

MULBERRY KNOLL ROAD EXTENSION

PLANNING AND ENVIRONMENTAL LINKAGES STUDY



Delaware Department of Transportation

June 2022

**MULBERRY KNOLL ROAD EXTENSION
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Prepared for:



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Division of Planning

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1.0 INTRODUCTION AND BACKGROUND

The Delaware Department of Transportation (DelDOT) has prepared this Mulberry Knoll Road Extension Planning and Environmental Linkages (PEL) study to establish a long-term vision and inform strategic transportation and development planning for future improvements west of SR 1/Coastal Highway in eastern Sussex County between US 9/Lewes Georgetown Highway and SR 24/John Williams Highway.

The Mulberry Knoll Road Extension PEL study is intended to identify and preserve a defined corridor for future project implementation and streamline the process for accelerated environmental analyses. The study will also inform regional transportation priorities in advance of funding becoming identified for detailed design and construction. PEL studies represent a collaborative and integrated approach to transportation decision making that considers benefits and impacts of potential future transportation improvements in comparison to the potential impacts to the environment, communities, and economy (FHWA, 2016). Information developed during these early transportation planning efforts can be integrated into the environmental review process as future funding is identified and a project advances to more detailed stages of engineering and design. The result of these planning efforts is intended to be an efficient decision-making process that encourages working relationships between federal, state, and local government agencies and stakeholders.

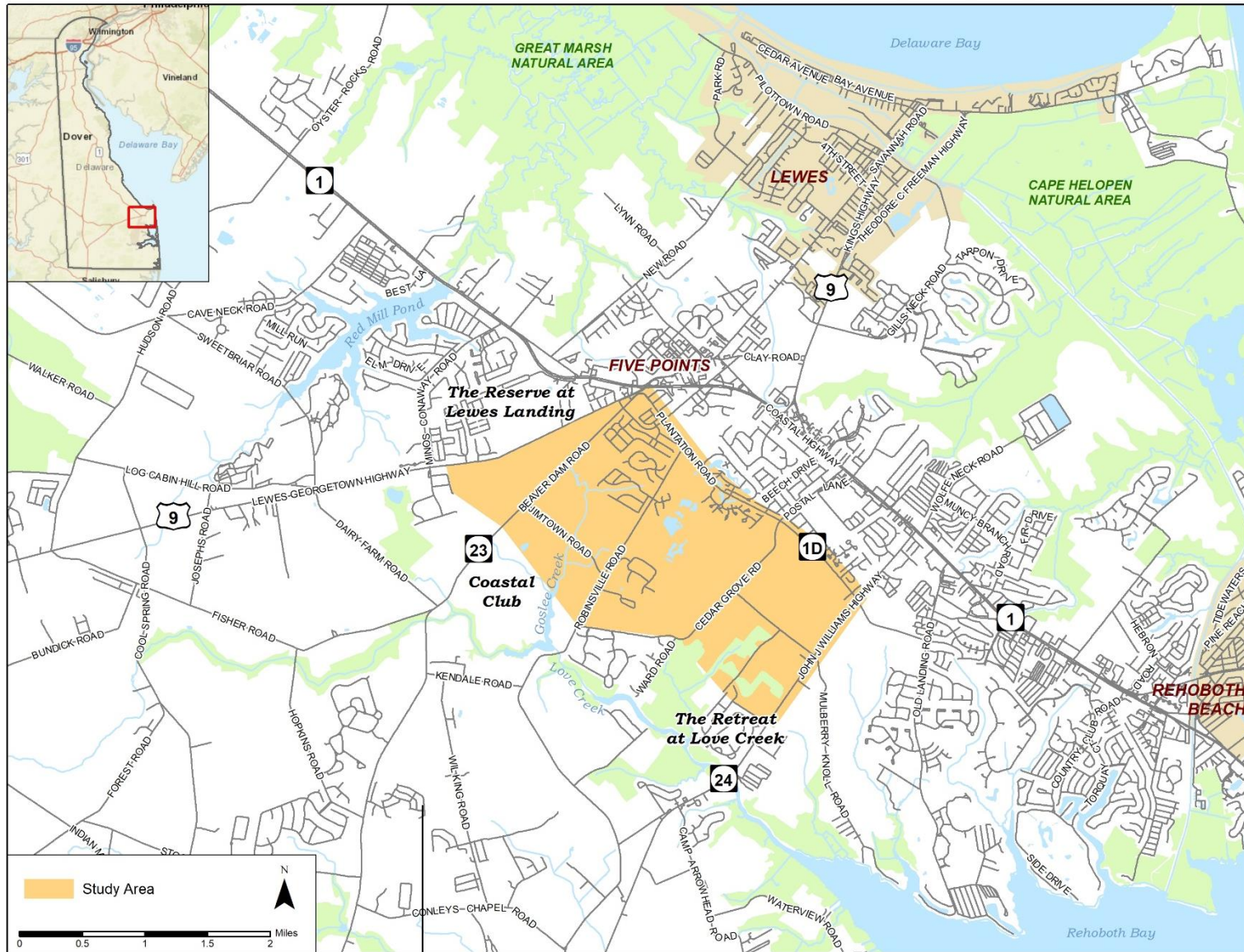
This section describes the study area that serves as the focus for this PEL study and provides background information on the context of the study area and previous associated planning efforts.

1.1 Study Area

This study focuses on the north-south corridor that parallels SR 1 between US 9 and SR 24 and is generally bounded by SR 1D/Plantation Road to the east and to the west by the residential developments along Love Creek (see **Figure 1**). The study area is approximately five miles west of Rehoboth and Dewey Beaches and just south of the area known as Five Points, at the intersection of US 9 and SR 1. SR 1 represents one of the most congested areas in Sussex County, due to its proximity to the beaches, adjacent shopping outlets, and other tourist attractions (DelDOT, 2017). In addition to the area's popularity as a tourist destination and for the commercial development along SR 1, this portion of eastern Sussex County is also an increasingly attractive area for full-time residents. With commercial development established along SR 1 and residential growth due to seasonal dwellings as well as people permanently relocating to the area, development continues to move to undeveloped properties to the south and west of the SR 1 corridor. This continued growth presents challenges for the efficient movement of traffic through the study area for both residents and visitors during the summer peak season, and increasingly throughout the remaining months of the year.

The study area encompasses approximately four-square miles with a mix of suburban residential developments interspersed among farm fields and open space as well as sensitive natural areas surrounding Love Creek, Goslee Creek, and their tributaries. The study area is characterized by low-lying areas of the Atlantic Coastal Plain Physiographic Province, with elevations that range up to 25 feet above mean sea level.

Figure 1: Study Area Location



Within the study area, Mulberry Knoll Road is a two-lane, local road with no shoulders and a posted speed limit of 50 miles per hour (mph). At the southern study limits, Mulberry Knoll Road intersects SR 24, which is a two-lane, major collector with full shoulders and a posted speed limit of 45 mph. Mulberry Knoll currently ends at the intersection with Cedar Grove Road, which is a two-lane, local road with no shoulders with a posted speed limit of 45 mph. Other east-west roadways within the study area include Robinsonville Road, which is a two-lane, local road with no shoulders and SR 23/Beaver Dam Road, which is a two-lane, major collector with a posted speed of 45 mph. US 9, which is at the northern limit of the study, is a two-lane, major collector with full shoulders and a posted speed limit that varies between 40 and 50 mph. Plantation Road, which forms the eastern study boundary, is a two-lane, major collector with full shoulders and a posted speed limit of 45 mph. Along the western portion of the study area, Jimtown Road is a two-lane, local road with no shoulders and a posted speed limit of 45 mph. Throughout the study area, there are limited existing bike and pedestrian facilities.

There are multiple active DeIDOT projects that include proposed improvements along roadways within the study area. Contract T200411209, SR 24: Mulberry Knoll to SR 1, is currently under construction and scheduled to be complete by summer 2022. Contract T201212201, SR 24: Love Creek to Mulberry Knoll, is scheduled to begin construction in spring 2023. Contract T202011201, Plantation Road (Phase 1): Robinsonville Road to US 9, is scheduled to begin construction in summer 2022. Phase 2 improvements along Plantation Road will extend from SR 24 to Robinsonville Road. The Department is still evaluating what the proposed typical section and future traffic capacity needs will be for this section of Plantation Road.

1.2 Planning Context and Background

The study area and surrounding region has been subject to extensive transportation studies and improvements since it is one of the fastest growing areas in Delaware that continues to generate tourism-related trips and year-round trips due to the growing number of permanent residents. The following provides a brief description of planning efforts and initiatives applicable to this study that have influenced the inception of this PEL study and identification of the study area.

1.2.1 Federal Requirements

The transportation planning and programming process and the environmental review process are long-standing elements that have been required in transportation infrastructure development. The transportation planning process is required by 23 United States Code (USC) §134 and 135.

Furthermore, federal law (23 USC §168) calls for the integration of planning decisions, such as the identification of a general travel corridor, and the environmental review process. This was explicitly clarified in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and Moving Ahead for Progress in the 21st Century (MAP-21) reinforced and expanded this authority. Federal regulation also strongly supports the integration of the transportation planning process with the National Environmental Policy Act of 1969 (NEPA) environmental review process. Supporting the increased use of synchronized planning efforts and environmental review processes, FHWA has developed a standard PEL Questionnaire to ensure that planning information and decisions are properly documented to be utilized in future federal approvals, such as decision making under NEPA. The completed standard PEL Questionnaire for the Mulberry Knoll Road Extension study is included in **Appendix A**.

1.2.2 State and Regional Planning

Recognizing the increasing travel demand pressures of the study area, DeIDOT began exploring opportunities and solutions to effectively manage the transportation system and land use for the Rehoboth and Lewes area with the completion of the *SR 1 Land Use and Transportation Study* in August 2003 (DeIDOT, 2003). Conducted in collaboration with Sussex County, the study identified a few possible recommendations to address the travel demand and land use development challenges within the area, including short- to mid-term solutions such as signal optimization and intersection improvements along SR 1. Additionally, the study identified potential long-term improvements that were recommended for further study, evaluation, and eventual implementation. Among these concepts were an access-controlled parkway west of SR 1 or widening of Plantation Road and SR 24 to improve capacity and local circulation.

Following the recommendations of the *SR 1 Land Use and Transportation Study*, DeIDOT initiated the planning and project development process to examine a full range of alternatives for providing a new transportation corridor west of SR 1. This planning effort was captured in the *Western Parkway Study*, which began in 2004 and was intended to identify, select, and preserve a transportation corridor for the future implementation of a four-lane north-south roadway between Lewes/Five Points and destinations along SR 24. Through the evaluation of several alternative alignments, it became apparent that the public and residents were concerned about potential property impacts, along with developers who had purchased land in the conceptual rights-of-way, and the *Western Parkway Study* did not advance.

More recently, DeIDOT and Sussex County agreed to establish the Henlopen Transportation Improvement District (DeIDOT, 2020a [TID]) to develop cohesive transportation and land use strategies southwest of SR 1. In 2018, DeIDOT completed the Henlopen TID Existing Conditions Traffic Analysis Report (DeIDOT, 2018b) which subsequently identified several projects that are either included or may be proposed for inclusion in DeIDOT's Capital Transportation Program (CTP). These projects include innovative intersection improvements as well as widening Plantation Road and a new connector extending Mulberry Knoll Road from SR 24 to US 9 (DeIDOT, 2020b).

Concurrently with the Henlopen TID study, DeIDOT and Sussex County partnered with residents, business community members, elected officials, and agency representatives to create the Five Points Transportation Study Working Group. The Working Group was tasked with developing recommendations to improve local traffic circulation at Five Points and in the surrounding area and, through a series of meetings and coordination from December 2017 through October 2018, identified a few needs, recommendations, and priorities for transportation improvements in the region.

The *Five Points Transportation Study – Phase I Final Report* provides a prioritized list of these recommendations (DeIDOT, 2018a) and the Working Group has since transitioned the study into Phase II to monitor and direct plan implementation. As a result of the collaborative efforts of the Working Group, several projects, at varying stages of planning, design, and construction, have advanced. These projects include:

- SR 1, Rehoboth Canal to north of Five Points pedestrian sidewalks
- SR 24, Mulberry Knoll to SR 1 widening to four lanes
- SR 1, Minos Conaway Road grade-separated intersection

- Old Orchard Road, Wescoats Road intersection realignment

Among the recommendations for new infrastructure investment to support future anticipated growth, the *Five Points Transportation Study – Phase I Final Report* also identified the evaluation of a new road parallel to Plantation Road, connecting Mulberry Knoll Road to US 9, which served as the impetus for the Mulberry Knoll Road Extension PEL study.

1.2.3 Sussex County Planning and Zoning Office

In addition to their integral role in regional transportation planning, Sussex County recognizes the importance of providing capacity improvements and implementing coordinated approaches to land use and transportation development. The *Sussex County Comprehensive Plan* recommends additional capacity improvement projects between US 9 to SR 24, west of Lewes and Rehoboth Beach (Sussex County, 2019).

