: loamy sand
E - 10 to 15 inches: sandy loam
Bt - 15 to 33 inches: sandy loam
BC - 33 to 43 inches: sandy loam
C1 - 43 to 56 inches: loamy sand
2C2 - 56 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 40 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 1

Land capability classification (nonirrigated): 1
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Evesboro
Percent of map unit: 5 percent
Landform: Dunes, knolls, flats
Landform position (three-dimensional): Rise
Hydric soil rating: No

Cedartown
Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

Woodstown
Percent of map unit: 5 percent
Landform: Flats, depressions, swales
Hydric soil rating: No

Hammonton
Percent of map unit: 5 percent
Landform: Flats, depressions, swales
Hydric soil rating: No

Downer
Percent of map unit: 5 percent
Landform: Flats
Landform position (three-dimensional): Rise
Hydric soil rating: No

IeB—Ingleside loamy sand, 2 to 5 percent slopes

Map Unit Setting
National map unit symbol: 1qthc
Elevation: 10 to 120 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Ingleside and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ingleside

Setting
Landform: Flats, depressions, fluviomarine terraces

Down-slope shape: Linear, concave
Across-slope shape: Linear, concave

Typical profile

Ap - 0 to 10 inches: loamy sand
E - 10 to 15 inches: sandy loam
Bt - 15 to 33 inches: sandy loam
BC - 33 to 43 inches: sandy loam
C1 - 43 to 56 inches: loamy sand
2C2 - 56 to 80 inches: silt loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 40 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Woodstown

Percent of map unit: 5 percent
Landform: Flats, depressions, swales
Hydric soil rating: No

Cedartown

Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

Downer

Percent of map unit: 5 percent
Landform: Flats
Landform position (three-dimensional): Rise
Hydric soil rating: No

Evesboro

Percent of map unit: 5 percent
Landform: Dunes, knolls, flats
Landform position (three-dimensional): Rise
Hydric soil rating: No

Hammonton

Percent of map unit: 5 percent
Landform: Flats, depressions, swales
Hydric soil rating: No

LO—Longmarsh and Indiantown soils, frequently flooded

Map Unit Setting

National map unit symbol: 1qtj1
Elevation: 0 to 120 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Longmarsh and similar soils: 43 percent
Indiantown and similar soils: 37 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Longmarsh

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 19 inches: mucky loam
Cg1 - 19 to 34 inches: sandy loam
Cg2 - 34 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 to 10 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Description of Indiantown

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 25 inches: mucky silt loam
Cg - 25 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 10 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Zekiah

Percent of map unit: 10 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Klej

Percent of map unit: 5 percent
Landform: Flats
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Manahawkin

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

PpB—Pepperbox loamy sand, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1qtjk
Elevation: 0 to 70 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Pepperbox and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pepperbox

Setting

Landform: Flats, depressions
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits over fluvial marine sediments

Typical profile

A - 0 to 10 inches: loamy sand
E - 10 to 25 inches: loamy sand
Bt - 25 to 37 inches: sandy loam
2Btg - 37 to 65 inches: sandy clay loam
2Cg - 65 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: About 20 to 40 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Rosedale
Percent of map unit: 10 percent
Landform: Flats
Hydric soil rating: No

Fort mott
Percent of map unit: 5 percent
Landform: Flats, knolls
Landform position (three-dimensional): Rise
Hydric soil rating: No

Rockawalkin
Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

PsA—Pepperbox-Rosedale complex, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 1qtjn
Elevation: 0 to 70 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Pepperbox and similar soils: 46 percent
Rosedale and similar soils: 44 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pepperbox

Setting
Landform: Flats, depressions
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Sandy eolian deposits over fluviomarine sediments

Typical profile
A - 0 to 10 inches: loamy sand
E - 10 to 25 inches: loamy sand
Bt - 25 to 37 inches: sandy loam
2Btg - 37 to 65 inches: sandy clay loam
2Cg - 65 to 80 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: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: About 20 to 40 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Rosedale

Setting

Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits over fluviomarine sediments

Typical profile

A - 0 to 9 inches: loamy sand
E - 9 to 25 inches: loamy sand
Bt - 25 to 38 inches: sandy loam
C - 38 to 68 inches: loamy sand
2Cg - 68 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: About 40 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Fort mott

Percent of map unit: 5 percent
Landform: Knolls, flats
Landform position (three-dimensional): Rise
Hydric soil rating: No

