Revised January 14, 2025
January 9, 2023

Ms. Annamaria Furmato
Project Engineer
Delaware Department of Transportation
Development Coordination, Division of Planning
800 Bay Road
Dover, DE 19901

RE: Agreement No. 1945F
Project Number T202069012
Traffic Impact Study Services
Task 5-16A – Cool Spring TIS

Dear Ms. Furmato:

Johnson, Mirmiran, and Thompson (JMT) has completed a review of the Traffic Impact Study (TIS) for the Cool Spring mixed-use development, which was prepared by Century Engineering, Inc. dated June 30, 2022. This review was assigned as Task Number 5-16A. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual*. This letter has been revised to reflect a change in the proposed land uses for the development and changes to the proposed site entrances. As the proposed land use changes are projected to generate fewer daily and PM peak hour trips, DelDOT has not required the traffic analysis to be updated by the applicant. However, the recommendations contained within this letter are based on the updated land uses and site entrances. A plan depicting the updated land uses is shown on Page 4. This letter also includes the results from a supplemental sensitivity analysis performed by JMT as requested by DelDOT to identify when the recommended improvements should be implemented.

The June 30, 2022 TIS evaluated the impacts of a proposed mixed-use development in Sussex County, Delaware. The development would be comprised of 1,600 single-family detached houses, 350 units of low-rise multi-family housing (duplexes and townhouses), 450 units of mid-rise multi-family housing (townhouses), 50 units of attached senior adult housing, 84 units of independent living developments, 80 beds of an assisted living facility, a 60,000 square-foot YMCA, a 600 student capacity school, a 75,000 square-foot educational institution, an 85,000 square-foot grocery store, a 6,000 square-foot restaurant with drive-through window, 3 fast casual restaurants without drive-through windows (totaling 20,000 square feet), a 6,500 square-foot super-convenience store, and a recreational/entertainment use.

A Final TIS review letter was issued on January 9, 2023 for the development proposed in the June 30, 2022 TIS. Since the issuance of the January 9, 2023 Final TIS review letter, the proposed development has been updated to include 918 units of single-family detached houses, 716 units of low-rise multi-family housing, 288 units of mid-rise multi-family housing, a 71,500 square-foot assisted living facility, 25,000 square feet of medical-dental office space, a 100 room hotel, a 60,000 square-foot YMCA, a 150 student junior/community college, 176,975 square feet of shopping center (which includes a 15,000 square-foot movie theatre, 85,000 square feet of

supermarket, a 4,400 square-foot casual restaurant, a 3,000 square-foot drive-in bank, a 27,125 square foot fine dining restaurant, and 42,450 square feet of retail), and a 6,500 square-foot convenience store with 12 vehicle fueling positions (VFP). The following tables summarize a trip generation comparison between the TIS and the updated proposed development. The trip generation for the land uses included in the June 30, 2022 TIS was performed according to *Trip Generation, 10th Edition: An ITE Informational Report*, published by the Institute of Transportation Engineers (ITE). Since then, the *Trip Generation, 11th Edition: An ITE Informational Report*, was published by ITE. As such, the trip generation for the updated uses was performed according to the 11th Edition.

Cool Spring Trip Generation Comparison – Daily Trips

Land Use	**TIS (ITE 10th Edition)**		**Updated Uses (ITE 11th Edition)**	
	Size	Weekday ADT	Size	Weekday ADT
Single Family Detached Housing (ITE – 210)	1,600 Units	13,327	918 Units	7,758
Low-Rise Multi-Family Housing (ITE – 220)	350 Units	2,605	716 Units	4,826
Mid-Rise Multi-Family Housing (ITE – 221)	450 Units	2,451	288 Units	1,327
Attached Senior Adult Housing (ITE – 252)	50 Units	185	-	-
Congregate Care Facility (ITE – 253)	84 Units	170	-	-
Assisted Living (ITE – 254)	80 Bed	208	71,500 SF	300
Medical-Dental Office Building (ITE – 720)	-	-	25,000 SF	966
Hotel (ITE – 310)	-	-	100 Rooms	660
Health/Fitness Club (ITE 492)	60,000 SF	1,780	-	-
YMCA (ITE 495)	-	-	60,000 SF	1,729
Elementary School (ITE – 520)	600 Students	1,134	-	-
Junior/Community College (ITE 540)	-	-	150 Students	755
University /College (ITE – 550)	75,000 SF	1,953	-	-
Shopping Center* (ITE 820)	-	-	176,975 SF*	10,485
Supermarket (ITE – 850)	85,000 SF	7,238	*	*
Fast Casual Restaurant (ITE – 930)	20,000 SF	6,303	*	*
Fast-Food Restaurant with Drive-Through (ITE 934)	6,000 SF	2,826	-	-
Convenience Store/Gas Station (ITE 945)	-	-	VFP 9-15, 6,500 SF	4,553
Super Convenience Market/Gas Station (ITE 960)	6,500 SF	5,444	-	-
Total		**45,624**		**33,359**

*Included in Shopping Center Land Use Code and encompasses a 15,000 square-foot movie theatre, 85,000 square feet of supermarket, a 4,400 square-foot casual restaurant, a 3,000 square-foot drive-in bank, a 27,125 square foot fine dining restaurant, and 42,450 square feet of retail.

Cool Spring Trip Generation Comparison – New Trips

Land Use	ADT	PM Peak Hour		
		In	Out	Total
TIS Total New Trips (ITE 10th Edition)	45,624	1,550	963	2,513
Updated Uses Total New Trips (ITE 11th Edition)	33,359	1,085	811	1,896
Difference Total New Trips	**-12,265**	**-465**	**-152**	**-617**

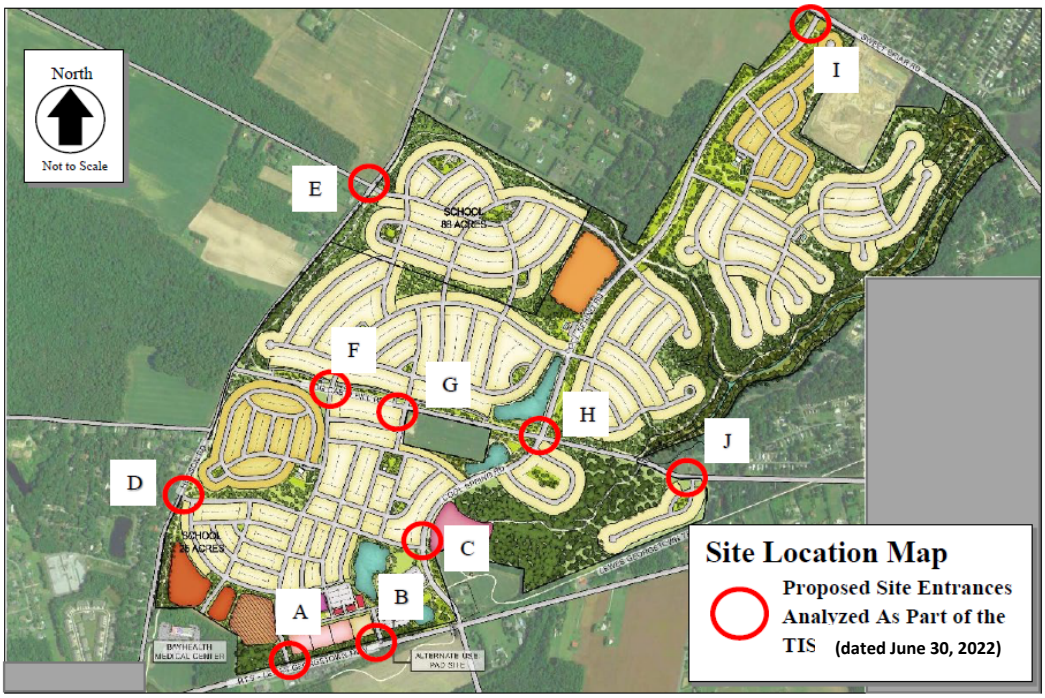
*Trip generation for the AM and Saturday peak hours is located in Table 1a & 1b starting on Page 33.

The land for the development is located on the north side of US Route 9, east of Hudson Road (Sussex Road 258), and on both sides of Log Cabin Hill Road (Sussex Road 247) and Cool Spring Road (Sussex Road 290) in Sussex County, Delaware. The subject property is on an approximately 796-acre assemblage of parcels. The land is currently zoned as AR-1 and the developer plans to rezone the land to MR-RPC. Construction is anticipated to be complete in 2044.

The June 30, 2022 TIS evaluated ten full access points: two access points on Hudson Road, four access points on Log Cabin Hill Road, two access points on US Route 9, one access point on Sweetbriar Road and one access point on Josephs Road. Note, the January 2022 concept plan depicts additional access points but those were not evaluated as part of the TIS as those locations were not included as study intersections within the September 21, 2021 DelDOT Scoping Meeting Memorandum.

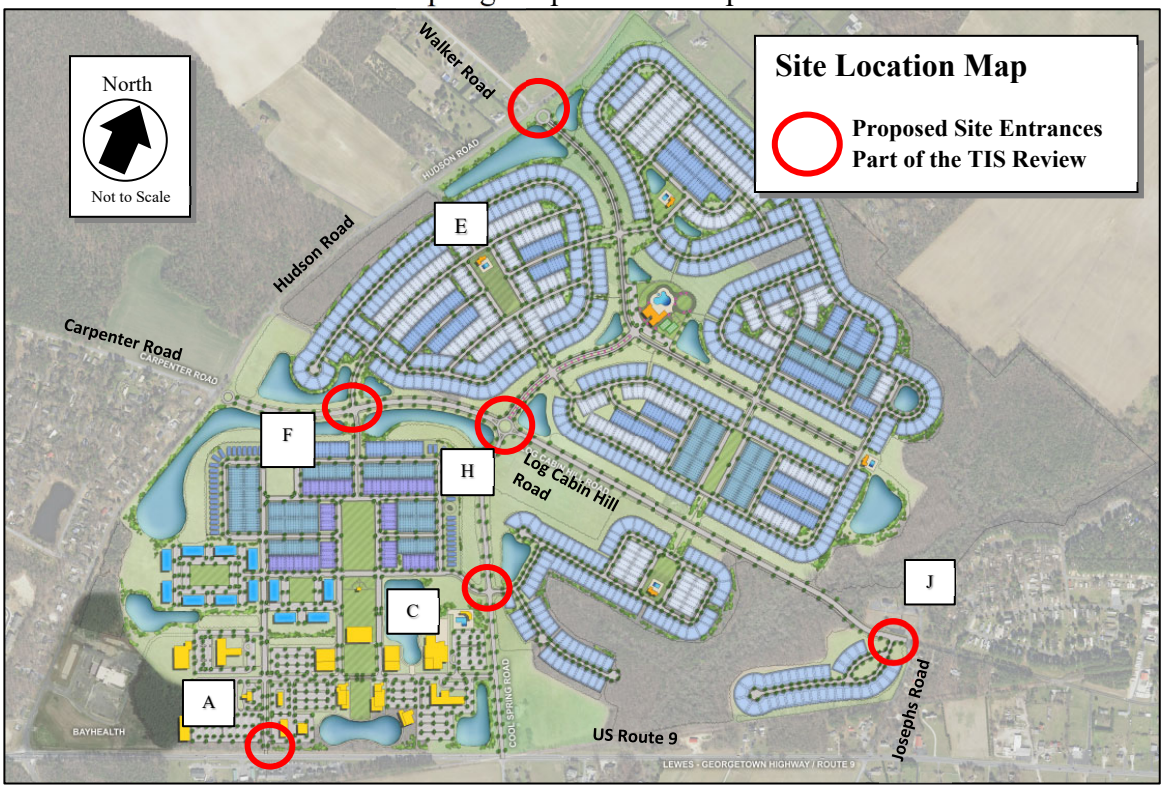
Since the June 30, 2022 TIS, the number of access points has been reduced from ten to six. Specifically, Site Entrances A and B along US Route 9 have been reduced to one Site Entrance A along US Route 9, and Site Entrances F and G along Log Cabin Hill Road have been reduced to one Site Entrance F along Log Cabin Hill Road. Additionally, Site Entrance D along Hudson Road and Site Entrance I along Sweetbriar Road have been eliminated. Concept plans depicting the previous and latest layouts are shown on Page 4.

Cool Spring – Previous Concept Plan



*Graphic is an approximation based on the Base Map prepared by George, Miles, and Buhr, LLC dated January 2022. Recommendations contained in this letter are not based upon this site layout.

Cool Spring – Updated Concept Plan



*Graphic is an approximation based on the Cool Spring Master Plan prepared by Becker Morgan Group dated July 2024. Recommendations contained in this letter are based upon this site layout.

The sensitivity analysis requested by DelDOT was conducted to determine when improvements to mitigate traffic deficiencies should be constructed. The intersection sensitivity analysis was first conducted incorporating 75% of Cool Spring site trips (representing approximately the trip generation of the latest land uses proposed). If LOS deficiencies were projected at the intersection with 75% of site trips, analysis was then conducted incorporating 50% of site trips. If LOS deficiencies were projected at the intersection with 50% of site trips, analysis was then conducted incorporating 25% of site trips. The results of the intersection sensitivity analysis are shown in the table on Page 10.

JMT also conducted HCS segment analysis along US Route 9, Hudson Road, Cool Spring Road, Log Cabin Hill Road, Josephs Road, Sweetbriar Road, and Cave Neck Road to evaluate the need for additional through lanes along roadways within the study area. Similar to the Henlopen TID, JMT utilized a demand-to-capacity ratio of less than 1.0 as the acceptable service standard for the segment analysis. Based on the results of the HCS segment analysis, it is not anticipated that additional through lanes would be needed for any of the roadways within the study area. While the analysis does not indicate the need for additional through lanes along US Route 9, the department would like right-of-way reserved along the US Route 9 site frontage for the potential to add additional lanes in the future.

Relevant and On-Going Projects and Studies

DelDOT has several relevant and ongoing improvement projects within the study area including the *Corridor Capacity Preservation Program* (CCPP), which aims to maintain the regional importance and preserve the intended function and capacity of existing designated transportation routes within the Program. The main objectives of the Program are listed below:

- Prevent the need to build an entirely new road.
- Minimize the transportation impacts of increased economic growth.
- Maintain an existing road's ability to handle traffic efficiently and safely.
- Preserve the ability to make future improvements.
- Sort local and through traffic.

Delaware Route 1 is one of the highways included in the CCPP. More information regarding the CCPP can be found at https://deldot.gov/Programs/corr_cap/index.shtml.

The *SR1 and Cave Neck Road Grade Separated Intersection* project (DelDOT Contract No. T201912201) includes the construction of a grade separated intersection to separate through movements along Delaware Route 1 and turning movements to and from Cave Neck Road. In accordance with the CCPP, the project would preserve traffic capacity and safety along the Delaware Route 1 corridor. The project would improve safety at the unsignalized intersection of Delaware Route 1 and Cave Neck Road while simultaneously improving mobility and access for local traffic. The project is in the planning and design phase. The construction phase is planned to begin in Spring 2026 and end in Summer 2028. More information about the project can be found at https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201912201.

The *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* project (DelDOT Contract No. T202104304) aims to incorporate geometric changes to the Cave Neck Road intersections at Sweetbriar Road and Hudson Road to help alleviate safety concerns. A substantial number of reported crashes have occurred at the Cave Neck Road/Hudson Road intersection and the Cave Neck Road/Sweetbriar Road intersection. The project will consolidate the intersections and implement a 5-legged roundabout. The project is in the planning and design phase and construction is anticipated to begin in Fall of 2025 and be completed in Fall of 2027. More information about the project can be found at https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T202104304#project-details1.

The *SR 1 at S264 & S258 Intersection Improvements* project (DelDOT Contract No. T201904302) proposes to implement safety and operational improvements at the Delaware Route 1 intersections with Hudson Road/Steamboat Landing Road and Eagle Crest Road/Oyster Rocks Road. Left turn and through movements from the Hudson Road and Steamboat Landing Road approaches would be eliminated. Through movements from Eagle Crest Road and Oyster Rocks Road would be eliminated, and acceleration lanes for the left turn movements from Eagle Crest Road and Oyster Rocks Road onto Delaware Route 1 would be added. Design is complete and has been put on hold. The construction phase is dependent on coordination with the Grade Separated Intersection at Delaware Route 1 and Delaware Route 16 as well as local special events. More information about the project can be found at https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201904302.

The *SR 1, Minos Conaway Road Grade Separated Intersection* project (DelDOT Contract No. T201612501) proposes to separate through movements along Delaware Route 1 from the turning movements to and from Minos Conaway Road, Nassau Road, Old Mill Road, and New Road. The purpose of the project is to maintain the capacity of the Delaware Route 1 corridor and improve safety at the unsignalized intersection of Delaware Route 1 and Minos Conaway while improving mobility and access for local traffic throughout the Nassau area. Design is complete and construction is anticipated to begin in 2025. Under existing conditions, the northerly limits of Nassau Commons Boulevard intersect with Janice Road, which is a roadway that provides access to Delaware Route 1. With the completion of the DelDOT project, Nassau Commons Boulevard and Janice Road, in combination, will provide an east/west connection to the City of Lewes and an alternate route to access points west of Five Points. Additional information on the project can be found on the DelDOT project website at https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201612501.

The proposed development is located west of the boundary of the Henlopen Transportation Improvement District (TID). DelDOT and Sussex County developed the TID and the formal creation of the TID was unanimously approved by Sussex County on October 27, 2020. The TID limits generally extend from the Georgetown to Lewes Trail and Delaware Route 1 to the north, Burton Pond and Herring Creek to the south, Arnell Creek and Rehoboth Bay to the east, and Beaver Dam Road to the west. The *Henlopen TID CTP Cost Development Report* was prepared in December 2019 by JMT and contained a summary of the traffic analysis conducted and the associated roadway concept plans and cost estimates for the TID. As part of the report, improvements were recommended at two of the TIS study intersections including the US Route 9

intersection with Minos Conaway Road and the Dairy Farm Road intersection with Beaver Dam Road (Sussex Road 285). Specifically, the Henlopen TID proposes the US Route 9 intersection with Minos Conaway Road to remain as unsignalized and auxiliary turn lanes as well as pedestrian and bicycle facilities be added. However, a project was recently completed by DelDOT to convert the intersection to a signalized intersection. DelDOT is in the process of collecting updated traffic counts and reevaluating the improvement recommendations as part of the Henlopen TID.

The *Five Points Transportation Study* is a joint effort developed by DelDOT and Sussex County to examine potential improvements to the area around the intersection of Delaware Route 1 and US Route 9 near Lewes, also known as Five Points. The Study seeks to reduce congestion and improve capacity on Delaware Route 1. A Working Group comprised of public, state, county, and municipal agency members was established to develop transportation recommendations for the area as part of Phase 1 of the Study. The Study has moved into Phase 2 – Implementation, which involves the development and execution of studies, projects, and plans based on the Working Group's recommendations. Phase 1 was completed in Fall of 2018, and Phase 2 began in Spring of 2019. Additional information can be found on the DelDOT project website at https://deldot.gov/projects/Studies/fivepoints/.

Per the April 25, 2022 Five Points Transportation Study Working Group meeting, the *Dairy Farm Road and Beaver Dam Road/Fisher Road Intersection Improvement* project aims to convert the Beaver Dam Road at Dairy Farm Road and Fisher Road at Dairy Farm Road intersections into a 4-legged roundabout which is consistent with recommendations made as part of the Henlopen TID. This intersection improvement project has been incorporated into the *Beaver Dam Road Widening, SR 1 to Dairy Farm Road*, DelDOT project. A DelDOT contract number has not been assigned but is included in the CTP (Capital Transportation Program) for FY 2025 – FY 2030, and the design phase is planned to start in Fiscal Year 2026.

The proposed development is located within the Coastal Corridors Study which will study east-west travel patterns in Sussex County. The study area is comprised of Delaware Route 16 to the north, Delaware Route 404/US Route 9 to the south, the Maryland State line to the west, and Delaware Route 1 to the east. The initial steps in the study will identify the east-west routes and corridors within northwestern Sussex County which are currently congested or are at risk for congestion based on anticipated growth. The study will consider factors such as: longer trips from the Chesapeake Bay Bridge to the Delaware beaches, regional traffic between Maryland's Eastern Shore and Sussex County, and local east-west traffic within the northwestern part of Sussex County. The study is currently in the targeted engagement phase. DelDOT has formed the Corridors Committee, comprised of local stakeholders which will work with the Study Team to review data and provide feedback on potential transportation solutions in the study area. The Coastal Corridors Study draft report has been released for public review and comment. More information about the Coastal Corridors Study can be found at: https://deldot.gov/projects/Studies/404/index.shtml.

The *Statewide Rail-to-Trail and Rail-with-Trail Facility Master Plan* project aims to utilize the abandoned, inactive, and publicly owned railroad corridors to create a separate off-road right-of-way for bicycle and pedestrian use. Segments of the trail will traverse the proposed development. The Georgetown – Lewes Shared Use Path will connect to Delaware Route 9, Cool Spring Road,

Hudson Road, and Fisher Road. The trail will be 16.7 miles when fully completed and will run from the Historic Georgetown Train Station to the Cape Henlopen State Park in Lewes. More information about the project can be found at https://deldot.gov/Publications/plans/rails_to_trails/index.shtml.

The *Park Avenue Relocation, Phase 2* project (DelDOT Contract No. T201904601) is the second phase of an improvement project aimed at providing a continuous US Route 9 Truck Bypass from US Route 113 to US Route 9 east of Georgetown. The project will improve traffic operations and remove the US Route 9 Truck Bypass route from existing residential areas of Park Avenue and South Bedford Street. Phase 2 of the project will reconstruct the US Route 9 and Park Avenue intersection. Additionally, the project will improve the US Route 9 and Shingle Point Road intersection to provide a separate left turn lane along eastbound US Route 9, a separate right turn lane along westbound US Route 9, and a separate right turn lane along southbound Shingle Point Road. Design is complete and roadway construction is anticipated to begin in 2026. More information about the project can be found at https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201904601.

Summary of Analysis Results

Based on our review of the TIS, the following is a summary of the analysis results:

Based on the land uses included in the June 30, 2022 TIS, the following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements. The table below does not include any LOS deficiencies which would be mitigated by the improvements proposed as part of the *SR1 and Cave Neck Road Grade Separated Intersection* project (DelDOT Contract No. T201912201), the *SR 1 at S264 & S258 Intersection Improvements* project (DelDOT Contract No. T201904302), the *Cave Neck Road, Hudson, and Sweetbriar Roads Intersection Improvement* project (DelDOT Contract No. T202104304), the *SR 1, Minos Conaway Road Grade Separated Intersection* project (DelDOT Contract No. T201612501), and the proposed Henlopen Transportation Improvement District (TID) improvements.

Additionally, the table below does not include any signalized intersections that exhibit LOS deficiencies which can be mitigated with signal timing optimization as the development would not be recommended to implement any additional improvements at those intersections. The table also does not include Site Entrance D or Site Entrance I, as those entrances have been removed from the proposed development. Furthermore, it is noted that Site Entrances A and B along US Route 9 are proposed to be consolidated into one Site Entrance A and Site Entrances F and G along Log Cabin Hill Road have been reduced to one Site Entrance F along Log Cabin Hill Road.

Intersection	LOS Deficiencies Occur			Case
	AM	PM	SAT	
Site Entrance A/US Route 9	X	X	X	Case 3 – 2044 with Development
Site Entrance B/US Route 9	X	X	X	Case 3 – 2044 with Development
Site Entrance E/Hudson Road/Walker Road	X	X	X	Case 3 – 2044 with Development
Site Entrance H/Cool Spring Road/Log Cabin Hill Road		X	X	Case 3 – 2044 with Development
Hudson Road/Cave Neck Road (Sussex Road 88)*		X	X	Case 1 – 2021 Existing
Delaware Route 1/Cave Neck Road*	X	X	X	Case 1 – 2021 Existing
Delaware Route 1/Eagle Crest Road/Oyster Rocks Road (Sussex Road 264)		X	X	Case 1 – 2021 Existing
			X	Case 2 – 2044 without Development
			X	Case 3 – 2044 with Development
Delaware Route 1/Minos Conaway Road (Sussex Road 265)*		X	X	Case 1 – 2021 Existing
Hudson Road/Carpenter Road (Sussex Road 259)		X	X	Case 3 – 2044 with Development
US Route 9/Hudson Road/Fisher Road (Sussex Road 262)		X		Case 3 – 2044 with Development
US Route 9/Cool Spring Road		X	X	Case 2 – 2044 without Development
	X	X	X	Case 3 – 2044 with Development
US Route 9/Josephs Road	X	X	X	Case 3 – 2044 with Development
US Route 9/Arabian Acres Road		X		Case 3 – 2044 with Development
US Route 9/Hunters Mill Road	X	X	X	Case 2 – 2044 without Development
	X	X	X	Case 3 – 2044 with Development
US Route 9/Beaver Creek Drive	X	X	X	Case 2 – 2044 without Development
	X	X	X	Case 3 – 2044 with Development
US Route 9/Delaware Route 5			X	Case 2 – 2044 without Development
	X	X	X	Case 3 – 2044 with Development

US Route 9/Prettyman Road (Sussex Road 254)	X	X	X	Case 2 – 2044 without Development
	X	X	X	Case 3 – 2044 with Development
Dairy Farm Road/Beaver Dam Road (Sussex Road 285)		X	X	Case 2 – 2044 without Development
	X	X	X	Case 3 – 2044 with Development

*Indicates intersections that would not exhibit capacity constraints under Cases 2 and 3 conditions with the completion of the proposed DelDOT Improvement projects at those locations.
**Site Entrances A and B have been combined into one Site Entrance A in the updated proposed land uses.
***Site Entrances F and G have been combined into one Site Entrance F in the updated proposed land uses.
****Site Entrance D and Site Entrance I have been eliminated in the updated proposed land use.

The table below depicts the sensitivity analysis results for the study intersections with recommended improvements and the timeframe for the construction of the recommended intersection improvements. A more detailed sensitivity analysis results table is located on Page 124.

Intersection	Timeframe for Recommended Improvements/Agreements to be Implemented	Recommended Improvement
Site Entrance A /US Route 9	At beginning of site construction	Construct the intersection as a signalized intersection.
Site Entrance E/Hudson Road/Walker Road	Prior to 75% Site Trips	Convert the intersection to a single lane roundabout.
Site Entrance H/Cool Spring Road/Log Cabin Hill Road	Prior to full build out	Convert the intersection to a single lane roundabout.
Hudson Road/Carpenter Road (Sussex Road 259)	Prior to 75% Site Trips	Realign Log Cabin Hill Road to intersect Hudson Road across from Carpenter Road and convert the intersection to a single lane roundabout.
US Route 9/Hudson Road/Fisher Road (Sussex Road 262)	Prior to full build out	Construct an additional left turn lane along the eastbound US Route 9 approach, widen the northern leg of Hudson Road to provide two receiving lanes, and enter into a traffic signal agreement.
US Route 9/Cool Spring Road	At beginning of site construction	Enter into a traffic signal agreement.
US Route 9/Delaware Route 5	At beginning of site construction	Contribute to the Traffic Signal Revolving Fund (TSRF).
US Route 9/Prettyman Road (Sussex Road 254)	At beginning of site construction	Enter into a signal agreement and fund an equitable portion of future improvements that would realign a portion of Prettyman Road north of US Route 9 to address the skewed angle of the intersection.

The following describes the analysis results at study intersections with LOS deficiencies.

Site Entrance A/US Route 9 (Site Entrances A and B are combined into one Site Entrance A) (See Tables 2 & 3, Page 54 & Development Improvements #4 & 5)
The proposed unsignalized Site Entrance A and Site Entrance B intersection with US Route 9 would exhibit LOS deficiencies during all peak hours under future 2044 conditions with the proposed development (Case 3). These deficiencies occur along the southbound Site Entrance A and Site Entrance B approaches with delays of over 1,000 seconds per vehicle.