2.0 PURPOSE AND NEED

This section defines the Purpose and Need for the study, which establishes the critical framework for identifying transportation solutions to be evaluated in the study area. Consistent with historic trends in Sussex County, the study area for the Mulberry Knoll Extension PEL Study has experienced continued growth and development at a substantial rate, resulting in increased traffic volumes on the local roadway network. **Table 1** shows the historic trends for population and housing data in the study area, compared to Delaware and Sussex County. Between 2000 and 2018, the study area has exhibited a higher growth rate in total population and housing units as compared to the averages of Delaware and Sussex County. From 2000 to 2018, the study area’s population grew by 84 percent; similarly, the total number of housing units in the study area increased by 72 percent. Sussex County’s growth was substantially lower, at 50 percent and 46 percent respectively, and statewide rates were lower yet at 24 percent and 23 percent.

Table 1: Total Population and Housing Units

	2000	2010	2018	%Δ 2000 - 2018
Total Population				
Delaware	783,600	897,934	973,764	24%
%Δ From Previous Analysis Year		15%	8%	-
Sussex County	156,638	197,145	234,225	50%
%Δ From Previous Analysis Year		26%	19%	-
Study Area	13,742	18,882	25,230	84%
%Δ From Previous Analysis Year		37%	34%	-
Housing Units				
Delaware	343,072	405,885	428,251	25%
%Δ From Previous Analysis Year		18%	6%	-
Sussex County	93,070	123,036	135,529	46%
%Δ From Previous Analysis Year		32%	10%	-
Study Area	9,748	14,397	16,801	72%
%Δ From Previous Analysis Year		48%	17%	-

Sources: U.S. Census Bureau, 2000 (DEC Summary File [Tables P001 and H001]); U.S. Census Bureau, 2012 (Table 1); and U.S. Census Bureau, 2019 (Detailed Tables [Tables S0101 and B25001])

Note: Study area calculation includes Census Tracts within or adjacent to study area (Census Tracts 508.02, 510.04, 510.05, 510.06, 510.07 and equivalent geographical areas [Census Tracts 508.2, 510.01, and 510.02] for 2000 Census)

In the study area and surrounding vicinity, this population growth and development is expected to continue. The Delaware Population Consortium (DPC), which is comprised of representatives from state agencies, regional planning organizations, and localities, annually prepares a set of 30-year population projections for the state, counties, and selected municipalities. Based on the DPC's latest population and housing forecasts, the population in Sussex County is expected to grow to 285,658 by 2050 (an increase of 22 percent from 2018). Similarly, housing units in Sussex County are expected to increase by 23 percent to 166,226 by 2050, compared to 2018 (135,529) (DPC, 2019). As the population and development in the study area continues to grow, efficient traffic movement through the study area will remain a challenge for residents as well as visitors.

The purpose of the Mulberry Knoll Extension PEL Study is to identify transportation improvements that will reduce congestion for local and regional traffic and increase system linkages, while improving access to designated development areas to support economic vitality and sustained growth in the study area. Following is a description of each of the needs that have been identified for the study area.

2.1 Reduce Congestion for Local and Regional Traffic and Increase System Linkages

Table 2 shows the existing and projected capacity analyses within the study area, represented by the overall Level of Service (LOS)¹ for signalized and unsignalized intersections within the study area. Existing conditions are listed based on 2017 traffic data, derived from the Henlopen TID Study, which included seasonal adjustments and adjustments to account for specific development sites and employment that had occurred since the traffic data were collected (DeIDOT, 2018b). As listed in **Table 2** and shown in **Figure 2**, six of the 16 intersections analyzed in the study area currently operate with volumes at or exceeding the capacity of the roadway system, resulting in stoppages and delays for long periods of time. LOS F operations indicate volumes exceeding capacity on multiple approaches to an intersection with motorists waiting through multiple signal cycles to travel through the intersection. During LOS F conditions, queues will continue to grow throughout the duration of at-capacity conditions, extend beyond the turn lanes, and cause blockages of upstream intersections and access points.

The Henlopen TID Study forecasted LOS for 2045 assuming the implementation of all committed transportation improvement projects in the study area that are included in DeIDOT's Capital Transportation Program (CTP) for Fiscal Years (FY) 2019-2024 and developer commitments as of May 2018 (DeIDOT, 2020c). By 2045, LOS in the study area is expected to worsen compared to existing conditions, with 13 of the 16 intersections analyzed in the study area expected to operate at or beyond capacity (see **Figure 3**) (DeIDOT, 2020c). Operational improvements along Plantation Road from SR 24 to US 9, including turn lanes and other intersection modifications, median turn lanes for residential entrances, and bicycle and pedestrian facilities along the corridor, are included among the programmed projects assumed under the 2045 analysis scenario. Even with the implementation of these improvements, the operational conditions of the study area are expected to be degraded, as noted in **Table 2**, and will not meet the LOS minimum of D, as set in the TID Agreement (DeIDOT 2020a). This demonstrates a need for additional improvements in the study area to improve congestion and increase system linkages.

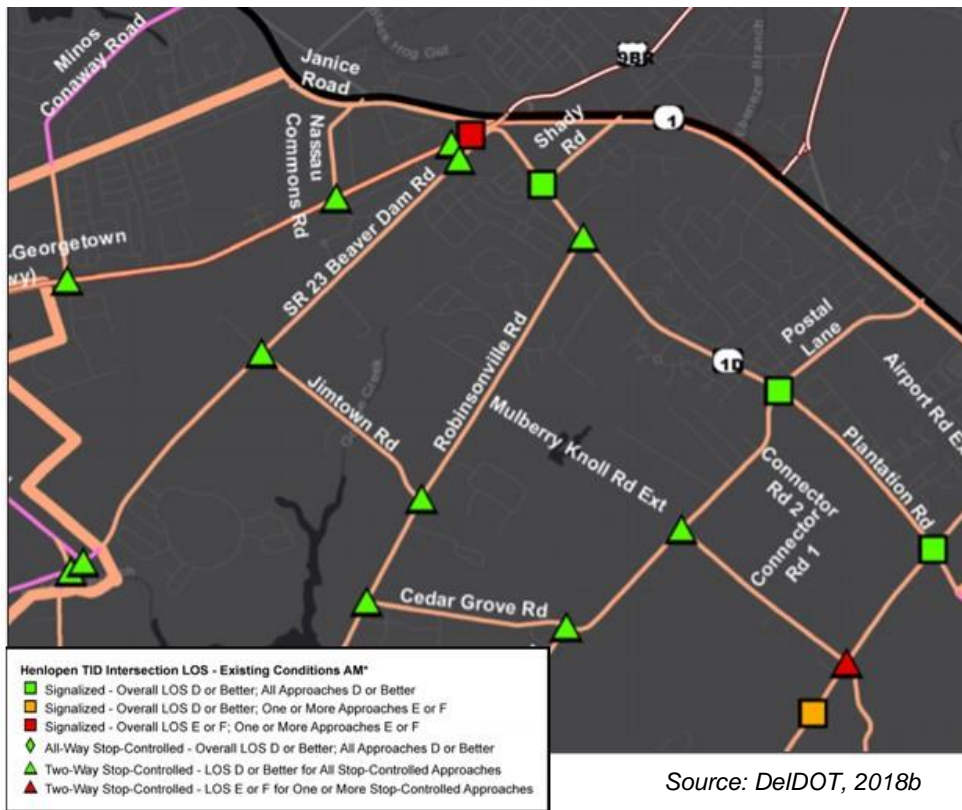
¹ LOS is a qualitative measure of operational conditions based on criteria such as speed, travel delay, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS A reflects free flow traffic conditions with minimal delays and vehicles unimpeded in their ability to maneuver, whereas LOS E or LOS F reflects traffic volumes at or exceeding the capacity of the roadway system resulting in stoppages and delays for long periods of time.

Table 2: Intersection Capacity Summary

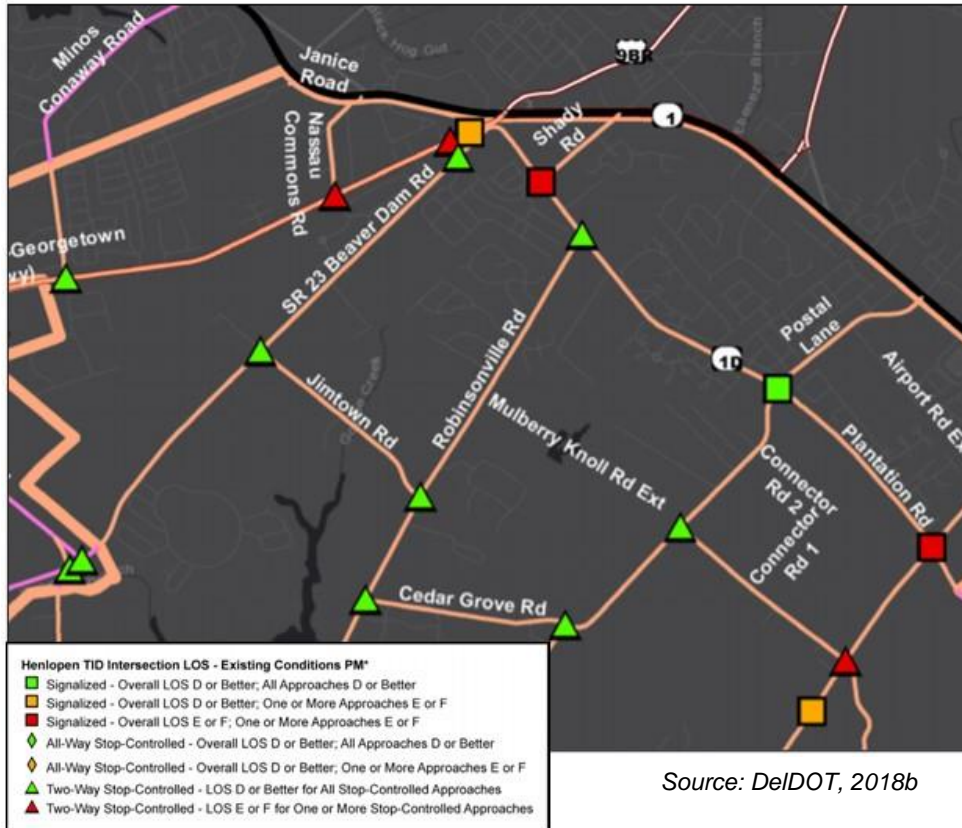
Intersection	Intersection Type	2017		2045	
		AM	PM	AM	PM
US 9/Lewes Georgetown Hwy at SR1/Coastal Hwy	Signalized	LOS E or F	LOS D or Better	LOS E or F	LOS E or F
US 9/Lewes Georgetown Hwy at Belltown Rd	Signalized	LOS D or Better	LOS E or F	LOS D or Better	LOS D or Better
Belltown Rd at SR 23/Beaver Dam Rd	Two-Way Stop-Controlled*	LOS D or Better	LOS D or Better	LOS E or F	LOS E or F
US 9/Lewes Georgetown Hwy at Nassau Commons Blvd	Two-Way Stop-Controlled	LOS D or Better	LOS E or F	LOS E or F	LOS E or F
US 9/Lewes Georgetown Hwy at Minos Conaway Rd	Two-Way Stop-Controlled	LOS D or Better	LOS D or Better	LOS E or F	LOS E or F
SR 23/Beaver Dam Rd at Jimtown Rd	Two-Way Stop-Controlled	LOS D or Better	LOS D or Better	LOS E or F	LOS E or F
Jimtown Rd at Robinsonville Rd	Two-Way Stop-Controlled	LOS D or Better	LOS D or Better	LOS D or Better	LOS D or Better
Robinsonville Rd at Cedar Grove Rd	Two-Way Stop-Controlled	LOS D or Better	LOS D or Better	LOS D or Better	LOS E or F
Cedar Grove Rd at Ward Rd	Two-Way Stop-Controlled	LOS D or Better	LOS D or Better	LOS D or Better	LOS D or Better
Cedar Grove Rd at Mulberry Knoll Rd	Two-Way Stop-Controlled	LOS D or Better	LOS D or Better	LOS E or F	LOS E or F
SR 24/John J Williams Hwy at Beacon Middle School	Signalized	LOS D or Better	LOS D or Better	LOS E or F	LOS E or F
SR 24/John J Williams Hwy at Mulberry Knoll Rd	Two-Way Stop-Controlled	LOS E or F	LOS E or F	LOS E or F	LOS E or F
SR 24/John J Williams Hwy at SR1D/Plantation Rd	Signalized	LOS D or Better	LOS E or F	LOS E or F	LOS E or F
SR 1D/Plantation Rd at Cedar Grove Rd	Signalized	LOS D or Better	LOS D or Better	LOS D or Better	LOS E or F
SR 1D/Plantation Rd at Robinsonville Rd	Two-Way Stop-Controlled	LOS D or Better	LOS D or Better	LOS E or F	LOS E or F
SR 1D/Plantation Rd at Shady Rd	Signalized	LOS D or Better	LOS E or F	LOS E or F	LOS E or F

