



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
800 BAY ROAD  
P.O. BOX 778  
DOVER, DELAWARE 19903

NICOLE MAJESKI  
SECRETARY

January 12, 2022

Mr. Drew Boyce  
Century Engineering, Inc.  
550 Bay Road  
Dover, Delaware 19901

Dear Mr. Boyce:

The enclosed Traffic Impact Study (TIS) review letter for the **Coral Lakes (f.k.a. Novosel)** (Tax Parcels: 234-6.00-67.00, 84.00, and 85.00) residential development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at (302) 760-2124.

Sincerely,

Claudy Joinville  
Project Engineer

CJ:km

Enclosures

cc with enclosures: Mr. William Conway, Century Engineering, Inc  
Mr. Stephen Marsh, George, Miles & Buhr, Inc.  
Mr. Tim Green, Schell Brothers  
Mr. David Edgell, Office of State Planning Coordination  
Mr. Jamie Whitehouse, Sussex County Planning and Zoning  
Ms. Joanne Arellano, Johnson, Mirmiran, & Thompson, Inc.  
DelDOT Distribution

## DelDOT Distribution

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Derek Sapp, Subdivision Manager, Development Coordination  
Annamaria Furmato, Project Engineer, Development Coordination



January 12, 2022

Mr. Claudy Joinville  
Project Engineer  
Delaware Department of Transportation  
Development Coordination, Division of Planning  
800 Bay Road  
P O Box 778  
Dover, DE 19903

RE: Agreement No. 1945F  
Project Number T202069012  
Traffic Impact Study Services  
**Task 5-3A-Coral Lakes TIS (f.k.a. Novosel)**

Dear Mr. Joinville:

Johnson, Mirmiran and Thompson (JMT) has completed the review of the Traffic Impact Study (TIS) for Coral Lakes (f.k.a. Novosel), prepared by Century Engineering Inc., dated December 22, 2021. This task was assigned as Task Number 5-3A. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual*.

The TIS evaluates the impacts of a proposed housing development containing 315 single-family detached houses in Sussex County, Delaware. The development is located on the west side of Robinsonville Road (Sussex Road 277), opposite Webbs Landing Road (Sussex Road 277B). The subject property is on an approximately 152.32-acre assemblage of parcels that is zoned as AR-1 (Agricultural Residential) and the developer does not plan to rezone the land. One full access point is proposed along Robinsonville Road and construction is anticipated to be complete in 2030.

The proposed development would be located within the boundary of the proposed Henlopen Transportation Improvement District (TID). DelDOT and Sussex County developed the TID. The formal creation of it 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 October 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 several of the TIS study intersections including the Delaware Route 24 intersections with Camp Arrowhead Road/Fairfield Road, Robinsonville Road/Angola Road and Hollymount Road/Sloan Road, the Robinsonville Road intersections with Cedar Grove Road, Kendale Road, Webbs Landing Road, and Harts Road, and the Kendale Road intersections with Wil King Road and Beaver Dam Road.



Although the subject property is within the Henlopen TID, the proposed plan for the development is not consistent with the Land Use and Transportation Plan (LUTP) that was developed for the TID. For developments that are consistent with the LUTP, the developer is required to pay a fee per dwelling in lieu of performing a TIS and make off-site improvements in accordance with the TID. However, as the proposed development is not consistent, a TIS was required.

The purpose of the TIS is to identify any additional improvements beyond the TID improvements that the development would be required to contribute to. If no additional improvements are identified within the TIS, the development would still be required to participate in the TID. The TID fee would cover off-site improvements beyond their entrance improvements. The TID fee would be based on actual units built, so the fee would be higher with more units. DelDOT would only require additional contributions beyond the TID fee for additional improvements needed beyond those in the TID.

DelDOT has several relevant and ongoing improvement projects within the study area including the *HSIP SR 24 at Camp Arrowhead Road and SR 24 at Angola Road* project (DelDOT Contract No. T201200902). This project was identified in the *SR 24-SR 30 to Love Creek Bridge Traffic Study* and was identified as a high crash location as part of DelDOT's Hazard Elimination Program (HEP) formally known as the Highway Safety Improvement Program (HSIP). This project would make operational improvements to address safety deficiencies and to accommodate future traffic volumes at these two intersections. Specifically, the improvements associated with the Delaware Route 24/Camp Arrowhead Road/Fairfield Road intersection will include extending the existing left turn and right turn lanes to increase capacity, as well as providing bicycle lanes and pedestrian facilities. The improvements associated with the Delaware Route 24/Robinsonville Road/Angola Road intersection will include providing one left turn lane, one through lane, and one right turn lane along all approaches. The right turn lanes along the northbound and southbound Delaware Route 24 approaches will be channelized. Construction is scheduled to start in Spring 2022 and end in Fall 2023. Additional information can be found on the DelDOT project website at <https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201200902>.

Based on our review of the TIS, we have the following comments and recommendations: The following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements. The table below incorporates the traffic analysis for the 2030 future conditions (Cases 2 and 3) with the improvements associated with the *HSIP SR 24 at Camp Arrowhead Road and SR 24 at Angola Road* project (DelDOT Contract No. T201200902). Additionally, the table below does not include any signalized intersections that exhibit LOS deficiencies under Cases 1, 2, and 3 due to the utilization of the splits from the DelDOT Timing Plans and can be mitigated with signal timing optimization as the developer would not be recommended to perform any additional improvements at those locations.



Intersection	LOS Deficiencies Occur			Year	Case
	AM	PM	SAT		
Robinsonville Road/Kendale Road (Sussex Road 287)	X	X	X	2030	2 – Without Development
	X	X	X	2030	3 – With Development
Robinsonville Road/Cedar Grove Road (Sussex Road 283)		X		2030	2 – Without Development
		X	X	2030	3 – With Development
Kendale Road/Beaver Dam Road (Sussex Road 285)		X	X	2021	1 – Existing
	X	X	X	2030	2 – Without Development
	X	X	X	2030	3 – With Development
Robinsonville Road/Harts Road (Sussex Road 277A)			X	2030	3 – With Development
Delaware Route 24/Harts Road (Sussex Road 277A)			X	2021	1 – Existing
	X	X	X	2030	2 – Without Development
	X	X	X	2030	3 – With Development

The unsignalized Robinsonville Road/Kendale Road intersection would exhibit LOS deficiencies during the weekday AM, weekday PM, and Summer Saturday peak periods under 2030 conditions with or without the proposed development (Cases 2 and 3). Specifically, the deficiency would occur along the eastbound Kendale Road approach. As part of the Henlopen TID, this intersection would be improved to be signalized and a separate right turn lane would be provided along the eastbound Kendale Road approach and the southbound Robinsonville Road approach. With the proposed Henlopen TID improvements, the intersection would improve to operate at acceptable LOS. As such, payment of the TID fee will satisfy any obligation the developer would have to improve this intersection.