Rockawalkin

Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

PsB—Pepperbox-Rosedale complex, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1qtjp
Elevation: 0 to 70 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Pepperbox and similar soils: 46 percent
Rosedale and similar soils: 44 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pepperbox

Setting

Landform: Flats, depressions
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Sandy eolian deposits over fluvial marine sediments

Typical profile

A - 0 to 10 inches: loamy sand
E - 10 to 25 inches: loamy sand
Bt - 25 to 37 inches: sandy loam
2Btg - 37 to 65 inches: sandy clay loam
2Cg - 65 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: About 20 to 40 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Rosedale

Setting

Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits over fluviomarine sediments

Typical profile

A - 0 to 9 inches: loamy sand
E - 9 to 25 inches: loamy sand
Bt - 25 to 38 inches: sandy loam
C - 38 to 68 inches: loamy sand
2Cg - 68 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: About 40 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Fort mott

Percent of map unit: 5 percent
Landform: Knolls, flats
Landform position (three-dimensional): Rise
Hydric soil rating: No

Rockawalkin

Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: No

RoA—Rosedale loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1qtjx
Elevation: 0 to 120 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Rosedale and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rosedale

Setting

Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits over fluviomarine deposits

Typical profile

A - 0 to 9 inches: loamy sand
E - 9 to 25 inches: loamy sand
Bt - 25 to 38 inches: sandy loam
C - 38 to 68 inches: loamy sand
2Cg - 68 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: About 40 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Evesboro

Percent of map unit: 10 percent
Landform: Flats
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hambrook

Percent of map unit: 5 percent
Landform: Fluviomarine terraces, flats, depressions
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Galloway

Percent of map unit: 5 percent
Landform: Depressions, flats
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Klej

Percent of map unit: 5 percent
Landform: Flats, depressions
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: 1qtkx
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

WodA—Woodstown loam, 0 to 2 percent slopes, Northern Tidewater Area

Map Unit Setting

National map unit symbol: 2thx5
Elevation: 0 to 100 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 53 to 58 degrees F
Frost-free period: 190 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Woodstown and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodstown

Setting

Landform: Fluviomarine terraces, depressions, broad interstream divides, flats
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Loamy fluviomarine deposits

Typical profile

Ap - 0 to 7 inches: loam
E - 7 to 11 inches: sandy loam
Bt - 11 to 29 inches: sandy loam
BCg - 29 to 45 inches: fine sandy loam
Cg - 45 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
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 20 to 40 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Fallsington

Percent of map unit: 6 percent
Landform: Drainageways, depressions, swales, flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Hammonton

Percent of map unit: 6 percent
Landform: Flats, depressions, drainageways, broad interstream divides
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Mattapex

Percent of map unit: 4 percent
Landform: Flats, depressions, swales, broad interstream divides
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Hambrook

Percent of map unit: 4 percent
Landform: Fluviomarine terraces, flats, depressions
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Za—Zekiah sandy loam, frequently flooded

Map Unit Setting

National map unit symbol: 1qtn2
Elevation: 0 to 120 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Zekiah and similar soils: 75 percent

Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zekiah

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 3 inches: sandy loam
Cg - 3 to 20 inches: silt loam
2Ab - 20 to 27 inches: sandy loam
2Cg1 - 27 to 37 inches: sandy loam
2Cg2 - 37 to 50 inches: loam
2Cg3 - 50 to 80 inches: stratified sand to loamy sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 10 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Longmarsh

Percent of map unit: 10 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Askecksy, undrained

Percent of map unit: 5 percent
Landform: Flats, drainageways, depressions, swales
Landform position (three-dimensional): Talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Hammonton

Percent of map unit: 5 percent
Landform: Flats, depressions, drainageways
Landform position (three-dimensional): Rise

Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Fallsington, undrained

Percent of map unit: 5 percent
Landform: Flats, depressions, swales, drainageways
Landform position (three-dimensional): Talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

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.

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.

Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

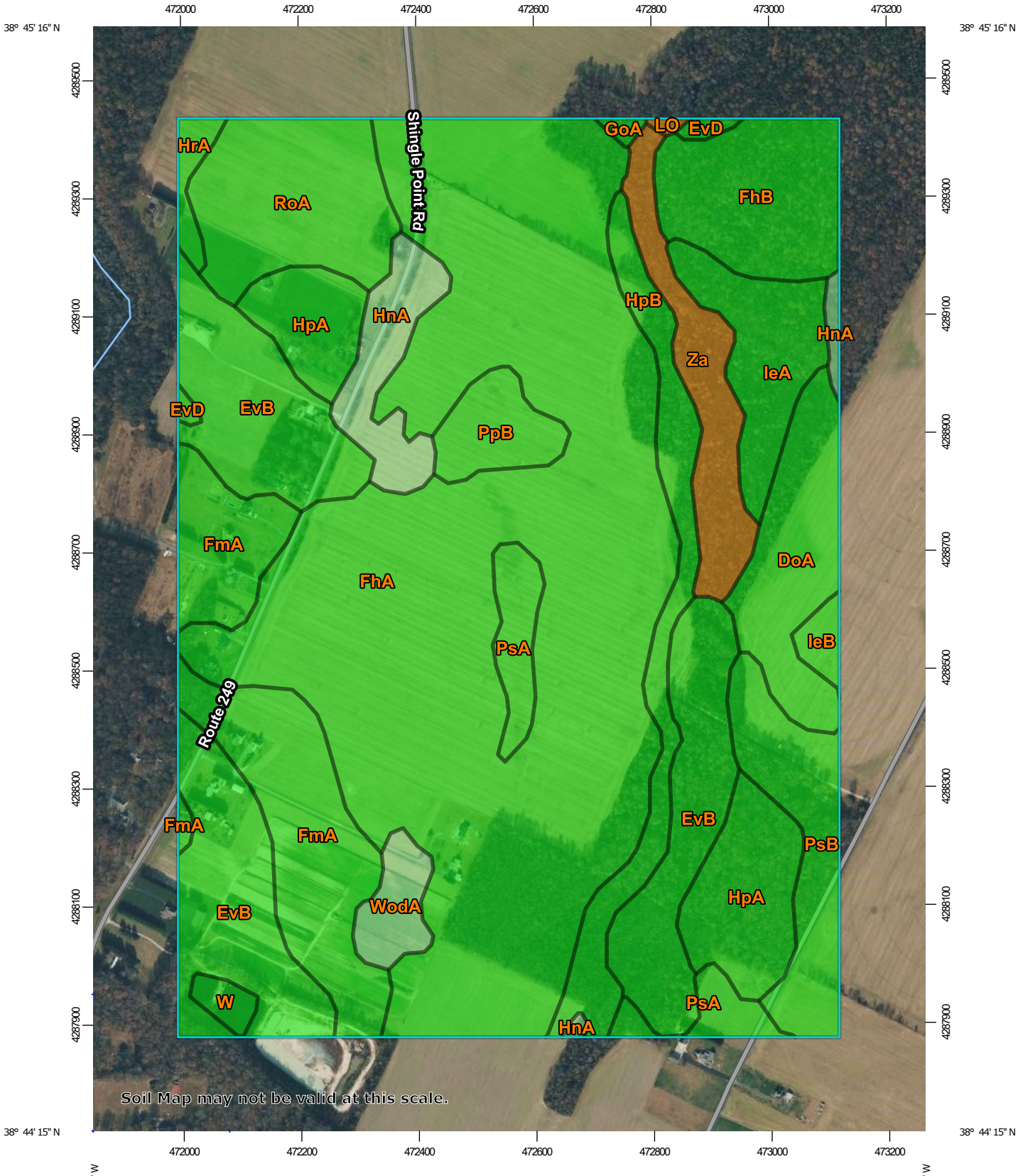
Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Map—Hydric Rating by Map Unit



MAP LEGEND

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

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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: Sussex County, Delaware
Survey Area Data: Version 22, Aug 26, 2021

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

Date(s) aerial images were photographed: Apr 1, 2020—Oct 1, 2020

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.