Sources: DeIDOT, 2018b and 2020c

Figure 2: 2017 AM and PM Peak Hour LOS

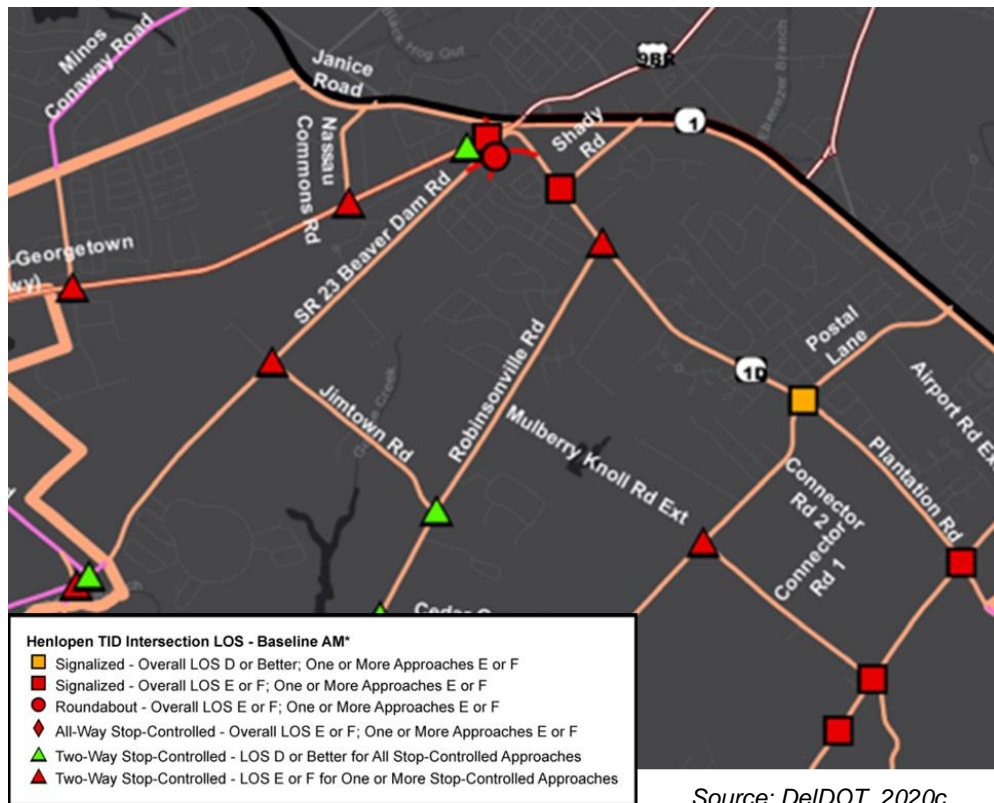


Source: DeIDOT, 2018b

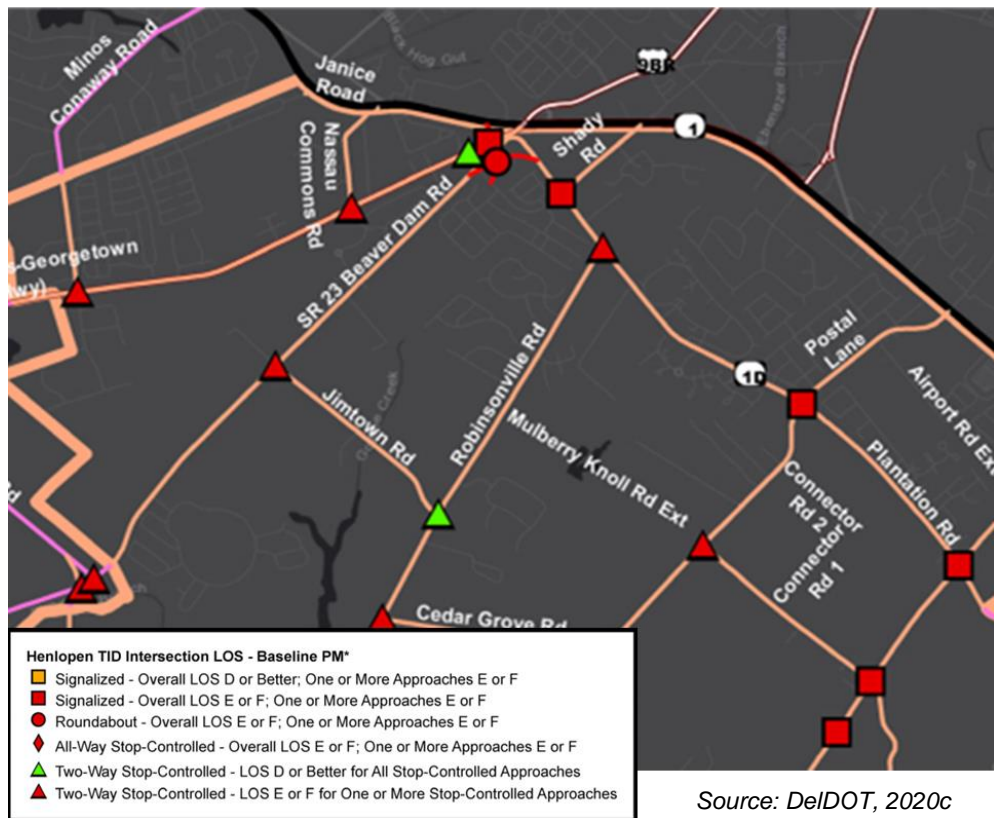


Source: DeIDOT, 2018b

Figure 3: 2045 AM and PM Peak Hour LOS



Source: DeIDOT, 2020c



Source: DeIDOT, 2020c

2.2 Accommodate Planned and Approved Local Development

Eastern Sussex County has been one of the most rapidly growing parts of Delaware for many years. Since the early 2000s, land use under commercial and residential development has increased by over 26 percent, as illustrated in **Figure 4**. Nearly the entire study area is zoned to allow for single- or multi-family dwelling units on individual lots, so the continued increase of development, particularly in the residential sector, is anticipated into the future. Adapted from the Henlopen TID study, **Figure 5** shows the parcels and anticipated number of residential units and commercial square footage expected within the study area vicinity by 2045. To support current and future growth in the area, improved access and increased roadway capacity is needed within the study area. This need is also identified in the *Sussex County Comprehensive Plan*, which recommends an improved or new connector road for local traffic west of Lewes and Rehoboth Beach between US 9 and SR 24 (Sussex County, 2019).

Figure 4: Historic Land Use

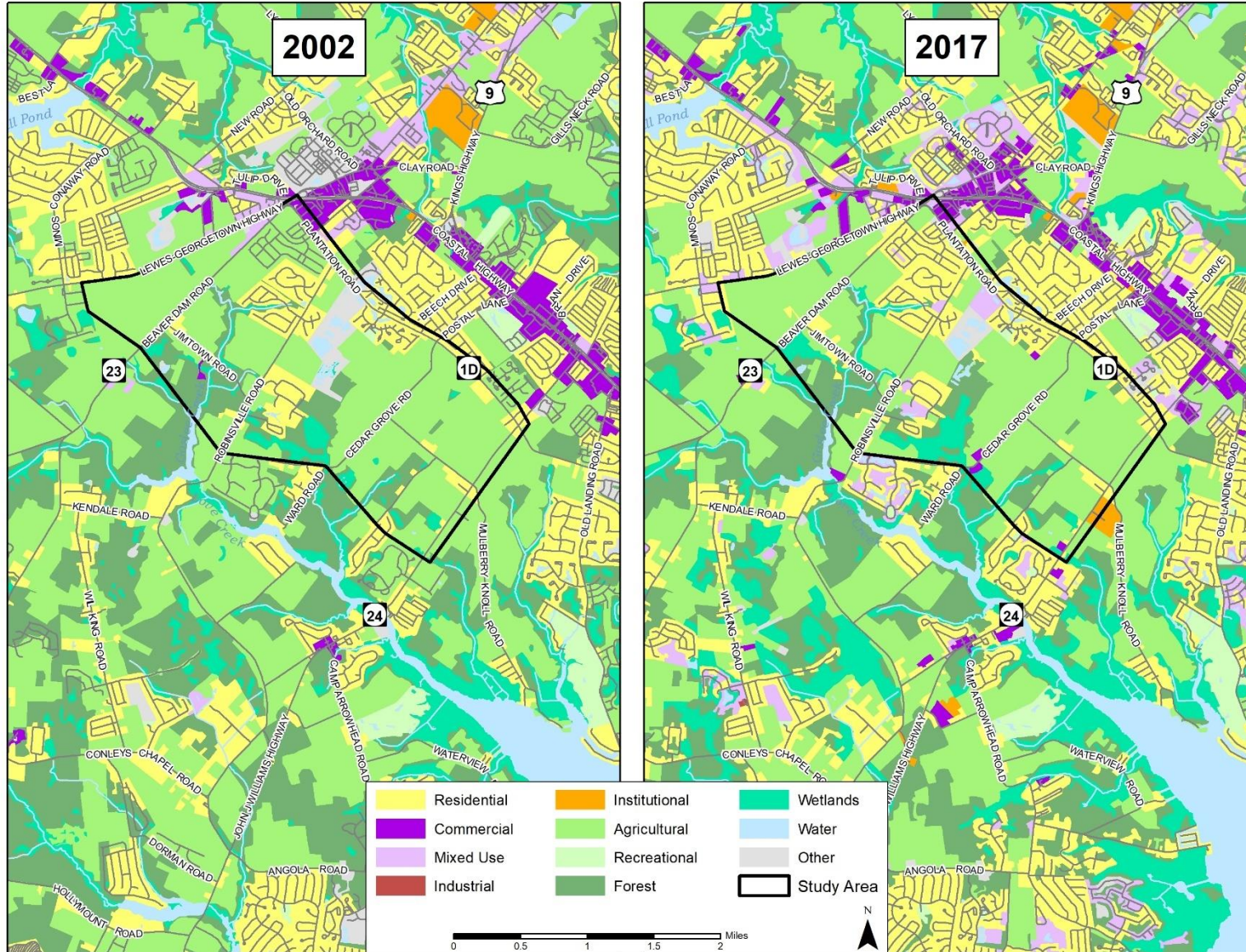
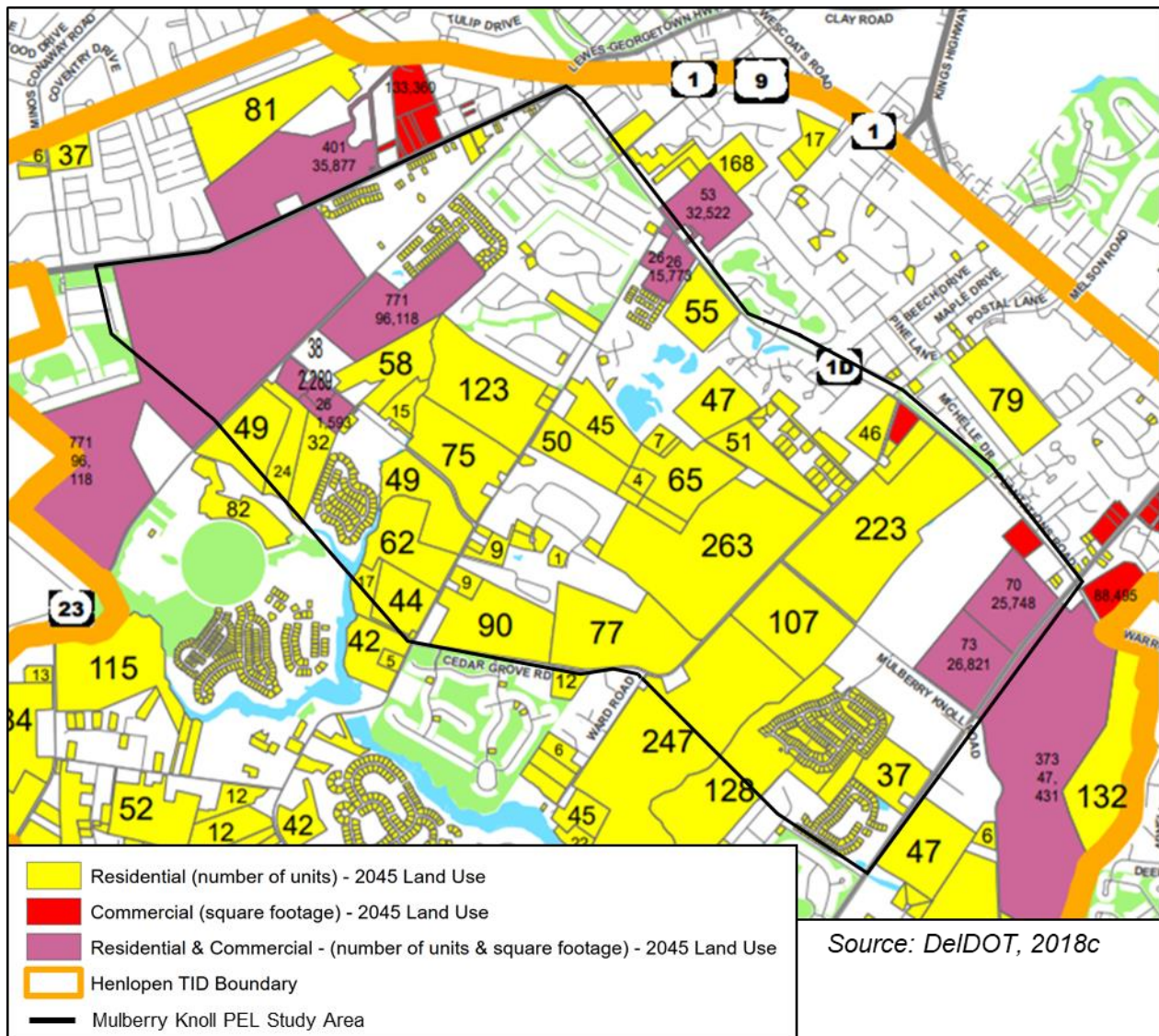


Figure 5: 2045 Land Use



3.0 EXISTING ENVIRONMENT

3.1 Land Use

As previously noted, the study area for the Mulberry Knoll Road Extension PEL Study is comprised of a mix of suburban residential land uses interspersed among farm fields and open space as well as sensitive natural areas surrounding Love Creek, Goslee Creek, and their tributaries. **Figure 4** illustrates the existing land use within the study area. Of the approximately 2,762 acres within the study area, the land use with the highest percentage is currently agricultural use (1,505 acres or 54 percent). Residential developments comprise the second most prevalent land use within the study area (585 acres or 21 percent). **Table 3** lists the composition of existing land use within the study area.