However, since the June 30, 2022 TIS, Site Entrance A and Site Entrance B have been proposed to be combined into one Site Entrance A. As such, an additional scenario was evaluated incorporating the consolidation of Site Entrance A and Site Entrance B into one signalized site entrance. With the consolidation of Site Entrance A and Site Entrance B into one signalized site entrance, the intersection would improve to operate at acceptable LOS D with a delay of 39.1 seconds per vehicle.

The results of the sensitivity analysis depict that LOS deficiencies would occur within 25% of site trip development if constructed as an unsignalized intersection.

Site Entrance E/Hudson Road/Walker Road (See Table 6, Page 61 & Development Improvement #7)
The existing unsignalized Hudson Road intersection with Walker Road would operate at acceptable LOS under existing and future conditions without the proposed development. As part of the proposed development Site Entrance E would be constructed as the westbound approach to the intersection. The proposed intersection would exhibit LOS deficiencies during all peak hours under future 2044 conditions with the proposed development (Case 3). These deficiencies occur along the eastbound Walker Road approach with delays of 96.5 seconds per vehicle and a projected 95th percentile queue of approximately 185 feet during the PM peak hour under Case 3 conditions. Deficiencies also occur along the westbound Site Entrance E approach with delays of 228.2 seconds per vehicle and a projected 95th percentile queue of approximately 210 feet during the PM peak hour under Case 3 conditions. These LOS deficiencies could be mitigated by converting the intersection to a single lane roundabout.

The results of the sensitivity analysis depict that LOS deficiencies would occur prior to 75% of site trip development if the intersection is maintained as a two-way stop-controlled intersection.

Site Entrance H/Cool Spring Road/Log Cabin Hill Road (See Table 9, Page 65 & Development Improvement #9)
The proposed unsignalized Site Entrance H intersection with Cool Spring Road/Log Cabin Hill Road would exhibit LOS deficiencies during the PM and Saturday peak hours under future 2044 conditions with the proposed development (Case 3). These deficiencies occur along the northbound Cool Spring Road approach with delays of 53.7 seconds per vehicle during the PM peak hour and a projected 95th percentile queue of approximately 185 feet. These LOS deficiencies could be mitigated by converting the intersection to a single lane roundabout.

The results of the sensitivity analysis depict that LOS deficiencies would occur prior to 100% of site trip development if the intersection is maintained as a two-way stop-controlled intersection.

Hudson Road/Cave Neck Road/Sweetbriar Road (See Table 12, Page 69 & Development Improvement #12)
The existing unsignalized Hudson Road intersection with Cave Neck Road exhibits LOS deficiencies during the PM and Saturday peak hours under existing conditions, and during all peak hours under future conditions, with or without the proposed development. These deficiencies occur along the northbound and southbound Hudson Road approaches with delays of over 1,000 seconds per vehicle during all peak hours under Case 3 conditions. These LOS deficiencies would be mitigated by the *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* project (DelDOT Contract No. T202104304) which proposes to convert this intersection and the adjacent Sweetbriar Road intersections with Hudson Road and Cave Neck Road to a 5-legged roundabout.

Delaware Route 1/Cave Neck Road (See Table 21, Page 79 & Development Improvement #11)
The existing unsignalized Delaware Route 1 intersection with Cave Neck Road exhibits LOS deficiencies during the AM and Saturday peak hours under existing conditions. As part of the *SR1 and Cave Neck Road Grade Separated Intersection* project (DelDOT Contract No. T201912201), the intersection will be converted to a grade separated intersection.

Delaware Route 1/Eagle Crest Road/Oyster Rocks Road (See Table 22, Page 80 & Development Improvement #11)
The existing unsignalized Delaware Route 1 and Eagle Crest Road/Oyster Rocks Road intersection exhibits LOS deficiencies along the eastbound Eagle Crest Road approach during the Saturday peak hour and along the westbound Oyster Rocks Road approach during the PM and Saturday peak hours under existing conditions (Case 1). Future analysis at this intersection accounts for the *SR 1 at S264 & S258 Intersection Improvements* project (DelDOT Contract No. T201904302), which will eliminate through movements from Eagle Crest Road and Oyster Rocks Road, eliminate left turns along northbound and southbound Delaware Route 1, and provide acceleration lanes for the left turn movements from Eagle Crest Road and Oyster Rocks Road onto Delaware Route 1.

With these improvements, the intersection would exhibit LOS deficiencies along the eastbound Eagle Crest Road approach during the Saturday peak hour under future conditions, with or without the proposed development (Case 2 and 3). Additionally, the intersection would exhibit LOS deficiencies along the westbound Oyster Rocks Road approach during the Saturday peak hour under future conditions, with or without the proposed development (Case 2 and 3). During the Saturday peak hour under Case 3 conditions, the eastbound Eagle Crest Road approach would operate at LOS F with a delay of 107.8 seconds per vehicle and a calculated 95th percentile queue length of approximately 85 feet. During the Saturday peak hour under Case 3 conditions, the westbound Oyster Rocks Road approach would operate at LOS F with a delay of 63.3 seconds per vehicle and a calculated 95th percentile queue length of approximately 30 feet.

The Delaware Route 1 and Eagle Crest Road/Oyster Rock Road intersection would continue to exhibit LOS deficiencies with the improvements planned as part of the *SR 1 at S264 & S258 Intersection Improvements* project. However, the *SR1 and Cave Neck Road Grade Separated*

Intersection project may impact traffic operations at the Delaware Route 1 and Eagle Crest Road/Oyster Rocks Road intersection. Specifically, it is anticipated that the grade separated intersection at Delaware Route 1/Cave Neck Road may alter traffic patterns in the area and divert turning movements at the Delaware Route 1 and Eagle Crest Road/Oysters Rocks Road intersection to utilize the grade separated intersection instead.

Delaware Route 1/Minos Conaway Road (See Table 23, Page 82 & Development Improvement #13)
The existing unsignalized Delaware Route 1 intersection with Minos Conaway Road exhibits LOS deficiencies during the PM and Saturday peak hours under existing conditions. As part of the *SR 1, Minos Conaway Road Grade Separated Intersection* project (DelDOT Contract No. T201612501) the intersection will be converted to a grade separated intersection.

Hudson Road/Carpenter Road (See Table 24, Page 83 & Development Improvement #15)
The existing unsignalized Hudson Road intersection with Carpenter Road would exhibit LOS deficiencies during the PM and Saturday peak hours under future 2044 conditions with the proposed development (Case 3). These deficiencies occur along the eastbound Carpenter Road approach with delays of 36.9 seconds per vehicle during the Saturday peak hour and a projected 95th percentile queue of approximately 100 feet. As proposed in the Cool Spring Final TIS, these deficiencies would be mitigated by the realignment of Log Cabin Hill Road to intersect Hudson Road across from Carpenter Road and the conversion of the intersection to a single lane roundabout.

The results of the sensitivity analysis depict that LOS deficiencies would occur prior to 75% of site trip development if the existing intersection geometry and traffic control is maintained.

US Route 9/Hudson Road/Fisher Road (See Table 29, Page 90 & Development Improvements #16 & 17)
The existing signalized US Route 9 intersection with Hudson Road/Fisher Road would exhibit LOS deficiencies during the PM peak hour under future conditions with the proposed development (Case 3) with a delay of 59.3 seconds per vehicle. As proposed in the Cool Spring Final TIS, these deficiencies could be mitigated by the provision of an additional left turn lane along the eastbound US Route 9 approach and widening along the northern leg of Hudson Road to provide two receiving lanes. The additional lane along northbound Hudson Road, north of the intersection with US Route 9, should continue past the existing medical center entrance before terminating.

The results of the sensitivity analysis depict that LOS deficiencies would occur prior to 100% of site trip development if the existing intersection geometry and traffic control is maintained.

US Route 9/Cool Spring Road (See Table 30, Page 91 & Development Improvement #18
The existing unsignalized US Route 9 intersection with Cool Spring Road would exhibit LOS deficiencies during the PM and Saturday peak hours under future conditions without the proposed development (Case 2) and during all peak hours under future conditions with the proposed development (Case 3). These deficiencies occur along the northbound and southbound Cool Spring Road approaches with delays of over 1,000 seconds per vehicle during all peak hours under Case

3 conditions. These deficiencies could be mitigated by the provision of a signal or a single lane roundabout.

The results of the sensitivity analysis depict that LOS deficiencies would occur within 25% of site trip development if the existing intersection geometry and traffic control is maintained.

US Route 9/Josephs Road (See Table 31, Page 94)
The existing unsignalized US Route 9 intersection with Josephs Road would exhibit LOS deficiencies during all peak hours under future conditions with the proposed development (Case 3). These deficiencies would occur along the northbound Josephs Road approach with a delay of 47.3 seconds per vehicle during the Saturday peak hour under Case 3 conditions and a projected 95th percentile queue of less than one vehicle. Additionally, deficiencies occur along the southbound Josephs Road approach during the PM peak hour with a delay of 40.2 seconds per vehicle under Case 3 conditions and a projected 95th percentile queue of less than one vehicle. These deficiencies could be mitigated by the provision of a signal or a single lane roundabout.

US Route 9/Arabian Acres Road (See Table 32, Page 96)
The existing unsignalized US Route 9 intersection with Arabian Acres Road would exhibit LOS deficiencies during the PM peak hour under future conditions with the proposed development (Case 3). These deficiencies would occur along the northbound Arabian Acres Road approach with a delay of 39.0 seconds per vehicle and a projected 95th percentile queue of less than one vehicle. These deficiencies could be mitigated by the provision of a signal or a single lane roundabout.

US Route 9/Hunters Mill Road (See Table 36, Page 101)
The existing unsignalized US Route 9 intersection with Hunters Mill Road would exhibit LOS deficiencies during all peak hours under future conditions with or without the proposed development (Case 2 and Case 3). These deficiencies would occur along the northbound Hunters Mill Road approach with a delay of 227.5 seconds per vehicle during the PM peak hour under Case 3 conditions and a projected 95th percentile queue of less than one vehicle. Additionally, deficiencies occur along the southbound Hunters Mill Road approach during the PM peak hour with a delay of 336.7 seconds per vehicle under Case 3 conditions and a projected 95th percentile queue length of approximately 60 feet. These deficiencies could be mitigated by the provision of a signal or a single lane roundabout.

US Route 9/Beaver Creek Drive (See Table 37, Page 104)
The existing unsignalized US Route 9 intersection with Beaver Creek Drive would exhibit LOS deficiencies during all peak hours under future conditions with or without the proposed development (Case 2 and Case 3). These deficiencies would occur along the northbound Beaver Creek Drive approach with a delay of 113.1 seconds per vehicle during the Saturday peak hour under Case 3 conditions and a projected 95th percentile queue length of approximately 25 feet. Additionally, deficiencies occur along the southbound Beaver Creek Drive approach during the PM peak hour with a delay of 508.0 seconds per vehicle under Case 3 conditions and a projected 95th percentile queue length of approximately 75 feet. These deficiencies could be mitigated by the provision of a signal or a single lane roundabout.

US Route 9/Delaware Route 5 (See Table 38, Page 107 & Development Improvement #19)
The existing signalized US Route 9 intersection with Delaware Route 5 would exhibit LOS deficiencies during the Saturday peak hour under future conditions without the proposed development (Case 2), and during all peak hours under future conditions with the proposed development (Case 3). Under Case 3 conditions during the Saturday peak hour, the intersection would operate at LOS F with 105.4 seconds of delay per vehicle. These deficiencies could be mitigated by the provision of one left turn lane, one through lane, and one shared through/right turn lane along the eastbound and westbound US Route 9 approaches. However, due to the environmental, cemetery, and right-of-way constraints at the intersection, these improvements may not be feasible. Additionally, DelDOT recently completed a project at the intersection to provide left turn lanes along each approach.

The results of the sensitivity analysis depict that LOS deficiencies would occur within 25% of site trip development.

US Route 9/Prettyman Road (See Table 39, Page 108 & Development Improvements #20)
The existing unsignalized US Route 9 intersection with Prettyman Road would exhibit LOS deficiencies during all peak hours under future conditions with or without the proposed development (Case 2 and Case 3). These deficiencies would occur along the southbound Prettyman Road approach with a delay of over 1,000 seconds per vehicle during the Saturday peak hour under Case 3 conditions. These deficiencies could be mitigated by the provision of a signal or a single lane roundabout. However, due to the nature of the US Route 9 corridor, a roundabout may not be feasible. Furthermore, DelDOT has identified the need to realign a portion of Prettyman Road north of US Route 9 to address the skewed angle of the intersection.

The results of the sensitivity analysis depict that LOS deficiencies would occur within 25% of site trip development if the existing intersection geometry and traffic control is maintained.

Dairy Farm Road/Beaver Dam Road (See Table 49, Page 120)
The existing unsignalized Dairy Farm Road intersection with Beaver Dam Road would exhibit LOS deficiencies during the PM and Saturday peak hours under future conditions without the proposed development (Case 2), and during all peak hours under future conditions with the proposed development (Case 3). These deficiencies would occur along the southbound Dairy Farm Road approach with a delay of 73.9 seconds per vehicle during the PM peak hour under Case 3 conditions and a projected 95th percentile queue length of approximately 225 feet. These deficiencies would be mitigated by the improvement proposed as part of the Henlopen TID to combine the intersection with the Fisher Road and Beaver Dam Road intersection. The combined intersection would be converted to a dual-lane roundabout with a northbound right turn bypass lane and westbound dual entry lanes.

DelDOT Supplemental Intersection Analysis

As part of the sensitivity analysis, DelDOT requested the evaluation of three additional intersections. The following intersections were studied under Case 3 conditions (2044 with the proposed development) considering the land uses proposed in the June 30, 2022 TIS.

Hudson Road/Log Cabin Hill Road (See Table 60, Page 136 & Development Improvement #15)
The existing unsignalized Hudson Road intersection with Log Cabin Hill Road would exhibit LOS deficiencies during the AM and PM peak hours under future 2044 conditions with the proposed development (Case 3). The deficiencies occur along the Log Cabin Hill Road approach with delays of 157.7 seconds per vehicle during the PM peak hour and a projected 95th percentile queue of approximately 295 feet. Although the Hudson Road and Log Cabin Hill Road intersection was not included as a TIS study intersection, the June 30, 2022 TIS proposed the realignment of Log Cabin Hill Road to intersect Hudson Road across from Carpenter Road and the conversion of the intersection to a single lane roundabout. The deficiencies at the intersection would be mitigated by the proposed realignment and roundabout.

The Hudson Road and Log Cabin Hill Road intersection was analyzed to determine when the realignment and roundabout installation would be needed. The results of the sensitivity analysis depict that LOS deficiencies would occur prior to 75% of site trip development.

US Route 9/Gravel Hill Road (See Table 58, Page 133)
The existing signalized US Route 9 intersection with Gravel Hill Road would exhibit LOS deficiencies during the Saturday peak hour under future conditions with the proposed development, operating at LOS E (76.0 seconds of delay per vehicle). These deficiencies could be mitigated by the provision of an additional through lane along the northbound and southbound Gravel Hill Road approaches. With the provision of additional through lanes, the intersection would improve to operate at acceptable LOS D (42.8 seconds of delay per vehicle).

The results of the sensitivity analysis depict that LOS deficiencies would occur within 25% of site trip development if the existing intersection geometry and traffic control is maintained.

US Route 9/Shingle Point Road (See Table 59, Page 134 & Development Improvement #14)
The existing unsignalized US Route 9 intersection with Shingle Point Road would exhibit LOS deficiencies during the AM and PM peak hours under future conditions with the proposed development. Specifically, deficiencies would occur along the southbound Shingle Point Road approach with a delay of 52.9 seconds and a projected 95th percentile queue length of approximately 90 feet during the PM peak hour.

As part of the *Park Avenue Relocation, Phase 2* project (DelDOT Contract No. T201904601) the intersection will be improved to provide a separate left turn along the eastbound US Route 9 approach, a separate right turn lane along the westbound US Route 9 approach, and a separate right turn lane along the southbound Shingle Point Road approach. With the proposed improvements, the Shingle Point Road approach to the intersection would operate at acceptable LOS D (34.6 seconds of delay per vehicle).

The results of the sensitivity analysis depict that LOS deficiencies would occur within 25% of site trip development if the existing intersection geometry and traffic control is maintained.

Development Improvements

Should Sussex County approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan unless a Design Deviation is requested and approved by the Department. 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. Furthermore, for any intersection proposed to be signalized, a Traffic Signal Justification Study should be conducted by the developer and reviewed by the Department for concurrence.

1. The developer shall improve the State-maintained Roads on which they front (US Route 9, Hudson Road, Log Cabin Hill Road, Cool Spring Road, and Josephs Road) within the limits of their frontage. The improvements shall include both directions of travel, regardless of whether the developer's lands are on one or both sides of the road. "Frontage" means the length along the state right-of-way of a single property tract where an entrance is proposed or required. If a single property tract has frontage along multiple roadways, any segment of roadway including an entrance shall be improved to meet DelDOT's Functional Classification criteria as found in Section 1.1 of the Development Coordination Manual and elsewhere therein, and/or improvements established in the Traffic Operational Analysis and/or Traffic Impact Study. "Secondary Frontage" means the length along the state right-of-way of a single property tract where no entrance is proposed or required. The segment of roadway may be upgraded by improving the pavement condition of the existing roadway width. The Pavement Management Section and Subdivision Section will determine the requirements to improve the pavement condition.

2. The developer shall improve Josephs Road to DelDOT's Functional Classification criteria from Log Cabin Hill Road to US Route 9. Understanding that there may be right-of-way and or engineering design constraints, final requirements of this recommendation should be determined during the Plan review process.

3. The developer shall improve Log Cabin Hill Road to DelDOT's Functional Classification criteria from Josephs Road to approximately 1,500 west of the Sweetbriar Road intersection. Understanding that there may be right-of-way and or engineering design constraints, final requirements of this recommendation should be determined during the Plan review process.

4. The developer should construct a signalized full access Site Entrance A on US Route 9, approximately 1,650 feet east of the northeast point of tangency at the Hudson Road/Fisher Road intersection when justified through a Traffic Signal Justification Study and approved by DelDOT. The access should be located directly across from the existing shopping center entrance. The design of the intersection and the storage lengths should be determined as

part of the Traffic Signal Justification Study. The signalization of the intersection should be implemented at the beginning of site construction.

5. The developer should enter into a traffic signal agreement with DelDOT for the intersection of US Route 9 and Site Entrance A.

6. The developer should construct an unsignalized full access Site Entrance C on Cool Spring Road, approximately 1,300 feet north of US Route 9. The intersection should be consistent with the lane configurations shown in the table below.

Approach	Current Configuration	Proposed Configuration
Eastbound Site Entrance C	Approach does not exist	One left turn lane and one shared through/right turn lane
Westbound Site Entrance C	Approach does not exist	One left turn lane and one shared through/right turn lane
Northbound Cool Spring Road	One through lane	One left turn lane and one shared through/right turn lane
Southbound Cool Spring Road	One through lane	One left turn lane, one through lane, and one right turn lane

Based on DelDOT's *Development Coordination Manual*, the recommended minimum storage lengths (excluding taper) of the northbound and southbound Cool Spring Road left turn lanes are 185 feet and the southbound Cool Spring Road right turn lane is 290 feet. The calculated queue lengths from the HCS analysis can be accommodated within the recommended storage lengths.

7. The developer should convert the Hudson Road intersection with Walker Road to a single lane roundabout and construct Site Entrance E as the westbound approach to the intersection. The developer should submit a plan to DelDOT's Development Coordination Section depicting the roundabout design. The final design of the roundabout should be determined during the Entrance Plan review process. The installation of the roundabout should be completed prior to reaching 75% of site trip development.

8. The developer should construct an unsignalized full access Site Entrance F on Log Cabin Hill Road, approximately 1,100 feet east of Hudson Road. The intersection should be consistent with the lane configurations shown in the table below.

Approach	Current Configuration	Proposed Configuration
Eastbound Log Cabin Hill Road	One through lane	One left turn lane, one through lane, and one right turn lane
Westbound Log Cabin Hill Road	One through lane	One left turn lane, one through lane, and one right turn lane
Northbound Site Entrance F	Approach does not exist	One left turn lane and one shared through/right turn lane
Southbound Site Entrance F	Approach does not exist	One left turn lane and one shared through/right turn lane

Based on DelDOT's *Development Coordination Manual*, the recommended minimum storage lengths (excluding taper) of the separate left turn and right turn lanes along Log Cabin Hill Road are summarized in the table below. The calculated queue lengths from the HCS analysis can be accommodated within the recommended storage lengths.

Approach	Left Turn Lane	Right Turn Lane
Eastbound Log Cabin Hill Road	185 feet	240 feet
Westbound Log Cabin Hill Road	185 feet	290 feet

9. The developer should convert the Log Cabin Hill Road intersection with Cool Spring Road to a single lane roundabout and construct Site Entrance H as the southbound approach to the intersection. The developer should submit a plan to DelDOT's Development Coordination Section depicting the roundabout design. The final design of the roundabout should be determined during the Entrance Plan review process. The roundabout should be constructed prior to completion of the full build out of the site.

10. The developer should construct an unsignalized full access Site Entrance J on Log Cabin Hill Road, approximately 300 feet west of Josephs Road. The intersection should be consistent with the lane configurations shown in the table below.

Approach	Current Configuration	Proposed Configuration
Eastbound Log Cabin Hill Road	One through lane	One through lane and one right turn lane
Westbound Log Cabin Hill Road	One through lane	One shared through/left turn lane and one bypass lane
Northbound Site Entrance J	Approach does not exist	One shared left turn/right turn lane

Based on DelDOT's *Development Coordination Manual*, the recommended minimum storage lengths (excluding taper) of the eastbound Log Cabin Hill Road right turn lane is 145 feet. The recommended minimum storage length (excluding taper) of the westbound bypass lane is 75 feet. The calculated queue lengths from the HCS analysis can be accommodated within the recommended storage lengths.

11. The developer should make an equitable contribution to the proposed improvements at the intersection of Delaware Route 1 with Cave Neck Road as part of the *SR 1 and Cave Neck Road Grade Separated Intersection* project (DelDOT Contract No. T201912201). The equitable contribution amount is $178,981.84. The developer should coordinate with DelDOT's Subdivision Section on the equitable cost payment terms.

12. The developer should make an equitable contribution to the proposed improvements at the intersections of Hudson Road/Sweetbriar Road, Hudson Road/Cave Neck Road, and Cave Neck Road/Sweetbriar Road as part of *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* project (DelDOT Contract No. T202104304). The equitable contribution amount is $228,842.98. The developer should coordinate with DelDOT's Subdivision Section on the equitable cost payment terms.

13. The developer should make an equitable contribution to the proposed improvements at the intersection of Delaware Route 1 with Minos Conaway Road as part of the *SR 1, Minos Conaway Road Grade Separated Intersection* project (DelDOT Contract No. T201612501). The equitable contribution amount is $85,355.34. The developer should coordinate with DelDOT's Subdivision Section on the equitable cost payment terms.

14. The developer should make an equitable contribution to the proposed improvements at the intersection of US Route 9 and Shingle Point Road as part of the *Park Avenue Relocation, Phase 2* project (DelDOT Contract No. T201904601). The equitable contribution amount

is $23,975.85. The developer should coordinate with DelDOT's Subdivision Section on the equitable cost payment terms.

15. The developer should convert the existing unsignalized Hudson Road intersection with Carpenter Road to a single lane roundabout and realign Log Cabin Hill Road to intersect Hudson Road across from Carpenter Road. The developer should submit a plan to DelDOT's Development Coordination Section depicting the roundabout design. The final design of the roundabout should be determined during the Entrance Plan review process. The roundabout should be constructed prior to the site reaching 75% of site trip development.

16. The developer should improve the existing signalized US Route 9 intersection with Hudson Road/Fisher Road to provide an additional left turn lane along the eastbound US Route 9 approach. The intersection should be consistent with the lane configurations shown in the table below.

Approach	Current Configuration	Proposed Configuration
Eastbound US Route 9	One left turn lane, one through lane, and one right turn lane	Two left turn lanes, one through lane, and one right turn lane
Westbound US Route 9	One left turn lane, one through lane, and one right turn lane	No change
Northbound Fisher Road	One left turn lane, one through lane, and one right turn lane	No change
Southbound Hudson Road	One left turn lane, one through lane, and one right turn lane	No change

Widening along the northern leg of Hudson Road would be required to accommodate the two receiving lanes. The additional lane along northbound Hudson Road, north of the intersection with US Route 9, should continue past the existing medical center entrance before terminating. The developer should submit a plan to DelDOT's Development Coordination Section depicting the design. The design shall maintain the separate right turn lane into the medical center. Signing and striping encouraging the utilization of both receiving lanes from the eastbound US Route 9 left turn movement should be considered in the design. Additionally, lighting at the intersection should be evaluated per DelDOT's lighting guidelines. The final design should be determined during the Entrance Plan review process. The intersection improvements should be installed prior to completion of the full build out of the site.

17. The developer should enter into a traffic signal agreement with DelDOT for the intersection of US Route 9 with Fisher Road and Hudson Road.

18. The developer should enter into a traffic signal agreement with DelDOT for the intersection of US Route 9 and Cool Spring Road.

19. The developer should enter into an agreement with DelDOT to contribute to the Traffic Signal Revolving Fund (TSRF) at the US Route 9 and Delaware Route 5 intersection. The contribution amount is $52,161.00.

20. The developer should fund an equitable portion of future improvements that would realign a portion of Prettyman Road north of US Route 9 to address the skewed angle of the intersection of US Route 9 and Prettyman Road. The realignment would eliminate the existing skewed angle such that Prettyman Road intersects US Route 9 at a 90-degree angle. One or more other developers may be required to contribute towards the improvements. The developer should coordinate with DelDOT's Development Coordination Section, along with the developers of Toback Flex Park and Georgetown Business Plaza (f.k.a. Prettyman Property – Route 9) and Wynford Preserve (f.k.a. Prettyman Property – Prettyman Road) if directed to do so by DelDOT, regarding the contribution amount and other details regarding the realignment project. The developer's contribution of $254,186 shall be made prior to the 100th building permit.

21. The developer should enter into an agreement with DelDOT for a right-of-way reservation along the US Route 9 site frontage to allow for potential future US Route 9 widening.

22. The following bicycle, pedestrian, and transit improvements should be included:

    a. The developer should construct a ten-foot wide shared-use path (SUP) along the site frontages. The SUP should be designed to meet current AASHTO and ADA standards. A minimum five-foot setback should be maintained from the edge of the pavement to the SUP. If feasible, the SUP should be placed behind existing utility poles and a buffer area should be provided between the roadway and the SUP. The developer should coordinate with DelDOT's Development Coordination Section during the plan review process to identify the exact location of the SUP.

    b. There should be internal connections into the residential, schools, and commercial sites from the SUP.

    c. A minimum five-foot wide bicycle lane should be incorporated in the right turn lanes and shoulders along the approaches to the Site Entrances.

    d. ADA compliant curb ramps and marked crosswalks should be provided along all Site Entrance approaches. The use of diagonal curb ramps is discouraged.

e. Bike parking should be provided near the commercial building entrances. Where the building architecture provides for an awning or other overhang, the bike parking should be covered.

f. Utility covers should be moved outside of any designated bicycle lanes and any proposed sidewalks/SUP or should be flush with the pavement.

g. 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.

h. Where feasible, vehicle and non-motorized interconnection should be provided to the surrounding network. Specifically, a connection should be provided to the Lewes-Georgetown trail and Compass Point community.

i. The pedestrian crossings along the Lewes-Georgetown trail that intersect with Josephs Road and Log Cabin Hill Road should be evaluated per NCHRP Report 562 methodology, and the proper treatment should be installed.

j. Right-of-way or easement should be provided for a potential future pedestrian bridge or tunnel across US Route 9.

k. Two bus stops should be installed along US Route 9 at the intersection with Cool Spring Road. A Type 2 (17' x 8') shelter pad should be installed along westbound US Route 9. A Type 2 (17' x 8') shelter pad should be installed along eastbound US Route 9. The design and location of the bus stops should be determined during the Entrance Plan Review Process.

l. Non-motorized access into the site should be provided per every 660 feet of residential frontage and 330 feet of commercial frontage.

m. There should be vehicle and non-motorized access from subdivisions to each school and commercial site.