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DoA	Downer sandy loam, 0 to 2 percent slopes, Northern Tidewater Area	0	16.8	3.9%
EvB	Evesboro loamy sand, 0 to 5 percent slopes	0	57.0	13.1%
EvD	Evesboro loamy sand, 5 to 15 percent slopes	0	1.1	0.3%
FhA	Fort Mott-Henlopen complex, 0 to 2 percent slopes	0	165.9	38.2%
FhB	Fort Mott-Henlopen complex, 2 to 5 percent slopes	0	18.3	4.2%
FmA	Fort Mott loamy sand, 0 to 2 percent slopes	0	33.5	7.7%
GoA	Glassboro sandy loam, 0 to 2 percent slopes	0	0.6	0.1%
HnA	Hammonton sandy loam, 0 to 2 percent slopes	5	11.2	2.6%
HpA	Henlopen loamy sand, 0 to 2 percent slopes	0	21.0	4.8%
HpB	Henlopen loamy sand, 2 to 5 percent slopes	0	17.5	4.0%
HrA	Henlopen-Rosedale complex, 0 to 2 percent slopes	0	2.4	0.6%
IeA	Ingleside loamy sand, 0 to 2 percent slopes	0	13.3	3.1%
IeB	Ingleside loamy sand, 2 to 5 percent slopes	0	2.0	0.5%
LO	Longmarsh and Indiantown soils, frequently flooded	95	0.3	0.1%
PpB	Pepperbox loamy sand, 2 to 5 percent slopes	0	7.0	1.6%
PsA	Pepperbox-Rosedale complex, 0 to 2 percent slopes	0	9.0	2.1%
PsB	Pepperbox-Rosedale complex, 2 to 5 percent slopes	0	15.6	3.6%
RoA	Rosedale loamy sand, 0 to 2 percent slopes	0	21.3	4.9%
W	Water	0	1.8	0.4%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
WodA	Woodstown loam, 0 to 2 percent slopes, Northern Tidewater Area	6	5.1	1.2%
Za	Zekiah sandy loam, frequently flooded	95	13.7	3.2%
Totals for Area of Interest			**434.6**	**100.0%**

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

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 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.

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.

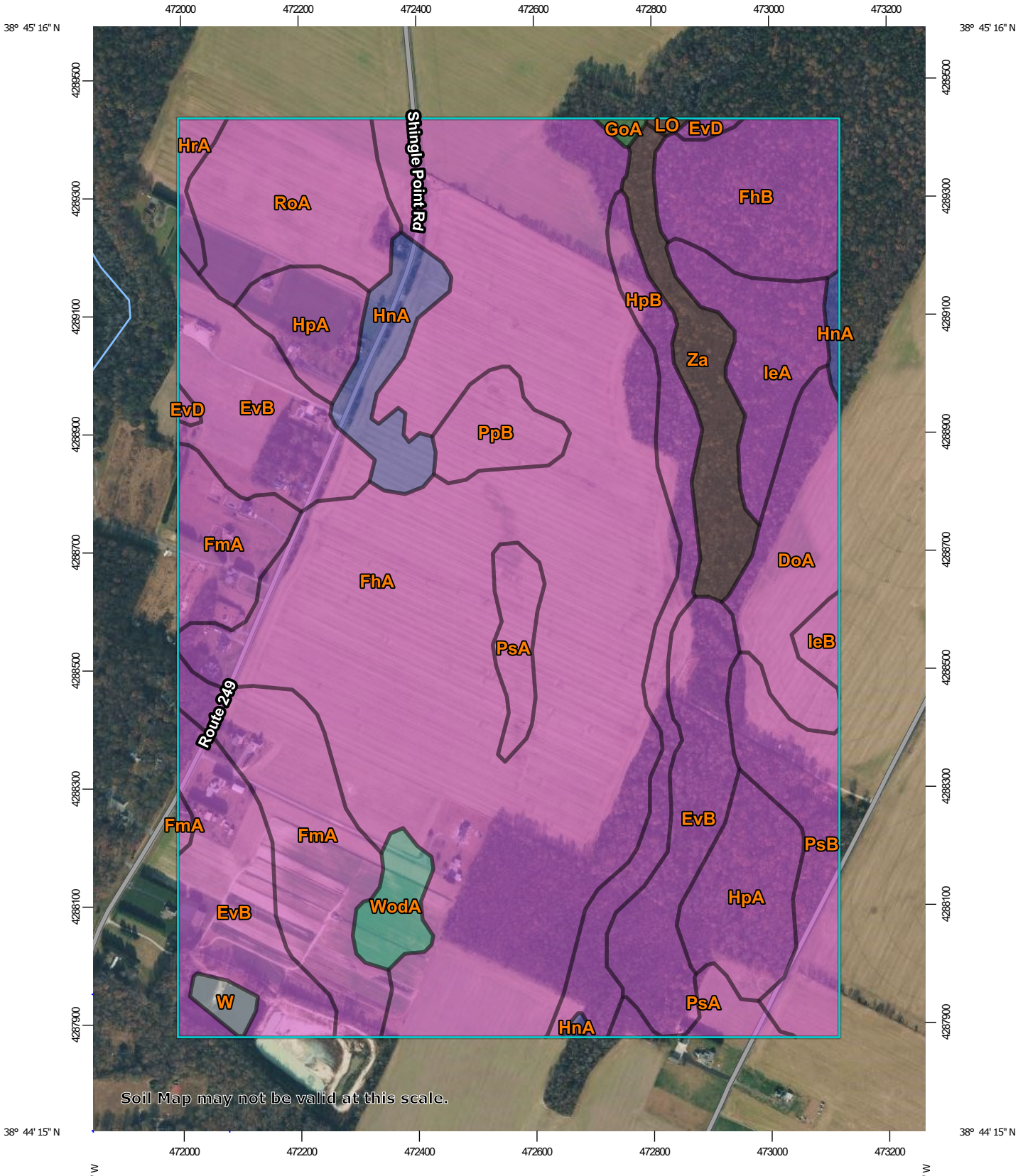
Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

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.