Table 3: Existing Land Use within the Study Area

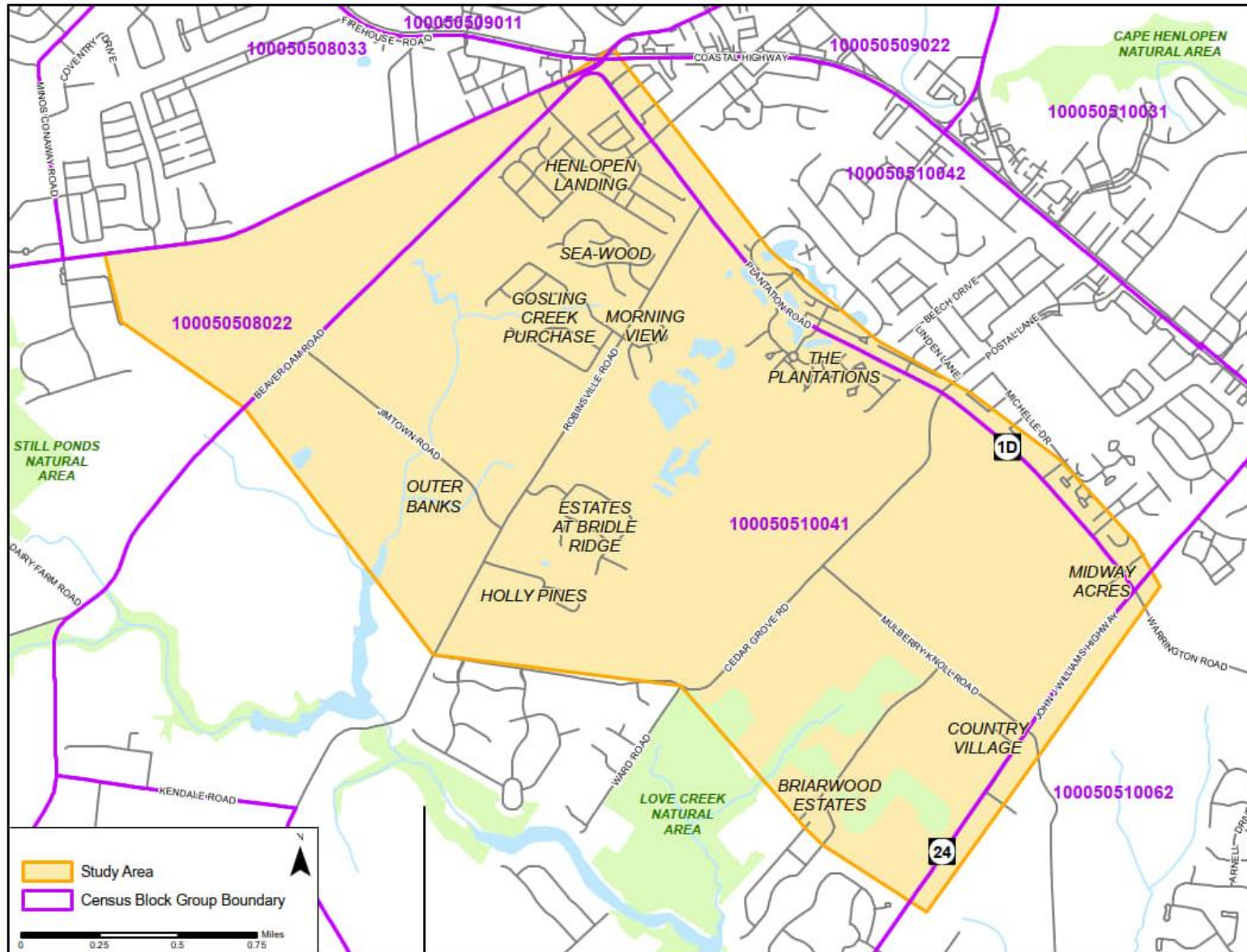
Land Use	Acres	Percent Study Area
Agricultural	1,505	54%
Residential	585	21%
Forest	291	11%
Wetlands	203	7%
Other	68	2.5%
Mixed Use	60	2%
Commercial	21	1%
Water	29	1%
Study Area Total	2,762	100%

3.2 Demographic Characteristics

This study area has been evaluated in accordance with Title VI of the Civil Rights Act of 1964, as amended, which requires that no person in the United States shall on the ground of race, color, or national origin, be excluded from participation in, be denied benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. In addition, Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and the U.S. Department of Transportation Order 5610.2C direct federal agencies to identify and address disproportionately high and adverse human health or environmental effects that their programs, policies and activities may have on minority and low-income populations to the greatest extent practicable while ensuring EJ communities are proactively provided meaningful opportunities for public participation in project development and decision-making.

The study area for the Mulberry Knoll Road Extension PEL Study encompasses portions of four Census Block Groups, demarcated by the U.S. Census Bureau. Much of the study area is within Block Group 2, Census Tract 508.02 and is bordered by adjoining block groups (see **Figure 6**). Consistent with the guidance noted above, the study area was evaluated to determine if Environmental Justice communities, which include minority or low-income populations, are present. Census block groups with high percentages of minority persons and/or high percentages of families in poverty were identified using the 2015-2019 American Community Survey (ACS) 5-Year Estimates data from the U.S. Census Bureau. None of the four block groups within the study area had a higher percentage of minority population as compared to the percentage within Sussex County (28%).

Figure 6 Block Groups within the Study Area



However, one of the block groups, Census Tract 508.02, Block Group 2, had a much higher percentage of families in poverty (19%) as compared to the percentage with Sussex County (7%). Although not reflected in the Census data, the unincorporated community of Jimtown, an historic African American community, is located within the northwest portion of the study area.

Additionally, the Nanticoke Indian Tribe State Designated Tribal Statistical Area (SDTSA) is located within the study area. SDTSAs are statistical geographic areas identified and delineated for state recognized tribes that are not federally recognized and do not have an American Indian reservation or off-reservation trust land. The Census Bureau works with an appointed state liaison to delineate statistical areas for state-recognized tribes. SDTSAs provide state recognized tribes without reservations statistical data for a geographic area that encompasses a substantial concentration of tribal members (Census, 2021).

Table 4 provides a demographic profile of block groups contained within the study area, compared to Sussex County and Delaware.

Table 4: Demographic Profile

Census Tract	508.02	510.04		510.06	Study Area	Sussex County	Delaware
Block Group	2	1	2	1			
Total Population	4,105	3,115	2,429	1,551	11,200	234,225	973,764
% Pop. Under Age 5	8%	5%	1%	3%	5%	5%	6%
% Pop. 65 and Over	22%	37%	40%	35%	32%	26%	18%
Minority Population ⁽¹⁾	963	596	217	212	1,988	66,025	377,267
% Minority Pop. ⁽¹⁾	23%	19%	9%	14%	18%	28%	32%
Total Families	1,179	910	621	732	3,442	62,686	240,038
Families in Poverty	228	26	30	42	326	4,662	18,981
% in Poverty	19%	3%	5%	6%	9%	7%	8%

Source: U.S. Census Bureau (2019). American Community Survey 5-year Estimates (2015-2019).

Notes: (1) Minority population includes all races that are not Non-Hispanic White Alone; block groups with percentages of families in poverty greater than the percentages in Sussex County are highlighted in red.

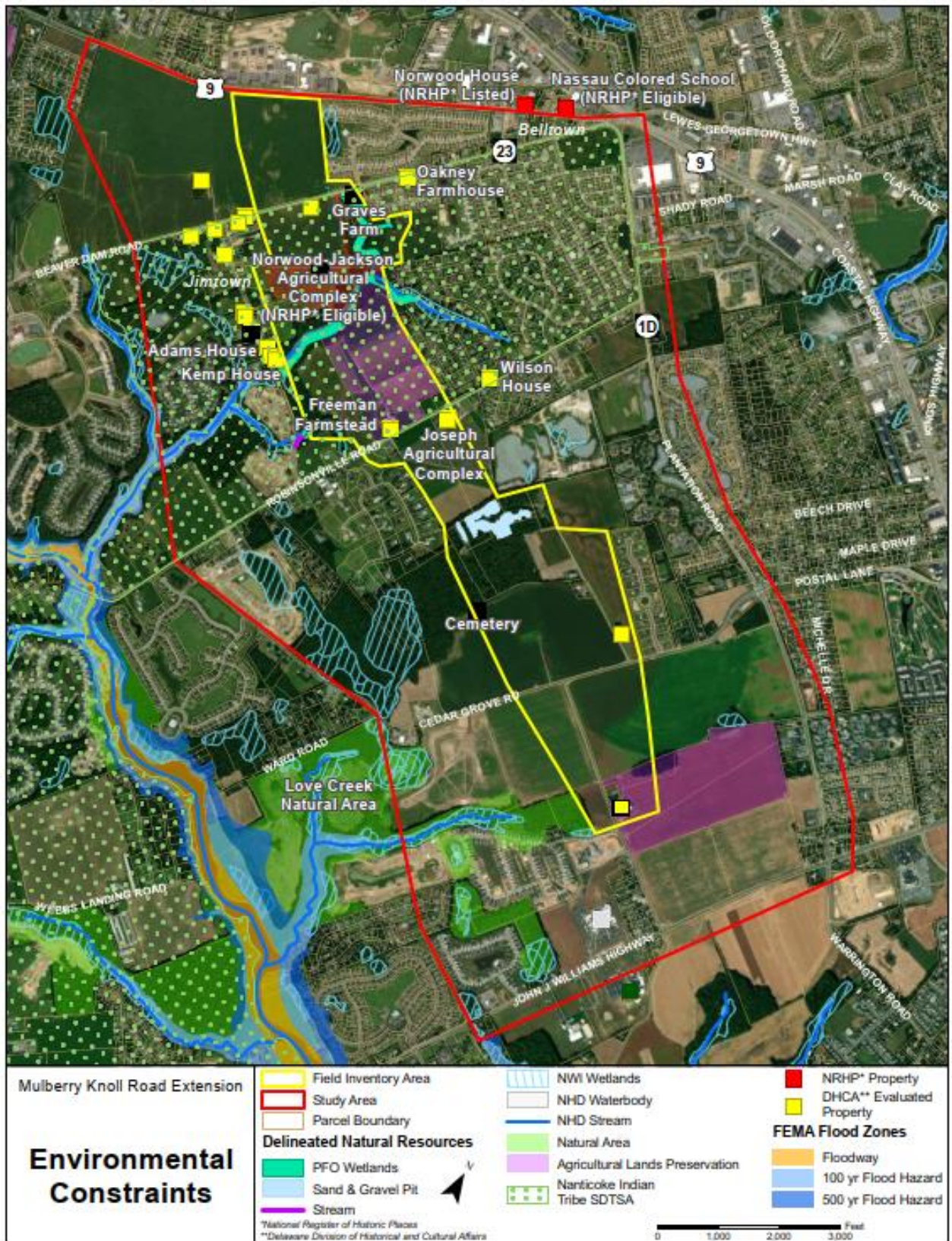
3.3 Environmental Features

To inform the planning-level design and development of conceptual transportation corridors for consideration in the Mulberry Knoll Road Extension PEL Study, environmental features and constraints were identified. Within the overall study area, the identification of environmental resources was primarily focused on an overall corridor in which a future connection could likely be implemented, considering the existing development and general environmental constraints within the study area vicinity. Developed in coordination with DelDOT, this field inventory boundary represents the area within which a physical site investigation occurred to inform a detailed understanding of the potential environmental constraints that may influence the development of a future new roadway alignment. Environmental constraints and identified resources are illustrated in **Figure 7** and described below.