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.

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.

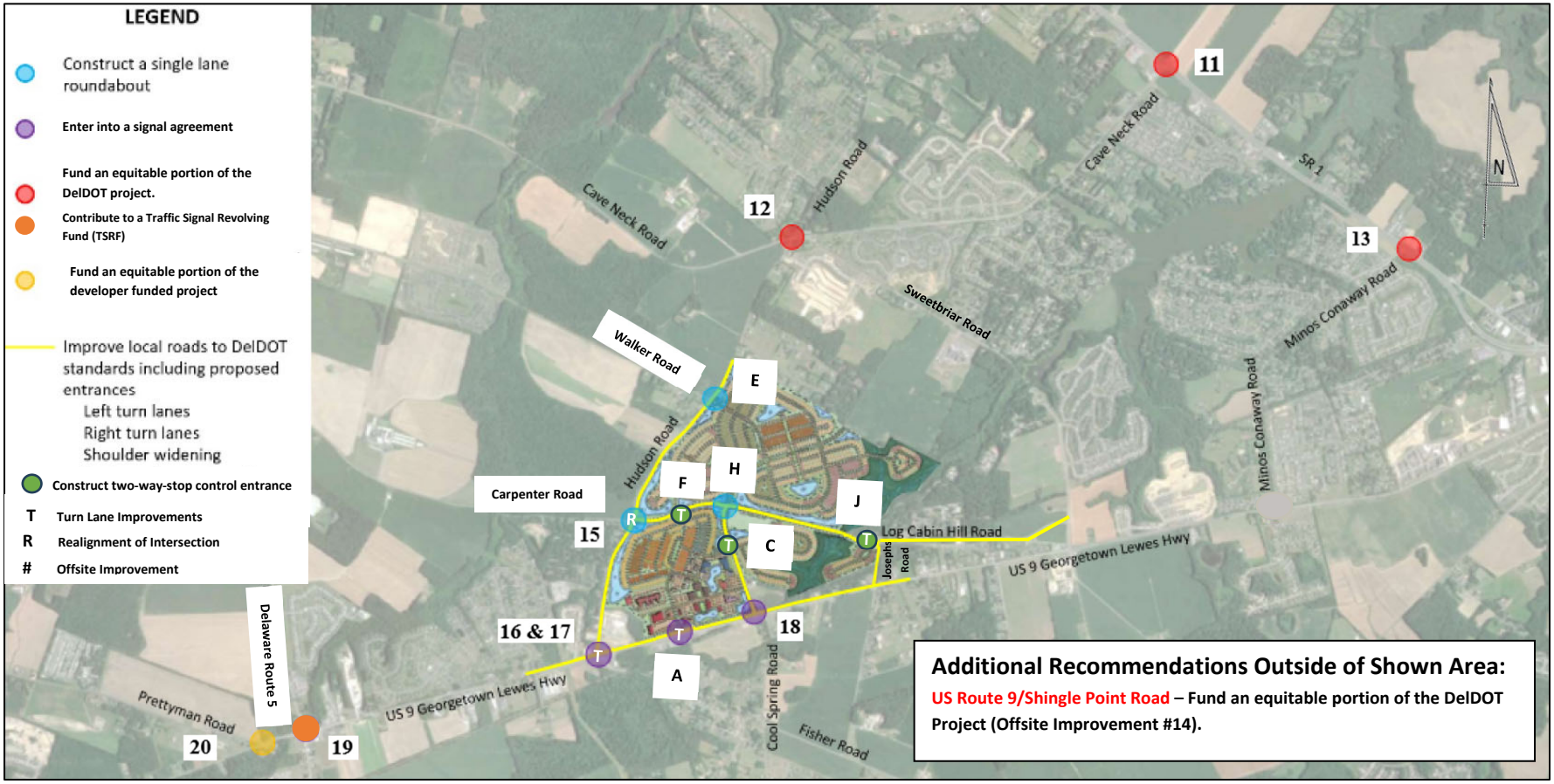
Sincerely,
Johnson, Mirmiran, and Thompson, Inc.

Joanne M. Arellano, P.E., PTOE

cc: Mir Wahed, P.E., PTOE
Janna Brown, P.E., PTOE

Enclosure

Recommendations Map



*Map is based on a graphic received on January 12, 2024 from Century Engineering. Note, a more recent site plan layout is available and is depicted on page 27. The recent site plan layout maintains the same proposed access points but contains a new interconnection proposed to the Bayhealth Medical Center property located on the southwest corner.

General Information

Report date: June 30, 2022
Prepared by: Century Engineering, Inc.
Prepared for: Carl M. Freeman Companies
Tax Parcels: 235-27.00-11.00, 235-27.00-12.00, 235-27.00-13.00, 235-27.00-14.00, 235-27.00-20.01, 235-27.00-21.01, and 334-4.00-34.00
Generally consistent with DelDOT's *Development Coordination Manual (DCM)*: Yes

Project Description and Background

Description: The proposed mixed-use development consists of 1,600 units of single family detached housing, 350 units of low-rise multifamily housing (duplexes and townhomes), 450 units of mid-rise multi-family housing (townhomes), 50 units of attached senior adult homes, 84 units of independent living developments, 80 beds of an assisted living facility, 60,000 square-foot YMCA, 600 student capacity school, 75,000 square-foot educational institution, 85,000 square-foot grocery store, 6,000 square-foot restaurant with drive-through window, 3 fast casual restaurants without drive-through windows totaling 20,000 square-foot, 6,500 square-foot super-convenience store, and a recreational/ entertainment use space.
Location: The land is located on the north side of US Route 9, east of Hudson Road (Sussex Road 258), south side of Sweetbriar Road (Sussex Road 261), and on both sides of Log Cabin Hill Road (Sussex Road 247) and Cool Spring Road (Sussex Road 290), in Sussex County, Delaware. Additionally, as part of the recently revised proposed land uses, the site does not have frontage along Sweetbriar Road.
Amount of Land to be developed: An approximately 796-acre assemblage of parcels.
Land Use approval(s) needed: Entrance Plan and Rezoning.
Proposed completion date: 2044.
Proposed access locations: Ten full access points are proposed: two access points on Hudson Road, four access points on Log Cabin Hill Road, two access points on US Route 9, one access point on Sweetbriar Road and one access point on Josephs Road. Note, the latest January 2022 concept plan depicts additional access points but those were not evaluated as part of the TIS. Since the June 30, 2022 TIS, one of the access points proposed along Hudson Road (Site Entrance D) has been removed as part of the proposed development. As the removal of Site Entrance D would have minimal impact on the recommendations, an updated TIS incorporating the removal of Site Entrance D was not required by DelDOT. While the analysis results contained within this letter incorporate the provision of Site Entrance D, the recommendations account for the removal of Site Entrance D. Additionally, as part of the recently revised proposed land uses, site access points along US Route 9 and Log Cabin Hill Road have been reduced. Site Entrances A and B along US Route 9 have been reduced to one Site Entrance A and Site Entrances F and G along Log Cabin Hill Road have been reduced to one site entrance. Also, Site Entrance I along Sweetbriar Road has been eliminated.

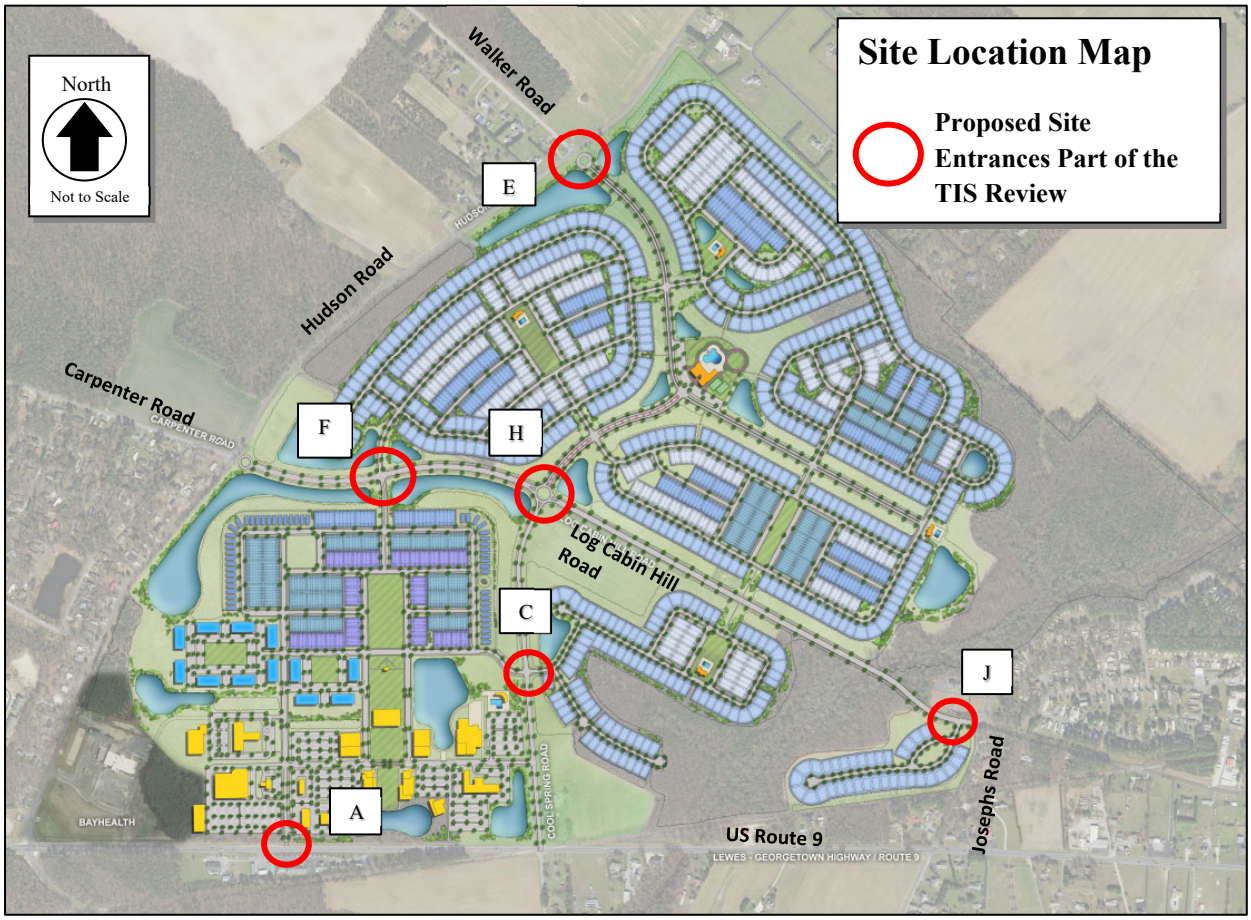
Daily Traffic Volumes:

- 2022 Average Annual Daily Traffic on US Route 9: 15,696
- 2022 Average Annual Daily Traffic on Cool Spring Road: 316
- 2022 Average Annual Daily Traffic on Hudson Road: 2,916

- 2022 Average Annual Daily Traffic on Log Cabin Hill Road: 1,052
- 2022 Average Annual Daily Traffic on Josephs Road: 523

*All AADT is sourced from data provided by DelDOT Gateway.

Site Map



**Graphic is an approximation based on the Cool Spring Master Plan prepared by Becker Morgan Group dated July 2024.*

Relevant and On-Going Projects and Studies

DelDOT has several relevant and ongoing improvement projects within the study area including the *Corridor Capacity Preservation Program* (CCPP), which aims to maintain the regional importance and preserve the intended function and capacity of existing designated transportation routes within the Program. The main objectives of the Program are listed below:

• Prevent the need to build an entirely new road.
• Minimize the transportation impacts of increased economic growth.
• Maintain an existing road's ability to handle traffic efficiently and safely.
• Preserve the ability to make future improvements.
• Sort local and through traffic.

Delaware Route 1 is one of the highways included in the CCPP. More information regarding the CCPP can be found at https://deldot.gov/Programs/corr_cap/index.shtml.

The *SR1 and Cave Neck Road Grade Separated Intersection* project (DelDOT Contract No. T201912201) includes the construction of a grade separated intersection to separate through movements along Delaware Route 1 and turning movements to and from Cave Neck Road. In accordance with the CCPP, the project would preserve traffic capacity and safety along the Delaware Route 1 corridor. The project would improve safety at the unsignalized intersection of Delaware Route 1 and Cave Neck Road while simultaneously improving mobility and access for local traffic. The project is in the planning and design phase. The construction phase is planned to begin in Spring 2026 and end in Summer 2028. More information about the project can be found at https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201912201.

The *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* project (DelDOT Contract No. T202104304) aims to incorporate geometric changes to the Cave Neck Road intersections at Sweetbriar Road and Hudson Road to help alleviate safety concerns. A substantial number of reported crashes have occurred at the Cave Neck Road/Hudson Road intersection and the Cave Neck Road/Sweetbriar Road intersection. The project will consolidate the intersections and implement a 5-legged roundabout. The project is in the planning and design phase and construction is anticipated to begin in Fall of 2025 and be completed in Fall of 2027. More information about the project can be found at https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T202104304#project-details1.

The *SR 1 at S264 & S258 Intersection Improvements* project (DelDOT Contract No. T201904302) proposes to implement safety and operational improvements at the Delaware Route 1 intersections with Hudson Road/Steamboat Landing Road and Eagle Crest Road/Oyster Rocks Road. Left turn and through movements from the Hudson Road and Steamboat Landing Road approaches would be eliminated. Through movements from Eagle Crest Road and Oyster Rocks Road would be eliminated, and acceleration lanes for the left turn movements from Eagle Crest Road and Oyster Rocks Road onto Delaware Route 1 would be added. Design is complete and has been put on hold. The construction phase is dependent on coordination with the Grade Separated Intersection at Delaware Route 1 and Delaware Route 16 as well as local special events. More information about the project can be found at https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201904302.

The *SR 1, Minos Conaway Road Grade Separated Intersection* project (DelDOT Contract No. T201612501) proposes to separate through movements along Delaware Route 1 from the turning movements to and from Minos Conaway Road, Nassau Road, Old Mill Road, and New Road. The purpose of the project is to maintain the capacity of the Delaware Route 1 corridor and improve safety at the unsignalized intersection of Delaware Route 1 and Minos Conaway while improving mobility and access for local traffic throughout the Nassau area. Design is complete and construction is anticipated to begin in 2025. Under existing conditions, the northerly limits of Nassau Commons Boulevard intersect with Janice Road, which is a roadway that provides access to Delaware Route 1. With the completion of the DelDOT project, Nassau Commons Boulevard and Janice Road, in combination, will provide an east/west connection to the City of Lewes and

an alternate route to access points west of Five Points. Additional information on the project can be found on the DelDOT project website at https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201612501.

The proposed development is located west of the boundary of the Henlopen Transportation Improvement District (TID). DelDOT and Sussex County developed the TID and the formal creation of the TID was unanimously approved by Sussex County on October 27, 2020. The TID limits generally extend from the Georgetown to Lewes Trail and Delaware Route 1 to the north, Burton Pond and Herring Creek to the south, Arnell Creek and Rehoboth Bay to the east, and Beaver Dam Road to the west. The *Henlopen TID CTP Cost Development Report* was prepared in December 2019 by JMT and contained a summary of the traffic analysis conducted and the associated roadway concept plans and cost estimates for the TID. As part of the report, improvements were recommended at two of the TIS study intersections including the US Route 9 intersection with Minos Conaway Road and the Dairy Farm Road intersection with Beaver Dam Road (Sussex Road 285). Specifically, the Henlopen TID proposes the US Route 9 intersection with Minos Conaway Road to remain as unsignalized and auxiliary turn lanes as well as pedestrian and bicycle facilities be added. However, a project was recently completed by DelDOT to convert the intersection to a signalized intersection. DelDOT is in the process of collecting updated traffic counts and reevaluating the improvement recommendations as part of the Henlopen TID.

The *Five Points Transportation Study* is a joint effort developed by DelDOT and Sussex County to examine potential improvements to the area around the intersection of Delaware Route 1 and US Route 9 near Lewes, also known as Five Points. The Study seeks to reduce congestion and improve capacity on Delaware Route 1. A Working Group comprised of public, state, county, and municipal agency members was established to develop transportation recommendations for the area as part of Phase 1 of the Study. The Study has moved into Phase 2 – Implementation, which involves the development and execution of studies, projects, and plans based on the Working Group's recommendations. Phase 1 was completed in fall of 2018, and Phase 2 began in spring of 2019. Additional information can be found on the DelDOT project website at https://deldot.gov/projects/Studies/fivepoints/.

Per the April 25, 2022 Five Points Transportation Study Working Group meeting, the *Dairy Farm Road and Beaver Dam Road/Fisher Road Intersection Improvement* project aims to convert the Beaver Dam Road at Dairy Farm Road and Fisher Road at Dairy Farm Road intersections into a 4-legged roundabout which is consistent with recommendations contained from the Henlopen TID. This intersection improvement project has been incorporated into the *Beaver Dam Road Widening, SR 1 to Dairy Farm Road*, DelDOT project. A DelDOT contract number has not been assigned but is included in the CTP (Capital Transportation Program) for FY 2025 – FY 2030, and the design phase is planned to start in Fiscal Year 2026.

The proposed development is located within the Coastal Corridors Study which will study east-west travel patterns in Sussex County. The study area is comprised of Delaware Route 16 to the north, Delaware Route 404/US Route 9 to the south, the Maryland State line to the west, and Delaware Route 1 to the east. The initial steps in the study will identify the east-west routes and corridors within northwestern Sussex County which are currently congested or are at risk for congestion based on anticipated growth. The study will consider factors such as: longer trips from

the Chesapeake Bay Bridge to the Delaware beaches, regional traffic between Maryland's Eastern Shore and Sussex County, and local east-west traffic within the northwestern part of Sussex County. The study is currently in the targeted engagement phase. DelDOT has formed the Corridors Committee, comprised of local stakeholders which will work with the Study Team to review data and provide feedback on potential transportation solutions in the study area. The Coastal Corridors Study draft report has been released for public review and comment. More information about the Coastal Corridors Study can be found at: https://deldot.gov/projects/Studies/404/index.shtml.

The *Statewide Rail-to-Trail and Rail-with-Trail Facility Master Plan* project aims to utilize the abandoned, inactive, and publicly owned railroad corridors to create a separate off-road right-of-way for bicycle and pedestrian use. Segments of the trail will traverse the proposed development. The Georgetown – Lewes Shared Use Path will connect to Delaware Route 9, Cool Spring Road, Hudson Road, and Fisher Road. The trail will be 16.7 miles when fully completed and will run from the Historic Georgetown Train Station to the Cape Henlopen State Park in Lewes. More information about the project can be found at https://deldot.gov/Publications/plans/rails_to_trails/index.shtml.

The *Park Avenue Relocation, Phase 2* project (DelDOT Contract No. T201904601) is the second phase of an improvement project aimed at providing a continuous US Route 9 Truck Bypass from US Route 113 to US Route 9 east of Georgetown. The project will improve traffic operations and remove the US Route 9 Truck Bypass route from existing residential areas of Park Avenue and South Bedford Street. Phase 2 of the project will reconstruct the US Route 9 and Park Avenue intersection. Additionally, the project will improve the US Route 9 and Shingle Point Road intersection to provide a separate left turn lane along eastbound US Route 9, a separate right turn lane along westbound US Route 9, and a separate right turn lane along southbound Shingle Point Road. Design is complete and roadway construction is anticipated to begin in 2026. More information about the project can be found at https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201904601.

Livable Delaware

(Source: Delaware Strategies for State Policies and Spending, 2020)

Location with respect to the Strategies for State Policies and Spending Map of Delaware:
The proposed development is located within Investment Level 4.

Investment Level 4

Delaware's Investment Level 4 Areas are rural in nature and are where the bulk of the state's open space/natural areas and agricultural industry is located. These areas contain agribusiness activities, farm complexes, and small settlements. They typically include historic crossroads or points of trade, often with rich cultural ties. Delaware's Investment Level 4 Areas are also the location of scattered residential uses, featuring almost entirely single-family detached residential structures. Delaware's Investment Level 4 Areas also include many unincorporated communities, typically with their own distinctive character and identity. Investment Level 4 Areas depend on a

transportation system primarily of secondary roads linked to roadways used as regional thoroughfares for commuting and trucking.

It is the state's intent to discourage additional urban and suburban development in Investment Level 4 Areas unrelated to agriculture and to the areas' needs. In Investment Level 4 Areas, the state's investments and policies should retain the rural landscape and preserve open spaces and farmlands, support farmland-related industries, and establish defined edges to more concentrated development. The focus for the Level 4 Areas will be to preserve and maintain existing facilities in safe working order, corridor-capacity preservation, and the enhancement of transportation facilities to support agricultural business. The lowest priority is given to transit system enhancements. All projects requesting an Entrance Plan Approval (EPA) within Investment Level 4 Areas are required by DelDOT to be evaluated based on the context of the project and surrounding conditions, such as traffic volumes and/or whether the project abuts an existing shared-use path (SUP) or sidewalk facility.

Proposed Development's Compatibility with Livable Delaware:
The proposed site would be located within Investment Level 4. Investment Level 4 areas consist of scattered residential uses, featuring almost entirely single-family detached homes. Additional suburban development unrelated to agriculture and the area's needs are discouraged in Investment Level 4 areas. New educational facilities are also discouraged in Investment Level 4 areas. The proposed development consists of various new housing options, educational facilities, shopping centers, and other amenities. Therefore, the proposed development is not consistent with the 2020 update of the Livable Delaware "Strategies for State Policies and Spending." It should be noted that this development is proposed to connect into the existing shared-use path network and roadway improvements are proposed within the study area to support the anticipated growth.

Comprehensive Plan
(Source: Sussex County Comprehensive Plan, 2019)

Sussex County Comprehensive Plan:
Per the *Sussex County Comprehensive Plan Existing Land Use Map,* the proposed development is currently zoned as Agricultural and Undeveloped Lands, and the developer plans to rezone the land to MR-RPC. Per the *Sussex County 2045 Future Land Use Map,* the proposed development is in areas designated as Low-Density Rural Area.

Proposed Development's Compatibility with the Sussex County Comprehensive Plan:
The *Sussex County Comprehensive Plan* states that in Low-Density Rural Areas, single family detached homes are permitted at two homes per acre on lots containing a minimum of half acre if the tract connects to central sewers. However, where on-site septic systems are used, single family detached homes are permitted on a minimum of 3/4-acre lots. AR-1 zoning regulations also permit an average of two homes per acre where a cluster-style site plan is used, and a portion of the tract is preserved in permanent open space. Furthermore, the developer plans to rezone the land to a Residential Planned Community. The planned Rezoning encourages large-scale developments to create superior living environments. The Rezoning allows a mix of housing types and a higher population density. Therefore, the proposed development is generally consistent with the *Sussex County Comprehensive Plan*.

Trip Generation

The trip generation for the development proposed within the TIS was determined by using the comparable land use and rates/equations contained in the *Trip Generation, 10th Edition: An ITE Informational Report*, published by the Institute of Transportation Engineers (ITE) for ITE Land Use Code 210 (Single Family Detached Housing), Land Use Code 220 (Low-Rise Multi-Family Housing), Land Use Code 221 (Mid-Rise Multi-Family Housing), Land Use Code 252 (Attached Senior Adult Housing), Land Use Code 253 (Congregate Care Facility), Land Use Code 254 (Assisted Living), Land Use Code 492 (Health/Fitness Club), Land Use Code 520 (Elementary School), Land Use Code 550 (University/College), Land Use Code 850 (Super Market), Land Use Code 930 (Fast Casual Restaurant), Land Use Code 934 (Fast-Food Restaurant with Drive-Through Window), Land Use Code 960 (Super Convivence Market/Gas Station).

Table 1a
Cool Spring Trip Generation

Land Use	ADT	AM Peak Hour			PM Peak Hour			Saturday		
		In	Out	Total	In	Out	Total	In	Out	Total
1,600 Units – Single Family Detached Housing (ITE – 210)	13327	285	856	1,141	917	538	1,455	735	627	1,362
350 Units – Low-Rise Multi-Family Housing (ITE – 220)	2605	36	121	157	113	67	180	186	159	345
450 Units – Mid-Rise Multi-Family Housing (ITE – 221)	2451	42	120	162	121	77	198	97	101	198
50 Units – Attached Senior Adult Housing (ITE – 252)	185	3	7	10	8	6	14	10	6	16
84 Units – Congregate Care Facility (ITE – 253)	170	3	3	6	9	8	17	0	0	0
80 Bed – Assisted Living (ITE – 254)	208	9	6	15	8	13	21	10	12	22
60,000 SF – Health/Fitness Club (ITE – 492)	1780*	40	39	79	101	77	178	93	98	191
600 Student – Elementary School (ITE – 520)	1134	217	185	402	49	53	102	0	0	0
75,000 SF – University /College (ITE – 550)	1953	63	19	82	28	60	88	0	0	0
85,000 SF – Super Market (ITE – 850)	7238	195	130	325	354	340	694	404	389	793
20,000 SF – Fast Casual Restaurant (ITE – 930)	6303	27	14	41	155	128	283	374	306	680

*Weekday ADT information not available, as such, ADT estimated by applying a K-factor of 10 to highest total weekday peak hour.

Table 1a (Continued)
Cool Spring Trip Generation

Land Use	ADT	AM Peak Hour			PM Peak Hour			Saturday		
		In	Out	Total	In	Out	Total	In	Out	Total
6,000 SF – Fast-Food Restaurant with Drive-Through Window (ITE – 934)	2826	123	118	241	102	94	196	168	161	329
6,500 SF – Super Convenience Market/Gas Station (ITE – 960)	5444	314	314	628	225	225	450	238	238	476
Total Residential Trips		**378**	**1,113**	**1,491**	**1,176**	**709**	**1,885**	**1,038**	**905**	**1,943**
Internal Capture		-13	-41	-54	-128	-71	-199	-187	-116	-303
Net External Residential Trips		**365**	**1,072**	**1,437**	**1,048**	**638**	**1,686**	**851**	**789**	**1,640**
Total Non-Residential Trips		**979**	**816**	**1,798**	**1,014**	**977**	**1,991**	**1,277**	**1,192**	**2,469**
Internal Capture (Retail)		-27	-25	-52	-126	-163	-289	-231	-214	-445
Internal Capture (Restaurant)		-47	-21	-68	-111	-131	-242	-189	-275	-464
Net External Non-Residential Trips		**905**	**773**	**1,678**	**777**	**683**	**1,460**	**857**	**703**	**1,560**
Pass-By Trips		-236	-244	-480	-275	-358	-633	-342	-269	-611
Total New Non-Residential Trips		**669**	**529**	**1,198**	**502**	**325**	**827**	**515**	**434**	**949**
Total New Trips	**45,624**	**1,034**	**1,601**	**2,635**	**1,550**	**963**	**2,513**	**1,366**	**1,223**	**2,589**

*Weekday ADT information not available, as such, ADT estimated by applying a K-factor of 10 to highest total weekday peak hour.

The trip generation for the revised development was determined by using the comparable land use and rates/equations contained in the *Trip Generation, 11th Edition: An ITE Informational Report*, published by the Institute of Transportation Engineers (ITE) for ITE Land Use Code (LUC) 210 (Single Family Detached Housing), LUC 220 (Low-Rise Multi-Family Housing), LUC 221 (Mid-Rise Multi-Family Housing), LUC 254 (Assisted Living), LUC 310 (Hotel), LUC 495 (Recreational Community Center), LUC 540 (Junior/Community College), LUC 720 (Medical-Dental Office Building), LUC 820 (Shopping Center > 150k square feet), and LUC 945 (Convenience Store/Gas Station).