Custom Soil Resource Report
Map—Hydrologic Soil Group



Map Scale: 1:9,120 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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: Sussex County, Delaware
Survey Area Data: Version 22, Aug 26, 2021

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

Date(s) aerial images were photographed: Apr 1, 2020—Oct 1, 2020

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.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DoA	Downer sandy loam, 0 to 2 percent slopes, Northern Tidewater Area	A	16.8	3.9%
EvB	Evesboro loamy sand, 0 to 5 percent slopes	A	57.0	13.1%
EvD	Evesboro loamy sand, 5 to 15 percent slopes	A	1.1	0.3%
FhA	Fort Mott-Henlopen complex, 0 to 2 percent slopes	A	165.9	38.2%
FhB	Fort Mott-Henlopen complex, 2 to 5 percent slopes	A	18.3	4.2%
FmA	Fort Mott loamy sand, 0 to 2 percent slopes	A	33.5	7.7%
GoA	Glassboro sandy loam, 0 to 2 percent slopes	A/D	0.6	0.1%
HnA	Hammonton sandy loam, 0 to 2 percent slopes	B	11.2	2.6%
HpA	Henlopen loamy sand, 0 to 2 percent slopes	A	21.0	4.8%
HpB	Henlopen loamy sand, 2 to 5 percent slopes	A	17.5	4.0%
HrA	Henlopen-Rosedale complex, 0 to 2 percent slopes	A	2.4	0.6%
IeA	Ingleside loamy sand, 0 to 2 percent slopes	A	13.3	3.1%
IeB	Ingleside loamy sand, 2 to 5 percent slopes	A	2.0	0.5%
LO	Longmarsh and Indiantown soils, frequently flooded	B/D	0.3	0.1%
PpB	Pepperbox loamy sand, 2 to 5 percent slopes	A	7.0	1.6%
PsA	Pepperbox-Rosedale complex, 0 to 2 percent slopes	A	9.0	2.1%
PsB	Pepperbox-Rosedale complex, 2 to 5 percent slopes	A	15.6	3.6%
RoA	Rosedale loamy sand, 0 to 2 percent slopes	A	21.3	4.9%
W	Water		1.8	0.4%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
WodA	Woodstown loam, 0 to 2 percent slopes, Northern Tidewater Area	C	5.1	1.2%
Za	Zekiah sandy loam, frequently flooded	B/D	13.7	3.2%
Totals for Area of Interest			**434.6**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