The unsignalized Robinsonville Road/Cedar Grove Road intersection would exhibit LOS deficiencies during the weekday PM peak hour under 2030 conditions with or without the proposed development (Cases 2 and 3) and during the Summer Saturday peak hour under 2030 conditions with the proposed development (Case 3). Specifically, the deficiency would occur along the westbound Cedar Grove Road approach. As part of the Henlopen TID, this intersection would be improved to be a single lane roundabout. With the proposed Henlopen TID improvements, the intersection would improve to operate at acceptable LOS. As such, payment of the TID fee will satisfy any obligation the developer would have to improve this intersection.

The unsignalized Kendale Road/Beaver Dam Road intersection would exhibit LOS deficiencies during the weekday PM and Summer Saturday peak hours under 2021 existing conditions (Case 1), as well as during the weekday AM, weekday PM, and Summer Saturday peak hours under 2030 conditions with or without the proposed development (Cases 2 and 3). Specifically, the deficiency would occur along the westbound Kendale Road approach. As part of the Henlopen TID, this



intersection would be improved to be signalized and separate turn lanes would be provided along each approach. With the proposed Henlopen TID improvements, the intersection would improve to operate at acceptable LOS. As such, payment of the TID fee will satisfy any obligation the developer would have to improve this intersection.

The unsignalized Robinsonville Road/Harts Road intersection would exhibit LOS deficiencies during the Summer Saturday peak hour under 2030 conditions with the proposed development (Case 3). Specifically, the deficiency would occur along the westbound Harts Road approach. As part of the Henlopen TID, this intersection would be improved to include separate turn lanes onto Harts Road. Additionally, as part of the Henlopen TID improvements, the Harts Road connection to Delaware Route 24 would be removed and a new roadway would be constructed connecting Delaware Route 24 and Robinsonville Road across from Jolyns Way. With the proposed Henlopen TID improvements, the intersection would improve to operate at acceptable LOS. As such, payment of the TID fee will satisfy any obligation the developer would have to improve this intersection.

The unsignalized Delaware Route 24/Harts Road intersection would exhibit LOS deficiencies during the Summer Saturday peak hour under 2021 existing conditions (Case 1) as well as during the weekday AM, weekday PM, and Summer Saturday peak hours under 2030 conditions with or without the proposed development (Cases 2 and 3). Specifically, the deficiency would occur along the Harts Road approach. As part of the Henlopen TID, this intersection would be eliminated and Harts Road would be converted to a cul-de-sac east of Robinsonville Road. In addition, Jolyns Way would be extended to the north to intersect with Robinsonville Road, south of Harts Road. A traffic signal would be installed at the Delaware Route 24/Jolyns Way intersection and the Robinsonville Road intersection with Jolyns Way would be a single lane roundabout. Payment of the TID fee will satisfy any obligation the developer would have to improve this intersection.

Should Sussex County approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan. All applicable agreements (i.e. TID infrastructure recoupment agreement) should be executed prior to Letter of No Objection to Recordation (LONOR) for the proposed development.

1. The developer shall improve Robinsonville Road within the limits of their frontage to meet DelDOT's standards for Functional Classification as found in Section 1.1 of the *Development Coordination Manual* and elsewhere therein. 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 is defined in Section 1 of the *Development Coordination Manual*, which states "This length includes the length of roadway perpendicular to lines created by the projection of the outside parcel corners to the roadway." Questions on or appeals of this requirement should be directed to the DelDOT Subdivision Review Coordinator in whose area the development is located.



To the extent that they are not addressed by the site entrance construction (Item 2 below), the cost of the work completed to improve Robinsonville Road to meet DelDOT’s standards and the shared use path, addressed in Item 4a below, are deductible from the TID fee discussed in Item 3. It may be appropriate for DelDOT to require less than the work contemplated here to adjust the cost of the work with the amount of the TID fee.

2. The developer should construct a full access site entrance (Site Entrance A) for the proposed Coral Lakes development on Robinsonville Road, approximately 1,100 feet north of the northeast point of tangency at the Robinsonville Road intersection with Webbs Landing Road to be consistent with the lane configurations shown in the table below:

Approach	Current Configuration	Proposed Configuration
Eastbound Site Entrance A	Approach does not exist	One shared left turn/right turn lane
Northbound Robinsonville Road	One through lane	One left turn lane and one through lane
Southbound Robinsonville Road	One through lane	One through lane and one right turn lane

Based on DelDOT’s *Development Coordination Manual*, the recommended minimum storage length is 240 feet (excluding taper) for the southbound Robinsonville Road right turn lane and 185 feet (excluding taper) for the northbound Robinsonville Road left turn lane. The calculated queue lengths from the HCS analysis can be accommodated within the recommended storage lengths.

3. The developer should pay the appropriate portion of the Henlopen TID fee in lieu of making transportation improvements outside of their access point and frontage road.
4. The following bicycle, pedestrian, and transit improvements should be included:
  - a. A minimum fifteen-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT along the property frontage along Robinsonville Road. Within the easement, the developer should construct a ten-foot wide shared-use path (SUP). 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 utility poles and street trees should be provided within the buffer area. The developer should coordinate with DelDOT’s Development Coordination section during the plan review process to identify the exact location of the SUP.



- b. An internal connection should be provided from the SUP into the site.
- c. ADA compliant curb ramps and marked crosswalks should be provided along the Site Entrance approach to Robinsonville Road. The use of diagonal curb ramps is discouraged.
- d. If pedestrian crossings are proposed across Robinsonville Road, the developer should conduct a pedestrian crossing analysis per NCHRP 562 to determine the pedestrian treatment. The developer should coordinate with DelDOT's Development Coordination section during the plan review process regarding any proposed pedestrian crossings.
- e. A minimum five-foot wide bicycle lane should be incorporated in the right turn lane and shoulder along the southbound Robinsonville Road approach to the Site Entrance.
- f. Utility covers should be moved outside of any designated bicycle lanes and any proposed sidewalks/shared-use paths or should be flush with the pavement.

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](https://www.deldot.gov/Publications/manuals/de_mutcd/index.shtml). For any additional information regarding the work zone impact and mitigation procedures during construction please contact Mr. Jeff VanHorn, Assistant Director for Traffic Operations and Management. Mr. VanHorn can be reached at (302) 659-4606 or by email at [Jeffrey.VanHorn@delaware.gov](mailto:Jeffrey.VanHorn@delaware.gov).

Additional details on our review of the TIS are attached. Please contact me at (302) 266-9600 if you have any questions concerning this review.

Sincerely,  
Johnson, Mirmiran, and Thompson, Inc.