Table 1b
Cool Spring Trip Generation – Updated Uses

Land Use	ADT	PM Peak Hour		
		In	Out	Total
918 Units – Single Family Detached Housing (LUC 210)	7,758	503	296	799
716 Units – Low-Rise Multi-Family Housing (LUC 220)	4,826	230	135	365
288 Units – Mid-Rise Multi-Family Housing (LUC 221)	1,327	69	44	113
71,500 SF – Assisted Living (LUC 254)	300	11	23	34
100 Rooms – Hotel (LUC 310)	660	24	22	46
60,000 SF – Recreational Community Center (LUC 495)	1,729	71	79	150
150 Students – Junior/Community College (LUC 540)	755	38	30	68
25,000 SF Medical-Dental Office Building (LUC 720)	966	30	69	99
176,975 SF Shopping Center (>150k) LUC (820)	10,485	409	442	851
VFP 9-15; 6,500 SF – Convenience Store/Gas Station (LUC 945)	4,553	177	177	354
Total Residential Trips	14,211	813	498	1,311
Internal Capture		-116	-61	-177
Net External Residential Trips		697	437	1134

Table 1b (continued)
Cool Spring Trip Generation – Updated Uses

Land Use	ADT	PM Peak Hour		
		In	Out	Total
Total Non-Residential Trips	19,148	749	819	1,568
Internal Capture (Office)		-26	-15	-41
Internal Capture (Retail)		-59	-128	-187
Internal Capture (Hotel)		-7	-4	-11
Total Non-Residential Internal Capture		-92	-147	-239
Net External Non-Residential Trips		657	672	1,329
Pass-By Trips		-269	-298	-567
Total New Non-Residential Trips		388	374	762
Total New Trips	33,359	1,085	811	1,896

Table 1c
Cool Spring Trip Generation Comparison – New Trips

Land Use	ADT	PM Peak Hour		
		In	Out	Total
TIS Total New Trips	45,624	1,550	963	2,513
Updated Uses Total New Trips	33,359	1,085	811	1,896
Difference Total New Trips	**-12,265**	**-465**	**-152**	**-617**

Overview of TIS

Intersections examined:

1. Site Entrance A / US Route 9 (*west*)
2. Site Entrance B / US Route 9 (*east*)
3. Site Entrance C / Cool Spring Road (Sussex Road 290)
4. Site Entrance D / Hudson Road (Sussex Road 258)
5. Site Entrance E / Hudson Road / Walker Road (Sussex Road 258)
6. Site Entrance F / Log Cabin Hill Road (Sussex Road 247) (*west*)
7. Site Entrance G / Log Cabin Hill Road (*east)*
8. Site Entrance H / Log Cabin Hill Road / Cool Spring Road
9. Site Entrance I / Sweetbriar Road (Sussex Road 261)
10. Site Entrance J / Josephs Road (Sussex Road 281)
11. Hudson Road / Cave Neck Road (Sussex Road 88)
12. Hudson Road / Sweetbriar Road
13. Hudson Road / Falls Road
14. Hudson Road / River Rock Way
15. Hudson Road / Eagles Crest Road (Sussex Road 264)
16. Cave Neck Road / Sweetbriar Road
17. Cave Neck Road / Round Pole Bridge Road (Sussex Road 257) / Diamond Farm Road
18. Cave Neck Road / Beulah Boulevard
19. Cave Neck Road / Windstone Boulevard
20. Delaware Route 1 / Cave Neck Road
21. Delaware Route 1 / Eagles Crest Road / Oyster Rocks Road (Sussex Road 264)
22. Delaware Route 1 / Minos Conaway Road (Sussex Road 265)
23. Hudson Road / Carpenter Road (Sussex Road 259)
24. Carpenter Road / Diamond Farm Road (Sussex Road 257)
25. Delaware Route 5 / Carpenter Road
26. Walker Road / Diamond Farm Road
27. Hudson Road / E. Lake Drive
28. US Route 9 / Hudson Road / Fisher Road (Sussex Road 262)
29. US Route 9 / Cool Spring Road
30. US Route 9 / Josephs Road
31. US Route 9 / Arabian Acres Road (Sussex Road 282)
32. Log Cabin Hill Road / Josephs Road (Sussex Road 281)

33. Log Cabin Hill Road / Persimmon Road
34. Log Cabin Hill Road / Sweetbriar Road
35. US Route 9 / Hunters Mill Road
36. US Route 9 / Beaver Creek Drive
37. US Route 9 / Delaware Route 5
38. US Route 9 / Prettyman Road (Sussex Road 254)
39. Fisher Road / Martins Farm Road (Sussex Road 291)
40. Fisher Road Cool / Spring Road
41. Cool Spring Road / Forest Road (Sussex Road 292)
42. Sweetbriar Road / Water View Drive
43. Sweetbriar Road / Breezeway Drive
44. Sweetbriar Road / Spring Brook Avenue
45. US Route 9 / Sweetbriar Road / Dairy Farm Road (Sussex Road 261)
46. US Route 9 / Minos Conaway Road
47. Fisher Road / Hopkins Road (Sussex Road 290)
48. Dairy Farm Road / Beaver Dam Road (Sussex Road 285)

Conditions examined:

1. Case 1 – 2021 existing
2. Case 2 – 2044 without development
3. Case 3 - 2044 with development

Committed Developments considered:

1. Fisher Road (256 single family detached homes)
2. Compass Point (277 single family detached homes; 270 units remain unbuilt)
3. Chappell Farm
    a. 94 low-rise multi-family homes
    b. 37,000 SF shopping center
    c. 5,068 SF super convenience market/gas station
4. Overbrook Towne Center (217 single family detached homes)
5. Vincent Overlook (246 single family detached homes; 65 units remain unbuilt)
6. Windstone (360 single family detached homes; 68 units remain unbuilt)
7. Red Mill Pond North (343 single family detached homes, 0 units remain unbuilt)
8. Red Mill Pond South (177 single family detached homes; 128 units remain unbuilt)
9. Sussex Square
    a. 27-unit mobile home park
    b. 10,000 SF general office building
10. Vineyards at Nassau
    a. Phases 1 – 4
        i. 58 single family detached homes; 49 units remain unbuilt
        ii. 908 mid-rise multi-family homes; 178 units remain unbuilt
        iii. 99,696 SF shopping center; 63,819 SF remains unbuilt
    b. Phases 5 & 6
        i. 376 mid-rise multi-family homes
        ii. 12,430 SF shopping center
11. Anchors Run (265 single family detached homes)

12. Woodridge (188 single family detached homes; 124 units remain unbuilt)

*Note: Committed development information provided in the Final TIS supersedes the information provided in the September 21, 2021, DelDOT Scoping Meeting Memorandum.

Peak hours evaluated:
Weekday morning, weekday evening, Saturday midday peak periods.

Intersection Descriptions

1. **Site Entrance A / US Route 9 (*west*)**
   Type of Control: Proposed two-way stop-controlled intersection (T-intersection).
   Eastbound Approach: (US Route 9) Existing one through lane; proposed one left turn lane and one through lane.
   Westbound Approach: (US Route 9) Existing one through lane; proposed one through lane and one right turn lane.
   Southbound Approach: (Site Entrance A) Proposed one shared left turn/right turn lane, stop-controlled.

2. **Site Entrance B / US Route 9 (*east*)**
   Type of Control: Proposed two-way stop-controlled intersection (T-intersection).
   Eastbound Approach: (US Route 9) Existing one through lane; proposed one left turn lane and one through lane.
   Westbound Approach: (US Route 9) Existing one through lane; proposed one through lane and one right turn lane.
   Southbound Approach: (Site Entrance B) Proposed one shared left turn/right turn lane, stop-controlled.

3. **Site Entrance C / Cool Spring Road (Sussex Road 290)**
   Type of Control: Proposed two-way stop-controlled intersection (T-intersection).
   Eastbound Approach: (Site Entrance C) Proposed one shared left turn/right turn lane, stop-controlled.
   Northbound Approach: (Cool Spring Road) Existing one through lane; proposed one left turn lane and one through lane.
   Southbound Approach: (Cool Spring Road) Existing one through lane; proposed one through lane and one right turn lane.

4. **Site Entrance D / Hudson Road (Sussex Road 258)**
   Type of Control: Proposed two-way stop-controlled intersection (T-intersection).
   Westbound Approach: (Site Entrance D) Proposed one shared left turn/right turn lane, stop-controlled.

Northbound Approach: (Hudson Road) Existing one through lane; proposed one through lane and one right turn lane.
Southbound Approach: (Hudson Road) Existing one through lane; proposed one left turn lane and one through lane.

5. **Site Entrance E / Hudson Road / Walker Road (Sussex Road 258)**
   Type of Control: Existing two-way stop-controlled intersection (three-legged); proposed two-way stop-controlled intersection (four-legged).
   Eastbound Approach: (Walker Road) Existing one shared left turn/right turn lane, stop-controlled; proposed one shared left turn/through/right turn lane, stop-controlled.
   Westbound Approach: (Site Entrance E) Proposed one shared left turn/through/right turn lane, stop-controlled.
   Northbound Approach: (Hudson Road) Existing one shared left turn/through lane; proposed one left turn lane, one through lane, and one right turn lane.
   Southbound Approach: (Hudson Road) Existing one shared through/right turn lane; proposed one left turn lane and one shared through/right turn lane.

6. **Site Entrance F / Log Cabin Hill Road (Sussex Road 247) (*west*)**
   Type of Control: Proposed two-way stop-controlled intersection (four-legged).
   Eastbound Approach: (Log Cabin Hill Road) Existing one through lane; proposed one left turn lane, one through lane and one right turn lane.
   Westbound Approach: (Log Cabin Hill Road) Existing one through lane; proposed one left turn lane, one through lane and one right turn lane.
   Northbound Approach: (Site Entrance F) Proposed one shared left turn/through/right turn lane, stop-controlled.
   Southbound Approach: (Site Entrance F) Proposed one shared left turn/through/right turn lane, stop-controlled.

7. **Site Entrance G / Log Cabin Hill Road (*east)***
   Type of Control: Proposed two-way stop-controlled intersection (four-legged).
   Eastbound Approach: (Log Cabin Hill Road) Existing one through lane; proposed one left turn lane, one through lane and one right turn lane.
   Westbound Approach: (Log Cabin Hill Road) Existing one through lane; proposed one left turn lane, one through lane and one right turn lane.
   Northbound Approach: (Site Entrance G) Proposed one shared left turn/through/right turn lane, stop-controlled.
   Southbound Approach: (Site Entrance G) Proposed one shared left turn/through/right turn lane, stop-controlled.

8. Site Entrance H / Log Cabin Hill Road / Cool Spring Road

Type of Control: Proposed two-way stop-controlled intersection (four-legged).

Eastbound Approach: (Log Cabin Hill Road) Existing one shared through/right turn lane; proposed one shared left turn/through/right turn lane.

Westbound Approach: (Log Cabin Hill Road) Existing one shared left turn/through lane; proposed one shared left turn/through/right turn lane.

Northbound Approach: (Cool Spring Road) Existing one shared left turn/right turn lane, stop-controlled; proposed one shared left turn/through/right turn lane, stop-controlled.

Southbound Approach: (Site Entrance G) Proposed one shared left turn/through/right turn lane, stop-controlled.

9. Site Entrance I / Sweetbriar Road (Sussex Road 261)

Type of Control: Proposed two-way stop-controlled intersection (T-intersection).

Eastbound Approach: (Site Entrance I) Proposed one shared left turn/right turn lane, stop-controlled.

Northbound Approach: (Sweetbriar Road) Existing one through lane; proposed one left turn lane and one through lane.

Southbound Approach: (Sweetbriar Road) Existing one through lane; proposed one through lane and one right turn lane.

10. Site Entrance J / Josephs Road (Sussex Road 281)

Type of Control: Proposed two-way stop-controlled intersection (T-intersection).

Eastbound Approach: (Site Entrance J) Proposed one shared left turn/right turn lane, stop-controlled.

Northbound Approach: (Josephs Road) Existing one through lane; proposed one left turn lane and one through lane.

Southbound Approach: (Josephs Road) Existing one through lane; proposed one through lane and one right turn lane.

11. Hudson Road / Cave Neck Road (Sussex Road 88)

Type of Control: Two-way stop-controlled intersection (four-legged).

Eastbound Approach: (Cave Neck Road) Existing one shared left turn/through/right turn lane.

Westbound Approach: (Cave Neck Road) Existing one shared left turn/through/right turn lane.

Northbound Approach: (Hudson Road) Existing one shared left turn/through/right turn lane, stop-controlled.

Southbound Approach: (Hudson Road) Existing one shared left turn/through/right turn lane, stop-controlled

*The *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* DelDOT project (DelDOT Contract No. T202104304) proposes to modify the Cave Neck Road intersections at Sweetbriar Road and Hudson Road to a 5-legged roundabout.

12. Hudson Road / Sweetbriar Road

Type of Control: Two-way stop-controlled intersection (T-intersection).
Westbound Approach: (Sweetbriar Road) Existing one shared left turn/right turn lane, stop-controlled.
Northbound Approach: (Hudson Road) Existing one through lane.
Southbound Approach: (Hudson Road) Existing one through lane.

*The *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* DelDOT project (DelDOT Contract No. T202104304) proposes to modify the Cave Neck Road intersections at Sweetbriar Road and Hudson Road to a 5-legged roundabout.

13. Hudson Road / Falls Road

Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Falls Road) Existing one shared left turn/right turn lane, stop-controlled.
Northbound Approach: (Hudson Road) Existing one shared left turn/through lane.
Southbound Approach: (Hudson Road) Existing one through lane and one right turn lane.

14. Hudson Road / River Rock Way

Type of Control: Two-way stop-controlled intersection (four-legged).
Eastbound Approach: (River Rock Way) Existing one shared left turn/through/right turn lane, stop-controlled.
Westbound Approach: (River Rock Way) Existing one shared left turn/through/right turn lane, stop-controlled. *
Northbound Approach: (Hudson Road) Existing one left turn lane and one shared through/right turn lane.
Southbound Approach: (Hudson Road) Existing one left turn lane, one through lane, and one right turn lane.

*The westbound approach is a partially built entrance that terminates immediately south of the intersection.

15. Hudson Road / Eagles Crest Road (Sussex Road 264)

Type of Control: Two-way stop-controlled intersection (T-intersection).
Westbound Approach: (Eagle Crest Road) Existing one shared left turn/right turn lane, stop-controlled.

Northbound Approach: (Hudson Road) Existing one shared through/right turn lane.
Southbound Approach: (Hudson Road) Existing one shared left turn/through lane.

16. Cave Neck Road / Sweetbriar Road

Type of Control: Two-way stop-controlled intersection (four-legged).
Eastbound Approach: (Cave Neck Road) Existing one shared left turn/through/right turn lane.
Westbound Approach: (Cave Neck Road) Exiting one shared left turn/through/right turn lane.
Northbound Approach: (Sweetbriar Road) Existing one shared left turn/through/right turn lane, stop-controlled.

*The southerly leg of the intersection is a one-way street going in the northbound direction.

**The *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* DelDOT project (DelDOT Contract No. T202104304) proposes to modify the Cave Neck Road intersections at Sweetbriar Road and Hudson Road to a 5-legged roundabout.

17. Cave Neck Road / Round Pole Bridge Road (Sussex Road 257) / Diamond Farm Road

Type of Control: Two-way stop-controlled intersection (four-legged).
Eastbound Approach: (Diamond Farm Road) Existing one shared left turn/through/right turn lane, stop-controlled.
Westbound Approach: (Round Pole Bridge Road) Existing one shared left turn/through/right turn lane, stop-controlled.
Northbound Approach: (Cave Neck Road) Existing one shared left turn/through/right turn lane.
Southbound Approach: (Cave Neck Road) Existing one shared left turn/through/right turn lane.

18. Cave Neck Road / Beulah Boulevard

Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Cave Neck Road) Existing one through lane and one right turn lane.
Westbound Approach: (Cave Neck Road) Existing one left turn lane and one through lane.
Northbound Approach: (Beulah Boulevard) Existing one shared left turn/right turn lane, stop-controlled

19. Cave Neck Road / Windstone Boulevard

Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Cave Neck Road) Existing one left turn lane and one through lane.
Westbound Approach: (Cave Neck Road) Existing one through lane and one right turn lane.
Southbound Approach: (Windstone Boulevard) Existing one shared left turn/right turn lane, stop-controlled.

20. Delaware Route 1 / Cave Neck Road

Type of Control: Two-way stop-controlled intersection (T-intersection);
Eastbound Approach: (Cave Neck Road) Existing one right channelized turn lane, yield controlled. **
Northbound Approach: (Delaware Route 1) Existing one left turn lane and two through lanes.
Southbound Approach: (Delaware Route 1) Existing two through lanes and one right channelized turn lane, yield controlled.

*Median between Northbound and Southbound Delaware Route 1 allows for two-stage crossing and is stop-controlled.

**The *SR 1 and Cave Neck Road Grade Separated Intersection* DelDOT project (DelDOT Contract No. T2019012201) proposes to build a grade separated intersection at SR1 and Cave Neck Road.

21. Delaware Route 1 / Eagles Crest Road / Oyster Rocks Road (Sussex Road 264)

Type of Control: Two-way stop-controlled intersection (four-legged).
Eastbound Approach: (Eagle Crest Road) Existing one shared left turn/through/right turn lane, stop-controlled. **
Westbound Approach: (Oyster Rocks Road) Existing one shared left turn/through/right turn lane, stop-controlled. **
Northbound Approach: (Delaware Route 1) Existing one left turn lane, two through lanes, and one right turn lane.
Southbound Approach: (Delaware Route 1) Existing one left turn lane, two through lanes, and one right turn lane.

*Median between Northbound and Southbound Delaware Route 1 allows for two-stage crossing and is stop-controlled.

**The *SR 1 at S264 & S258 Intersection Improvements* DelDOT project (DelDOT Contract No. T201904302) proposes to eliminate the through movements from Eagle Crest Road and Oyster Rocks Road.

22. Delaware Route 1 / Minos Conaway Road (Sussex Road 265)

Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Minos Conaway Road) Existing one left turn lane and one right turn lane, yield controlled. **
Northbound Approach: (Delaware Route 1) Existing one left turn lane and two through lanes.
Southbound Approach: (Delaware Route 1) Existing one U-turn lane, two through lanes, and one channelized right turn lane, yield controlled.

*Median between Northbound and Southbound Delaware Route 1 allows for two-stage crossing and is stop-controlled.

**The *SR1, Minos Conaway Road Grade Separated Intersection* DelDOT project (DelDOT Contract No. T201612501) proposes to provide a grade separated intersection at SR1 and Minos Conaway Road and separate through and turning movements along SR1.

23. Hudson Road / Carpenter Road (Sussex Road 259)

Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Carpenter Road) Existing one shared left turn/right turn lane, stop-controlled.
Northbound Approach: (Hudson Road) Existing one shared left turn/through lane.
Southbound Approach: (Hudson Road) Existing one shared through/right turn lane.

24. Carpenter Road / Diamond Farm Road (Sussex Road 257)

Type of Control: Two-way stop-controlled intersection (four-legged).
Westbound Approach: (Carpenter Road) Existing one shared left turn/through/right turn lane, stop-controlled.
Eastbound Approach: (Carpenter Road) Existing one shared left turn/through/right turn lane, stop-controlled.
Northbound Approach: (Diamond Farm Road) Existing one shared left turn/through/right turn lane.
Southbound Approach: (Diamond Farm Road) Existing one shared left turn/through/right turn lane.

25. Delaware Route 5 / Carpenter Road

Type of Control: Two-way stop-controlled intersection (T-intersection).

Westbound Approach: (Carpenter Road) Existing one shared left turn/right turn lane, stop-controlled.

Northbound Approach: (Delaware Route 5) Existing one shared through/right turn lane.

Southbound Approach: (Delaware Route 5) Existing one shared left turn/through lane.

26. Walker Road / Diamond Farm Road

Type of Control: Two-way stop-controlled intersection (T-intersection).

Westbound Approach: (Walker Road) Existing one shared left turn/right turn lane, stop-controlled.

Northbound Approach: (Diamond Farm Road) Existing one shared through/right turn lane.

Southbound Approach: (Diamond Farm Road) Existing one shared left turn/through lane.

27. Hudson Road / E. Lake Drive

Type of Control: Two-way stop-controlled intersection (T-intersection).

Eastbound Approach: (E. Lake Drive) Existing one shared left turn/right turn lane, stop-controlled.

Northbound Approach: (Hudson Road) Existing one shared left turn/through lane.

Southbound Approach: (Hudson Road) Existing one shared through/right turn lane.

28. US Route 9 / Hudson Road / Fisher Road (Sussex Road 262)

Type of Control: Existing signalized intersection (four-legged).

Eastbound Approach: (US Route 9) Existing one left turn lane, one through lane, and one right turn lane.

Westbound Approach: (US Route 9) Existing one left turn lane, one through lane, and one right turn lane.

Northbound Approach: (Fisher Road) Existing one left turn lane, one through lane, and one channelized right turn lane, yield controlled.

Southbound Approach: (Hudson Road) Existing one left turn lane, one through lane, and one channelized right turn lane, yield controlled.

29. US Route 9 / Cool Spring Road

Type of Control: Two-way stop-controlled intersection (four-legged).

Eastbound Approach: (US Route 9) Existing one shared left turn/through/right turn lane.

Westbound Approach: (US Route 9) Existing one shared left turn/through/right turn lane.
Northbound Approach: (Cool Spring Road) Existing one shared left turn/through/right turn lane, stop-controlled.
Southbound Approach: (Cool Spring Road) Existing one shared left turn/through/right turn lane, stop-controlled.

30. US Route 9 / Josephs Road
Type of Control: Two-way stop-controlled intersection (four-legged).
Eastbound Approach: (US Route 9) Existing one shared left turn/through/right turn lane.
Westbound Approach: (US Route 9) Existing one shared left turn/through/right turn lane.
Northbound Approach: (Josephs Road) Existing one shared left turn/through/right turn lane, stop-controlled.
Southbound Approach: (Josephs Road) Existing one shared left turn/through/right turn lane, stop-controlled.

31. US Route 9 / Arabian Acres Road (Sussex Road 282)
Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (US Route 9) Existing one shared through/right turn lane.
Westbound Approach: (US Route 9) Existing one shared left turn/through lane and one bypass lane.
Northbound Approach: (Arabian Acres Road) Existing one shared left turn/right turn lane, stop-controlled.

32. Log Cabin Hill Road / Josephs Road (Sussex Road 281)
Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Log Cabin Hill Road) Existing one shared through/right turn lane.
Westbound Approach: (Log Cabin Hill Road) Existing one shared left turn/through lane.
Northbound Approach: (Joseph Road) Existing one shared left turn/right turn lane, stop-controlled.

*****A private driveway is located at the southbound leg of the intersection.

33. Log Cabin Hill Road / Persimmon Road
Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Log Cabin Hill Road) Existing one shared left turn/through lane.

Westbound Approach: (Log Cabin Hill Road) Existing one shared through/right turn lane.
Southbound Approach: (Persimmon Road) Existing one shared left turn/right turn lane, stop-controlled.

*A private driveway is located at the northbound leg of the intersection.

34. Log Cabin Hill Road / Sweetbriar Road
Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Log Cabin Hill Road) Existing one left turn lane and one right turn lane, stop-controlled.
Northbound Approach: (Sweetbriar Road) Existing one left turn lane and one through lane.
Southbound Approach: (Sweetbriar Road) Existing one shared right turn/through lane.

35. US Route 9 / Hunters Mill Road
Type of Control: Two-way stop-controlled intersection.
Eastbound Approach: (Route 9) Existing one shared left turn/through lane and one bypass lane.
Westbound Approach: (Route 9) Existing one shared left turn/through lane and one right turn lane.
Northbound Approach: (Breakwater Acres Lane) Existing one shared left turn/through/right turn lane, stop-controlled.
Southbound Approach: (Hunters Mill Road) Existing one shared left turn/through/right turn lane, stop-controlled.

36. US Route 9 / Beaver Creek Drive
Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Route 9) Existing one left turn lane and one through lane.
Westbound Approach: (Route 9) Existing one through lane and one right turn lane.
Southbound Approach: (Beaver Creek Drive) Existing one left turn lane and one right turn lane, stop-controlled.

*A private driveway is located at the northbound leg of the intersection.

37. US Route 9 / Delaware Route 5
Type of Control: Existing signalized intersection (four-legged).
Eastbound Approach: (US Route 9) Existing one left turn lane and one through/right turn lane.

Westbound Approach: (US Route 9) Existing one left turn lane and one through/right turn lane.
Northbound Approach: (Delaware Route 5) Existing one left turn lane and one through/right turn lane.
Southbound Approach: (Delaware Route 5) Existing one left turn lane and one through/right turn lane.

38. US Route 9 / Prettyman Road (Sussex Road 254)
Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (US Route 9) Existing one shared left turn/through lane.
Westbound Approach: (US Route 9) Existing one through lane and one right turn lane.
Southbound Approach: (Prettyman Road) Existing one shared left turn/right turn lane, stop-controlled.

39. Fisher Road / Martins Farm Road (Sussex Road 291)
Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Fisher Road) Existing one shared through/right turn lane.
Westbound Approach: (Fisher Road) Existing one shared left turn/through lane.
Northbound Approach: (Martins Farm Road) Existing one shared left turn/right turn lane, stop-controlled.

*A private driveway is located at the southbound leg of the intersection.

40. Fisher Road / Cool Spring Road
Type of Control: All-way stop-controlled intersection (four-legged).
Eastbound Approach: (Fisher Road) Existing one shared left turn/through/right turn lane, stop-controlled.
Westbound Approach: (Fisher Road) Existing one shared left turn/through/right turn lane, stop-controlled.
Northbound Approach: (Cool Spring Road) Existing one shared left turn/through/right turn lane, stop-controlled.
Southbound Approach: (Cool Spring Road) Existing one shared left turn/through/right turn lane, stop-controlled.

41. Cool Spring Road / Forest Road (Sussex Road 292)
Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Forest Road) Existing one shared left turn/right turn lane, stop-controlled.
Northbound Approach: (Cool Spring Road) Existing one shared left turn/through lane.

Southbound Approach: (Cool Spring Road) Existing one shared through/right turn lane.

42. Sweetbriar Road / Water View Drive

Type of Control: Two-way stop-controlled intersection (T-intersection).
Westbound Approach: (Water View Drive) Existing one shared left turn/right turn lane, stop-controlled.
Southbound Approach: (Sweetbriar Road) Existing one shared left turn/through lane.
Northbound Approach: (Sweetbriar Road) Existing one shared through/right turn lane.

43. Sweetbriar Road / Breezeway Drive

Type of Control: Two-way stop-controlled intersection (T-intersection).
Westbound Approach: (Breezeway Drive) Existing one shared left turn/right turn lane, stop-controlled.
Northbound Approach: (Sweetbriar Road) Existing one through lane and one right turn lane.
Southbound Approach: (Sweetbriar Road) Existing one through lane.

44. Sweetbriar Road / Spring Brook Avenue

Type of Control: Two-way stop-controlled intersection (T-intersection).
Westbound Approach: (Spring Brook Avenue) Existing one shared left turn/right turn lane, stop-controlled.
Northbound Approach: (Sweetbriar Road) Existing one through lane and one right turn lane.
Southbound Approach: (Sweetbriar Road) Existing one left turn lane and one through lane.

45. US Route 9 / Sweetbriar Road / Dairy Farm Road (Sussex Road 261)

Type of Control: Existing signalized intersection (four-legged).
Eastbound Approach: (US Route 9) Existing one left turn lane, one through lane, and one channelized right turn lane, yield controlled.
Westbound Approach: (US Route 9) Existing one left turn lane, one through lane, and one channelized right turn lane, yield controlled.
Northbound Approach: (Dairy Farm Road) Existing one left turn lane, one through lane, and one channelized right turn lane, yield controlled.
Southbound Approach: (Sweetbriar Road) Existing one left turn lane, one through lane, and one channelized right turn lane, yield controlled.