3.3.1 Parcel Boundary

Based on geographic information system (GIS) data obtain from Sussex County, Delaware, this feature represents individual property boundaries within the project vicinity. Properties potentially impacted by any future new roadway alignment would require conversion of any private property to public transportation use. As a result, affected property owners would receive fair compensation for any acquisition or easements of private properties to be incorporated into the roadway right of way.

Figure 7: Environmental Constraints



3.3.2 Delineated Natural Resources

Within the Field Inventory Area, a field delineation of jurisdictionally regulated wetlands and streams was conducted in October 2020, in accordance with the 1987 U.S. Army Corps of Engineers' *Wetlands Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0)*. A routine on-site inspection procedure was followed for making wetland determinations and the boundaries of each feature were delineated using sequentially numbered pink ribbon/pin flags in the field and each flag was located using global positioning system (GPS) equipment capable of sub-meter accuracy. Each wetland or waters identified within the field inventory area have been classified per the U.S Fish and Wildlife Service's (USFWS) *Classification of Wetlands and Deepwater Habitats of the United States*.

Palustrine-Forested (PFO) Wetlands

Of the delineated wetlands, Palustrine-Forested (PFO) wetlands were primarily identified within the Field Inventory Area. PFO wetlands are nontidal wetlands bound by upland areas and dominated by trees. PFO wetlands are regulated resources that require a permit for potential impacts and may require compensation, depending on the degree and extent of impacts. As a result, impacts to these features should be avoided or minimized to the extent practicable.

Open Water

Impacts to open water are also regulated, require a permit, and may require compensation, depending on the degree and extent of impacts. Conversely compared to PFO wetlands, if required, compensation for unavoidable impacts to open water is typically commensurate with the amount of impact. To the extent practicable, impacts to these features should be avoided or minimized.

Stream

Streams are also natural resource features identified within the Field Inventory Area that may convey surface water or groundwater discharge ephemerally, intermittently, or perennially and demonstrate bed and bank or an ordinary high water mark. These regulated resources may require structural roadway improvement (i.e., bridge or culvert) to convey continued surface flow or base flow and may require compensation for potential impacts, based on the degree and extent of the impact.

3.3.3 Natural Areas

In 1978, the State of Delaware enacted the Natural Areas Preservation System (7 Del. Code, Chapter 73) for the purpose of establishing an inventory of natural areas statewide and a system of nature preserves. A "natural area" as defined by the law is an "area of land or water, or of both land and water, whether in public or private ownership, which either retains or has reestablished its natural character (although it need not be undisturbed), or has unusual flora or fauna, or has biotic, geological, scenic or archaeological features of scientific or educational value".

3.3.4 Agricultural Lands Preservation

The Delaware Department of Agriculture manages Delaware's Agricultural Lands (Aglands) Preservation Program. This program, established in 1991, allows landowners to voluntarily preserve their farms. Resources identified under the Aglands Preservation Program are noted to distinguish where landowners have agreed to use their land for agricultural purposes under a ten-year agreement. Termination or transfer of this agreement may require coordination with the

Agricultural Lands Preservation Foundation, established under the Delaware Department of Agriculture.

3.3.5 Structure

Based on a review of aerial photography, existing structures have been identified. Similar to any affected property owners, any structures acquired or relocated would be compensated for the fair market value, in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended).

3.3.6 Historic Property

Previously identified historic properties and extant structures have been mapped, based on a review of the Delaware Division of Historical and Cultural Affairs' (DHCA) Cultural and Historic Resource Information System (CHRIS). Based on the information obtained from CHRIS, these resources are either those that have been identified as eligible or are currently listed on the National Register of Historic Places (NRHP) as well as existing structures that have been previously evaluated by DHCA and remain intact. Coordination with the State Historic Preservation Officer (SHPO), DHCA, would be required to verify the eligibility of these previously identified historic resources and determine the potential degree of effect as well as any mitigation that may be required, should any of these properties be impacted. There are no previously identified archaeology sites within the study area. An archaeological survey was not conducted as part of this identification effort.

3.3.7 Federal Emergency Management Agency (FEMA) Flood Zones

Digital floodplain data were obtained from the Federal Emergency Management Agency (FEMA) and overlaid in GIS to determine where 100-year and 500-year floodplains are present in the project vicinity. The floodplain areas identified are land areas susceptible to being inundated by floodwaters from any source. Several Federal directives regulate construction in floodplains to ensure that consideration is given to avoidance and mitigation of adverse effects to floodplains. These Federal directives include the National Flood Insurance Act of 1968, EO 11988 (May 24, 1977), EO 13690 (January 30, 2015), and USDOT Order 5650.2, entitled Floodplain Management and Protection. The National Flood Insurance Act of 1968 established the National Flood Insurance Program (NFIP), which is administered by FEMA. The design for any roadway improvements would be subject to Federal policies and procedures for the location and hydraulic design of highway encroachments on floodplains contained in 23 CFR §650 Subpart A. These features have been identified to inform the planning and design for future roadway improvements to ensure that there would be no increase in flood levels nor the probability of flooding or the potential for property loss and hazard to life.

Floodway

The floodway represents the area that encounters the deepest water and the highest velocities.

100-year Flood Hazard

The 100-year flood, or base flood, is the area covered by a flood that has a one percent chance of occurring in any given year; this is commonly referred to as the 100-year floodplain. The 100-year floodplain includes the floodway as well as the flood fringe.

500-year Flood Hazard

The 500-year floodplain is the area covered by a flood that has a 0.2 percent chance of occurring in any given year.

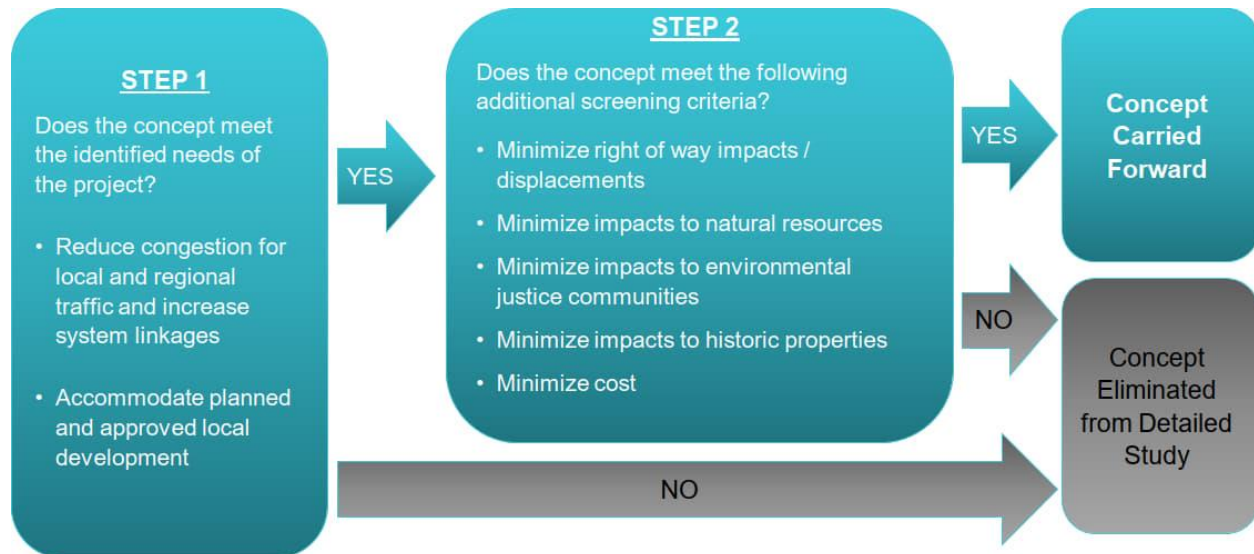
3.3.8 Nanticoke Indian Tribe State Designated Tribal Statistical Area (SDTSA)

SDTSAs are statistical geographic areas identified and delineated for state recognized tribes that are not federally recognized and do not have an American Indian reservation or off-reservation trust land.

4.0 CONCEPT SCREENING CRITERIA

Concepts that could potentially address the Purpose and Need for the study were developed and then screened following the two-step process illustrated in **Figure 8**.

Figure 8: Concept Screening Process Flow Chart



4.1 Step 1: Does the Concept Meet the Identified Needs of the Project?

The Purpose and Need for the Mulberry Knoll Road Extension PEL Study was the primary criterion in the development of potential concepts to address the identified transportation needs. The ability of a concept to meet the Purpose and Need was assessed based on the following screening criteria:

- **Reduce congestion for local and regional traffic and increase system linkages** – The concept was evaluated by comparing the forecasted LOS within the study area outlined above with anticipated future conditions if the concept was implemented. Based on this comparison, the concept design would reduce congestion for local and regional traffic and increase system linkages; thereby meeting the identified need for the project.
- **Accommodate planned and approved local development** – As shown in **Figure 5**, there are many properties identified within the study area for future development. To accommodate planned and approved development and enable access and improve circulation, the number of properties identified for future development adjacent to the alignment should be maximized.

4.2 Step 2: Does the Concept Meet Additional Screening Criteria?

In addition to consideration of the Purpose and Need and input from the public and agencies, concepts that meet the needs of the project were evaluated based on the following screening criteria and other factors relevant to evaluating the reasonableness of concepts.

- **Minimize Right of Way Impacts / Displacements** – Widening an existing roadway and constructing a new roadway would require right of way takings and could require the displacement of existing residences or businesses. While takings and displacements are unavoidable, care should be taken to minimize property impacts. Reducing these impacts also helps to reduce the cost of the project.
- **Minimize Impacts to Natural Resources** – US Environmental Protection Agency (EPA) 404(b)(1) Guidelines state that “no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.” The Guidelines further state that an “alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” Therefore, impacts to wetlands, open waters, and streams should be minimized to the greatest extent practicable, while taking into consideration constructability, cost, and the overall purpose and need. In addition, impacts to forests, designated agricultural lands, and designated natural areas should be minimized in accordance with the Delaware Forest Conservation Act (Delaware State Senate Bill #324), Delaware’s Agricultural Lands Preservation Program, and the 1978 National Areas Preservation System (7 Del. Code, Chapter 73).
- **Minimize Impacts to Environmental Justice Communities** – Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (1994) seeks to ensure federal programs do not result in disproportionately high and adverse environmental or health impacts to minority populations and low-income populations. Additionally, consistent with Title VI of the Civil Rights Act of 1964 which prohibits discrimination on the basis of race, color, or national origin in programs and activities receiving federal financial assistance, DelDOT is committed to ensuring that no person is excluded from, denied the benefits of, or discriminated against in their programs and activities based on race, color, or national origin. Therefore, potential impacts to low-income or minority populations or communities identified within the study area should be avoided or minimized. Low-income or minority populations or communities may be identified through minority population or household income data maintained by U.S. Census Bureau or through coordination with agencies, localities, organizations, and businesses as well as public outreach.
- **Minimize Impacts to Historic Properties** – Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) requires federal agencies to consider a project’s effect on historic properties and seek ways to avoid, minimize or mitigate any adverse effects on historic properties.
- **Minimize Cost** – A planning-level cost estimate was developed in standard DelDOT format. Cost may be used as a screening parameter for comparing concepts relative to others that address the identified Purpose and Need.

5.0 CONCEPT DEVELOPMENT AND EVALUATION

As part of the development of DelDOT’s Mulberry Knoll Road Extension PEL Study, potential concepts that address the Purpose and Need have been identified and evaluated to generate possible transportation solutions that could be considered as part of future local development

plans and approvals. The development and evaluation of these concepts was focused on an overall corridor in which a future connection could likely be implemented, considering the existing development and general environmental constraints within the study area and vicinity.

The development of concepts focused on the extension of Mulberry Knoll Road from Cedar Grove Road to US 9/Lewes Georgetown Highway. An additional roadway connection in this location would serve to reduce congestion and increase system linkages within the study area network. The corridor within which alignment concepts were developed is generally bound by existing residential developments to the east and west. The conceptual typical section for the new roadway alignment would include two 11-foot lanes with five-foot-wide shoulders, a 5-foot buffer, and a 10-foot shared use path on both sides of the roadway. The assumed right-of-way is a corridor approximately 120 feet wide. This would accommodate anticipated grading requirements, stormwater conveyance, potential construction access, and future maintenance.