A handwritten signature in black ink, appearing to read 'Joanne M. Arellano', is written over a light blue horizontal line.

Joanne M. Arellano, P.E., PTOE

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

Enclosure



## **General Information**

**Report date:** December 22, 2021

**Prepared by:** Century Engineering, Inc.

**Prepared for:** Schell Brothers, LLC.

**Tax Parcel:** 234-6.00-67, 84.00, and 85.00

**Generally consistent with DelDOT's *Development Coordination Manual (DCM)*:** Yes

## **Project Description and Background**

**Description:** The developer seeks to develop 315 single-family detached houses.

**Location:** The subject site is located on the west side of Robinsonville Road (Sussex Road 277), opposite Webbs Landing Road (Sussex Road 277B).

**Amount of Land to be developed:** An approximately 152.3-acre assemblage of parcels.

**Land Use approval(s) needed:** Entrance Plan.

**Proposed completion date:** 2030.

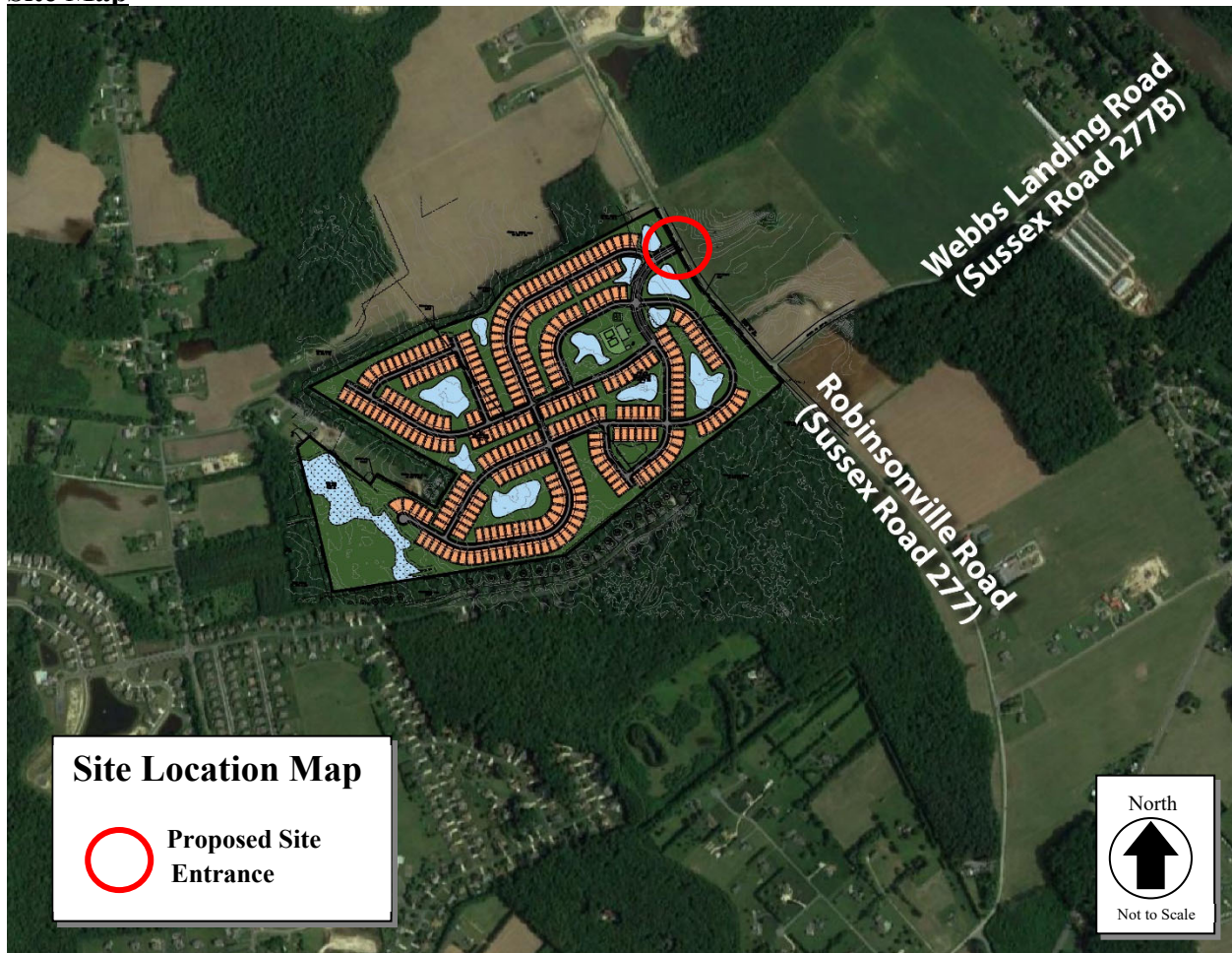
**Proposed access location:** One full access point is proposed on Robinsonville Road.

### **Daily Traffic Volumes:**

- 2021 Average Annual Daily Traffic on Robinsonville Road: 4,303 vehicles per day\*

\*Per ATR data collected from August 18, 2021 to August 24 2021.

## Site Map



*\*Graphic is an approximation based on the Site Plan for Coral Lakes prepared by George, Miles & Buhr, LLC. dated June 2021.*

## Relevant and On-going Projects

DelDOT has several relevant and ongoing improvement projects within the study area including the *HSIP SR 24 at Camp Arrowhead Road and SR 24 at Angola Road* project (DelDOT Contract No. T201200902). This project was identified in the *SR 24-SR 30 to Love Creek Bridge Traffic Study* and was identified as a high crash location as part of DelDOT's Hazard Elimination Program (HEP) formally known as the Highway Safety Improvement Program (HSIP). This project would make operational improvements to address safety deficiencies and to accommodate future traffic volumes at these two intersections. Specifically, the improvements associated with the Delaware Route 24/Camp Arrowhead Road/Fairfield Road intersection will include extending the existing left turn and right turn lanes to increase capacity, as well as providing bicycle lanes and pedestrian facilities. The improvements associated with the Delaware Route 24/Robinsonville Road/Angola Road intersection will include providing one left turn lane, one through lane, and one right turn lane along all approaches. The right turn lanes along the northbound and southbound Delaware

Route 24 approaches will be channelized. Construction is scheduled to start in Spring 2022 and end in Fall 2023. Additional information can be found on the DelDOT project website at <https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201200902>.

The proposed development would be located within the boundary of the proposed Henlopen Transportation Improvement District (TID). DelDOT and Sussex County developed the TID. The formal creation of it 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 October 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 several of the TIS study intersections including the Delaware Route 24 intersections with Camp Arrowhead Road/Fairfield Road, Robinsonville Road/Angola Road and Hollymount Road/Sloan Road, the Robinsonville Road intersections with Cedar Grove Road, Kendale Road, Webbs Landing Road, and Harts Road, and the Kendale Road intersections with Wil King Road and Beaver Dam Road.