46. US Route 9 / Minos Conaway Road

Type of Control: Signalized intersection (four-legged).
Eastbound Approach: (US Route 9) Existing one left turn lane, one through lane and one right turn lane.
Westbound Approach: (US Route 9) Existing one left turn lane, one through lane and one right turn lane.
Northbound Approach: (Minos Conaway Road) Existing one shared left turn/through/right turn lane.
Southbound Approach: (Minos Conaway Road) Existing one shared left turn/through lane and one channelized right turn lane.

47. Fisher Road / Hopkins Road (Sussex Road 290)

Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Fisher Road) Existing one shared through/right turn lane.
Westbound Approach: (Fisher Road) Existing one shared left turn/through lane.
Northbound Approach: (Hopkins Road) Existing one shared left turn/right turn lane, stop-controlled.

48. Dairy Farm Road / Beaver Dam Road (Sussex Road 285)

Type of Control: Two-way stop-controlled intersection (T-intersection).
Eastbound Approach: (Beaver Dam Road) Existing one shared left turn/through lane.
Westbound Approach: (Beaver Dam Road) Existing one shared through/right turn lane.
Southbound Approach: (Dairy Farm Road) Existing one shared left turn/right turn lane, stop-controlled.

*The *Dairy Farm Road and Beaver Dam Road/Fisher Road Intersection Improvement* project aims to convert the Beaver Dam Road at Dairy Farm Road and Fisher Road at Dairy Farm Road into a 4-legged roundabout. A DelDOT contract Number has not been assigned and the design phase is planned to start in the fall of 2025.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Per DelDOT Gateway, DART Routes 206, 303, and 307 exist within the study area. Sixteen stops exist within the study area along US Route 9.

Planned transit service: Per email correspondence on July 14, 2022, with Mr. Jared Kauffman, Fixed-Route Planner for DART, the following recommendations were provided:

- A pair of companion stops are needed on US Route 9 at Cool Spring Road.
    - Westbound, a Type 2 (17'x8') shelter pad placed far-side of Cool Spring Road.

- Eastbound, a Type 2 (17'x8') shelter pad is preferable, but if Right-of-Way constraints deem it necessary, then a Type 2 5'x8' pad is adequate. Whether this stop is placed far-side or near-side of Cool Spring Road depends upon a pedestrian crossing of Cool Spring Road.

Existing bicycle and pedestrian facilities: Per DelDOT's Sussex County Bicycle Map, several main study roadways are considered bicycle routes. US Route 9 and Delaware Route 5 are considered regional bicycle routes. Prettyman Road, Diamond Farm Road, Round Pole Bridge Road, Hudson Road, Log Cabin Hill Road, and Carpenter Road are considered connector bicycle routes. Cave Neck Road, Sweetbriar Road, Dairy Farm Road, and Beaver Dam Road are considered statewide bicycle routes. Crosswalks are present at the US Route 9 intersections with Cool Spring Road and Beaver Creek Drive. Bike lanes areas are present on US Route 9, Sweetbriar Road, Dairy Farm Road, Cave Neck Road, and Beaver Dam Road.

Planned bicycle and pedestrian facilities: Email correspondence was sent to Anthony Aglio, DelDOT's Bicycle and Pedestrian Coordinator, on July 5, 2022, and to Mr. John Fiori, DelDOT's Bicycle Coordinator and Ms. Linda Osiecki, DelDOT's Pedestrian Coordinator on August 8, 2022. Per an email response from Mr. Fiori and Ms. Osiecki received August 25, 2022, several recommendations were provided:

- Per the DelDOT SUP/Sidewalk Policy, a non-motorized facility is required since the ADT is greater than 2,000 trips. Consequently, it is recommended to install a 10' wide shared-use path along the property frontage.
- Internal connections into the residential, schools, and commercial sites from the SUP will be required.
- Non-motorized crossings at all signalized intersections and stop-controlled streets at unsignalized intersections.
- Non-motorized access into the site per every 660 feet of residential frontage and 330 feet of commercial frontage.
- Non-motorized access from subdivision to each school and commercial site
- There is an active project (DelDOT Contract Number T202030001) under ATCC: Georgetown to Lewes Trail, Cool Spring Road to Fisher Road. The site frontage along US9 should provide a non-motorized connection to the SUP.
- The site has frontage along the existing Georgetown to Lewes Trail, where a non-motorized connection to the SUP should be provided.
- Contact the Town of Milton to learn about the status of a feasibility study that aimed to connect the Milton Trail project to the Georgetown to Lewes Trail, as the Georgetown to Lewes Trail falls within the project limits of the site.
- Recommended to contact Mark Whiteside concerning the scope of work, limits of construction, and project timeline of a DOTS project (DelDOT Contract Number T202104304): Cave Neck Road, Hudson, and Sweetbriar Roads Intersection Improvement.
- Per the DCM, the site shall dedicate the right-of-way per the roadway classification and establish a 15' wide permanent easement along all property roadway frontages.
- All entrance, roadway, and/or intersection improvements required shall incorporate bicycle and pedestrian facilities. Per the DCM, if the right turn lane is warranted, then a separate bike lane shall be incorporated along the right turn lane; if a left turn lane is required, any

roadway improvements shall include a shoulder matching the roadway functional classification or existing conditions (minimum 5-feet).
- There could be additional and/or revised comments once project is discussed at a pre-submittal meeting and/or plans are submitted for LONO/ENT review/approval.

Bicycle Level of Traffic Stress in Delaware: Researchers with the Mineta Transportation Institute developed a framework to measure low-stress connectivity, which can be used to evaluate and guide bicycle network planning. Bicycle LTS analysis uses factors such as the speed of traffic, volume of traffic, and the number of lanes to rate each roadway segment on a scale of 1 to 4, where 1 is a low-stress place to ride and 4 is a high-stress place to ride. It analyzes the total connectivity of a network to evaluate how many destinations can be accessed using low-stress routes. Developed by planners at the Delaware Department of Transportation (DelDOT), the bicycle Level of Traffic Stress (LTS) model will be applied to bicycle system planning and evaluation throughout the state. The Bicycle LTS for the roadways under existing conditions along the site frontage are summarized below. The Bicycle LTS was determined utilizing the map on the DelDOT Gateway.

- US Route 9 LTS: 3
- Cool Spring Road LTS: 2
- Hudson Road LTS: 4
- Log Cabin Hill Road LTS: 4
- Sweetbriar Road LTS: 3
- Josephs Road LTS: 3

Sight Distance Evaluation

Based on a qualitative field visit, there are no sight distance concerns expected at any of the proposed site entrances.

Crash Evaluation

Per the crash data included in the TIS from October 28, 2018, to October 28, 2021, provided by the Delaware Department of Transportation (DelDOT), 343 crashes were reported within the study area, 68 included personal injuries, and no reported crashes involved a fatality.

The US Route 9/Delaware Route 5 intersection had 51 crashes reported, with 6 involving personal injury. Of the 51 crashes, 26 were rear-end, 16 angle, 3 sideswipe, 1 unknown, and 5 not a collision between two vehicles.

The Hudson Road/Cave Neck Road, Hudson Road/Sweetbriar Road, and Cave Neck Road/Sweetbriar Road had a total of 46 crashes reported, with 16 involving personal injury. Of the 46 crashes, 6 were rear-end, 2 head-on, 35 angle, and 3 not a collision between two vehicles.

The Delaware Route 1/Cave Neck Road intersection had 31 crashes reported, with 7 involving personal injury. Of the 31 crashes, 5 were rear-end, 15 angle, 2 sideswipe, and 9 not a collision between two vehicles.

The US Route 9/Hudson Road/Fisher Road intersection had 25 crashes reported, with 2 involving personal injury. Of the 25 crashes, 15 were rear-end, 1 head-on, 5 angle, 2 sideswipe, and 2 not a collision between two vehicles.

The Delaware Route 1/Minos Conaway Road intersection had 22 crashes reported, with 2 involving personal injury. Of the 22 crashes, 2 were rear-end, 6 angle, 3 sideswipe, and 11 not a collision between two vehicles.

The US Route 9/Sweetbriar Road/Dairy Farm Road intersection had 22 crashes reported, with 3 involving personal injury. Of the 22 crashes, 12 were rear-end, 8 angle, and 2 not a collision between two vehicles.

The US Route 9/Prettyman Road intersection had 22 crashes, with 6 involving personal injury. Of the 22 crashes, 9 were rear-end, 5 angle, 1 sideswipe, and 7 not a collision between two vehicles.

The Dairy Farm Road/Beaver Dam Road intersection had 21 crashes, with 5 involving personal injury. Of the 21 crashes, 8 were rear-end, 1 head-on, 4 angle, 3 sideswipe, and 5 not a collision between two vehicles.

The remaining intersections each reported less than 20 incidents within the three-year study period.

Previous Comments

All comments made during the Preliminary TIS (PTIS) were addressed in the Final TIS (FTIS).

General HCS Analysis Comments

(See table footnotes on the following pages for specific comments)

1. JMT used version 7.9.5 of HCS7 to complete the analysis, whereas the TIS utilized version 7.8.5.

2. Per DelDOT's *Development Coordination Manual*, JMT used a minimum heavy vehicle percentage of 3% for each movement greater than 100 vph in the Case 2 and Case 3 future scenario analysis, unless the existing heavy vehicle percentage was greater than 3% and there was no significant increase of vehicles along that movement, in which case the existing heavy vehicle percentage was used for the analysis of future scenarios, whereas the TIS did not.

3. Per DelDOT's *Development Coordination Manual* and coordination with DelDOT Planning, JMT used a heavy vehicle percentage of 5% for each movement less than 100 vph along roadways. Additionally, the JMT utilized a heavy vehicle percentage of 3% for movements entering and exiting the proposed site. The TIS utilized the existing heavy vehicle percentage in all cases.

4. As all the intersections within the study area experience some increase in volumes, per DelDOT's *Development Coordination Manual,* JMT utilized the future intersection PHF of 0.80 for roadways with less than 500 vph, 0.88 for roadways between 500 and 1,000 vph, and 0.92 for roadways with more than 1,000 vph, or used the existing PHF if higher, whereas the TIS utilized the existing PHF.

5. JMT input the pedestrians within the HCS analysis consistent with HCM methodology whereas the TIS did not.

Table 2
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance A / US Route 9 [2]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)[3]						
Eastbound Route 9 Left Turn	B (11.2)	B (13.1)	B (12.7)	B (11.2)	B (13.1)	B (12.7)
Southbound Site Entrance A Approach	F (*)	F (*)	F (*)	F (*)	F (*)	F (*)

*Indicates delay greater than 1,000 seconds per vehicle

Signalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance A / US Route 9 [4]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)	C (30.4)	C (31.1)	D (44.5)	C (21.5)	C (22.1)	C (23.3)
2044 with Development (Case 3) *with Site Entrance B Combined*	-	-	-	C (31.4)	D (39.1)	D (37.9)

[1] For signalized and unsignalized analysis, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.
[2] Both the TIS and JMT modeled the intersection with one left turn lane and one through lane along the eastbound approach, one through lane and one right turn lane along the westbound approach, and one shared left turn/right turn lane along the southbound approach.
[3] JMT utilized traffic volumes per the approved traffic volume diagrams and assumed a 50/50 split in traffic with the adjacent Site Entrance B, whereas the TIS did not.
[4] TIS and JMT modeled the intersection with separate lanes along each approach and protected-permitted left turn phasing along eastbound US Route 9. The TIS used various signal cycle lengths during each peak hour whereas JMT utilized a 90 second signal cycle length.

Table 2 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance A / US Route 9 [5]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)						
Eastbound US Route 9 Approach	-	-	-	E (35.9)	C (17.6)	D (26.3)
Westbound US Route 9 Approach	-	-	-	C (17.8)	E (41.5)	D (33.6)
Southbound Site Entrance A Approach	-	-	-	B (14.6)	C (19.6)	C (17.6)
Overall LOS	-	-	-	D (25.9)	D (28.6)	D (28.0)

[5] JMT modeled the intersection as a single-lane roundabout.

Table 3
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance B / US Route 9[6]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)[7]						
Eastbound Route 9 Left Turn	B (10.8)	B (12.7)	B (12.4)	B (10.8)	B (12.7)	B (12.4)
Southbound Site Entrance B Approach	F (*)	F (*)	F (*)	F (980.1)	F (*)	F (*)

Signalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance B / US Route 9 [4]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)	C (26.8)	C (28.0)	D (38.7)	B (19.4)	C (20.7)	C (21.6)

[6] Both the TIS and JMT modeled the intersection with one left turn lane and one through lane along the eastbound approach, one through lane and one right turn lane along the westbound approach, and one shared left turn/right turn lane along the southbound approach.
[7] JMT utilized traffic volumes per the approved traffic volume diagrams and assumed a 50/50 split in traffic with the adjacent Site Entrance A, whereas the TIS did not.

Table 3 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance B / US Route 9 [5]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)						
Eastbound US Route 9 Approach	-	-	-	D (25.0)	B (13.7)	C (18.2)
Westbound US Route 9 Approach	-	-	-	B (14.8)	D (34.9)	D (28.7)
Southbound Site Entrance B Approach	-	-	-	B (12.8)	C (18.0)	C (16.3)
Overall LOS	-	-	-	C (19.3)	C (24.1)	C (22.4)

Table 4
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance C / Cool Spring Road[8]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)						
Eastbound Site Entrance C Approach	B (11.5)	B (11.7)	B (11.7)	B (11.7)	B (12.0)	B (11.9)
Westbound Site Entrance C Approach	B (11.0)	B (11.8)	B (11.6)	B (11.2)	B (12.1)	B (11.8)
Northbound Cool Spring Road Left- Turn	A (7.9)	A (7.8)	A (7.8)	A (7.9)	A (7.8)	A (7.8)
Southbound Cool Spring Road Left- Turn	A (7.5)	A (7.8)	A (7.7)	A (7.5)	A (7.8)	A (7.7)

[8] Both the TIS and JMT utilized a stop-controlled shared left turn/through/right turn lane for both the eastbound and westbound Site Entrance C approach for the analysis. Northbound Cool Spring Road has a left turn lane and a shared through/right turn lane, while Southbound Cool Spring Road has a shared left turn/through lane and a right turn lane.

Table 5
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance D / Hudson Road[9]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)[10]						
Westbound Site Entrance D Approach	F (82.6)	C (19.4)	F (70.0)	F (82.6)	F (86.8)	F (70.0)
Southbound Hudson Road Left Turn	A (8.8)	A (9.9)	A (9.4)	A (8.8)	A (9.9)	A (9.4)

[9] Both the TIS and JMT utilized a stop-controlled shared left turn/right turn lane for the westbound Site Entrance D approach for the analysis. Hudson Road southbound has a left turn lane and a through lane, while Hudson Road northbound has a through lane and a right turn lane.

[10] For PM peak hour, JMT utilized traffic volumes per the approved traffic volume diagrams, whereas the TIS did not.

Table 5 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance D / Hudson Road [5]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)						
Westbound Site Entrance D Approach	A (7.3)	A (8.0)	A (7.4)	A (7.3)	A (8.0)	A (7.4)
Northbound Hudson Road Approach	A (7.2)	B (11.1)	A (9.2)	A (7.2)	B (11.1)	A (9.2)
Southbound Hudson Road Approach	B (11.9)	A (9.9)	B (10.0)	B (11.9)	A (9.9)	B (10.0)
Overall LOS	A (9.7)	B (10.2)	A (9.4)	A (9.7)	B (10.2)	A (9.4)

Table 6
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance E / Hudson Road / Walker Road[11]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1)						
Eastbound Walker Road Approach	B (10.3)	B (10.5)	A (9.3)	B (10.1)	B (10.5)	A (9.3)
Northbound Hudson Road Left Turn	A (7.7)	A (7.6)	A (7.5)	A (7.5)	A (7.7)	A (7.5)
2044 Without Project (Case 2)						
Eastbound Walker Road Approach	B (14.0)	B (12.9)	B (11.0)	B (12.4)	B (13.0)	B (11.0)
Northbound Hudson Road Left Turn	A (8.3)	A (8.1)	A (8.0)	A (8.0)	A (8.2)	A (8.0)
2044 with Development (Case 3)						
Eastbound Walker Road Approach	F (332.3)	F (131.9)	E (39.6)	E (40.0)	F (96.5)	E (36.5)
Westbound Site Entrance E Approach	F (582.9)	F (330.2)	F (188.5)	F (155.8)	F (228.2)	F (157.6)
Northbound Hudson Road Left Turn	A (9.3)	A (8.8)	A (8.6)	A (8.6)	A (8.8)	A (8.7)
Southbound Hudson Road Left Turn	A (8.7)	A (8.9)	A (8.6)	A (8.4)	A (8.8)	A (8.5)

[11] Both the TIS and JMT utilized a stop-controlled shared left turn/through/right turn lane for the westbound site entrance E approach and for the eastbound Walker Road approach for the analysis. Hudson Road southbound has a left turn lane and a through/right turn lane, while Hudson Road northbound has a left turn lane, a through lane, and a right turn lane.

Table 6 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance E / Hudson Road / Walker Road [5]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)						
Eastbound Walker Road Approach	A (8.5)	B (10.7)	A (9.5)	A (6.9)	A (8.2)	A (7.5)
Westbound Site Entrance E Approach	B (11.1)	A (8.5)	A (8.5)	A (8.4)	A (6.9)	A (6.9)
Northbound Hudson Road Approach	A (9.7)	B (13.7)	B (10.7)	A (7.8)	A (10.0)	A (8.4)
Southbound Hudson Road Approach	B (11.1)	B (13.1)	B (11.7)	A (8.5)	A (9.7)	A (8.9)
Overall LOS	B (10.2)	B (12.7)	B (10.7)	A (8.0)	A (9.4)	A (8.3)

Table 7
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance F / Log Cabin Hill Road[12]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)[13]						
Eastbound Log Cabin Hill Road Left Turn	A (7.9)	A (8.0)	A (8.0)	A (7.6)	A (7.7)	A (7.7)
Westbound Log Cabin Hill Road Left Turn	A (7.4)	A (7.6)	A (7.6)	A (7.4)	A (7.7)	A (7.7)
Northbound Site Entrance F Approach	B (11.8)	B (12.5)	B (12.6)	B (11.0)	B (12.2)	B (12.1)
Southbound Site Entrance F Approach	B (12.2)	B (12.9)	B (13.0)	B (11.2)	B (11.8)	B (11.9)

[12] Both the TIS and JMT utilized a stop-controlled shared left turn/through/right turn lane for the northbound and southbound site entrance F approaches for the analysis. Log Cabin Hill Road northbound and southbound have a left turn lane, a through lane, and a right turn lane.
[13] For the AM, PM, and SAT peak hours, JMT utilized traffic volumes per the approved traffic volume diagrams.

Table 8
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance G / Log Cabin Hill Road[14]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)[15]						
Eastbound Log Cabin Hill Road Left Turn	A (7.5)	A (7.7)	A (7.7)	A (7.5)	A (7.8)	A (7.7)
Westbound Log Cabin Hill Road Left Turn	A (7.7)	A (7.8)	A (7.8)	A (7.6)	A (7.7)	A (7.7)
Northbound Site Entrance G Approach	B (11.4)	B (12.2)	B (12.4)	B (11.2)	B (12.2)	B (12.1)
Southbound Site Entrance G Approach	B (11.2)	B (11.9)	B (12.1)	B (11.2)	B (12.1)	B (12.1)

[14] Both the TIS and JMT utilized a stop-controlled shared left turn/through/right turn lane for the northbound and southbound site entrance G approaches for the analysis. Log Cabin Hill Road northbound and southbound have a left turn lane, a through lane, and a right turn lane.
[15] For the AM, PM, and SAT peak hours, JMT utilized traffic volumes per the approved traffic volume diagrams.

Table 9
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance H / Cool Spring Road / Log Cabin Hill Road[16]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)						
Eastbound Log Cabin Hill Road Left Turn	A (7.6)	A (2.9)	A (7.8)	A (7.6)	A (7.9)	A (7.9)
Westbound Log Cabin Hill Road Left Turn	A (7.8)	A (7.6)	A (7.7)	A (7.8)	A (7.7)	A (7.8)
Northbound Cool Spring Road Approach	C (18.4)	E (36.7)	D (31.1)	C (21.6)	F (53.7)	E (43.0)
Southbound Site Entrance H Approach	C (16.6)	C (17.4)	C (17.9)	C (18.5)	C (19.5)	C (20.3)

[16] Both the TIS and JMT utilized a stop-controlled shared left turn/through/right turn lane for the eastbound, westbound, northbound, and southbound approaches.

Table 9 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance H / Cool Spring Road / Log Cabin Hill Road [5]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)						
Eastbound Log Cabin Hill Road Approach	-	-	-	A (5.9)	A (5.4)	A (5.7)
Westbound Log Cabin Hill Road Approach	-	-	-	A (4.7)	A (6.8)	A (6.2)
Northbound Cool Spring Road Approach	-	-	-	A (5.2)	A (6.3)	A (6.1)
Southbound Entrance H Approach	-	-	-	A (5.6)	A (5.4)	A (5.6)
Overall LOS	-	-	-	A (5.5)	A (6.0)	A (5.9)

Table 10
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance I / Sweetbriar Road[17]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)						
Eastbound Site Entrance I Approach	C (17.3)	C (16.7)	B (13.4)	C (18.6)	C (17.7)	C (18.5)
Northbound Sweetbriar Road Left Turn	A (7.9)	A (8.4)	A (7.9)	A (7.9)	A (8.5)	A (8.4)

[17] Both the TIS and JMT utilized a stop-controlled shared left turn/through/right turn lane for the eastbound site Entrance I. The northbound Sweetbriar Road has a left turn lane and a through lane, while the southbound Sweetbriar Road has a through lane and a right lane.

Table 11
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance J / Josephs Road	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Partial Development (Case 3) [18]						
Eastbound Site Entrance J Approach	A (0.0)	A (0.0)	A (0.0)	A (8.8)	A (8.9)	A (8.9)
Northbound Josephs Road Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)

[18] JMT assumed 1% of residential traffic at the site entrance and generated through volumes from the adjacent Josephs Road intersection with Log Cabin Hill Road, whereas the TIS assumed 0 site traffic at the site entrance.

Table 12
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
Hudson Road / Cave Neck Road (Sussex Road 88) [19]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1)						
Eastbound Cave Neck Road Left Turn	A (7.7)	A (7.9)	A (7.5)	A (7.5)	A (7.8)	A (7.7)
Westbound Cave Neck Road Left Turn	A (7.9)	A (7.7)	A (8.0)	A (7.9)	A (7.9)	A (8.1)
Northbound Hudson Road Approach	B (14.1)	C (17.6)	C (16.5)	B (14.2)	C (19.1)	C (15.1)
Northbound Hudson Road Approach	D (28.1)	E (39.2)	F (52.5)	D (27.5)	E (44.8)	E (49.9)
2044 without Development (Case 2)						
Eastbound Cave Neck Road Left Turn	A (7.8)	A (8.1)	A (7.7)	A (7.6)	A (7.9)	A (7.7)
Westbound Cave Neck Road Left Turn	A (8.2)	A (8.2)	A (8.4)	A (8.2)	A (8.2)	A (8.3)
Northbound Hudson Road Approach	F (56.0)	F (820.6)	F (162.6)	F (56.7)	F (275.0)	E (47.0)
Northbound Hudson Road Approach	F (398.0)	F (*)	F (*)	F (384.7)	F (*)	F (541.5)
2044 with Development (Case 3)						
Eastbound Cave Neck Road Left Turn	A (7.9)	A (8.2)	A (7.8)	A (7.6)	A (7.9)	A (7.7)
Westbound Cave Neck Road Left Turn	A (8.2)	A (8.3)	A (8.5)	A (8.4)	A (8.4)	A (8.5)
Northbound Hudson Road Approach	F (*)	F (*)	F (*)	F (*)	F (*)	F (*)
Northbound Hudson Road Approach	F (*)	F (*)	F (*)	F (*)	F (*)	F (*)

* Delay exceeds 1000 seconds/vehicle.

[19] As part of the *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* project (DelDOT project number T202104304), geometric upgrades are proposed to convert this intersection and the intersections of Hudson Road & Sweetbriar Road, and Cave Neck Road & Sweetbriar Road to a 5-legged roundabout. Due to the limitations of HCS software, a separate analysis conducted with Sidra Intersection software was performed to evaluate the 5-legged roundabout.

Table 12 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Roundabout [1] (Five Legged)	**LOS per TIS**			**LOS per JMT**		
Hudson Road / Cave Neck Road (Sussex Road 88)/Sweetbriar Road (Sussex Road 261) [25, 20]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)						
Eastbound Cave Neck Road Approach	C (15.0)	C (23.1)	D (25.5)	B (12.6)	C (23.1)	D (25.5)
Westbound Cave Neck Road Approach	B (10.7)	C (18.7)	B (11.8)	B (10.7)	C (18.7)	B (11.8)
Northbound Hudson Road Approach	C (24.8)	C (23.2)	C (24.7)	C (24.8)	C (23.2)	C (24.7)
Northbound Sweetbriar Road Approach	C (27.1)	C (16.8)	C (17.1)	D (27.1)	C (16.8)	C (17.1)
Southbound Hudson Road Approach	B (12.6)	F (56.0)	C (24.8)	B (12.6)	F (56.0)	C (24.8)
Intersection	C (18.7)	D (30.2)	C (21.3)	C (18.7)	D (30.2)	C (21.3)

[20] A Case 2 analysis was not performed as the TIS report did not include volumes for that case.

Table 13
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Hudson Road / Sweetbriar Road [21]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1)						
Westbound Sweetbriar Road Approach	A (9.1)	A (9.7)	A (9.4)	A (9.2)	A (9.7)	A (9.4)
2044 without Development (Case 2)						
Westbound Sweetbriar Road Approach	B (10.1)	B (10.9)	B (10.8)	B (10.1)	B (10.9)	B (10.1)
2044 with Development (Case 3)						
Westbound Sweetbriar Road Approach	B (10.9)	B (11.7)	B (11.8)	B (10.9)	B (11.4)	B (10.8)

[21] As part of the *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* project (DelDOT project number T202104304), geometric upgrades are planned that will convert this intersection and the intersections of Hudson Road & Cave Neck Road, and Cave Neck Road & Sweetbriar Road to a 5-legged roundabout. Due to the limitations of HCS software, a separate analysis conducted with Sidra Intersection software was performed to evaluate the 5-legged roundabout.

Table 14
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Hudson Road / Falls Road [22]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1)						
Eastbound Falls Road Approach	A (9.9)	B (10.9)	A (9.9)	B (10.0)	B (10.9)	B (10.0)
Northbound Hudson Road Left-Turn	A (7.6)	A (7.8)	A (7.7)	A (7.7)	A (7.8)	A (7.8)
2044 without Development (Case 2)						
Eastbound Falls Road Approach	B (11.3)	B (13.4)	B (11.5)	B (11.4)	B (13.1)	B (11.0)
Northbound Hudson Road Left-Turn	A (7.9)	A (8.3)	A (8.3)	A (8.0)	A (8.2)	A (8.1)
2044 with Development (Case 3)						
Eastbound Falls Road Approach	B (13.2)	C (19.8)	B (14.7)	B (13.3)	C (16.9)	B (13.5)
Northbound Hudson Road Left-Turn	A (8.3)	A (9.4)	A (9.0)	A (8.4)	A (9.0)	A (8.9)

[22] JMT analyzed this intersection with a northbound left-turn lane and a shared through/right-turn lane. The TIS analyzed the northbound approach as a shared left-turn/through lane and a shared through/right-turn lane.