The following sections describe the concepts developed for consideration and provide a preliminary evaluation of each concept. Unless otherwise noted, the horizontal alignments for these concepts were developed assuming a 45-mph design speed, using engineering standards established by the American Association of State Highway and Transportation Officials (AASHTO) and set forth in the 7th edition of its *Policy on Geometric Design of Highways and Streets* (Green Book). A 45-mph design speed was determined to be consistent with the surrounding local roads. This design speed is also consistent with the Purpose and Need to accommodate planned and approved local development while providing a safe speed to support current and future growth in the area. The locations of roundabouts proposed in each concept were evaluated in accordance with DelDOT Design Guidance Memorandum Number 1-26. Graphics showing the concepts and the assumed typical section are included in **Appendix B**.

5.1 Concepts Evaluated

5.1.1 Concept A

Concept A is approximately 2.24 miles in length and is the westernmost alignment concept developed, which is intended to align with existing parcels owned by DelDOT and to minimize impacts to private property. Concept A would begin with a new roundabout where Mulberry Knoll Road intersects Cedar Grove Road. The 2045 LOS analysis (DelDOT, 2020c) for this existing two-way, stop-controlled intersection indicate conditions of LOS E or F during peak AM and PM hours. With the construction of a new roundabout, operational conditions will improve to LOS D or better.

From Cedar Grove Road, the alignment of Concept A would extend northward from Mulberry Knoll Road and shift slightly west to align with the available right-of-way parcel owned by DelDOT and avoid the open water quarry ponds. The alignment would follow along the eastern edge of the Estates of Bridle Ridge neighborhood to avoid private property impacts to that neighborhood, and then shift farther west as it approaches Robinsonville Road to help minimize impacts to the single-family residences at 18465 and 18442 Robinsonville Road. At the intersection of the Concept A alignment and Robinsonville Road, a roundabout is proposed to maintain LOS D conditions or better. To minimize the impacts to the Robinsonville Road residences, the approach angle of Concept A at the intersection of Robinsonville Road would require a slight realignment of the existing Robinsonville Road through the roundabout.

North of Robinsonville Road, Concept A would continue along as far west as possible to avoid the Agriculture Preservation District, minimize bisecting farmland, and avoid unusable right-of-

way remnants. Concept A would then cross the Norwood-Jackson Agricultural Complex, also along the western edge, to minimize impacts within the historic property boundary to the extent practicable.

North of the Norwood-Jackson Agricultural Complex, Concept A would cross Beaver Dam Road and shift east to align with the existing intersection of US 9 and Old Vine Boulevard, where Concept A would terminate. Both intersections of Concept A at Beaver Dam Road and US 9 are proposed to be signalized at-grade crossings to maintain LOS D conditions or better.

As shown in Table 6, while avoids impacts to the Agricultural Preservation District and minimizes impacts to the Norwood-Jackson Agricultural Complex, Concept A is the longest of the three concepts and affects more parcels and acres of agricultural land compared to the other two concepts.

5.1.2 Concept B

Concept B follows a similar alignment as Concept A but would be a slightly shorter route (approximately 2.19 miles in length) due to having fewer curves. Concept B would begin at the intersection Mulberry Knoll Road and Cedar Grove Road and would also involve the construction of a new roundabout at this intersection to provide LOS D conditions or better.

From Cedar Grove Road, the alignment of Concept B would extend northward from Mulberry Knoll Road and shift slightly west to align with the available right-of-way parcel owned by DeIDOT and avoid open water quarry ponds. Approaching Robinsonville Road, the alignment would shift slightly west to avoid impacts to the residences at 18465 and 18442 Robinsonville Road. At the intersection of the Concept B alignment and Robinsonville Road, a roundabout is proposed to maintain LOS D conditions or better. On the south side of this intersection, the alignment would meet Robinsonville Road at an angle, while on the north, the alignment would be perpendicular to Robinsonville Road. The alignment would then continue along the existing western property line of the Agricultural Preservation District to avoid impacts to the farmland. After crossing Goslee Creek, Concept B would generally follow the same alignment as Concept A until its intersection with US 9. Like Concept A, the intersections of Concept B at Beaver Dam Road and US 9 are proposed to be signalized at-grade crossings to maintain LOS D conditions or better.

Similar to Concept A, Concept B avoids impacts to the Agricultural Preservation District and minimizes impacts to the Norwood-Jackson Agricultural Complex. However, as shown in Table 6, Concept B affects 0.1 acres of residential land, making it the only concept that would have an impact on residential land.

5.1.3 Concept C

Compared to the other concepts developed, Concept C is the most direct. Approximately 2.16 miles in length, Concept C would begin at the intersection of Mulberry Knoll Road and Cedar Grove Road and also would involve the construction of a new roundabout at this intersection.

From Cedar Grove Road, the alignment of Concept C would extend northward from Mulberry Knoll Road and shift slightly west to align with the available right-of-way parcel owned by DeIDOT and avoid open water quarry ponds. Concept C would then shift east to align with a perpendicular intersection of Robinsonville Road and avoid any impacts to the Estates of Bridle Ridge or residential units along Robinsonville Road. At the intersection of the Concept C alignment and Robinsonville Road, a roundabout is proposed to maintain LOS D conditions or better.

North of Robinsonville Road, Concept C would continue farther east along existing property lines as much as possible to minimize bisecting farmland and avoid unusable right-of-way remnants. Unlike Concepts A and B, Concept C would cross the Agricultural Preservation District, at its eastern edge. Concept C would then follow along the easternmost portion of the Norwood-Jackson Agricultural Complex to minimize impacts within the historic property boundary to the extent practicable; although the alignment would cross between the buildings associated with the Agricultural Complex and the driveway, likely causing a greater impact to the historic resource.

North of the Norwood-Jackson Agricultural Complex, Concept C would cross Beaver Dam Road and shift slightly west to align with the existing intersection of US 9 and Old Vine Boulevard, where the alignment would terminate. Both intersections of Concept C at Beaver Dam Road and US 9 are proposed to be signalized at-grade crossings to provide LOS D conditions or better.

As shown in Table 6, Concept C affects the fewest parcels and the fewest acres of agricultural land use; however, it is the only concept that affects the Agricultural Preservation District and has the greatest impact to the Norwood-Jackson Agricultural Complex.

5.2 Evaluation of Concepts

Each of the concepts developed for evaluation will address the identified Purpose and Need for the study, based on its ability to provide a new system linkage resulting in reduced congestion within the study area roadway network. Additionally, the new roadway connection would serve to improve access for planned and approved development within the study area. With the implementation of a new roadway connection extending Mulberry Knoll Road, in addition to the planned improvements identified in the Henlopen TID, the 2045 operational conditions of the study area are expected to notably improve and meet the minimum LOS as defined in the Henlopen TID agreement (DeIDOT, 2020a). **Table 5** shows the improvements to congestion compared to the No-Build scenario.

Table 5: Intersection Capacity Summary

Intersection	Intersection Type	2045 No-Build		2045 Full Build Out of TID Projects, including Mulberry Knoll Ext	
		AM	PM	AM	PM
US 9/Lewes Georgetown Hwy at SR 1/Coastal Hwy	Signalized	LOS E or F	LOS E or F	LOS D or Better	LOS D or Better
US 9/Lewes Georgetown Hwy at Belltown Rd	Signalized	LOS D or Better	LOS D or Better	LOS D or Better	LOS D or Better
Belltown Rd at SR23Beaver Dam Rd	Two-Way Stop-Controlled*	LOS E or F	LOS E or F	LOS D or Better	LOS D or Better
US 9/Lewes Georgetown Hwy at Nassau Commons Blvd	Two-Way Stop-Controlled	LOS E or F	LOS E or F	LOS D or Better	LOS D or Better
US 9/Lewes Georgetown Hwy at Minos Conaway Rd	Two-Way Stop-Controlled	LOS E or F	LOS E or F	LOS E or F	LOS E or F
SR 23/Beaver Dam Rd at Jimtown Rd	Two-Way Stop-Controlled	LOS E or F	LOS E or F	LOS E or F	LOS E or F
Jimtown Rd at Robinsonville Rd	Two-Way Stop-Controlled	LOS D or Better	LOS D or Better	LOS D or Better	LOS D or Better
Robinsonville Rd at Cedar Grove Rd	Two-Way Stop-Controlled	LOS D or Better	LOS E or F	LOS D or Better	LOS D or Better

Intersection	Intersection Type	2045 No-Build		2045 Full Build Out of TID Projects, including Mulberry Knoll Ext	
		AM	PM	AM	PM
Cedar Grove Rd at Ward Rd	Two-Way Stop-Controlled	LOS D or Better	LOS D or Better	LOS D or Better	LOS D or Better
Cedar Grove Rd at Mulberry Knoll Rd	Two-Way Stop-Controlled	LOS E or F	LOS E or F	LOS D or Better	LOS D or Better
SR 24/John J Williams Hwy at Beacon Middle School	Signalized	LOS E or F	LOS E or F	LOS D or Better	LOS D or Better
SR 24/John J Williams Hwy at Mulberry Knoll Rd	Two-Way Stop-Controlled	LOS E or F	LOS E or F	LOS D or Better	LOS D or Better
SR 24/John J Williams Hwy at SR 1D/Plantation Rd	Signalized	LOS E or F	LOS E or F	LOS D or Better	LOS D or Better
SR1D/Plantation Rd at Cedar Grove Rd	Signalized	LOS D or Better	LOS E or F	LOS D or Better	LOS D or Better
SR 1D/Plantation Rd at Robinsonville Rd	Two-Way Stop-Controlled	LOS E or F	LOS E or F	LOS D or Better	LOS D or Better
SR 1D/Plantation Rd at Shady Rd	Signalized	LOS E or F	LOS E or F	LOS D or Better	LOS D or Better

Source: DeIDOT, 2018b and 2020c

In addition to consideration of the Purpose and Need, the concepts were preliminarily evaluated based on several additional screening criteria and other factors relevant to determining the reasonableness of concepts. This preliminary evaluation is summarized in **Table 6**.

Table 6: Comparison of Concepts

Resource	Concept A	Concept B	Concept C
Length (miles)	2.24	2.19	2.16
Area (acres)	30.2	29.6	28.4
Properties Affected (number of parcels)	17	15	12
Residential Land Use (acres)	0.0	0.1	0.0
Relocations (number of relocations)	0	0	0
Wetlands (acres)	0.3	0.4	0.6
Streams (linear feet)	120	112	118
Forest Land (acres)	4.1	4.6	4.4
Socioeconomic and Environmental Justice Communities (Affected Census Block Groups)	1	1	1
Agricultural Land	25.4	24.5	23.1
Agricultural Preservation District (acres)	0	0	11.0
Cultural Resources (acres)	1.5 Edge of Property	1.6 Edge of property	1.1 Bisects property
Adjacent Parcels Identified for Development	8	8	7

5.3 Direct, Indirect and Cumulative Effects

In addition to consideration of potential direct effects, consideration was given to the possible indirect and cumulative effects of the concept options as well. Cumulative impacts result from “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually-minor, but collectively-significant actions taking place over a period of time” (40 CFR 1508.7). It is the combination of these impacts that is the focus of a cumulative impact analysis.

A review encompassing a five-mile buffer around the Mulberry Knoll Road Extension concept corridors identified recently completed, currently on-going and future planned projects, which are summarized in **Table 7**. Based on these identified projects and the anticipated impacts from the concepts evaluated (see **Table 6**), the following resources that should be included in a future, detailed cumulative analysis are:

- Water quality and resources,
- Biological resources,
- Socioeconomics and land use, and
- Cultural resources.

Table 7. Past, Present, and Future Actions Within a Five-Mile Radius of the Proposed Mulberry Knoll Road Extension Corridor

Factor	Project Name	Description	Timeframe
Past	BR 3-105 on SR 1 Over Lewes Rehoboth Canal	Bridge Replacement	2019-2020
Past	SR 1 and SR 5 Intersection Improvement	Intersection Improvement	2020-2020
Present	BR 3-155 on SR 1 Over Broadkill River	Bridge Replacement	2021-2022
Present	Removal of BR 3-928R, Lewes RR Swing Bridge	Bridge Removal	2021-2022
Present	SR 24: Mulberry Knoll to SR 1	Roadway Improvement	2020-2021/22
Planned	SR 24 at Camp Arrowhead Road/SR 24 at Angola Rd	Roadway Improvement	2022-2023
Planned	SR 24: Love Creek to Mulberry Knoll Rd	Roadway Improvement	2022-2023
Planned	Munchy Branch Rd Multi-Use Trail	Multi-modal project	2022-2022
Planned	Plantation Rd Improvements Phase 1 (Robinsonville Road to US 9)	Roadway Improvement	2022-2024
Planned	SR 1 Minos Conaway Rd Grade Separated Intersection	Roadway Improvement	2023-2025
Planned	Old Orchard Rd at Wescoats Corner Realignment	Roadway Improvement	2022-2025
Planned	US 9 (Kings Highway): Dartmouth Dr to Freeman Highway	Roadway Improvement	2026-2028
Planned	Burtons Pond Improvements	Stormwater	2022-2022/23
Planned	SR 1 and Cave Neck Rd Grade Separated Intersection	Roadway Improvement	2025-2026
Planned	SR 1 at SR 264 and SR 258 Intersection Improvements	Roadway Improvement	TBD
Planned	SR 1 and SR 16 Grade Separated Intersection	Roadway Improvement	2021-2024
Planned	Plantation Rd Improvements Phase 2	Roadway Improvement	TBD
Planned	US 9 Widening, Old Vine Blvd to SR 1	Roadway Improvement	TBD

Source: DelDOT, 2022.