### **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 3 and Investment Level 4.

#### *Investment Level 3*

Investment Level 3 Areas generally fall into two categories. The first category covers lands that are in the long-term growth plans of counties or municipalities where development is not necessary to accommodate expected population growth during a five-year planning period (or longer). The second category includes lands that are adjacent to or intermingled with fast-growing areas within counties or municipalities that are otherwise categorized as Investment Levels 1 or 2. Investment Level 3 is further characterized by areas with new development separated from existing development by a substantial amount of vacant land that is not contiguous with existing infrastructure, areas that are experiencing some development pressure, areas with existing but disconnected development, and possible lack of adequate infrastructure.

The state will consider investing in infrastructure within Investment Level 3 Areas once the Investment Level 1 and 2 Areas are substantially built out, or when the infrastructure or facilities are logical extensions of existing systems and deemed appropriate to serve a particular area. The priorities in the Level 3 Areas are for DelDOT to focus on regional movements between towns and other population centers. Local roadway improvements will be made by developers and property owners as development occurs. Lower priority is given to transportation system-capacity improvements and transit-system enhancements.

#### *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.

#### **Proposed Development's Compatibility with Livable Delaware:**

The site would be in the Investment Level 3 and Investment Level 4 areas. According to Livable Delaware, Investment Level 3 areas may be desirable for a variety of housing types, styles, and densities in conjunction with local government comprehensive plans. Per Livable Delaware, the state's investments and policies should retain the rural landscape and preserve open spaces and farmlands within Level 4 areas. In addition, construction of new homes is discouraged in Level 4 areas. Therefore, the area of the site within Investment Level 3 is generally consistent with the 2015 update of the Livable Delaware "Strategies for State Policies and Spending" and the areas within Investment Level 4 are not.

#### **Comprehensive Plans**

*(Source: Sussex County March 2019 Comprehensive Plan)*

#### **Sussex County Comprehensive Plan:**

Per the *Sussex County Comprehensive Plan 2045 Future Land Use Map*, the proposed development is in an area designated as Coastal Area.

#### **Proposed Development's Compatibility with the Sussex County Comprehensive Plan:**

Per the *Sussex County Comprehensive Plan*, a range of housing types including single-family homes should be permitted in Coastal Areas. Therefore, the proposed development is generally consistent with the *Sussex County March 2019 Comprehensive Plan*.

#### **Trip Generation**

The trip generation for the proposed development was determined by using the comparable land use and rates/equations contained in the *Trip Generation, 10<sup>th</sup> Edition: An ITE Informational*

Report, published by the Institute of Transportation Engineers (ITE) for ITE Land Use Code 210 (single-family detached). The trip generation was approved by DelDOT during the PTIS review.

**Table 1**  
Coral Lakes Trip Generation

Land Use	ADT	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
315 Single-Family Detached Housing (ITE Code 210)	2,988	57	171	228	193	113	306	153	130	283

### **Overview of TIS**

#### **Intersections examined:**

1. Site Entrance A/Robinsonville Road (Sussex Road 277)
2. Robinsonville Road/Kendale Road (Sussex Road 287)
3. Robinsonville Road/Cedar Grove Road (Sussex Road 283)
4. Kendale Road/Wil King Road (Sussex Road 288)
5. Kendale Road/Beaver Dam Road (Sussex Road 285)
6. Robinsonville Road/Harts Road (Sussex Road 277A)
7. Delaware Route 24/Harts Road
8. Delaware Route 24/Camp Arrowhead Road (Sussex Road 279)/Fairfield Drive
9. Delaware Route 24/Robinsonville Road/Angola Road (Sussex Road 277)
10. Delaware Route 24/Hollymount Road (Sussex Road 48)/Sloan Road

#### **Conditions examined:**

1. Case 1 – 2021 Existing Condition
2. Case 2 – 2030 without development
3. Case 3 – 2030 with development

#### **Committed Developments considered:**

1. Chase Oaks f.k.a. Charter Oak (249 single family detached houses)
2. Tidewater Landing (31 single family detached houses)
3. Dellwood f.k.a. Ocean Meadows (92 single family detached houses)
4. Acadia f.k.a. Insight at Lewes Point (238 single family detached houses)
5. Coastal Club (19 low-rise townhouses)
6. Anchors Run f.k.a. Insight at Lewes Run (263 single family detached houses)
7. Kindleton (76 single family detached houses)
8. Outer Banks (49 single family detached houses)
9. The Woods at Burton Pond (121 single family detached houses)

10. Pelican Landing (88,000 square feet shopping center)
11. Marsh Island (138 single family detached houses)
12. Marsh Farm Estates (20 single family detached houses)
13. Rehoboth Point Yacht Club f.k.a. Love Creek Marina (120 mid-rise condominiums, 5,000 square feet quality restaurant)
14. Middle Creek Preserve (258 single family detached houses)
15. Dorman Farm Property f.k.a. Belle Terre (154 single family detached houses)
16. Headwater Cove (163 single family detached houses)
17. Hailey's Glen a.k.a. Kielbasa Property (67 single family detached houses)
18. Tanager Woods f.k.a. Street Property (173 single family detached houses)
19. Welches Pond f.k.a. Fieldstone (247 single family detached houses)

*Note: The committed development information listed above is from the December 22, 2021 Traffic Impact Study report and supersedes the information contained in the September 21, 2021 DelDOT Scoping Meeting Memorandum.*

**Peak hours evaluated:** Weekday morning, Weekday evening, and Summer Saturday midday peak hours.

### **Intersection Descriptions**

#### **1. Site Entrance A/Robinsonville Road (Sussex Road 277)**

**Type of Control:** Proposed two-way stop-controlled intersection

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

**Northbound Approach:** (Robinsonville Road) Existing one through lane; proposed one left turn lane and one through lane

**Southbound Approach:** (Robinsonville Road) Existing one through lane; proposed one through lane and one right turn lane