Table 15
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
Hudson Road / River Rock Way	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1)						
Eastbound River Rock Way Approach	B (10.3)	A (9.9)	B (10.6)	B (10.7)	B (10.1)	B (11.0)
Westbound River Rock Way Approach	C (16.1)	B (12.1)	A (0.0)	B (12.0)	B (11.9)	A (9.3)
Northbound Hudson Road Left-Turn	A (7.8)	A (7.6)	A (7.8)	A (7.7)	A (7.7)	A (7.8)
Southbound Hudson Road Left-Turn	A (7.6)	A (7.6)	A (7.6)	A (7.7)	A (7.6)	A (7.6)
2044 without Development (Case 2)						
Eastbound River Rock Way Approach	B (12.0)	B (11.5)	B (13.2)	B (13.0)	B (12.1)	B (12.5)
Westbound River Rock Way Approach	D (26.0)	C (16.7)	A (0.0)	C (15.6)	C (16.0)	A (9.9)
Northbound Hudson Road Left-Turn	A (8.1)	A (8.0)	A (8.3)	A (7.9)	A (8.1)	A (8.1)
Southbound Hudson Road Left-Turn	A (8.0)	A (7.8)	A (8.0)	A (8.0)	A (7.9)	A (7.9)
2044 with Development (Case 3)						
Eastbound River Rock Way Approach	B (14.5)	B (14.4)	C (18.9)	C (16.0)	C (15.4)	C (16.4)
Westbound River Rock Way Approach	E (45.0)	D (25.5)	A (0.0)	C (21.5)	C (23.5)	B (10.3)
Northbound Hudson Road Left-Turn	A (8.6)	A (8.7)	A (9.3)	A (8.3)	A (8.8)	A (8.9)
Southbound Hudson Road Left-Turn	A (8.2)	A (8.0)	A (8.2)	A (8.3)	A (8.0)	A (8.1)

Table 16
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Hudson Road / Eagle Crest Road (Sussex Road 264)	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1)						
Westbound Eagle Crest Road Approach	B (11.1)	B (10.9)	B (10.7)	B (10.8)	B (10.8)	B (10.8)
Southbound Hudson Road Left-Turn	A (7.6)	A (7.6)	A (7.6)	A (7.7)	A (7.7)	A (7.6)
2044 without Development (Case 2)						
Westbound Eagle Crest Road Approach	B (14.4)	B (14.5)	B (14.2)	B (13.2)	B (13.9)	B (13.2)
Southbound Hudson Road Left-Turn	A (8.1)	A (8.0)	A (8.0)	A (8.1)	A (8.0)	A (7.9)
2044 with Development (Case 3)						
Westbound Eagle Crest Road Approach	C (19.2)	C (21.2)	C (20.2)	C (16.7)	C (19.6)	C (17.7)
Southbound Hudson Road Left-Turn	A (8.3)	A (8.1)	A (8.2)	A (8.3)	A (8.2)	A (8.1)

Table 17
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
Cave Neck Road / Sweetbriar Road [23]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1)						
Eastbound Cave Neck Road Left-Turn	A (7.5)	A (7.8)	A (7.6)	A (7.5)	A (7.9)	A (7.6)
Westbound Cave Neck Road Left-Turn	A (8.4)	A (8.0)	A (8.5)	A (8.4)	A (8.1)	A (8.6)
Northbound Sweetbriar Road Approach	C (17.7)	C (18.7)	C (24.2)	C (17.7)	C (20.5)	C (24.2)
2044 without Development (Case 2)						
Eastbound Cave Neck Road Left-Turn	A (7.6)	A (8.0)	A (7.7)	A (7.7)	A (8.1)	A (7.7)
Westbound Cave Neck Road Left-Turn	A (8.8)	A (8.6)	A (9.2)	A (8.8)	A (8.6)	A (9.0)
Northbound Sweetbriar Road Approach	D (33.3)	F (67.6)	F (123.9)	D (33.9)	F (65.8)	F (59.2)
2044 with Development (Case 3)						
Eastbound Cave Neck Road Left-Turn	A (7.8)	A (8.2)	A (7.9)	A (7.8)	A (8.3)	A (7.9)
Westbound Cave Neck Road Left-Turn	A (9.7)	A (9.7)	B (10.6)	A (9.6)	A (9.7)	B (10.2)
Northbound Sweetbriar Road Approach	F (275.5)	F (412.2)	F (668.1)	F (260.0)	F (393.8)	F (396.2)

[23] As part of the *Cave Neck Road, Hudson and Sweetbriar Roads Intersection Improvement* project (DelDOT project number T202104304), geometric upgrades are planned that will convert this intersection and the intersections of Hudson Road & Sweetbriar Road, and Hudson Road & Sweetbriar Road to a 5-legged roundabout. Due to the limitations of HCS software, a separate analysis conducted with Sidra Intersection software was performed to evaluate the 5-legged roundabout.

Table 18
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
Cave Neck Road / Round Pole Bridge Road (Sussex Road 257) / Diamond Farm Road (Sussex Road 257)	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1)						
Eastbound Cave Neck Road Left-Turn	A (7.6)	A (7.7)	A (7.6)	A (7.6)	A (7.8)	A (7.7)
Westbound Cave Neck Road Left-Turn	A (8.2)	A (7.7)	A (7.9)	A (8.0)	A (7.8)	A (7.8)
Northbound Diamond Farm Road Approach	B (12.8)	B (13.0)	B (12.6)	B (12.7)	B (12.9)	B (12.7)
Southbound Round Pole Bridge Road	B (11.5)	B (11.4)	A (9.7)	B (11.5)	B (11.4)	A (9.8)
2044 without Development (Case 2)						
Eastbound Cave Neck Road Left-Turn	A (7.7)	A (7.9)	A (7.8)	A (7.7)	A (8.0)	A (7.8)
Westbound Cave Neck Road Left-Turn	A (8.4)	A (8.2)	A (8.1)	A (8.0)	A (8.0)	A (8.0)
Northbound Diamond Farm Road Approach	B (14.7)	B (15.2)	B (14.5)	B (13.2)	C (15.2)	B (14.7)
Southbound Round Pole Bridge Road	B (12.4)	B (12.3)	B (10.2)	B (11.7)	B (12.4)	B (10.3)
2044 with Development (Case 3)						
Eastbound Cave Neck Road Left-Turn	A (7.8)	A (7.9)	A (7.8)	A (7.8)	A (8.0)	A (7.9)
Westbound Cave Neck Road Left-Turn	A (8.7)	A (8.6)	A (8.5)	A (8.3)	A (8.4)	A (8.4)
Northbound Diamond Farm Road Approach	D (34.9)	C (22.3)	C (21.7)	C (22.7)	C (23.0)	C (22.1)
Southbound Round Pole Bridge Road	C (24.7)	B (13.5)	B (10.6)	B (12.5)	B (13.6)	B (10.6)

Table 19
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Cave Neck Road / Beulah Boulevard	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1)						
Westbound Cave Neck Road Left-Turn	A (8.3)	A (7.8)	A (7.7)	A (8.1)	A (7.8)	A (7.7)
Northbound Beulah Boulevard Approach	B (12.2)	B (11.8)	B (10.8)	B (12.2)	B (11.6)	B (10.8)
2044 without Development (Case 2)						
Westbound Cave Neck Road Left-Turn	A (8.7)	A (8.0)	A (7.9)	A (8.4)	A (8.1)	A (7.9)
Northbound Beulah Boulevard Approach	C (15.4)	B (14.0)	B (12.3)	B (14.7)	B (13.8)	B (12.3)
2044 with Development (Case 3)						
Westbound Cave Neck Road Left-Turn	A (10.0)	A (8.6)	A (8.5)	A (9.5)	A (8.6)	A (8.5)
Northbound Beulah Boulevard Approach	D (28.7)	C (19.6)	C (16.9)	D (25.3)	C (19.1)	C (16.8)

Table 20
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Cave Neck Road / Windstone Boulevard	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1)						
Eastbound Cave Neck Road Left-Turn	A (7.6)	A (8.0)	A (7.7)	A (7.6)	A (8.0)	A (7.7)
Southbound Windstone Boulevard Approach	B (11.0)	B (12.1)	B (10.2)	B (11.0)	B (11.9)	B (10.2)
2044 without Development (Case 2)						
Eastbound Cave Neck Road Left-Turn	A (7.7)	A (8.4)	A (8.0)	A (7.7)	A (8.4)	A (8.0)
Southbound Windstone Boulevard Approach	B (12.8)	C (15.0)	B (12.1)	B (12.8)	B (14.6)	B (12.1)
2044 with Development (Case 3)						
Eastbound Cave Neck Road Left-Turn	A (7.6)	A (8.7)	A (8.3)	A (7.9)	A (8.7)	A (8.3)
Southbound Windstone Boulevard Approach	C (16.3)	C (18.8)	B (14.5)	C (16.3)	C (18.2)	B (14.6)

Table 21
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
Delaware Route 1 / Cave Neck Road	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1) [24]						
Eastbound Cave Neck Road Approach	F (75.2)	C (17.8)	F (64.3)	F (72.5)	C (17.8)	F (64.3)
Northbound Delaware Route 1 Left-Turn	B (14.1)	C (15.8)	D (32.2)	B (14.1)	C (15.8)	D (33.0)
Southbound Delaware Route 1 U-Turn	B (12.1)	D (29.9)	E (46.7)	--	--	--
2044 without Development (Case 2) [25]						
Eastbound Cave Neck Road Approach	F (245.1)	D (34.0)	F (*)	--	--	--
Northbound Delaware Route 1 Left-Turn	C (18.1)	D (31.6)	F (122.4)	--	--	--
Southbound Delaware Route 1 U-Turn	B (13.5)	E (39.6)	F (67.2)	--	--	--
2044 with Development (Case 3)						
Eastbound Cave Neck Road Approach	F (331.1)	F (*)	F (*)	--	--	--
Northbound Delaware Route 1 Left-Turn	C (20.5)	E (49.5)	F (230.2)	--	--	--
Southbound Delaware Route 1 U-Turn	B (13.5)	E (39.6)	F (67.2)	--	--	--

* Delay exceeds 1000 seconds/vehicle.

[24] The TIS analyzed this intersection showing a southbound u-turn movement, JMT did not.

[25] As part of the *SR1 and Cave Neck Road Grade Separated Intersection* project (DelDOT project number T201912201), geometric upgrades are planned that which will convert this location to a grade separated intersection. Therefore, JMT did not analyze this location for Cases 2 & 3.

Table 22
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Delaware Route 1 / Eagle Crest Road / Oyster Rocks Road (Sussex Road 264)	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1)						
Eastbound Eagle Crest Road Approach	C (19.2)	C (16.1)	F (113.4)	C (20.8)	C (17.6)	F (159.3)
Westbound Oyster Rocks Road Approach	C (20.7)	E (37.4)	F (75.7)	C (24.2)	E (47.6)	F (114.4)
Northbound Delaware Route 1 Left-Turn	B (12.5)	B (10.6)	C (19.4)	B (11.9)	B (10.4)	C (20.5)
Southbound Delaware Route 1 Left-Turn	A (9.5)	B (13.9)	C (17.1)	A (9.3)	B (13.5)	C (18.0)
2044 without Development (Case 2)						
Eastbound Eagle Crest Road Approach	C (23.5)	C (19.5)	F (298.0)	--	--	--
Westbound Oyster Rocks Road Approach	D (26.0)	F (56.2)	F (148.6)	--	--	--
Northbound Delaware Route 1 Left-Turn	B (13.9)	B (11.9)	D (25.0)	--	--	--
Southbound Delaware Route 1 Left-Turn	B (10.3)	C (16.3)	C (20.9)	--	--	--
2044 without Development *with improvements* (Case 2) [26]						
Eastbound Eagle Crest Road Approach	--	--	--	C (20.1)	C (16.0)	F (107.8)
Westbound Oyster Rocks Road Approach	--	--	--	C (15.3)	D (32.8)	F (52.4)

[26] For Case 2 and Case 3, JMT modeled the intersection to reflect the improvements planned as part of the *SR 1 at S264 & S258 Intersection Improvements* project (DelDOT Contract No. T201904302), which will eliminate through movements from Eagle Crest Road and Oyster Rocks Road, eliminate left turns along northbound and southbound Delaware Route 1, and provide acceleration lanes for the left turn movements from Eagle Crest Road and Oyster Rocks Road onto Delaware Route 1. The TIS analyzed the future geometric condition for Case 3 only.

Table 22 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Delaware Route 1 / Eagle Crest Road / Oyster Rocks Road (Sussex Road 264)	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)						
Eastbound Eagle Crest Road Approach	C (23.8)	C (20.0)	F (316.3)	--	--	--
Westbound Oyster Rocks Road Approach	D (30.2)	F (67.4)	F (182.7)	--	--	--
Northbound Delaware Route 1 Left-Turn	B (13.9)	B (11.9)	D (25.0)	--	--	--
Southbound Delaware Route 1 Left-Turn	B (11.2)	C (17.5)	C (23.0)	--	--	--
2044 with Development *with improvements* (Case 3) [26]						
Eastbound Eagle Crest Road Approach	C (21.8)	C (15.6)	F (99.7)	C (20.1)	C (16.0)	F (107.8)
Westbound Oyster Rocks Road Approach	C (21.9)	E (35.6)	F (159.0)	C (17.9)	E (37.7)	F (63.3)

Table 23
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
Delaware Route 1 / Minos Conaway Road (Sussex Road 265) [27]	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2021 Existing (Case 1)						
Eastbound Minos Conaway Road Approach	D (25.9)	C (18.0)	F (50.2)	D (28.0)	C (21.0)	F (58.8)
Northbound Delaware Route 1 Left-Turn	B (13.7)	B (11.8)	D (26.8)	B (13.9)	B (11.8)	D (26.2)
Southbound Delaware Route 1 U-Turn	B (12.9)	E (35.9)	F (64.1)	B (13.2)	E (36.8)	F (80.2)
2044 without Development (Case 2) [28]						
Eastbound Minos Conaway Road Approach	E (47.0)	D (25.8)	F (145.0)	-	-	-
Northbound Delaware Route 1 Left-Turn	C (17.4)	B (14.5)	E (49.9)	-	-	-
Southbound Delaware Route 1 U-Turn	C (15.5)	F (66.0)	F (134.8)	-	-	-
2044 with Development (Case 3) [28]						
Eastbound Minos Conaway Road Approach	F (56.2)	D (29.1)	F (198.1)	-	-	-
Northbound Delaware Route 1 Left-Turn	C (18.4)	B (14.8)	F (54.6)	-	-	-
Southbound Delaware Route 1 U-Turn	C (16.2)	F (73.6)	F (150.6)	-	-	-

[27] JMT modeled the eastbound right-turn movement as channelized, the TIS did not.

[28] As part of the *SR 1, Minos Conaway Road Grade Separated Intersection* project (DelDOT project number T201612501), geometric upgrades are planned that will convert this location to a grade separated intersection. Therefore, JMT did not analyze this location for Cases 2 & 3.

Table 24
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS per TIS**			**LOS per JMT**		
Hudson Road / Carpenter Road (Sussex Road 259)	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound Carpenter Road Approach	A (9.9)	A (9.9)	A (9.8)	A (10.0)	A (10.0)	A (9.8)
Northbound Hudson Road Left Turn	A (7.6)	A (7.6)	A (7.5)	A (7.6)	A (7.7)	A (7.5)
2044 without Development (Case 2)						
Eastbound Carpenter Road Approach	B (12.5)	B (12.0)	B (12.4)	B (12.6)	B (12.1)	B (12.3)
Northbound Hudson Road Left Turn	A (8.1)	A (8.1)	A (8.0)	A (8.2)	A (8.2)	A (8.1)
2044 with Development (Case 3)						
Eastbound Carpenter Road Approach	E (35.2)	D (33.3)	F (57.4)	D (30.0)	E (35.3)	E (36.9)
Northbound Hudson Road Left Turn	A (9.8)	A (9.3)	A (9.5)	A (9.8)	A (9.4)	A (9.3)
2044 with Development (Case 3) *with improvement*[29]						
Eastbound Carpenter Road Approach	-	-	-	C (22.3)	C (24.4)	C (23.5)
Northbound Hudson Road Left Turn	-	-	-	A (9.8)	A (9.4)	A (9.3)

[29] Improvement scenario includes the provision of a separate left turn lane and right turn lane along the eastbound Carpenter Road approach.

Table 24 (Continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Signalized Intersection (T-Intersection)[1]	**LOS per TIS**			**LOS per JMT**		
Hudson Road / Carpenter Road (Sussex Road 259)[30]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)	-	-	-	B (10.4)	A (9.0)	A (9.1)

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
Hudson Road / Carpenter Road (Sussex Road 259) [5]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)						
Eastbound Carpenter Road Approach	-	-	-	A (7.9)	A (7.0)	A (7.5)
Northbound Hudson Road Approach	-	-	-	A (7.4)	A (9.1)	A (8.4)
Southbound Hudson Road Approach	-	-	-	B (10.7)	A (9.2)	A (9.1)
Overall	-	-	-	A (9.1)	A (8.9)	A (8.6)

[30] JMT conducted an additional analysis of the intersection as a signalized intersection. For this analysis, the eastbound approach was modeled with one left turn lane and one right-turn lane. The northbound approach was modeled with one left-turn lane and one through lane. The southbound approach was modeled with one right-turn lane and one through lane. The intersection was modeled with utilizing a 60 second cycle length. The northbound and southbound approaches were modeled with concurrent phasing and protected/permitted northbound left turns.

Table 24A
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
Hudson Road / Carpenter Road (Sussex Road 259) / Log Cabin Hill Road (Sussex Road 247) [31]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)						
Eastbound Carpenter Road Approach	A (7.9)	A (7.3)	A (9.4)	A (8.1)	A (7.4)	A (9.5)
Westbound Log Cabin Road Approach	A (8.3)	B (11.5)	A (9.1)	A (8.4)	B (12.0)	A (9.3)
Northbound Hudson Road Approach	A (8.5)	C (15.0)	B (12.6)	A (8.6)	C (15.3)	B (12.8)
Southbound Hudson Road Approach	B (11.2)	A (9.9)	B (12.9)	B (11.3)	B (10.1)	B (13.1)
Overall	A (9.5)	B (12.3)	B (12.0)	A (9.6)	B (12.6)	B (12.3)

[31] The intersection was modeled as a single lane roundabout. The scenario incorporates the realignment of Log Cabin Hill Road to intersect Hudson Road across from Carpenter Road.

Table 25
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
Carpenter Road / Diamond Farm Road (Sussex Road 257)	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound Diamond Farm Road Left Turn	A (7.3)	A (7.3)	A (7.2)	A (7.3)	A (7.3)	A (7.3)
Westbound Diamond Farm Rod Left Turn	A (7.3)	A (7.2)	A (7.2)	A (7.3)	A (7.3)	A (7.3)
Northbound Carpenter Road Approach	A (9.7)	A (9.7)	A (9.6)	A (9.6)	A (9.6)	A (9.5)
Southbound Carpenter Road Approach	A (9.7)	A (9.6)	A (9.7)	A (9.7)	A (9.6)	A (9.7)
2044 without Development (Case 2)						
Eastbound Diamond Farm Road Left Turn	A (7.4)	A (7.3)	A (7.3)	A (7.4)	A (7.4)	A (7.4)
Westbound Diamond Farm Rod Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.4)	A (7.4)	A (7.4)
Northbound Carpenter Road Approach	B (10.4)	B (10.4)	B (10.3)	B (10.4)	B (10.4)	B (10.3)
Southbound Carpenter Road Approach	B (10.6)	B (10.4)	B (10.5)	B (10.6)	B (10.4)	B (10.6)
2044 with Development (Case 3)						
Eastbound Diamond Farm Road Left Turn	A (7.4)	A (7.3)	A (7.3)	A (7.4)	A (7.4)	A (7.4)
Westbound Diamond Farm Rod Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.4)	A (7.4)	A (7.4)
Northbound Carpenter Road Approach	B (11.5)	B (11.2)	B (11.1)	B (11.4)	B (11.2)	B (11.0)
Southbound Carpenter Road Approach	B (11.6)	B (11.4)	B (11.5)	B (11.5)	B (11.4)	B (11.5)

Table 26
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Delaware Route 5 / Carpenter Road	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Westbound Carpenter Road Approach	A (9.5)	A (10.0)	A (9.7)	A (9.4)	A (9.8)	A (9.8)
Southbound Delaware Route 5 Left Turn	A (7.8)	A (7.7)	A (7.9)	A (7.7)	A (7.8)	A (7.9)
2044 without Development (Case 2)						
Westbound Carpenter Road Approach	A (9.8)	A (10.3)	B (10.1)	A (9.7)	B (10.1)	B (10.3)
Southbound Delaware Route 5 Left Turn	A (7.9)	A (7.9)	A (8.0)	A (7.8)	A (8.0)	A (8.0)
2044 with Development (Case 3)						
Westbound Carpenter Road Approach	B (10.9)	B (11.1)	B (10.9)	B (10.6)	B (10.7)	B (10.9)
Southbound Delaware Route 5 Left Turn	A (8.2)	A (8.1)	A (8.3)	A (8.0)	A (8.2)	A (8.3)

Table 27
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Walker Road / Diamond Farm Road	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Westbound Walker Road Approach	A (9.1)	A (8.9)	A (8.7)	A (8.9)	A (8.9)	A (8.7)
Southbound Diamond Farm Road Left Turn	A (7.5)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
2044 without Development (Case 2)						
Westbound Walker Road Approach	A (9.6)	A (9.5)	A (9.2)	A (9.2)	A (9.4)	A (9.2)
Southbound Diamond Farm Road Left Turn	A (7.6)	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)
2044 with Development (Case 3)						
Westbound Walker Road Approach	B (10.3)	B (11.0)	B (10.3)	B (10.1)	B (10.8)	B (10.4)
Southbound Diamond Farm Road Left Turn	A (7.8)	A (7.6)	A (7.5)	A (7.5)	A (7.6)	A (7.6)

Table 28
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Hudson Road / E. Lake Drive	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound E. Lake Drive Approach	B (10.2)	A (9.7)	A (9.4)	A (9.9)	A (9.7)	A (9.5)
Northbound Hudson Road Left Turn	A (8.3)	A (7.6)	A (7.6)	A (7.7)	A (7.7)	A (7.6)
2044 without Development (Case 2)						
Eastbound E. Lake Drive Approach	B (12.8)	B (11.6)	B (11.2)	B (12.0)	B (11.6)	B (11.7)
Northbound Hudson Road Left Turn	A (9.0)	A (8.1)	A (8.0)	A (8.2)	A (8.2)	A (8.2)
2044 with Development (Case 3)						
Eastbound E. Lake Drive Approach	C (22.0)	C 915.4)	B (14.7)	C (18.0)	C (15.5)	B (14.9)
Northbound Hudson Road Left Turn	B (11.1)	A (8.9)	A (8.9)	A (9.4)	A (9.1)	A (9.0)

Table 29
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Signalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Hudson Road / Fisher Road (Sussex Road 262)	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1) [32]	C (21.9)	C (24.8)	C (20.5)	D (39.5)	D (40.1)	D (38.6)
2044 without Development (Case 2) [32]	D (45.3)	E (63.7)	D (36.4)	D (41.8)	D (49.7)	D (44.1)
2044 with Development (Case 3) [32]	F (129.1)	F (137.2)	F (101.0)	E (78.6)	F (101.6)	F (89.4)
2044 with Development (Case 3) *with signal timing optimization* [33]	-	-	-	D (41.2)	E (59.3)	D (43.1)
2044 with Development (Case 3) *with improvement* [34]	C (32.7)	D (38.4)	C (33.5)	D (43.3)	D (52.6)	D (44.4)

[32] JMT modeled the intersection utilizing the split green times consistent with DelDOT MAX 1 green times.
[33] The signal optimization scenario includes optimizing green split times while utilizing a 120 second cycle length during the AM and Saturday peak hours, and a 150 second cycle length during the PM peak hour.
[34] Both JMT and the TIS modeled the intersection with an additional left turn lane along the eastbound approach. JMT updated the eastbound and westbound left turn phasing to be protected-only, whereas the TIS maintained protected-permitted left turns.

Table 30
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Cool Spring Road	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound US Route 9 Left Turn	A (9.2)	A (8.5)	A (8.3)	A (8.0)	A (8.6)	A (8.4)
Westbound US Route 9 Left Turn	A (8.6)	A (8.2)	A (8.5)	A (8.5)	A (8.3)	A (8.6)
Northbound Cool Spring Road Approach	B (14.3)	C (15.8)	B (15.0)	B (14.2)	C (16.1)	C (15.1)
Southbound Cool Spring Road Approach	C (18.8)	C (16.3)	C (20.0)	C (18.4)	C (16.6)	C (18.8)
2044 without Development (Case 2)						
Eastbound US Route 9 Left Turn	A (9.7)	A (9.1)	A (8.8)	A (8.4)	A (9.2)	A (8.9)
Westbound US Route 9 Left Turn	A (9.0)	A (8.7)	A (9.1)	A (9.0)	A (8.8)	A (9.1)
Northbound Cool Spring Road Approach	D (33.3)	F (61.1)	E (46.4)	D (32.4)	F (60.8)	E (47.8)
Southbound Cool Spring Road Approach	E (36.2)	E (40.3)	E (49.8)	D (34.6)	E (49.0)	E (49.2)
2044 with Development (Case 3)						
Eastbound US Route 9 Left Turn	B (11.0)	B (10.6)	B (10.1)	A (9.1)	B (10.8)	B (10.2)
Westbound US Route 9 Left Turn	B (10.1)	A (9.4)	A (9.9)	B (10.0)	A (9.6)	A (9.9)
Northbound Cool Spring Road Approach	F (*)	F (*)	F (*)	F (*)	F (*)	F (*)
Southbound Cool Spring Road Approach	F (*)	F (*)	F (*)	F (*)	F (*)	F (*)

*Indicates delay greater than 1,000 seconds per vehicle

Table 30 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Signalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Cool Spring Road [35]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 without Development (Case 2)				C (21.9)	B (17.7)	B (18.7)
2044 with Development (Case 3)				C (29.8)	C (26.7)	C (26.4)

[35] JMT modeled the intersection as a signalized intersection with turn lanes along each approach. A 120 second cycle length was utilized during all peak hours.

Table 30 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Cool Spring Road [5]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 without Development (Case 2)						
Eastbound US Route 9 Approach	-	-	-	A (8.9)	A (8.2)	A (9.2)
Westbound US Route 9 Approach	-	-	-	A (6.7)	B (10.5)	A (9.0)
Northbound Cool Spring Road Approach	-	-	-	A (8.2)	A (6.5)	A (7.2)
Southbound Cool Spring Road Approach	-	-	-	A (5.4)	A (7.3)	A (6.6)
Overall LOS	-	-	-	A (7.9)	A (9.2)	A (8.9)
2044 with Development (Case 3)						
Eastbound US Route 9 Approach	-	-	-	D (26.3)	C (17.4)	C (23.0)
Westbound US Route 9 Approach	-	-	-	B (11.8)	F (52.1)	D (27.1)
Northbound Cool Spring Road Approach	-	-	-	C (16.5)	B (13.2)	B (14.7)
Southbound Cool Spring Road Approach	-	-	-	B (13.0)	C (15.3)	B (14.4)
Overall LOS	-	-	-	C (18.9)	D (31.9)	C (23.0)

Table 31
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Josephs Road	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound US Route 9 Left Turn	A (8.3)	A (8.6)	A (8.3)	A (8.1)	A (8.7)	A (8.4)
Westbound US Route 9 Left Turn	A (8.7)	A (8.2)	A (8.6)	A (8.8)	A (8.3)	A (8.6)
Northbound Josephs Road Approach	C (17.7)	C (16.8)	C (17.9)	C (17.7)	C (16.9)	C (18.2)
Southbound Josephs Road Approach	B (13.4)	C (16.6)	C (15.3)	B (13.5)	C (16.9)	C (15.4)
2044 without Development (Case 2)						
Eastbound US Route 9 Left Turn	A (8.9)	A (9.3)	A (9.0)	A (8.5)	A (9.4)	A (9.1)
Westbound US Route 9 Left Turn	A (9.2)	A (8.7)	A (9.1)	A (9.2)	A (8.8)	A (9.2)
Northbound Josephs Road Approach	D (25.3)	C (24.6)	D (25.8)	C (23.5)	C (24.9)	D (26.4)
Southbound Josephs Road Approach	C (16.8)	C (23.4)	C (20.8)	C (16.1)	C (23.9)	C (21.0)
2044 with Development (Case 3)						
Eastbound US Route 9 Left Turn	A (9.7)	B (10.2)	A (9.8)	A (9.1)	B (10.4)	A (10.0)
Westbound US Route 9 Left Turn	B (10.3)	A (9.2)	A (9.9)	B (10.2)	A (9.3)	B (10.0)
Northbound Josephs Road Approach	E (48.0)	E (40.8)	E (46.0)	E (42.4)	E (41.9)	E (47.3)
Southbound Josephs Road Approach	D (26.5)	E (38.8)	D (34.0)	C (24.4)	E (40.2)	D (34.6)

Table 31 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Signalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Josephs Road [36]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)				C (22.1)	B (19.6)	B (19.5)

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Josephs Road [5]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)						
Eastbound US Route 9 Approach	-	-	-	C (16.8)	A (9.4)	B (12.8)
Westbound US Route 9 Approach	-	-	-	A (9.2)	C (15.6)	B (12.3)
Northbound Josephs Road Approach	-	-	-	A (8.8)	A (6.6)	A (7.7)
Southbound Josephs Road Approach	-	-	-	A (6.1)	A (8.1)	A (7.6)
Overall LOS	-	-	-	B (13.4)	B (12.8)	B (12.4)

[36] The intersection was modeled as a signalized intersection with a 120 second cycle length. Each approach was modeled with separate left turn, through, and right turn lanes and protected-permitted left turn phasing.