The Mulberry Knoll Road Extension PEL study is intended to identify and preserve a defined corridor for future project implementation, streamline the process for environmental analyses, and to prioritize regional development transportation projects. Additional analyses and agency coordination will be needed, but preliminary reviews indicate the Mulberry Knoll Road Extension Project would provide several community benefits and have significant potential to accommodate new development and economic growth in Sussex County.

The public investment for this project offers several direct benefits to the community including:

- Improved transportation infrastructure,
- Improved traffic operations and safety, and
- Improved pedestrian and bicycle access.

These direct effects support indirect benefits to the community including:

- Improved mobility
- Reduced congestion, and
- Improved access to potential development sites.

5.4 Conceptual Cost Estimate

Due to the similarity of the concepts, one construction cost estimates was prepared for the potential project. The total cost of the project is estimated to be approximately \$40.2 Million. The details associated with this estimate are shown in **Appendix C**.

6.0 PUBLIC INVOLVEMENT AND AGENCY COORDINATION

DeIDOT has been committed to involving federal, state, and local agencies along with the public throughout the Mulberry Knoll Road Extension PEL Study process. Success hinges on effective communication and cooperation among the study area partners and stakeholders. This includes coordination with and involvement of federal, state, and local government officials, regional planning entities, community groups, businesses, and residents. The study has also built upon the public involvement and agency coordination previously conducted on other transportation and land use studies in the study area.

6.1 Public Involvement

To gain community input, DeIDOT held a virtual public meeting on October 26, 2021, to discuss the need for the study, show the study area and to share the initial concepts. The public provided live feedback online through the Microsoft Teams' question and answer function and directly by phone. Post-presentation questions and comments were directed to DeIDOT's email and physical mailing address. The public's questions and comments are included in **Appendix D** for consideration should any future projects advance from the Mulberry Knoll Extension PEL Study.

The following additional public outreach activities provide the public with multiple ways of participating in the process:

- **Mailing List and Contact Database:** A contact database includes property owners, business owners and individuals who want to stay informed about the study. The database allows for direct communication with the public, which was utilized for sending notifications of the October 26, 2021, virtual public meeting. The mailing list currently contains approximately 3,200 contacts.

- **Project Website and Point of Contact:** DelDOT hosts a dedicated page on its website (<https://deldot.gov/projects/Studies/mulberry-knoll/index.shtml>) to provide updated information about the study and to enable ongoing communication. The site <https://deldot.gov/projects/Studies/mulberry-knoll/> includes an overview, study area map, relevant studies, and meeting announcements. The website also contains contact information for the public to be able to speak directly with DelDOT’s Community Relations Division and Transportation Planners. The site is enabled for the public to sign up for the study’s mailing list.
- **Social Media Outreach:** DelDOT’s Community Relations Division uses Facebook and Twitter to communicate announcements about the study and to publicize public meetings.

6.2 Agency Coordination

In coordination with FHWA, DelDOT held a virtual resource agency meeting on October 7, 2021, with representatives from the US Army Corps of Engineers (USACE), the US Environmental Protection Agency (EPA), Delaware Department of Natural Resources and Environmental Control (DNREC) Fish and Wildlife, DNREC Coastal Programs, DNREC Wetlands, Delaware State Historic Preservation Office (SHPO), and the DelDOT Environmental Studies Office (ESO). The meeting offered an opportunity to provide the agencies with a preview of the concepts, provide an opportunity to comment, and review the information planned to be presented to the public at the October 26, 2021, virtual public meeting. The agencies responses are provided in **Appendix E**.

7.0 CONCEPTS RECOMMENDED FOR FURTHER STUDY

This section describes the concepts recommended for further study resulting from the initial concept development and screening process conducted for this PEL study. Through this study, DelDOT identified needs, recommendations, and priorities for transportation improvements west of the SR 1 area of Sussex County. **Appendix B** includes the alternate route maps, while **Appendix C** contains the cost estimates of individual items for the project.

Through meetings with staff, agencies, and the public, the study team worked through the concepts developed for evaluation. The discussions and input from the public and resources agencies resulted in the recommendation to move forward with Concepts A and B. Key elements for these two recommended concepts include avoiding impacts to the Agricultural Preservation District, being consistent with the improvements recommended in the Henlopen TID Study, and increasing safety for pedestrians and bicyclists by providing a shared-use path. Concept C was not recommended to be carried forward because of the public’s concern regarding significant impacts to the Agricultural Preservation District and the Norwood-Jackson Agricultural Complex. Both Concept A and B would provide additional capacity to meet the 2045 forecasted traffic volumes for reducing congestion for local and regional traffic, increasing system linkages, and supporting current and future growth in the area.

8.0 NEXT STEPS

The Mulberry Knoll Road Extension PEL Study has been prepared as a conceptual plan and preliminary analysis of potential impacts to inform transportation and development planning for future improvements. To advance the identified concepts towards a single Preferred Alternative, federal, state, or local appropriations may be allocated for funding future transportation

improvements within the Mulberry Knoll Road Extension PEL Study corridor. State or local development requirements could include proffers for portions of the identified Preferred Alternative corridor to be constructed along with any future developments within the study area.

Should future federal funding become available, more refined analyses under NEPA, and detailed design would be necessary for the identified Preferred Alternative transportation improvements to advance to implementation. Assuming federal funding is identified, the following steps are anticipated to advance the project to completion. A number of these steps can be completed concurrently to inform both the NEPA documentation and preliminary engineering and design efforts:

- NEPA documentation:
 - Coordinate with FHWA and regulatory agencies to initiate NEPA scoping and documentation
 - Continue public involvement and engagement outreach
 - Perform hazardous materials site assessments to determine presence of contamination or recognized environmental conditions
 - Perform cultural resources analysis and Section 106 coordination (including coordination with the Nanticoke State Designated Tribal Statistical Area)
 - Refine traffic analysis to update traffic counts, reassess No-Build conditions based on ongoing transportation improvements within the study area vicinity, conduct project-specific traffic forecasting analysis
 - Establish limits of disturbance
 - Conduct air quality and noise analyses
 - Refine assessment of environmental impacts and mitigation requirements
 - Identify areas for right of way acquisition
 - Secure funding for final design and construction
 - Coordinate with FHWA to develop and approve NEPA document
- Preliminary Engineering and Design
 - Conduct topographic survey to confirm existing topographic features and property boundaries
 - Conduct floodplain analyses and determine grading limits and hydrology patterns to minimize potential flood impacts
 - Conduct geotechnical investigations to verify soil structure and characterization
 - Conduct utility investigations and coordinate relocations
 - Refine concept plans
 - Update project cost estimate

9.0 REFERENCES

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APPENDIX A:
Federal Highway Administration –
Planning and Environmental Linkages Questionnaire

	Topic	Section Reference	Comments
1.	Background:		
a.	Who is the sponsor of the PEL study?	Section 1.0	Delaware Department of Transportation (DeIDOT)
b.	What is the name of the PEL study document and other identifying project information (e.g., sub-account or STIP numbers, long-range plan, or transportation improvement program years)?	Title Page/ Section 1.0	Mulberry Knoll Road Extension PEL Study
c.	Who was included on the study team (Name and title of agency representatives, consultants, etc.)?		Jennifer Cinelli (Project Manager), DeIDOT – Regional Systems Planning Heidi Krofft (Environmental Manager), DeIDOT Sarah Coakley (Principal Planner), DeIDOT Joshua Thomas (Transportation Planner), DeIDOT Todd Oliver (Consultant Contract Manager), Whitman Requardt & Associates, LLP Kimberly Glinkin (Consultant Project Manager), Whitman Requardt & Associates, LLP Caleb Parks (Project Planner), Whitman Requardt & Associates, LLP
d.	Provide a description of the existing transportation facility within the corridor, including project limits, modes, functional classification, number of lanes, shoulder width, access control and type of surrounding environment (urban vs. rural, residential vs. commercial, etc.)	Section 1.1	The study area encompasses approximately four-square miles with a mix of suburban residential developments interspersed among farm fields and open space as well as sensitive natural areas. The existing Mulberry Knoll Road is a two-lane (two 11-ft travel lanes, no shoulders facility with a 50-mph posted speed limit. Mulberry Knoll Road is intersected to the east by SR 24 that has a 45-mph speed limit, which is reduced to 20 mph in the vicinity of the Mulberry Knoll Road intersection and established school safety zone near Love Creek Elementary and Beacon Middle Schools. To the west, Mulberry Knoll intersects Cedar Grove Road, which is a two-lane roadway extending east-west with a 45-mph speed limit. To the northwest of the study area, US 9 is a two-lane roadway with a 40-mph speed limit that increases to 50 mph south of Nassau Commons Boulevard. The study area is bound to the northeast by Plantation Road, which is a two-lane facility with a 45-mph speed limit. Along the southwestern portion of the study area, Jimtown Road is a 45-mph facility with unmarked lane designations for much of its extent within the study area.
e.	Provide a brief chronology of the planning activities (PEL study) including the year(s) the studies were completed.	Section 1.2	SR 1 Land Use and Transportation Study (2003) Western Parkway Study (2004) Henlopen TID Existing Conditions Report (2018) Five Points Transportation Study – Phase I Final Report (2018) Sussex County Comprehensive Plan (2019)



	Topic	Section Reference	Comments
f.	Are there recent, current, or near future planning studies or projects in the vicinity? What is the relationship of this project to those studies/projects?	Section 1.2.2 / Section 7.1	See list in previous question for relevant studies related to this PEL Study and relevant construction projects listed in Table 8. Past, Present, and Future Actions, that occur within a five-mile radius of the study area.
2.	Methodology used:		
a.	What was the scope of the PEL study and the reason for completing it?	Section 1.0/ Section 2.0	The Mulberry Knoll Extension PEL Study identifies transportation improvements that reduce congestion for local and regional traffic and increase system linkages, while improving access to designated development areas to support economic vitality and sustained growth in the study area. Consistent with historic trends in Sussex County, the study area for the Mulberry Knoll Extension PEL Study has experienced continued growth and development at a substantial rate, resulting in increased development and traffic volumes on the local roadway network. As the population and development in the study area continues to grow, efficient traffic movement through the study area will remain a challenge for residents, as well as visitors, and it is expected that traffic congestion will increase into the future.
b.	Did you use NEPA-like language? Why or why not?		Yes, NEPA-like language was used in anticipation of potentially preparing a NEPA EA should the project move forward, and federal funds are identified.
c.	What were the actual terms used and how did you define them? (Provide examples or list)	Section 2, Section 3.2, Section 7, Section 8	Purpose and Need, Environmental Justice, Preferred Alternative, Indirect and Cumulative Effects
d.	How do you see these terms being used in NEPA documents?		These analyses are described in the report for reference in a future NEPA study.
e.	What were the key steps and coordination points in the PEL decision-making process? Who were the decision-makers and who else participated in those key steps? For example, for the corridor vision, the decision was made by state DOT and the local agency, with buy-in from FHWA, the USACE, and USFWS and other resource/regulatory agencies.	Section 6.0	DeIDOT and Sussex County along with the Five Points Transportation Study Working Group agreed upon the study area corridor. In coordination with FHWA, DeIDOT held a virtual agency meeting with representatives from the US Army Corps of Engineers (USACE), the US Environmental Protection Agency (USEPA), Delaware Department of Natural Resources and Environmental Control (DNREC) Fish and Wildlife, DNREC Coastal Programs, DNREC Wetlands, Delaware State Historic Preservation Office (SHPO), and the DeIDOT Environmental Studies Office (ESO). Conceptual alternatives were presented to the public to gauge level of acceptance and concerns.
f.	How should the PEL information be presented in NEPA?		The information in the PEL study documentation may be referenced or incorporated in the NEPA document. Specifically, the Purpose and Need and Alternatives Development may be used in the NEPA document.
3.	Agency coordination:		