#### **2. Robinsonville Road/Kendale Road (Sussex Road 287)**

**Type of Control:** Existing two-way stop-controlled intersection (T-intersection)

**Eastbound Approach:** (Kendale Road) Existing one shared left turn/right turn lane, stop-controlled

**Northbound Approach:** (Robinsonville Road) Existing one shared left turn/through lane

**Southbound Approach:** (Robinsonville Road) Existing one shared through/right turn lane

#### **3. Robinsonville Road/Cedar Grove Road (Sussex Road 283)**

**Type of Control:** Existing two-way stop-controlled intersection (T-intersection)

**Westbound Approach:** (Cedar Grove Road) Existing one shared left turn/right turn lane, stop-controlled

**Northbound Approach:** (Robinsonville Road) Existing one shared through/right turn lane

**Southbound Approach:** (Robinsonville Road) Existing one shared left turn/through lane

**4. Kendale Road/Wil King Road (Sussex Road 288)**

**Type of Control:** Existing two-way stop-controlled intersection (T-intersection)

**Eastbound Approach:** (Kendale Road) Existing one shared through/right turn lane

**Westbound Approach:** (Kendale Road) Existing one shared left turn/through lane

**Northbound Approach:** (Wil King Road) Existing one shared left turn/right turn lane, stop-controlled

**5. Kendale Road/Beaver Dam Road (Sussex Road 285)**

**Type of Control:** Existing two-way stop-controlled intersection (T-intersection)

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

**Northbound Approach:** (Beaver Dam Road) Existing one shared through/right turn lane

**Southbound Approach:** (Beaver Dam Road) Existing one shared left turn/through lane

**6. Robinsonville Road/Harts Road (Sussex Road 277A)**

**Type of Control:** Existing two-way stop-controlled intersection (T-intersection)

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

**Northbound Approach:** (Robinsonville Road) Existing one shared through/right turn lane

**Southbound Approach:** (Robinsonville Road) Existing one shared left turn/through lane

**7. Delaware Route 24/Harts Road**

**Type of Control:** Existing two-way stop-controlled intersection

**Eastbound Approach:** (Harts Road) Existing one left turn lane and one right turn lane, stop-controlled

**Northbound Approach:** (Delaware Route 24) Existing one left turn lane and one through lane

**Southbound Approach:** (Delaware Route 24) Existing through lane and one right turn lane

**8. Delaware Route 24/Camp Arrowhead Road (Sussex Road 279)/Fairfield Drive**

**Type of Control:** Existing signalized intersection

**Eastbound Approach:** (Fairfield Drive) Existing one left turn lane and one shared through/right turn lane

**Westbound Approach:** (Camp Arrowhead Road) Existing one left turn lane, one through lane, and one channelized right turn lane

**Northbound Approach:** (Delaware Route 24) Existing one left turn lane, one through lane, and one channelized right turn lane

**Southbound Approach:** (Delaware Route 24) Existing one left turn lane, one through lane, and one channelized right turn lane

**9. Delaware Route 24/Robinsonville Road/Angola Road (Sussex Road 277)**

**Type of Control:** Existing signalized intersection

**Eastbound Approach:** (Robinsonville Road) Existing one shared left turn/through lane and one right turn lane; proposed one left turn lane, one through lane, and one right turn lane

**Westbound Approach:** (Angola Road) Existing one shared left turn/through lane and one right turn lane; proposed one left turn lane, one through lane, and one right turn lane

**Northbound Approach:** (Delaware Route 24) Existing one left turn lane, one through lane, and one channelized right turn lane

**Southbound Approach:** (Delaware Route 24) Existing one left turn lane and one shared through/right turn lane

*Note: The proposed lane configurations are part of the HSIP SR 24 at Camp Arrowhead Road and SR 24 at Angola Road project (DelDOT Contract No. T201200902)*

**10. Delaware Route 24/Hollymount Road (Sussex Road 48)/Sloan Road**

**Type of Control:** Existing signalized intersection

**Eastbound Approach:** (Hollymount Road) Existing one left turn lane and one shared through/right turn lane

**Westbound Approach:** (Sloan Road) Existing one left turn lane and one shared through/right turn lane

**Northbound Approach:** (Delaware Route 24) Existing one left turn lane, one through lane, and one channelized right turn lane

**Southbound Approach:** (Delaware Route 24) Existing one left turn lane, one through lane, and one right turn lane

**Transit, Pedestrian, and Bicycle Facilities**

**Existing transit service:** Per DelDOT Gateway, Delaware Transit Corporation (DTC) currently provides services along Delaware Route 24 via DART Routes 215 within the study area. Designated bus stops for DART Route 215 exist adjacent to the Delaware Route 24 intersection



with Camp Arrowhead Road (Sussex Road 279)/Fairfield Drive. DART Route 215 provides 11 round trips from 5:25 a.m. to 12:43 a.m. Monday through Saturday.

**Planned transit service:** JMT contacted Mr. Jared Kauffman, DART First State Fixed-Route Planner, on December 30, 2021 via email regarding transit improvements. As of January 10, 2022, a response has not yet been received.

**Existing bicycle and pedestrian facilities:** Per DelDOT Gateway, Connector and Regional Bicycle Routes exist within the study area. A Connector Bicycle Route travels along Camp Arrowhead Road starting at the Delaware Route 24 intersection with Camp Arrowhead Road/Fairfield Road. Another Connector Bicycle Route travels along Beaver Dam and Robinsonville Road/Angola Road, traversing the study intersection with Delaware Route 24. The Regional Bicycle Route exists along Delaware Route 24 and traverses through four study intersections (Camp Arrowhead Road/Fairfield Drive, Harts Road, Robinsonville Road/Angola Road, and Hollymount Road/Sloan Road).

**Planned bicycle and pedestrian facilities:** JMT contacted Mr. John Fiori, DelDOT's Bicycle Coordinator, and Ms. Linda Osiecki, DelDOT's Pedestrian Coordinator, on December 30, 2021 via email regarding bicycle and pedestrian improvements. As of January 10, 2022, a response has not yet been received.

**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.

- Robinsonville Road – LTS: 4

### **Sight Distance Evaluation**

Based on a qualitative field visit, there are no sight distance concerns expected at the proposed site entrance along Robinsonville Road.

### **Crash Evaluation**

Per the TIS, crash data from October 22, 2018 to October 22, 2021 was provided by DelDOT and a total of 128 crashes were reported within the study intersections. Of the 128 crashes reported:

- 16 crashes were reported at the intersection of Kendale Road and Beaver Dam Road.
- 23 crashes were reported at the intersection of Delaware Route 24 and Hollymount Road/Sloan Road.

- 27 crashes were reported at the intersection of Delaware Route 24 and Camp Arrowhead Road/Fairfield Drive.
- 42 crashes were reported at the intersection of Delaware Route 24 and Robinsonville Road/Angola Road.
- One fatality occurred at the intersection of Delaware Route 24 and Camp Arrowhead Road/Fairfield Drive. The fatal crash was an angle crash at the unsignalized shopping center driveway approximately 325 feet south of Fairfield Drive.

### **Previous Comments**

Comments provided by DeIDOT during the Preliminary TIS review have been addressed in the Final TIS.