Table 32
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Arabian Acres Road (Sussex Road 282) [37]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Westbound US Route 9 Left Turn	A (8.6)	A (8.3)	A (8.5)	A (8.7)	A (8.3)	A (8.6)
Northbound Arabian Acres Road Approach	B (14.4)	C (17.1)	C (15.5)	B (14.4)	C (16.8)	C (15.6)
2044 without Development (Case 2)						
Westbound US Route 9 Left Turn	A (9.2)	A (8.7)	A (9.1)	A (9.2)	A (8.8)	A (9.2)
Northbound Arabian Acres Road Approach	C (18.3)	D (25.1)	C (21.1)	C (17.6)	C (24.3)	C (21.2)
2044 with Development (Case 3)						
Westbound US Route 9 Left Turn	B (10.2)	A (9.3)	A (9.8)	B (10.2)	A (9.4)	A (9.9)
Northbound Arabian Acres Road Approach	D (27.8)	E (41.1)	D (32.1)	D (26.3)	E (39.0)	D (32.2)

[37] JMT modeled the intersection with a separate left turn and through lane along the westbound US Route 9 approach due to the existing bypass lane, whereas the TIS modeled the intersection with a shared left turn/through lane.

Table 32 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Signalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Arabian Acres Road (Sussex Road 282)	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)[38]				B (14.7)	B (10.0)	B (10.1)

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Arabian Acres Road (Sussex Road 282) [5]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)	-	-	-			
Eastbound US Route 9 Approach	-	-	-	C (18.4)	A (9.7)	B (11.8)
Westbound US Route 9 Approach	-	-	-	A (8.7)	B (14.2)	B (10.6)
Northbound Arabian Acres Road Approach	-	-	-	A (9.0)	A (6.5)	A (7.3)
Overall LOS	-	-	-	B (14.2)	B (12.2)	B (11.2)

[38] The intersection was modeled as a signalized intersection with a 90 second cycle length. Each approach was modeled with separate left turn, through, and right turn lanes and protected-permitted left turn phasing.

Table 33
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Log Cabin Hill Road / Josephs Road (Sussex Road 281)	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound Log Cabin Hill Road Left Turn	A (7.2)	A (8.3)	A (7.9)	A (7.3)	A (7.3)	A (7.3)
Westbound Log Cabin Hill Road Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
Northbound Josephs Road Approach	A (8.4)	A (7.6)	A (7.2)	A (8.6)	A (8.8)	A (9.0)
Southbound Josephs Road Approach	A (9.1)	A (8.5)	B (10.4)	A (9.2)	A (8.5)	A (9.5)
2044 without Development (Case 2)						
Eastbound Log Cabin Hill Road Left Turn	A (7.4)	A (8.5)	A (8.1)	A (7.4)	A (7.5)	A (7.5)
Westbound Log Cabin Hill Road Left Turn	A (7.5)	A (7.5)	A (7.5)	A (7.6)	A (7.6)	A (7.6)
Northbound Josephs Road Approach	A (9.0)	A (9.1)	B (10.3)	B (10.5)	B (10.8)	B (11.5)
Southbound Josephs Road Approach	B (10.1)	A (8.9)	B (12.5)	B (10.2)	A (9.0)	B (11.1)
2044 with Development (Case 3)						
Eastbound Log Cabin Hill Road Left Turn	A (7.5)	A (8.9)	A (8.4)	A (7.5)	A (7.7)	A (7.7)
Westbound Log Cabin Hill Road Left Turn	A (7.8)	A (7.7)	A (7.7)	A (7.9)	A (7.7)	A (7.8)
Northbound Josephs Road Approach	B (10.1)	B (10.5)	B (12.1)	B (11.9)	B (12.4)	B (13.6)
Southbound Josephs Road Approach	B (11.1)	A (9.5)	B (14.9)	B (11.1)	A (9.5)	B (12.7)

Table 34
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Log Cabin Hill Road / Persimmon Road	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound Log Cabin Hill Road Left Turn	A (7.3)	A (7.4)	A (7.3)	A (7.3)	A (7.4)	A (7.4)
Southbound Persimmon Approach	A (8.7)	A (9.3)	A (8.9)	A (8.8)	A (9.3)	A (9.0)
2044 without Development (Case 2)						
Eastbound Log Cabin Hill Road Left Turn	A (7.4)	A (7.7)	A (7.5)	A (7.4)	A (7.7)	A (7.5)
Southbound Persimmon Approach	A (9.4)	B (10.5)	A (9.8)	A (9.5)	B (10.6)	A (9.9)
2044 with Development (Case 3)						
Eastbound Log Cabin Hill Road Left Turn	A (7.5)	A (7.9)	A (7.7)	A (7.5)	A (7.9)	A (7.7)
Southbound Persimmon Approach	A (9.9)	B (11.7)	B (10.7)	A (10.0)	B (11.7)	B (10.8)

Table 35
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Log Cabin Hill Road / Sweetbriar Road	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound Log Cabin Hill Road Left Turn	B (12.9)	B (14.1)	B (14.9)	B (12.5)	B (14.3)	B (15.0)
Eastbound Log Cabin Road Right Turn	A (9.7)	A (9.7)	B (11.2)	A (9.7)	A (9.7)	B (11.3)
Northbound Sweet Briar Road Left Turn	A (7.7)	A (7.9)	A (8.2)	A (7.8)	A (7.9)	A (8.2)
2044 without Development (Case 2)						
Eastbound Log Cabin Hill Road Left Turn	C (18.5)	C (21.3)	C (23.9)	C (16.7)	C (21.7)	C (21.6)
Eastbound Log Cabin Road Right Turn	B (11.4)	B (11.4)	B (15.0)	B (11.1)	B (11.4)	B (14.0)
Northbound Sweet Briar Road Left Turn	A (8.1)	A (8.4)	A (8.8)	A (8.1)	A (8.4)	A (8.7)
2044 with Development (Case 3)						
Eastbound Log Cabin Hill Road Left Turn	C (23.5)	D (32.3)	E (36.6)	C (20.5)	D (32.9)	D (31.4)
Eastbound Log Cabin Road Right Turn	B (14.3)	B (12.6)	C (19.5)	B (13.4)	B (12.6)	C (17.2)
Northbound Sweet Briar Road Left Turn	A (8.5)	A (8.9)	A (9.5)	A (8.4)	A (8.8)	A (9.3)

Table 36
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Hunters Mill Road [39]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound US Route 9 Left Turn	A (8.7)	A (9.0)	A (8.7)	A (8.2)	A (9.1)	A (8.6)
Westbound US Route 9 Left Turn	A (8.6)	A (8.2)	A (8.8)	A (8.7)	A (8.4)	A (8.9)
Northbound Hunters Mill Road Approach	C (19.1)	C (24.3)	C (22.2)	C (19.3)	D (28.0)	C (20.7)
Southbound Hunters Mill Road Approach	C (20.1)	C (22.2)	C (22.5)	C (19.3)	C (25.0)	C (20.9)
2044 without Development (Case 2)						
Eastbound US Route 9 Left Turn	A (10.0)	B (10.4)	A (9.8)	A (9.3)	B (10.3)	A (9.6)
Westbound US Route 9 Left Turn	A (9.5)	A (9.5)	B (10.1)	A (9.6)	A (9.6)	B (10.3)
Northbound Hunters Mill Road Approach	E (38.3)	F (73.5)	E (48.1)	E (38.9)	F (74.4)	E (45.1)
Southbound Hunters Mill Road Approach	E (48.9)	F (72.9)	F (59.7)	E (44.6)	F (70.9)	F (50.7)
2044 with Development (Case 3)						
Eastbound US Route 9 Left Turn	B (12.3)	B (11.9)	B (11.4)	B (11.2)	B (11.8)	B (11.1)
Westbound US Route 9 Left Turn	B (10.6)	B (11.3)	B (12.0)	B (10.8)	B (11.5)	B (12.1)
Northbound Hunters Mill Road Approach	F (110.4)	F (229.5)	F (131.8)	F (112.0)	F (227.5)	F (122.5)
Southbound Hunters Mill Road Approach	F (308.9)	F (376.4)	F (361.2)	F (238.9)	F (336.7)	F (239.3)

[39] JMT modeled the eastbound approach with one left turn lane and one shared through/right turn lane due to the existing bypass lane, whereas the TIS modeled the approach with one shared left turn/through lane and one right turn lane. JMT modeled the southbound approach with one shared left turn/through lane and one right turn lane due to the width of the driveway, whereas the TIS modeled the approach with one shared left turn/through/right turn lane.

Table 36 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Signalized Intersection[1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Hunters Mill Road [40]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 without Development (Case 2)				B (13.3)	C (20.3)	B (13.8)
2044 with Development (Case 3)				C (23.5)	C (33.9)	C (22.5)

[40] The intersection was modeled as a signalized intersection with a 120 second cycle length during Case 2 and a 150 second cycle length during Case 3. Each approach was modeled with separate left turn, through, and right turn lanes and protected-permitted left turn phasing.

Table 36 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Hunters Mill Road [5]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 without Development (Case 2)						
Eastbound US Route 9 Approach	-	-	-	B (12.3)	B (10.1)	B (13.3)
Westbound US Route 9 Approach	-	-	-	A (9.5)	B (13.5)	A (9.6)
Northbound Hunters Mill Road Approach	-	-	-	A (7.5)	A (6.9)	A (8.1)
Southbound Hunters Mill Road Approach	-	-	-	A (5.9)	A (7.1)	A (6.0)
Overall LOS	-	-	-	B (10.9)	B (11.8)	B (11.5)
2044 with Development (Case 3)						
Eastbound US Route 9 Approach	-	-	-	D (26.3)	D (25.9)	E (41.2)
Westbound US Route 9 Approach	-	-	-	D (26.4)	D (30.0)	C (18.3)
Northbound Hunters Mill Road Approach	-	-	-	B (10.3)	B (10.4)	B (11.8)
Southbound Hunters Mill Road Approach	-	-	-	A (9.2)	A (9.3)	A (8.1)
Overall LOS	-	-	-	D (26.1)	D (27.8)	D (30.5)

Table 37
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Beaver Creek Drive [41]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound US Route 9 Left Turn	A (8.5)	A (9.6)	A (8.6)	A (8.3)	A (9.3)	A (8.6)
Westbound US Route 9 Left Turn	A (8.6)	A (8.4)	A (8.8)	A (8.6)	A (8.5)	A (8.9)
Northbound Beaver Creek Drive Approach	-	B (11.4)	C (17.9)	B (12.0)	B (11.6)	C (18.2)
Southbound Beaver Creek Drive Approach	C (18.9)	D (26.3)	C (18.7)	C (19.2)	D (26.8)	C (18.9)
2044 without Development (Case 2)						
Eastbound US Route 9 Left Turn	A (9.8)	B (11.3)	A (9.8)	A (9.4)	B (10.7)	A (9.8)
Westbound US Route 9 Left Turn	A (9.4)	A (9.7)	B (10.2)	A (9.5)	A (9.8)	B (10.3)
Northbound Beaver Creek Drive Approach	-	C (15.7)	E (36.7)	B (14.6)	C (15.7)	E (37.9)
Southbound Beaver Creek Drive Approach	E (44.9)	F (92.0)	E (42.7)	E (45.5)	F (87.9)	E (44.2)
2044 with Development (Case 3)						
Eastbound US Route 9 Left Turn	B (12.0)	B (13.2)	B (11.4)	B (11.4)	B (12.4)	B (11.4)
Westbound US Route 9 Left Turn	B (10.5)	B (11.8)	B (12.1)	B (10.7)	B (11.9)	B (12.3)
Northbound Beaver Creek Drive Approach	-	C (23.6)	F (107.0)	C (18.8)	C (23.7)	F (113.1)
Southbound Beaver Creek Drive Approach	F (256.3)	F (541.4)	F (209.9)	F (260.9)	F (508.0)	F (224.3)

[41] JMT modeled the intersection with one right turning vehicle along the northbound Beaver Creek Drive approach during the AM peak hour to generate LOS results and queue results along that approach, whereas the TIS did not.

Table 37 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Signalized Intersection[1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Beaver Creek Drive[42]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 without Development (Case 2)				B (11.1)	B (13.9)	B (15.8)
2044 with Development (Case 3)				C (25.2)	C (34.7)	D (40.9)

[42] The intersection was modeled as a signalized intersection with a 150 second cycle length. Each approach was modeled with separate left turn, through, and right turn lanes and protected-permitted left turn phasing.

Table 37 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Beaver Creek Drive [5, 43]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 without Development (Case 2)						
Eastbound US Route 9 Approach	-	-	-	B (12.4)	B (11.0)	B (13.5)
Westbound US Route 9 Approach	-	-	-	A (9.7)	B (14.8)	B (10.3)
Northbound Beaver Creek Drive Approach	-	-	-	A (7.4)	A (7.3)	A (8.5)
Southbound Beaver Creek Drive Approach	-	-	-	A (6.1)	A (7.5)	A (6.2)
Overall LOS	-	-	-	B (11.0)	B (13.0)	B (11.9)
2044 with Development (Case 3)						
Eastbound US Route 9 Approach	-	-	-	C (16.6)	E (35.7)	E (44.4)
Westbound US Route 9 Approach	-	-	-	D (27.8)	E (38.8)	C (21.4)
Northbound Beaver Creek Drive Approach	-	-	-	A (8.9)	B (11.3)	B (12.6)
Southbound Beaver Creek Drive Approach	-	-	-	A (9.5)	A (10.1)	A (8.5)
Overall LOS	-	-	-	C (22.3)	E (37.0)	D (33.4)

[43] JMT modeled the intersection with one right turning vehicle along the northbound Beaver Creek Drive approach during the AM peak hour to generate LOS results and queue results along that approach.

Table 38
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Signalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Delaware Route 5	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)	D (38.4)	D (42.0)	D (38.0)	E (55.1)	E (56.2)	E (61.9)
2021 Existing (Case 1) *with signal timing optimization* [44]				C (34.2)	C (33.3)	C (33.8)
2044 without Development (Case 2) *with signal timing optimization*	E (68.4)	F (89.6)	F (88.0)	D (48.7)	D (53.9)	E (58.3)
2044 with Development (Case 3) *with signal timing optimization*	F (172.9)	F (198.6)	F (189.0)	F (83.0)	F (92.2)	F (105.4)
2044 with Development (Case 3) *with improvement* [45]	D (42.6)	D (40.0)	D (42.5)	D (37.0)	D (36.2)	D (38.0)

[44] The signal optimization scenario includes optimizing green split times. JMT utilized a cycle length of 120 for the AM and Saturday peak hours during Case 2, a cycle length of 150 seconds for the PM peak hour during Case 2. A 150 second cycle length was used for the AM peak hour and a 180 second cycle length for the PM and Saturday peak hours during Case 3.

[45] TIS improvement included dual left turn lanes along the eastbound approach as well as one left turn lane, one through lane and one shared through/right turn lane along the westbound approach. JMT improvement included providing one left turn lane, one through lane, and one shared through/right turn lane along eastbound and westbound US Route 9.

Table 39
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Prettyman Road (Sussex Road 254)	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound US Route 9 Left Turn	A (8.3)	A (9.0)	A (8.5)	A (8.3)	A (9.0)	A (8.6)
Southbound Prettyman Road Approach	C (21.0)	D (26.7)	D (30.8)	C (21.0)	C (24.5)	D (30.6)
2044 without Development (Case 2)						
Eastbound US Route 9 Left Turn	A (9.4)	B (10.2)	A (9.7)	A (9.5)	B (10.3)	A (9.8)
Southbound Prettyman Road Approach	F (73.8)	F (137.5)	F (310.4)	F (73.9)	F (141.7)	F (307.5)
2044 with Development (Case 3)						
Eastbound US Route 9 Left Turn	B (10.9)	B (11.2)	B (11.0)	B (11.1)	B (11.4)	B (11.1)
Southbound Prettyman Road Approach	F (504.5)	F (870.8)	F (*)	F (505.9)	F (889.7)	F (*)

*Indicates delay greater than 1,000 seconds per vehicle

Table 39 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Signalized Intersection[1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Prettyman Road (Sussex Road 254) [46]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 without Development (Case 2)				B (11.2)	B (11.9)	B (17.1)
2044 with Development (Case 3)				C (21.7)	C (21.2)	C (32.3)

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Prettyman Road (Sussex Road 254) [5]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 without Development (Case 2)						
Eastbound US Route 9 Approach	-	-	-	B (12.7)	B (13.3)	C (16.9)
Westbound US Route 9 Approach	-	-	-	A (8.8)	A (9.1)	A (8.6)
Southbound Prettyman Road Approach	-	-	-	A (8.3)	A (9.0)	A (9.6)
Overall LOS	-	-	-	B (10.5)	B (11.0)	B (12.5)
2044 with Development (Case 3)						
Eastbound US Route 9 Approach	-	-	-	C (23.1)	E (39.5)	F (57.3)
Westbound US Route 9 Approach	-	-	-	C (15.4)	B (12.8)	B (12.7)
Southbound Prettyman Road Approach	-	-	-	B (13.9)	B (13.2)	C (15.3)
Overall LOS	-	-	-	C (18.5)	D (25.0)	D (33.6)

[46] The intersection was modeled as a signalized intersection with a 90 second cycle length. Each approach was modeled with separate left turn, through, and right turn lanes and protected-permitted left turn phasing.

Table 40
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Fisher Road / Martins Farm Road (Sussex Road 291)	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Westbound Fisher Road Left Turn	A (7.8)	A (7.6)	A (7.7)	A (7.6)	A (7.7)	A (7.7)
Northbound Martins Farm Road Approach	A (10.0)	A (10.0)	A (9.9)	A (9.9)	B (10.0)	A (9.9)
2044 without Development (Case 2)						
Westbound Fisher Road Left Turn	A (8.0)	A (7.8)	A (7.9)	A (7.8)	A (7.9)	A (7.9)
Northbound Martins Farm Road Approach	B (10.8)	B (10.8)	B (10.7)	B (10.6)	B (10.9)	B (10.7)
2044 with Development (Case 3)						
Westbound Fisher Road Left Turn	A (8.1)	A (7.9)	A (8.0)	A (7.9)	A (7.9)	A (8.0)
Northbound Martins Farm Road Approach	B (11.7)	B (11.7)	B (11.5)	B (11.4)	B (11.8)	B (11.5)

Table 41
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection All-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
Fisher Road / Cool Spring Road	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound Fisher Road Left Turn	A (8.6)	A (8.3)	A (8.7)	A (9.0)	A (8.4)	A (8.4)
Westbound Fisher Road Left Turn	A (8.5)	A (9.0)	A (8.1)	A (8.4)	A (8.9)	A (8.2)
Northbound Cool Spring Road Left Turn	A (9.2)	A (8.3)	A (8.2)	A (8.7)	A (8.4)	A (8.2)
Southbound Cool Spring Road Left Turn	A (7.9)	A (8.0)	A (7.8)	A (8.0)	A (8.1)	A (7.9)
2044 without Development (Case 2)						
Eastbound Fisher Road Left Turn	B (10.3)	B (10.0)	B (10.3)	B (10.6)	B (10.1)	A (10.0)
Westbound Fisher Road Left Turn	A (9.7)	B (10.7)	A (9.2)	A (9.5)	B (10.6)	A (9.3)
Northbound Cool Spring Road Left Turn	B (11.2)	B (10.2)	A (9.8)	B (10.4)	B (10.1)	A (9.7)
Southbound Cool Spring Road Left Turn	A (9.0)	A (9.3)	A (9.0)	A (9.1)	A (9.4)	A (9.0)
2044 with Development (Case 3)						
Eastbound Fisher Road Left Turn	B (14.1)	B (13.0)	B (13.4)	B (14.5)	B (13.4)	B (12.8)
Westbound Fisher Road Left Turn	B (12.2)	B (14.2)	B (11.4)	B (11.9)	B (14.4)	B (11.4)
Northbound Cool Spring Road Left Turn	C (16.1)	C (15.5)	B (13.8)	B (14.5)	C (15.7)	B (13.6)
Southbound Cool Spring Road Left Turn	B (12.9)	B (12.2)	B (11.8)	B (13.0)	B (12.7)	B (11.9)

Table 42
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Cool Spring Road / Forest Road (Sussex Road 292)	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound Cool Spring Road Approach	A (9.5)	A (9.3)	A (9.3)	A (9.5)	A (9.3)	A (9.2)
Northbound Forest Road Left Turn	A (7.3)	A (7.4)	A (7.3)	A (7.4)	A (7.4)	A (7.4)
2044 without Development (Case 2)						
Eastbound Cool Spring Road Approach	B (10.8)	B (10.6)	B (10.4)	B (10.8)	B (10.5)	B (10.4)
Northbound Forest Road Left Turn	A (7.5)	A (7.6)	A (7.5)	A (7.6)	A (7.6)	A (7.6)
2044 with Development (Case 3)						
Eastbound Cool Spring Road Approach	B (13.6)	B (13.1)	B (12.7)	B (13.0)	B (12.7)	B (12.6)
Northbound Forest Road Left Turn	A (7.9)	A (7.8)	A (7.8)	A (7.9)	A (7.9)	A (7.8)

Table 43
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Sweetbriar Road / Water View Drive	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Westbound Sweet Briar Road Approach	B (11.7)	B (11.0)	B (10.4)	B (11.6)	B (11.1)	B (10.5)
Southbound Water View Drive Left Turn	A (7.8)	A (7.7)	A (7.6)	A (7.9)	A (7.7)	A (7.7)
2044 without Development (Case 2)						
Westbound Sweet Briar Road Approach	B (13.3)	B (12.7)	B (11.7)	B (12.3)	B (12.8)	B (11.8)
Southbound Water View Drive Left Turn	A (8.1)	A (7.9)	A (7.9)	A (8.0)	A (8.0)	A (7.9)
2044 with Development (Case 3)						
Westbound Sweet Briar Road Approach	B (14.0)	B (13.1)	B (12.1)	B (12.8)	B (13.3)	B (12.1)
Southbound Water View Drive Left Turn	A (8.2)	A (8.0)	A (8.0)	A (8.1)	A (8.1)	A (8.1)

Table 44
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Sweetbriar Road / Breezeway Drive	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Westbound Breezeway Drive Approach	B (11.8)	B (11.2)	B (12.0)	B (11.8)	B (11.1)	B (12.2)
Southbound Sweetbriar Road Left Turn	A (7.8)	A (7.7)	A (7.6)	A (7.9)	A (7.8)	A (7.7)
2044 without Development (Case 2)						
Westbound Breezeway Drive Approach	B (13.5)	B (12.9)	B (14.2)	B (12.9)	B (12.8)	B (14.3)
Southbound Sweetbriar Road Left Turn	A (8.0)	A (7.9)	A (7.8)	A (8.1)	A (8.0)	A (7.9)
2044 with Development (Case 3)						
Westbound Breezeway Drive Approach	B (15.0)	B (14.3)	C (15.9)	B (14.1)	B (14.1)	C (16.0)
Southbound Sweetbriar Road Left Turn	A (8.1)	A (8.1)	A (7.9)	A (8.1)	A (8.2)	A (8.1)

Table 45
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Sweetbriar Road / Spring Brook Avenue	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Westbound Spring Brook Avenue Approach	B (12.1)	B (11.6)	B (11.9)	B (12.2)	B (11.7)	B (12.0)
Southbound Sweetbriar Road Left Turn	A (7.8)	A (7.8)	A (7.7)	A (7.9)	A (7.8)	A (7.8)
2044 without Development (Case 2)						
Westbound Spring Brook Avenue Approach	B (14.0)	B (13.7)	B (13.8)	B (13.3)	B (13.9)	B (14.0)
Southbound Sweetbriar Road Left Turn	A (8.1)	A (8.1)	A (7.9)	A (8.1)	A (8.1)	A (8.0)
2044 with Development (Case 3)						
Westbound Spring Brook Avenue Approach	C (15.8)	C (15.2)	C (15.8)	B (14.7)	C (15.4)	C (16.0)
Southbound Sweetbriar Road Left Turn	A (8.1)	A (8.3)	A (8.0)	A (8.1)	A (8.3)	A (8.2)

Table 46
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Signalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Sweetbriar Road / Diary Farm Road (Sussex Road 261)	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)	C (23.6)	C (22.2)	C (22.8)	D (45.9)	D (43.8)	D (42.9)
2044 without Development (Case 2)	D (35.7)	D (37.1)	C (33.5)	E (55.6)	E (57.7)	D (51.8)
2044 without Development (Case 2) *with signal timing optimization*				C (32.7)	C (33.9)	C (30.3)
2044 with Development (Case 3) *with signal timing optimization*	E (58.6)	E (66.0)	D (54.1)	D (53.6)	D (50.3)	D (42.9)

Table 47
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Minos Conaway Road[47]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound US Route 9 Left Turn	A (8.2)	A (8.9)	A (9.0)	A (8.2)	A (8.9)	A (8.9)
Westbound US Route 9 Left Turn	A (9.1)	A (8.2)	A (8.7)	A (8.9)	A (8.3)	A (8.7)
Northbound Lakeview Boulevard Approach	C (21.7)	C (15.7)	C (17.6)	C (22.0)	C (16.2)	C (18.1)
Southbound Minos Conaway Road Approach	B (14.3)	C (17.4)	C (22.5)	B (14.0)	C (17.5)	C (22.8)

[47] Since the June 30, 2022 Final TIS, the intersection has been converted to a signalized intersection. As such, future analysis was conducted incorporating the traffic signal.

Table 47 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Signalized Intersection[1]	**LOS per TIS**			**LOS per JMT**		
US Route 9 / Minos Conaway Road [48]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 without Development (Case 2)	-	-	-	B (15.7)	B (13.6)	B (12.3)
2044 with Development (Case 3)	-	-	-	C (34.9)	C (22.8)	B (18.9)

[48] Since the June 30, 2022 Final TIS, the intersection has been converted to a signalized intersection. As such, analysis was conducted modeling the intersection as a signalized intersection with a 130 second cycle length and concurrent phases along the northbound and southbound approaches.