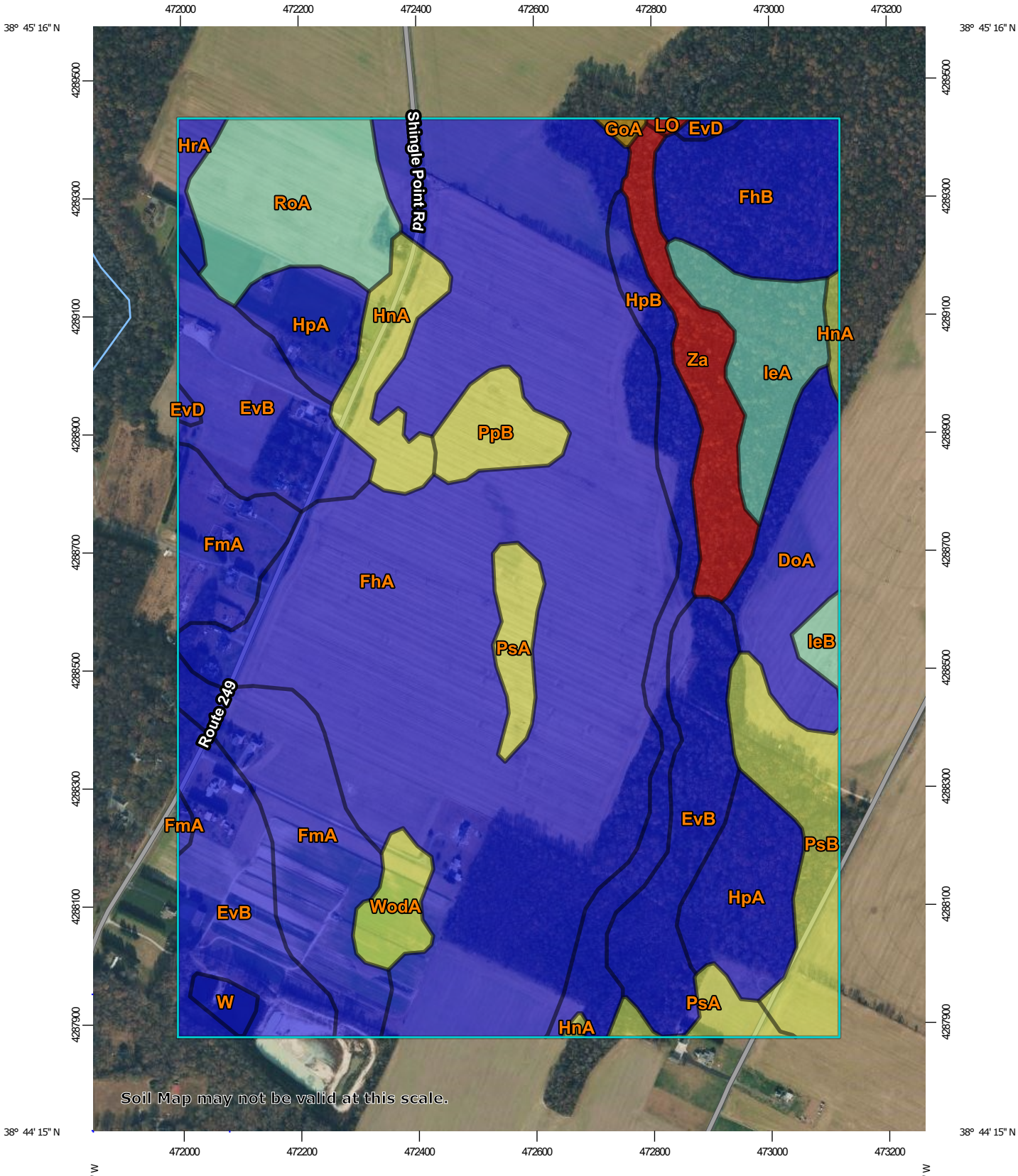
Water Features

Water Features include ponding frequency, flooding frequency, and depth to water table.

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.



Map Scale: 1:9,120 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Lines

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Points

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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Table—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
DoA	Downer sandy loam, 0 to 2 percent slopes, Northern Tidewater Area	>200	16.8	3.9%
EvB	Evesboro loamy sand, 0 to 5 percent slopes	>200	57.0	13.1%
EvD	Evesboro loamy sand, 5 to 15 percent slopes	>200	1.1	0.3%
FhA	Fort Mott-Henlopen complex, 0 to 2 percent slopes	>200	165.9	38.2%
FhB	Fort Mott-Henlopen complex, 2 to 5 percent slopes	>200	18.3	4.2%
FmA	Fort Mott loamy sand, 0 to 2 percent slopes	>200	33.5	7.7%
GoA	Glassboro sandy loam, 0 to 2 percent slopes	30	0.6	0.1%
HnA	Hammonton sandy loam, 0 to 2 percent slopes	61	11.2	2.6%
HpA	Henlopen loamy sand, 0 to 2 percent slopes	>200	21.0	4.8%
HpB	Henlopen loamy sand, 2 to 5 percent slopes	>200	17.5	4.0%
HrA	Henlopen-Rosedale complex, 0 to 2 percent slopes	>200	2.4	0.6%
IeA	Ingleside loamy sand, 0 to 2 percent slopes	114	13.3	3.1%
IeB	Ingleside loamy sand, 2 to 5 percent slopes	114	2.0	0.5%
LO	Longmarsh and Indiantown soils, frequently flooded	13	0.3	0.1%
PpB	Pepperbox loamy sand, 2 to 5 percent slopes	61	7.0	1.6%
PsA	Pepperbox-Rosedale complex, 0 to 2 percent slopes	61	9.0	2.1%
PsB	Pepperbox-Rosedale complex, 2 to 5 percent slopes	61	15.6	3.6%
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Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
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Za	Zekiah sandy loam, frequently flooded	13	13.7	3.2%
Totals for Area of Interest			**434.6**	**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

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