### **General HCS Analysis Comments**

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

1. Per DelDOT's *Development Coordination Manual*, JMT used a heavy vehicle percentage of 3% for each movement greater than 100 vph in the Case 2 and Case 3 future scenario analyses, unless the existing heavy vehicle percentage was greater than 3% or there was no significant increase of vehicles along that movement, in which case the existing heavy vehicle percentage was used for analysis of future scenarios. Whereas, the TIS used the existing heavy vehicle percentage for Case 1, Case 2 and Case 3 scenarios.
2. 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 for Case 1 conditions, whereas the TIS did not.
3. Per DelDOT's *Development Coordination Manual*, JMT utilized the existing PHF for the Case 1 scenario and a future PHF for Cases 2 and 3 scenarios 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 the existing PHF, whichever was higher. The TIS utilized the existing PHF for Case 1, Case 2 and Case 3 scenarios.
4. Both the TIS and JMT utilized a saturation flow rate of 1,750 pc/ph/pl for any signalized intersection based on the project area being located south of the C&D Canal.
5. For all the signalized intersections JMT utilized Field-Measured Phase Times whereas the TIS did not.

Table 2  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Site Entrance /Robinsonville Road (Sussex Road 277)</b>						
2030 with development (Case 3)						
Eastbound Site Entrance Approach	C (16.0)	C (25.5)	C (25.5)	C (16.9)	D (25.5)	D (25.5)
Northbound Robinsonville Road Left Turn	A (7.9)	A (9.2)	A (8.9)	A (8.0)	A (9.2)	A (8.9)

<sup>1</sup> For signalized and unsignalized analysis, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

Table 3  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Robinsonville Road (Sussex Road 277)/ Kendale Road (Sussex Road 287)</b>						
2021 with Existing (Case 1)						
Eastbound Kendale Approach	C (15.5)	C (15.1)	C (18.9)	C (15.5)	C (15.1)	C (18.5)
Northbound Robinsonville Road Left Turn	A (7.6)	A (8.4)	A (8.1)	A (7.6)	A (8.4)	A (8.1)
2030 without Development (Case 2)						
Eastbound Kendale Approach	F (120.9)	F (150.5)	F (315.5)	F (108.0)	F (148.1)	F (279.4)
Northbound Robinsonville Road Left Turn	A (8.2)	A (9.3)	A (9.1)	A (8.1)	A (9.2)	A (8.9)
2030 without Development (Case 2) <i>with auxiliary turn lanes along all approaches</i>						
Eastbound Kendale Approach	-	-	-	E (43.2)	D (25.6)	F (55.6)
Northbound Robinsonville Road Left Turn	-	-	-	A (8.1)	A (9.2)	A (8.9)
2030 with Development (Case 3)						
Eastbound Kendale Approach	F (258.9)	F (294.2)	F (522.9)	F (220.9)	F (290.1)	F (467.9)
Northbound Robinsonville Road Left Turn	A (8.4)	A (9.7)	A (9.5)	A (8.3)	A (9.6)	A (9.2)

Table 3 (Continued)  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Robinsonville Road (Sussex Road 277)/ Kendale Road (Sussex Road 287)</b>						
<i>2030 with Development (Case 2) with auxiliary turn lanes along all approaches</i>						
Eastbound Kendale Approach	-	-	-	F (87.8)	E (39.6)	F (104.8)
Northbound Robinsonville Road Left Turn	-	-	-	A (8.3)	A (9.6)	A (9.2)

Table 3 (Continued)  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Signalized Intersection <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Robinsonville Road (Sussex Road 277)/ Kendale Road (Sussex Road 287)</b>						
2030 without development (Case 2) with <i>Henlopen TID Improvement</i> <sup>2</sup>	-	-	-	B (17.4)	B (17.5)	B (17.7)
2030 with development (Case 3) with <i>Henlopen TID Improvement</i> <sup>2</sup>	-	-	-	B (17.3)	C (20.2)	B (18.3)

<sup>2</sup> The Henlopen TID Improvements scenario includes signaling the intersection and providing auxiliary lanes along each approach. A cycle length of 90 seconds was utilized for all peak hours.

Table 4  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Robinsonville Road (Sussex Road 277)/ Cedar Grove Road (Sussex Road 283)</b>						
2021 with Existing (Case 1)						
Westbound Cedar Grove Road Approach	B (11.7)	C (16.4)	B (14.6)	B (11.7)	C (16.4)	B (14.6)
Southbound Robinsonville Road Left Turn	A (8.4)	A (7.8)	A (8.0)	A (8.4)	A (7.8)	A (8.0)
2030 without Development (Case 2)						
Westbound Cedar Grove Road Approach	C (16.4)	F (55.2)	D (33.8)	C (15.7)	F (53.2)	D (30.9)
Southbound Robinsonville Road Left Turn	A (8.8)	A (8.3)	A (8.5)	A (8.9)	A (8.3)	A (8.6)
2030 without Development (Case 2) <i>with auxiliary turn lanes along all approaches</i>						
Westbound Cedar Grove Road Approach	-	-	-	B (12.0)	D (27.7)	C (18.6)
Southbound Robinsonville Road Left Turn	-	-	-	A (8.9)	A (8.3)	A (8.6)
2030 with Development (Case 3)						
Westbound Cedar Grove Road Approach	C (17.8)	F (85.9)	E (45.1)	C (17.0)	F (65.3)	E (40.1)
Southbound Robinsonville Road Left Turn	A (9.0)	A (8.4)	A (8.6)	A (9.0)	A (8.3)	A (8.7)



Table 4 (Continued)  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Robinsonville Road (Sussex Road 277)/ Cedar Grove Road (Sussex Road 283)</b>						
<i>2030 without Development (Case 2) with auxiliary turn lanes along all approaches</i>						
Westbound Cedar Grove Road Approach	-	-	-	B (12.5)	D (32.0)	C (21.5)
Southbound Robinsonville Road Left Turn	-	-	-	A (9.0)	A (8.3)	A (8.7)

Table 4 (Continued)  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Roundabout <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Robinsonville Road (Sussex Road 277)/ Cedar Grove Road (Sussex Road 283)</b>						
2030 without Development (Case 2) with Henlopen TID improvements <sup>3</sup>						
Westbound Cedar Grove Road Approach	-	-	-	A (5.1)	A (7.0)	A (6.2)
Northbound Robinsonville Road Approach	-	-	-	A (8.2)	A (5.9)	A (6.6)
Southbound Robinsonville Road Approach	-	-	-	A (4.4)	A (7.8)	A (6.3)
Overall LOS	-	-	-	A (7.1)	A (6.8)	A (6.4)
2030 with Development (Case 3) with Henlopen TID improvements <sup>3</sup>						
Westbound Cedar Grove Road Approach	-	-	-	A (5.4)	A (7.2)	A (6.5)
Northbound Robinsonville Road Approach	-	-	-	A (8.8)	A (6.0)	A (6.9)
Southbound Robinsonville Road Approach	-	-	-	A (4.5)	A (8.3)	A (6.7)
Overall LOS	-	-	-	A (7.6)	A (7.1)	A (6.7)

<sup>3</sup> The Henlopen TID Improvements scenario includes converting the intersection into a single lane roundabout.