Table 48
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Fisher Road / Hopkins Road (Sussex Road 290)[49]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Westbound Fisher Road Left Turn	A (7.6)	A (7.5)	A (7.4)	A (7.6)	A (7.6)	A (7.5)
Northbound Hopkins Road Approach	B (10.2)	B (10.4)	A (9.8)	B (10.1)	B (10.4)	A (10.0)
2044 without Development (Case 2)[50]						
Westbound Fisher Road Left Turn	A (7.7)	-	A (7.5)	A (7.7)	A (7.7)	A (7.6)
Northbound Hopkins Road Approach	B (10.9)	-	B (10.3)	B (10.7)	B (11.2)	B (10.4)
2044 with Development (Case 3)						
Westbound Fisher Road Left Turn	A (7.8)	A (7.7)	A (7.6)	A (7.8)	A (7.7)	A (7.7)
Northbound Hopkins Road Approach	B (11.6)	B (12.5)	B (11.0)	B (11.3)	B (11.8)	B (11.3)

[49] JMT utilized a PHF of 0.93 for all AM cases and 0.86 for all SAT cases, based on the PHF from collected traffic data, whereas the TIS utilized a PHF of 0.86 for all AM cases and 0.93 for all SAT cases.
[50] TIS did not include a PM Case 2 model.

Table 49
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS per TIS**			**LOS per JMT**		
Dairy Farm Road / Beaver Dam Road (Sussex Road 285)	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2021 Existing (Case 1)						
Eastbound Beaver Dam Road Left Turn	A (8.3)	A (9.2)	A (8.6)	A (8.3)	A (9.2)	A (8.6)
Southbound Dairy Farm Road Approach	C (18.3)	C (21.8)	C (19.1)	C (18.3)	C (21.9)	C (19.1)
2044 without Development (Case 2)						
Eastbound Beaver Dam Road Left Turn	A (8.6)	A (9.8)	A (9.0)	A (8.5)	A (9.8)	A (8.9)
Southbound Dairy Farm Road Approach	E (43.2)	F (50.2)	E (38.9)	D (31.8)	F (50.7)	E (39.4)
2044 with Development (Case 3)						
Eastbound Beaver Dam Road Left Turn	A (8.7)	A (9.9)	A (9.1)	A (8.6)	A (9.9)	A (9.0)
Southbound Dairy Farm Road Approach	F (78.4)	F (72.9)	F (54.0)	E (49.4)	F (73.9)	F (54.9)

Table 49A
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Cool Spring
Report Dated: June 30, 2022
Prepared by: Century Engineering, Inc.

Unsignalized Intersection Roundabout Control[2]	**LOS per TIS**			**LOS per JMT**		
Dairy Farm Road / Beaver Dam Road (Sussex Road 285) / Fisher Road [51, 52]	Weekday AM	Weekday PM	SAT	Weekday AM	Weekday PM	SAT
2044 without Development (Case 2)						
Eastbound Beaver Dam Road Approach	-	-	-	A (5.4)	A (6.9)	A (6.3)
Westbound Fisher Road Approach	-	-	-	A (4.5)	A (6.3)	A (5.4)
Northbound Beaver Dam Road Approach	-	-	-	A (5.1)	A (4.8)	A (5.1)
Southbound Dairy Farm Road Approach	-	-	-	A (4.9)	A (9.1)	A (8.0)
Overall	-	-	-	A (3.1)	A (5.6)	A (4.9)
2044 with Development (Case 3)						
Eastbound Beaver Dam Road Approach	A (6.2)	A (8.4)	-	A (5.5)	A (7.1)	A (6.5)
Westbound Fisher Road Approach	A (6.6)	B (13.7)	-	A (4.6)	A (6.5)	A (5.6)
Northbound Beaver Dam Road Approach	B (13.8)	A (7.7)	-	A (5.3)	A (4.9)	A (5.2)
Southbound Dairy Farm Road Approach	A (5.5)	B (11.6)	-	A (5.0)	A (9.5)	A (8.3)
Overall	B (10.0)	B (11.2)	-	A (3.2)	A (5.7)	A (5.1)

[51] As part of Henlopen TID project (DelDOT project number T201769002), geometric upgrades are planned for the near future which will convert this intersection and the intersections of Dairy Farm Road & Fisher Road to a roundabout.

[52] JMT conducted analysis of a dual-lane roundabout, with a northbound right turn bypass lane and westbound dual entry lanes, based on the intersection configuration in the Henlopen TID project, whereas the TIS modeled a single-lane roundabout with single entry lanes and no bypass lane. JMT included Saturday peak hour and Case 2 volumes in its analysis.

Intersection Sensitivity Analysis

General HCS Analysis Comments

(See table footnotes on the following pages for specific comments)

1. JMT used version 7.9.5 of HCS7 to complete the analysis.

2. Per DelDOT's *Development Coordination Manual*, JMT used a minimum heavy vehicle percentage of 3% for each movement greater than 100 vph in the Case 2 and Case 3 future scenario analysis, unless the existing heavy vehicle percentage was greater than 3% and there was no significant increase of vehicles along that movement, in which case the existing heavy vehicle percentage was used for the analysis of future scenarios.

3. Per DelDOT's *Development Coordination Manual* and coordination with DelDOT Planning, JMT used a heavy vehicle percentage of 5% for each movement less than 100 vph along roadways. Additionally, the JMT utilized a heavy vehicle percentage of 3% for movements entering and exiting the proposed site.

4. As all the intersections within the study area experience some increase in volumes, per DelDOT's *Development Coordination Manual,* JMT utilized the future intersection PHF of 0.80 for roadways with less than 500 vph, 0.88 for roadways between 500 and 1,000 vph, and 0.92 for roadways with more than 1,000 vph, or used the existing PHF if higher.

5. JMT input the pedestrians within the HCS analysis consistent with HCM methodology.

6. The intersection sensitivity analysis considered three scenarios:
    a. 75% of Site Trips
    b. 50% of Site Trips
    c. 25% of Site Trips

    The intersection sensitivity analysis was first conducted incorporating 75% of Cool Spring site trips. If LOS deficiencies were projected at the intersection with 75% of site trips, analysis was then conducted incorporating 50% of site trips. If LOS deficiencies were projected at the intersection with 50% of site trips, analysis was then conducted incorporating 25% of site trips.

Intersection Sensitivity Analysis Results Summary

Intersection	LOS Deficiencies Occur			Percentage of Site Trips
	AM	PM	SAT	
Site Entrance A /US Route 9	X	X	X	100% of Site Trips (Case 3)
	X	X	X	75% of Site Trips
	X	X	X	50% of Site Trips
	X	X	X	25% of Site Trips
Site Entrance E/Hudson Road/Walker Road	X	X	X	100% of Site Trips (Case 3)
	X	X	X	75% of Site Trips
	-	-	-	50% of Site Trips
Site Entrance H/Cool Spring Road/Log Cabin Hill Road	-	X	X	100% of Site Trips (Case 3)
	-	-	-	75% of Site Trips
Hudson Road/Carpenter Road (Sussex Road 259)		X	X	100% of Site Trips (Case 3)
	-	-	-	75% of Site Trips
US Route 9/Hudson Road/Fisher Road (Sussex Road 262)	-	X	-	100% of Site Trips (Case 3)
	-	-	-	75% of Site Trips
US Route 9/Cool Spring Road	X	X	X	100% of Site Trips (Case 3)
	X	X	X	75% of Site Trips
	X	X	X	50% of Site Trips
	X	X	X	25% of Site Trips
US Route 9/Delaware Route 5	X	X	X	100% of Site Trips (Case 3)
	X	X	X	75% of Site Trips
	X	X	X	50% of Site Trips
	-	X	X	25% of Site Trips
US Route 9/Prettyman Road (Sussex Road 254)	X	X	X	100% of Site Trips (Case 3)
	X	X	X	75% of Site Trips
	X	X	X	50% of Site Trips
	X	X	X	25% of Site Trips

Table 50
Peak Hour Levels Of Service (LOS)

Unsignalized Intersection Two-Way Stop Control[53]	**LOS per JMT**		
Site Entrance A / US Route 9 [54]	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)[55]			
Eastbound Route 9 Left Turn	B (11.2)	B (13.1)	B (12.7)
Southbound Site Entrance A Approach	F (*)	F (*)	F (*)
2044 with Development (Case 3) *with 75% of site trips*			
Eastbound Route 9 Left Turn	C (15.5)	C (22.6)	C (22.1)
Southbound Site Entrance A Approach	F (*)	F (*)	F (*)
2044 with Development (Case 3) *with 50% of site trips*			
Eastbound Route 9 Left Turn	B (11.8)	C (15.1)	B (15.0)
Southbound Site Entrance A Approach	F (*)	F (*)	F (*)
2044 with Development (Case 3) *with 25% of site trips*			
Eastbound Route 9 Left Turn	A (10.0)	B (12.0)	B (11.9)
Southbound Site Entrance A Approach	F (812.5)	F (*)	F (*)

*Indicates delay greater than 1,000 seconds per vehicle

[53] For signalized and unsignalized analysis, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.
[54] JMT modeled the intersection with one left turn lane and one through lane along the eastbound approach, one through lane and one right turn lane along the westbound approach, and one shared left turn/right turn lane along the southbound approach.
[55] JMT utilized traffic volumes per the approved traffic volume diagrams and assumed a 50/50 split in traffic with the adjacent Site Entrance B.

Table 51
Peak Hour Levels Of Service (LOS)

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per JMT**		
Site Entrance E / Hudson Road / Walker Road[56]	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)			
Eastbound Walker Road Approach	E (40.0)	F (96.5)	E (36.5)
Westbound Site Entrance E Approach	F (155.8)	F (228.2)	F (157.6)
Northbound Hudson Road Left Turn	A (8.6)	A (8.8)	A (8.7)
Southbound Hudson Road Left Turn	A (8.4)	A (8.8)	A (8.5)
2044 with Development (Case 3) *with 75% of site trips*			
Eastbound Walker Road Approach	E (37.6)	F (79.1)	D (32.0)
Westbound Site Entrance E Approach	F (90.5)	F (131.9)	F (91.1)
Northbound Hudson Road Left Turn	A (8.5)	A (8.9)	A (8.7)
Southbound Hudson Road Left Turn	A (8.6)	A (8.9)	A (8.7)
2044 with Development (Case 3) *with 50% of site trips*			
Eastbound Walker Road Approach	C (21.4)	D (30.4)	C (19.2)
Westbound Site Entrance E Approach	D (28.2)	D (34.4)	D (29.2)
Northbound Hudson Road Left Turn	A (8.3)	A (8.6)	A (8.4)
Southbound Hudson Road Left Turn	A (8.3)	A (8.5)	A (8.3)

[56] JMT utilized a stop-controlled shared left turn/through/right turn lane for the westbound site entrance E approach and for the eastbound Walker Road approach for the analysis. Hudson Road southbound has a left turn lane and a through/right turn lane, while Hudson Road northbound has a left turn lane, a through lane, and a right turn lane.

Table 52
Peak Hour Levels Of Service (LOS)

Unsignalized Intersection Two-Way Stop Control[1]	**LOS per JMT**		
Site Entrance H / Cool Spring Road / Log Cabin Hill Road[57]	Weekday AM	Weekday PM	Saturday Midday
2044 with Development (Case 3)			
Eastbound Log Cabin Hill Road Left Turn	A (7.6)	A (7.9)	A (7.9)
Westbound Log Cabin Hill Road Left Turn	A (7.8)	A (7.7)	A (7.8)
Northbound Cool Spring Road Approach	C (21.6)	F (53.7)	E (43.0)
Southbound Site Entrance H Approach	C (18.5)	C (19.5)	C (20.3)
2044 with Development (Case 3) *with 75% of site trips*			
Eastbound Log Cabin Hill Road Left Turn	A (7.6)	A (8.0)	A (7.9)
Westbound Log Cabin Hill Road Left Turn	A (7.8)	A (7.7)	A (7.8)
Northbound Cool Spring Road Approach	B (14.8)	D (26.9)	C (22.6)
Southbound Site Entrance H Approach	C (18.6)	C (20.9)	C (21.2)

[57] JMT utilized a stop-controlled shared left turn/through/right turn lane for the eastbound, westbound, northbound, and southbound approaches.

Table 53
Peak Hour Levels Of Service (LOS)

Unsignalized Intersection Two-Way Stop Control (T-Intersection)[1]	**LOS per JMT**		
Hudson Road / Carpenter Road (Sussex Road 259)	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)			
Eastbound Carpenter Road Approach	D (30.0)	E (35.3)	E (36.9)
Northbound Hudson Road Left Turn	A (9.8)	A (9.4)	A (9.3)
2044 with Development (Case 3) *with 75% of site trips*			
Eastbound Carpenter Road Approach	C (22.1)	C (22.9)	C (23.5)
Northbound Hudson Road Left Turn	A (9.3)	A (9.1)	A (9.0)

Table 54
Peak Hour Levels Of Service (LOS)

Signalized Intersection [1]	**LOS per JMT**		
US Route 9 / Hudson Road / Fisher Road (Sussex Road 262)	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3) *with signal timing optimization* [58]	D (41.2)	E (59.3)	D (43.1)
2044 with Development (Case 3) *with 75% of site trips with signal timing optimization* [59]	D (37.7)	D (49.9)	D (37.7)

[58] The signal optimization scenario includes optimizing green split times while utilizing a 120 second cycle length during the AM and Saturday peak hours, and a 150 second cycle length during the PM peak hour.

Table 55
Peak Hour Levels Of Service (LOS)

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per JMT**		
US Route 9 / Cool Spring Road	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)			
Eastbound US Route 9 Left Turn	A (9.1)	B (10.8)	B (10.2)
Westbound US Route 9 Left Turn	B (10.0)	A (9.6)	A (9.9)
Northbound Cool Spring Road Approach	F (*)	F (*)	F (*)
Southbound Cool Spring Road Approach	F (*)	F (*)	F (*)
2044 with Development (Case 3) *with 75% of site trips*			
Eastbound US Route 9 Left Turn	A (9.0)	B (10.5)	A (9.9)
Westbound US Route 9 Left Turn	A (9.7)	A (9.3)	A (9.7)
Northbound Cool Spring Road Approach	F (*)	F (*)	F (*)
Southbound Cool Spring Road Approach	F (*)	F (*)	F (*)
2044 with Development (Case 3) *with 50% of site trips*			
Eastbound US Route 9 Left Turn	A (8.8)	B (10.0)	A (9.5)
Westbound US Route 9 Left Turn	A (9.5)	A (9.1)	A (9.5)
Northbound Cool Spring Road Approach	F (521.5)	F (*)	F (*)
Southbound Cool Spring Road Approach	F (477.3)	F (*)	F (*)

*Indicates delay greater than 1,000 seconds per vehicle

Table 55 (continued)
Peak Hour Levels Of Service (LOS)

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per JMT**		
US Route 9 / Cool Spring Road	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3) *with 25% of site trips*			
Eastbound US Route 9 Left Turn	A (8.6)	A (9.6)	A (9.2)
Westbound US Route 9 Left Turn	A (9.2)	A (9.0)	A (9.3)
Northbound Cool Spring Road Approach	F (96.3)	F (329.5)	F (217.7)
Southbound Cool Spring Road Approach	F (101.7)	F (233.5)	F (228.7)

Table 56
Peak Hour Levels Of Service (LOS)

Signalized Intersection [1]	**LOS per JMT**		
US Route 9 / Delaware Route 5 [59]	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3) *with signal timing optimization*	F (83.0)	F (92.2)	F (105.4)
2044 with Development (Case 3) *with 75% of site trips with signal timing optimization*	E (70.4)	E (78.4)	F (89.1)
2044 with Development (Case 3) *with 50% of site trips with signal timing optimization*	E (57.5)	E (67.9)	E (76.1)
2044 with Development (Case 3) *with 25% of site trips with signal timing optimization*	D (52.6)	E (59.7)	E (66.0)

[59] The signal optimization scenario includes optimizing green split times. JMT utilized a 120 second cycle length during the AM peak hour, and a 180 second cycle length during the PM and Saturday peak hours.

Table 57
Peak Hour Levels Of Service (LOS)

Unsignalized Intersection Two-Way Stop Control (T-Intersection) [1]	**LOS per JMT**		
US Route 9 / Prettyman Road (Sussex Road 254)	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)			
Eastbound US Route 9 Left Turn	B (11.1)	B (11.4)	B (11.1)
Southbound Prettyman Road Approach	F (505.9)	F (889.7)	F (*)
2044 with Development (Case 3) *with 75% of site trips*			
Eastbound US Route 9 Left Turn	B (10.7)	B (11.1)	B (10.7)
Southbound Prettyman Road Approach	F (351.6)	F (623.5)	F (998.9)
2044 with Development (Case 3) *with 50% of site trips*			
Eastbound US Route 9 Left Turn	B (10.3)	B (10.8)	B (10.4)
Southbound Prettyman Road Approach	F (213.1)	F (409.0)	F (710.3)
2044 with Development (Case 3) *with 25% of site trips*			
Eastbound US Route 9 Left Turn	A (9.9)	B (10.5)	B (10.1)
Southbound Prettyman Road Approach	F (124.1)	F (246.9)	F (485.4)

*Indicates delay greater than 1,000 seconds per vehicle

Table 58
Peak Hour Levels Of Service (LOS)

Signalized Intersection[1]	**LOS per JMT**		
US Route 9 / Gravel Hill Road[60] [61]	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3) *with signal timing optimization*	C (31.2)	D (38.6)	E (76.0)
2044 with Development (Case 3) *with improvement* [62]	C (27.3)	C (32.3)	D (42.8)
2044 with Development (Case 3) *with 75% of site trips with signal timing optimization*	C (30.1)	D (36.1)	E (68.7)
2044 with Development (Case 3) *with 50% of site trips with signal timing optimization*	C (29.3)	C (34.5)	E (63.1)
2044 with Development (Case 3) *with 25% of site trips with signal timing optimization*	C (28.9)	C (33.3)	E (58.2)

[60] This intersection is outside of the TIS limits. Analysis was performed as part of the requested sensitivity analysis.
[61] The signal optimization scenario includes optimizing green split times. JMT utilized a 120 second cycle length during the AM and PM peak hours, and a 150 second cycle length during the Saturday peak hour.
[62] Improvement scenario includes the provision of an additional through lane along the northbound and southbound Gravel Hill Road approaches.

Table 59
Peak Hour Levels Of Service (LOS)

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per JMT**		
US Route 9 / Shingle Point Road [60]	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3)			
Eastbound US Route 9 Left Turn	A (9.9)	B (10.3)	A (9.8)
Westbound US Route 9 Left Turn	A (9.0)	A (9.5)	A (9.8)
Northbound French Road Approach	C (23.3)	D (33.8)	D (32.6)
Southbound Shingle Point Road Approach	F (50.1)	F (60.6)	D (30.3)
2044 with Development (Case 3) *with DelDOT Improvements Project*[63]			
Eastbound US Route 9 Left Turn	A (9.8)	B (10.1)	A (9.7)
Westbound US Route 9 Left Turn	A (9.0)	A (9.5)	A (9.8)
Northbound French Road Approach	C (22.5)	D (31.2)	D (31.1)
Southbound Shingle Point Road Approach	D (29.9)	D (34.6)	D (25.3)
2044 with Development (Case 3) *with 75% of site trips*			
Eastbound US Route 9 Left Turn	A (9.7)	B (10.2)	A (9.6)
Westbound US Route 9 Left Turn	A (9.0)	A (9.3)	A (9.7)
Northbound French Road Approach	C (22.0)	D (31.3)	D (30.3)
Southbound Shingle Point Road Approach	E (43.8)	F (52.9)	D (28.2)

[63] Scenario includes the improvements proposed as part of the *Park Avenue Relocation Phase 2* project. The project proposes to construct a left turn lane along the eastbound approach, a right turn lane along the westbound approach and a separate right turn lane along the southbound approach.

Table 59 (continued)
Peak Hour Levels Of Service (LOS)

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per JMT**		
US Route 9 / Shingle Point Road [60]	Weekday AM	Weekday PM	SAT
2044 with Development (Case 3) *with 50% of site trips*			
Eastbound US Route 9 Left Turn	A (9.6)	B (10.1)	A (9.5)
Westbound US Route 9 Left Turn	A (8.9)	A (9.2)	A (9.9)
Northbound French Road Approach	C (20.9)	D (29.1)	D (28.3)
Southbound Shingle Point Road Approach	E (38.5)	E (46.8)	D (26.3)
2044 with Development (Case 3) *with 25% of site trips*			
Eastbound US Route 9 Left Turn	A (9.5)	B (10.0)	A (9.4)
Westbound US Route 9 Left Turn	A (8.8)	A (9.1)	A (9.5)
Northbound French Road Approach	C (19.9)	D (27.1)	D (26.4)
Southbound Shingle Point Road Approach	D (34.4)	E (41.6)	C (24.5)

Table 60
Peak Hour Levels Of Service (LOS)

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per JMT**	
Hudson Road / Log Cabin Hill Road [60]	Weekday AM	Weekday PM
2044 with Development (Case 3)		
Westbound Log Cabin Hill Approach	F (100.7)	F (157.7)
Southbound Hudson Road Left Turn	A (8.6)	
2044 with Development (Case 3) *with 75% of site trips*		
Westbound Log Cabin Hill Approach	D (32.4)	E (45.0)
Southbound Hudson Road Left Turn	A (8.4)	A (9.0)
2044 with Development (Case 3) *with 50% of site trips*		
Westbound Log Cabin Hill Approach	C (18.5)	C (22.4)
Southbound Hudson Road Left Turn	A (8.1)	A (8.6)

Segment Analysis

General HCS Analysis Comments

(See table footnotes on the following pages for specific comments)

1. JMT used version 8.3 of HCS2023 to complete the analysis.

2. Similar to the Henlopen TID, JMT utilized demand-to-capacity ratio of less than 1.0 as the acceptable service standard for the segment analysis. ~~(i.e. a segment would need to operate at LOS F for widening to be recommended).~~

3. JMT used a heavy vehicle percentage of 5% for each segment unless there was an existing heavy vehicle percentage for an adjacent intersection.

4. JMT utilized the future intersection PHF of 0.94 for roadways unless there was an existing PHF for an adjacent intersection.

5. JMT used the existing paved shoulder width measured from an aerial when conducting the segment analysis. For shoulders wider than six feet, JMT input a shoulder width of six feet as that is the maximum width allowed in HCS.

6. JMT utilized a Percent Occupied Parking of 0% throughout the analysis due to the lack of marked parking facilities along the segments.

Table 61
Peak Hour Levels of Service (LOS)

	Two-Lane Highways Directional Segment Analysis								
Future 2044[64]	**Weekday AM Peak Hour**			**Weekday PM Peak Hour**			**Summer Saturday**		
US Route 9	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**
Between Prettyman Road to Sweet Briar Road[65]									
Eastbound US Route 9	0.70	18.4	E	0.75	20.0	E	0.79	21.2	E
Westbound US Route 9	0.73	19.4	E	0.80	21.6	E	0.75	19.9	E
Between Prettyman Road to Shingle Point Road[66]									
Eastbound US Route 9	0.57	13.3	E	0.67	16.5	E	0.68	16.9	E
Westbound US Route 9	0.66	16.4	E	0.61	14.7	E	0.61	14.7	E

[64] For the segment analyses, LOS criteria is based on D/C (demand to capacity) ratio and follower density.
[65] The results listed here represents the segment analysis conducted along US Route 9 from Delaware Route 30 Gravel Hill Road to Prettyman Road as this subsegment carried the highest projected volumes in the overall segment.
[66] The results listed here represents the segment analysis conducted along US Route 9 from Delaware Route 5 to Hudson Road as this subsegment carried the highest projected volumes in the overall segment.

Table 62
Peak Hour Levels of Service (LOS)

	Two-Lane Highways Directional Segment Analysis								
Future 2044[64]	**Weekday AM Peak Hour**			**Weekday PM Peak Hour**			**Summer Saturday**		
Hudson Road	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**
Between US Route 9 to Cave Neck Road[67]									
Northbound Hudson Road	0.34	8.1	C	0.42	11.0	D	0.39	9.7	C
Southbound Hudson Road	0.50	14.1	D	0.47	12.9	D	0.45	12.1	D
Between Sweet Briar Road to US Route 1[68]									
Northbound Hudson Road	0.29	7.4	C	0.24	5.8	C	0.25	6.0	C
Southbound Hudson Road	0.27	6.7	C	0.40	11.8	D	0.39	11.5	D

[67] The results listed here represents the segment analysis conducted along Hudson Road from US Route 9 to Carpenter Road as this subsegment carried the highest projected volumes in the overall segment.
[68] The results listed here represents the segment analysis conducted along Hudson Road from Sweet Briar Road to Eagle Crest Road as this subsegment carried the highest projected volumes in the overall segment.

Table 63
Peak Hour Levels of Service (LOS)

	Two-Lane Highways Directional Segment Analysis								
Future 2044[64]	**Weekday AM Peak Hour**			**Weekday PM Peak Hour**			**Summer Saturday**		
Cool Spring Road	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**
Between US Route 9 to Log Cabin Hill Road									
Northbound Cool Spring Road	0.10	0.9	A	0.20	2.8	B	0.17	2.1	B
Southbound Cool Spring Road	0.18	2.5	B	0.12	1.3	A	0.14	1.6	A
Between US Route 9 to Stockley Road[69]									
Northbound Cool Spring Road	0.17	2.6	B	0.18	2.8	B	0.17	2.6	B
Southbound Cool Spring Road	0.19	3.1	B	0.17	2.5	A	0.16	2.3	A

[69] The results listed here represents the segment analysis conducted along Cools Spring Road from Fisher Road to Forest Road as this subsegment carried the highest projected volumes in the overall segment.

Table 64
Peak Hour Levels of Service (LOS)

	Two-Lane Highways Directional Segment Analysis								
Future 2044[64]	**Weekday AM Peak Hour**			**Weekday PM Peak Hour**			**Summer Saturday**		
Log Cabin Hill Road	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**
Between Hudson Road to Sweet Briar Road[70]									
Eastbound Log Cabin Hill Road	0.18	2.5	B	0.19	2.8	B	0.20	2.9	B
Westbound Log Cabin Hill Road	0.17	2.3	B	0.21	3.1	B	0.20	3.0	B

[70] The results listed here represents the segment analysis conducted along Log Cabin Hill Road from Hudson Road to Cool Spring Road as this subsegment carried the highest projected volumes in the overall segment.

Table 65
Peak Hour Levels of Service (LOS)

	Two-Lane Highways Directional Segment Analysis								
Future 2044[64]	**Weekday AM Peak Hour**			**Weekday PM Peak Hour**			**Summer Saturday**		
Josephs Road	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**
Between Log Cabin Hill Road to US Route 9									
Northbound Josephs Road	0.05	0.3	A	0.05	0.3	A	0.05	0.3	A
Southbound Josephs Road	0.07	0.6	A	0.05	0.3	A	0.06	0.4	A

Table 66
Peak Hour Levels of Service (LOS)

	Two-Lane Highways Directional Segment Analysis								
Future 2044[64]	**Weekday AM Peak Hour**			**Weekday PM Peak Hour**			**Summer Saturday**		
Sweetbriar Road	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**
Between US Route 9 to Cave Neck Road[71]									
Northbound Sweetbriar Road	0.27	5.3	C	0.42	10.0	D	0.33	7.1	C
Southbound Sweetbriar Road	0.39	9.2	C	0.34	7.3	C	0.50	12.8	D

[71] The results listed here represents the segment analysis conducted along Sweet Briar Road from US Route 9 to Log Cabin Hill Road as this subsegment carried the highest projected volumes in the overall segment.

Table 67
Peak Hour Levels of Service (LOS)

	Two-Lane Highways Directional Segment Analysis								
Future 2044[64]	**Weekday AM Peak Hour**			**Weekday PM Peak Hour**			**Summer Saturday**		
Cave Neck Road	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**	**D/C Ratio**	**Follower Density (followers/mi/ln)**	**LOS**
Between Hudson Road to Sam Lucas Road[72]									
Eastbound Cave Neck Road	0.29	5.3	C	0.28	4.9	C	0.21	3.3	B
Westbound Cave Neck Road	0.28	5.1	C	0.26	4.4	C	0.18	2.5	B

[72] The results listed here represents the segment analysis conducted along Cave Neck Road from Sam Lucas Road to Diamond Farm Road as this subsegment carried the highest projected volumes in the overall segment.