Table 5  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Kendale Road (Sussex Road 287)/ Wil King Road (Sussex Road 288)</b>						
2021 with Existing (Case 1)						
Westbound Kendale Road Left Turn	A (8.2)	A (7.8)	A (8.0)	A (8.2)	A (7.8)	A (8.0)
Northbound Wil King Road Approach	B (11.9)	B (11.2)	B (11.9)	B (11.9)	B (11.2)	B (11.9)
2030 without Development (Case 2)						
Westbound Kendale Road Left Turn	A (8.5)	A (8.4)	A (8.6)	A (8.5)	A (8.4)	A (8.6)
Northbound Wil King Road Approach	C (15.4)	C (15.6)	C (17.0)	C (15.3)	C (15.7)	C (17.3)
2030 with Development (Case 3)						
Westbound Kendale Road Left Turn	A (8.6)	A (8.6)	A (8.7)	A (8.6)	A (8.6)	A (8.8)
Northbound Wil King Road Approach	C (16.4)	C (17.0)	C (18.5)	C (16.3)	C (17.1)	C (18.9)

Table 5 (Continued)  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Unsignalized Intersection All-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Kendale Road (Sussex Road 287)/ Wil King Road (Sussex Road 288)</b>						
<i>2030 with Development (Case 3) with Henlopen TID improvements<sup>4</sup></i>						
Eastbound Kendale Road Approach	-	-	-	B (13.4)	B (14.3)	C (20.0)
Westbound Kendale Road Approach	-	-	-	B (12.6)	B (13.6)	B (14.3)
Northbound Wil King Road Approach	-	-	-	B (10.2)	A (9.5)	B (10.1)
Overall LOS	-	-	-	B (12.6)	B (13.7)	C (16.9)

<sup>4</sup> The Henlopen TID Improvements scenario includes converting the intersection to an all-way stop.

Table 6  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Kendale Road (Sussex Road 287)/ Beaver Dam Road (Sussex Road 285)</b>						
2021 with Existing (Case 1)						
Westbound Kendale Road Approach	C (20.0)	E (41.3)	E (45.9)	C (20.0)	E (41.3)	E (45.9)
Southbound Beaver Dam Road Left Turn	A (9.3)	A (8.4)	A (9.2)	A (9.3)	A (8.4)	A (9.2)
2030 without Development (Case 2)						
Westbound Kendale Road Approach	F (220.9)	F (1122.4)	F (1242.9)	F (218.0)	F (946.7)	F (1107.8)
Southbound Beaver Dam Road Left Turn	B (10.6)	A (9.9)	B (11.4)	B (10.4)	A (9.8)	B (11.3)
2030 without Development (Case 2) with auxiliary turn lanes along all approaches						
Westbound Kendale Road Approach	-	-	-	D (33.8)	F (285.5)	F (247.8)
Southbound Beaver Dam Road Left Turn	-	-	-	B (10.4)	A (9.8)	B (11.3)
2030 with Development (Case 3)						
Westbound Kendale Road Approach	F (300.1)	F (1618.8)	F (1700.6)	F (296.6)	F (1356.5)	F (1508.8)
Southbound Beaver Dam Road Left Turn	B (10.7)	B (10.3)	B (11.9)	B (10.5)	B (10.2)	B (11.8)

Table 6 (Continued)  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Kendale Road (Sussex Road 287)/ Beaver Dam Road (Sussex Road 285)</b>						
<i>2030 with Development (Case 3) with auxiliary turn lanes along all approaches</i>						
Westbound Kendale Road Approach	-	-	-	E (38.3)	F (378.9)	F (317.7)
Southbound Beaver Dam Road Left Turn	-	-	-	B (10.5)	B (10.2)	B (11.8)

Table 6 (Continued)  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Signalized Intersection <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Kendale Road (Sussex Road 287)/ Beaver Dam Road (Sussex Road 285)</b>						
2030 without development (Case 2) with <i>Henlopen TID Improvement</i> <sup>5</sup>	-	-	-	C (20.1)	C (20.5)	B (18.3)
2030 with development (Case 3) with <i>Henlopen TID Improvement</i> <sup>55</sup>	-	-	-	C (21.4)	C (20.6)	B (19.5)

<sup>5</sup> The Henlopen TID Improvements scenario includes signaling the intersection and providing auxiliary lanes along each approach. A cycle length of 120 seconds was utilized for the AM and Saturday peak hours, and cycle length of 90 seconds was utilized for the PM peak hour.

Table 7  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Robinsonville Road (Sussex Road 277)/ Harts Road (Sussex Road 277A)</b>						
2021 with Existing (Case 1)						
Westbound Harts Road Approach	B (10.4)	B (11.6)	B (12.4)	B (10.4)	B (11.6)	B (12.4)
Southbound Robinsonville Road Left Turn	A (8.0)	A (7.6)	A (7.9)	A (8.0)	A (7.6)	A (7.9)
2030 without Development (Case 2)						
Westbound Harts Road Approach	B (13.8)	C (19.6)	C (24.0)	B (12.9)	C (19.6)	C (24.4)
Southbound Robinsonville Road Left Turn	A (8.7)	A (8.2)	A (8.6)	A (8.3)	A (8.2)	A (8.7)
2030 without Development (Case 2) <i>with Henlopen TID Improvement</i> <sup>6</sup>						
Westbound Harts Road Approach	-	-	-	B (12.6)	B (14.8)	C (15.1)
Southbound Robinsonville Road Left Turn	-	-	-	A (8.3)	A (8.2)	A (8.3)

<sup>6</sup> The Henlopen TID Improvements scenario includes removing the Harts Road connection to Delaware Route 24 and constructing an alternative connecting roadway between Delaware Route 24 and Robinsonville Road across from Jane Way. The TIS did not account for the resulting volume change under Case 2 and 3 conditions, whereas JMT redistributed volumes to account for the closure.



Table 7 (continued)  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Robinsonville Road (Sussex Road 277)/ Harts Road (Sussex Road 277A)</b>						
2030 with Development (Case 3)						
Westbound Harts Road Approach	B (14.7)	D (27.6)	E (37.1)	C (15.6)	D (27.5)	E (38.0)
Southbound Robinsonville Road Left Turn	A (8.8)	A (8.5)	A (9.0)	A (8.6)	A (8.6)	A (9.0)
2030 with Development (Case 3) with Henlopen TID Improvement <sup>6</sup>						
Westbound Harts Road Approach	-	-	-	B (13.8)	C (17.4)	C (17.5)
Southbound Robinsonville Road Left Turn	-	-	-	A (8.4)	A (8.5)	A (8.5)

Table 8  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Unsignalized Intersection Two-Way Stop Control (T-intersection) <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Delaware Route 24/Harts Road</b> <sup>7</sup>						
2021 with Existing (Case 1)						
Eastbound Harts Road Approach	C (21.6)	C (22.3)	E (43.2)	C (20.1)	C (21.2)	E (40.7)
Northbound Delaware Route 24 Left Turn	A (7.9)	A (8.9)	A (8.4)	A (8.0)	A (9.0)	A (8.5)
2030 without Development (Case 2)						
Eastbound Harts Road Approach	F (123.8)	F (196.3)	F (701.0)	F (81.5)	F (134.4)	F (562.7)
Northbound Delaware Route 24 Left Turn	A (8.4)	B (10.3)	A (9.5)	A (8.5)	B (10.4)	A (9.7)
2030 with Development (Case 3)						
Eastbound Harts Road Approach	F (237.9)	F (323.8)	F (929.5)	F (153.0)	F (211.5)	F (725.9)
Northbound Delaware Route 24 Left Turn	A (8.4)	B (10.5)	A (9.7)	A (8.5)	B (10.7)	A (9.9)

<sup>7</sup> The TIS modeled the intersection with shared lanes along all approaches. JMT modeled the intersection with one left turn lane and one right turn lane along the eastbound Harts Road Approach, one left turn lane and one through lane along the northbound Delaware Route 24 approach, and one through lane and one right turn lane along the southbound Delaware Route 24 approach, per existing conditions.

Table 9  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Signalized Intersection <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Delaware Route 24/Camp Arrowhead Road (Sussex Road 279)/Fairfield Drive <sup>8,9</sup></b>						
2021 with Existing (Case 1)	F (97.1)	D (38.1)	F (81.4)	E (77.6)	D (48.5)	E (68.6)
2021 with Existing (Case 1) <i>with signal optimization</i> <sup>10</sup>	C (23.1)	C (33.5)	C (30.1)	C (30.0)	C (22.5)	C (32.9)
2030 without Development (Case 2) <sup>11</sup>	E (62.1)	C (29.9)	E (61.2)	D (43.2)	C (27.8)	D (46.9)
2030 without Development (Case 2) <i>with Henlopen TID Improvements</i> <sup>12</sup>	-	-	-	C (26.2)	C (23.0)	C (32.5)
2030 with Development (Case 3) <sup>11</sup>	E (72.8)	C (31.7)	E (67.5)	D (45.4)	C (29.1)	D (51.6)
2030 with development (Case 3) <i>with Henlopen TID Improvements</i> <sup>12</sup>	-	-	-	C (26.4)	C (23.0)	C (32.7)

<sup>8</sup> The TIS modeled the Delaware Route 24 intersections with Camp Arrowhead Road/Fairfield Drive and Robinsonville Road/Angola Road separately, whereas JMT modeled the intersections as part of a coordinated corridor, per existing conditions.

<sup>9</sup> Due to a lack of right turn on red count data, JMT modeled the intersection with right turn overlap phases to account for right turn on red movements, whereas the TIS did not.

<sup>10</sup> Signal optimization scenario includes optimizing green split times while maintaining signal cycle lengths.

<sup>11</sup> The Case 2 and Case 3 future analysis includes improvements to intersections 8 and 9 as part of the *HSIP SR 24 at Camp Arrowhead Road and SR 24 at Angola Road* project (DelDOT Contract No. T201200902). As such, signal timings have been optimized.

<sup>12</sup> Henlopen TID Improvements scenario includes the provision of an additional through lane along northbound and southbound Delaware Route 24.

Table 10  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Signalized Intersection <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Delaware Route 24/Robinsonville Road/Angola Road (Sussex Road 277)<sup>8,9</sup></b>						
2021 with Existing (Case 1)	-	-	-	F (73.6)	E (56.5)	E (65.8)
2021 with Existing (Case 1) <i>with signal optimization</i> <sup>10</sup>	D (40.0)	D (41.7)	D (39.9)	D (45.4)	D (42.9)	D (49.1)
2030 without Development (Case 2) <sup>11,13</sup>	D (43.3)	D (47.0)	D (45.4)	D (41.5)	D (40.4)	D (38.4)
2030 without Development (Case 2) <i>with Henlopen TID Improvements</i> <sup>12</sup>	-	-	-	C (34.5)	C (34.1)	C (33.5)
2030 with Development (Case 3) <sup>11,13</sup>	D (45.4)	D (54.7)	D (48.8)	D (43.8)	D (41.3)	D (40.0)
2030 with development (Case 3) <i>with Henlopen TID Improvements</i> <sup>12</sup>	-	-	-	C (34.6)	C (34.6)	C (33.7)

<sup>13</sup> Improvements as part of the *HSIP SR 24 at Camp Arrowhead Road and SR 24 at Angola Road* project (DelDOT Contract No. T201200902) include the provision of one left turn lane, one through lane, and one right turn lane along all approaches.

Table 11  
Peak Hour Levels Of Service (LOS)  
Based on Final Traffic Impact Study for Coral Lakes f.k.a. Novosel  
Report Dated: December 22, 2021  
Prepared By: Century Engineering, Inc.

Signalized Intersection <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
<b>Delaware Route 24/Hollymount Road (Sussex Road 48)</b>						
2021 with Existing (Case 1)	C (21.1)	B (19.3)	C (24.6)	D (50.9)	E (56.0)	F (115.7)
2021 with Existing (Case 1) <i>with signal optimization</i>	-	-	-	C (20.9)	B (18.0)	C (21.3)
2030 without Development (Case 2)	C (25.1)	C (33.3)	F (82.6)	F (86.9)	F (163.7)	F (282.5)
2030 without Development (Case 2) <i>with signal optimization</i>	-	-	D (39.9)	C (24.1)	C (27.2)	D (42.8)
2030 without Development (Case 2) <i>with Henlopen TID Improvement<sup>14</sup></i>	-	-	-	C (23.1)	C (25.7)	D (40.7)
2030 with Development (Case 3)	C (25.9)	D (37.7)	F (94.8)	F (96.8)	F (184.4)	F (305.4)
2030 with Development (Case 3) <i>with signal optimization</i>	-	-	-	C (25.3)	C (27.9)	D (46.1)
2030 with development (Case 3) <i>with Henlopen TID Improvement<sup>14</sup></i>	-	-	-	C (23.5)	C (26.7)	D (43.6)

<sup>14</sup> Henlopen TID Improvements scenario includes providing separate left turn lanes along northbound Sloan Lane and southbound Hollymount Road.