	Topic	Section Reference	Comments
a.	Provide a synopsis of coordination with federal, tribal, state and local environmental, regulatory and resource agencies. Describe their level of participation and how you coordinated with them.	Section 6.2	In coordination with FHWA, DeIDOT held a virtual resource agency meeting on October 7, 2021, with representatives from the USACE, USEPA, DNREC Fish and Wildlife, DNREC Coastal Programs, DNREC Wetlands, Delaware SHPO, and the DeIDOT ESO. These agencies provided comments and recommendations for improving the PEL Study and conceptual alternative considerations.
b.	What transportation agencies (e.g., for adjacent jurisdictions) did you coordinate with or were involved during the PEL study?	Section 6.2	DeIDOT, FHWA, Sussex County
c.	What steps will need to be taken with each agency during NEPA scoping?	Section 8.0	DeIDOT will need to consult with regulatory agencies to document anticipated impacts: USFWS (T&E Species, Migratory Birds); USACE (404 permitting, mitigation); EPA (Environmental Justice); FHWA (Noise; Air Quality) DNREC (Hazardous Materials, T&E Species, Air Quality, Water/wetlands permitting and mitigation); SHPO (Cultural Resources); coordinate with FHWA to determine appropriate Class of Action; continue public involvement and engagement outreach; refine traffic analyses to update traffic counts; reassess No-Build conditions based on ongoing transportation improvements within the study area vicinity; and conduct project-specific traffic forecasting analysis
4.	Public coordination:		
a.	Provide a synopsis of your coordination efforts with the public and stakeholders.	Section 6.1	DeIDOT held a virtual public meeting on October 26, 2021, to discuss the need for the study, show the study area and to share the initial concepts. The public provided live feedback online through the Microsoft Teams' Question & Answer function and directly by phone. Post-presentation questions and comments were directed to DeIDOT's email and physical mail address. Additional efforts include developing a mailing list and contact database, contact database, project website, a direct point of contact, and a social media presence.
5.	Purpose and Need for the PEL study:		
a.	What was the scope of the PEL study and the reason for completing it?	Section 2.0	The Mulberry Knoll Extension PEL Study identifies transportation improvements that reduce congestion for local and regional traffic and increase system linkages, while improving access to designated development areas to support economic vitality and sustained growth in the study area. The study area has experienced continued growth and development at a substantial rate, resulting in increased development and traffic volumes on the local road network.
b.	Provide the purpose and need statement, or the corridor vision and transportation goals and objectives to realize that vision.	Section 2.0	The purpose of the Mulberry Knoll Extension PEL study is to identify transportation improvements that reduce congestion for local and regional traffic and increase system linkages, while improving access to designated development areas to support economic vitality and sustained growth in the study area.



	Topic	Section Reference	Comments
c.	What steps will need to be taken during the NEPA process to make this a project-level purpose and need statement?		Refine traffic analysis to update traffic counts and reassess No-Build conditions based on ongoing transportation improvements within the study area vicinity.
6.	Range of alternatives: Planning teams need to be cautious during the alternative screen process; alternative screening should focus on purpose and need/corridor vision, fatal flaw analysis, and possibly mode selection. This may help minimize problems during discussions with resource agencies. Alternatives that have fatal flaws or do not meet the purpose and need/corridor vision will not be considered reasonable alternatives, even if they reduce impacts to a particular resource. Detail the range of alternatives considered, screening criteria, and screening process, including:		
a.	What types of alternatives were looked at? (Provide a one or two sentence summary and reference document.)	Section 5.0	Three new location roadway alignments that will connect SR 24 to US 9: no-build, Alternative A and B.
b.	How did you select the screening criteria and screening process?	Section 4.0	See detailed steps in Section 4.1 (Step 1) and 4.2 (Step 2), summarized in Figure 7 Alternative Screening Process Flow Chart.
c.	For alternative(s) that were screened out, briefly summarize the reasons for eliminating the alternative(s). (During the initial screenings, this generally will focus on fatal flaws.)	Section 5.2	The alternatives developed for evaluation in this PEL study have been preliminarily evaluated based on the Steps in the Screening Process. Input from resource agencies and the public resulted in Alternative C not being carried forward. The largest concern for Alternative C was greater impacts to the Agricultural Preservation District and Norwood-Jackson Agricultural Complex.
d.	Which alternatives should be brought forward into NEPA and why?	Section 5.0/ Section 7.0	No-Build Alternative and Alternatives A and B; Alternatives A and B evaluated in the PEL study will individually address the Purpose and Need, and were selected based on anticipated environmental impacts, public and agency feedback, and cost.
e.	Did the public, stakeholders, and agencies have an opportunity to comment during this process?	Section 6.0	Yes, a resource agencies meeting was held October 7, 2021, and a virtual public meeting was held October 26, 2021. Additional stakeholder was also provided throughout the multiple planning studies conducted prior to the PEL Study.
f.	Were there unresolved issues with the public, stakeholders, and/or agencies?	Section 6.0	The public’s concern involved the potential impacts to the Agricultural Preservation District and Norwood-Jackson Agricultural Complex. Additional outreach and conversation will help to refine the scope and project limits.
7.	Planning assumptions and analytical methods:		
a.	What is the forecast year used in the PEL study?	Section 2.1	The forecast year used for the LOS analysis in the PEL study is 2045.
b.	What method was used for forecasting traffic volumes?	Section 2.1	Existing conditions are listed based on 2017 traffic data, derived from the Henlopen Transportation Improvement District (TID) study, which included seasonal adjustments and adjustments to account for specific development sites and employment that had occurred since the traffic data were collected. The 2045 analysis assumes the implementation of all committed transportation improvement projects in the study area that are included in DeIDOT’s Capital Transportation Program (CTP) for Fiscal Years (FY) 2019-2024.
c.	Are the planning assumptions and the corridor vision/purpose and need statement consistent with each	Section 1.2.2	Mulberry Knoll Road Expansion PEL Study is identified in the 2021 Five Points Transportation Study Implementation Plan Status Report



	Topic	Section Reference	Comments
	other and with the long-range transportation plan? Are the assumptions still valid?		and the project is planned to be listed in the 2022 Sussex County Long Range Transportation Plan Update. The assumptions are still valid.
d.	What were the future year policy and/or data assumptions used in the transportation planning process related to land use, economic development, transportation costs, and network expansion?	Section 2.1	The 2045 analysis assumes the implementation of all committed transportation improvement projects in the study area that are included in DelDOT’s Capital Transportation Program (CTP) for Fiscal Years (FY) 2019-2024. The analysis also assumes that all proposed new developments are built by 2045.
8.	Environmental resources (wetlands, cultural, etc.) reviewed. For each resource or group of resources reviewed, provide the following:		
a.	In the PEL study, at what level of detail was the resource reviewed and what was the method of review?	Section 3.0/ Section 5.2	<p>The identification of resources in the overall corridor, in which a future connection could likely be implemented, was done through a field survey for jurisdictional waters of the US, including wetlands; and a survey to identify and evaluate historic architectural properties currently listed in or eligible for listing in the National Register of Historic Places (NRHP). A desktop review was conducted for additional resources, listed below, and shown in greater detail in Table 6 of Section 5.2:</p> <ul style="list-style-type: none"> • Properties affected • Residences displaced • Socioeconomic & Environmental Justice communities affected • Wetland impacts • Stream impacts • Forest impacts • Designated agricultural land impacts • Designated natural area impacts • Historic structure impacts • Adjacent parcels identified for development • Planning-level cost
b.	Is this resource present in the area and what is the existing environmental condition for this resource?	Section 5.2	<p>Each alternative proposed a new alignment of approximately 2.0-2.3 miles in length, impacting between 30 to 33 acres, and involving up to 17 parcels of land, but not requiring any relocations. Table 6 in Section 5.2 provides greater detail. These impacts are preliminary and subject to change once a preferred alternative is chosen and further studies have been conducted.</p> <p>The overall corridor contains areas of palustrine forested wetlands (PFO1R) and non-tidal open waters associated with Goslee Creek, Love Creek, and their tributaries.</p> <p>While mainly a residential and agricultural area, there are forested tracts of land that may be impacted. Included in the agricultural</p>



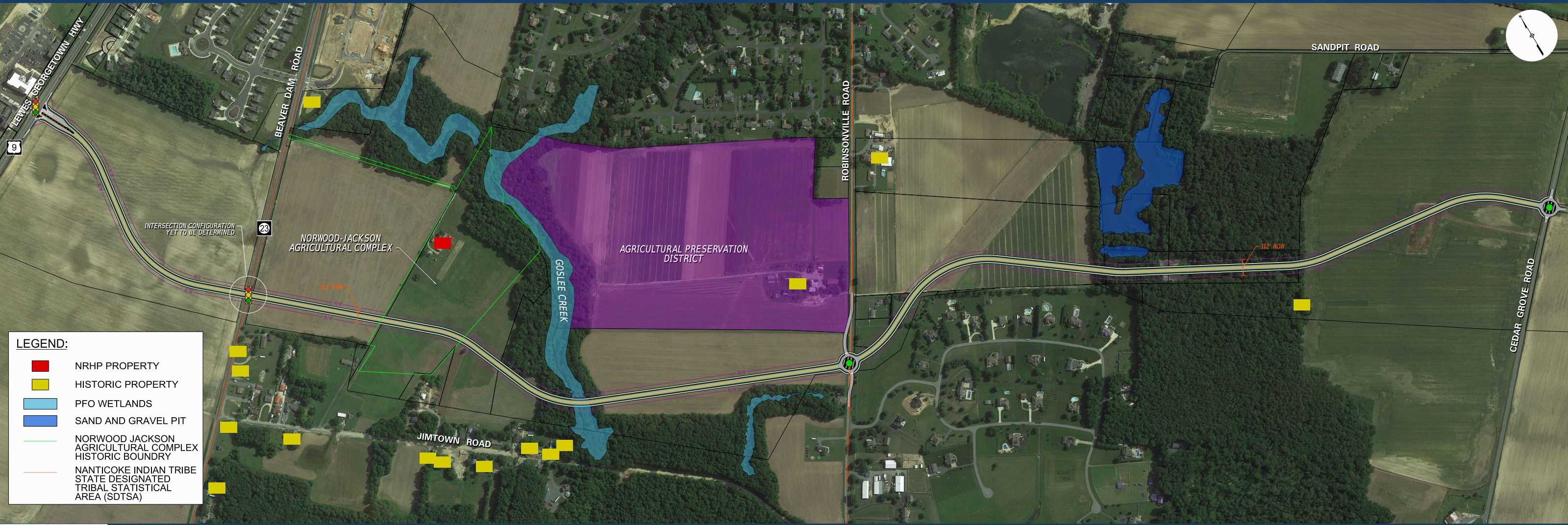
	Topic	Section Reference	Comments
			category are two protected properties: the Agricultural Preservation District and Norwood-Jackson Agricultural Complex. At least 8 known adjacent parcels have been identified for future development. The overall corridor contains an Environmental Justice population and several historic architectural resources currently listed or eligible for listing under the NRHP.
c.	What are the issues that need to be considered during NEPA, including potential resource impacts and potential mitigation requirements (if known)?	Section 7.1	During the October 26, 2021, virtual public meeting, the public's greatest concern was the impact Alternative C will have on the Agricultural Preservation District and Norwood-Jackson Agricultural Complex. Based on potential unavoidable impacts to these resources, it was decided to not carry Alternative C forward for further analysis.
d.	How will the planning data provided need to be supplemented during NEPA?		During NEPA, DelDOT will need to refine the traffic analysis to update traffic counts and reassess No-Build conditions based on ongoing transportation improvements within the study area vicinity. A project-specific traffic analysis will be needed for air and noise studies.
9.	List environmental resources you are aware of that were not reviewed in the PEL study and why. Indicate whether or not they will need to be reviewed in NEPA and explain why.		DelDOT did not review potential hazardous materials sites and recognized environmental conditions where right of way may be required, noise impacts, air quality studies, or cultural resource investigations. Studies were not completed in the absence of a selected Build Alternative alignment, project-specific traffic analysis, and established limit of disturbance. These studies would be completed during NEPA.
10.	Were cumulative impacts considered in the PEL study? If yes, provide the information or reference where the analysis can be found.	Section 7.1	A high-level review of the recommended alternatives was completed to identify any anticipated impacts.
11.	Describe any mitigation strategies discussed at the planning level that should be analyzed during NEPA.	Section 7.1	Proposed alignments were adjusted to minimize impacts to the greatest extent possible. Unavoidable impacts will be mitigated based on the level of impacts and in coordination with the respective resource agencies. No specific mitigation strategies were discussed
12.	What needs to be done during NEPA to make information from the PEL study available to the agencies and the public? Are there PEL study products which can be used or provided to agencies or the public during the NEPA scoping process?		The PEL Study can be made available to agencies involved with the NEPA process and as part of any public outreach.
13.	Are there any other issues a future project team should be aware of?	Section 3.2/ Section 5.2	The study area includes an Environmental Justice population.

APPENDIX B:
Alternatives Mapping

MULBERRY KNOLL ROAD EXTENSION STUDY

CONTRACT NO. T202166001
SUSSEX COUNTY

SCALE
0 200 400 600
FEET



- LEGEND:**
- NRHP PROPERTY
 - HISTORIC PROPERTY
 - PFO WETLANDS
 - SAND AND GRAVEL PIT
 - NORWOOD JACKSON AGRICULTURAL COMPLEX HISTORIC BOUNDARY
 - NANTICOKE INDIAN TRIBE STATE DESIGNATED TRIBAL STATISTICAL AREA (SDTSA)



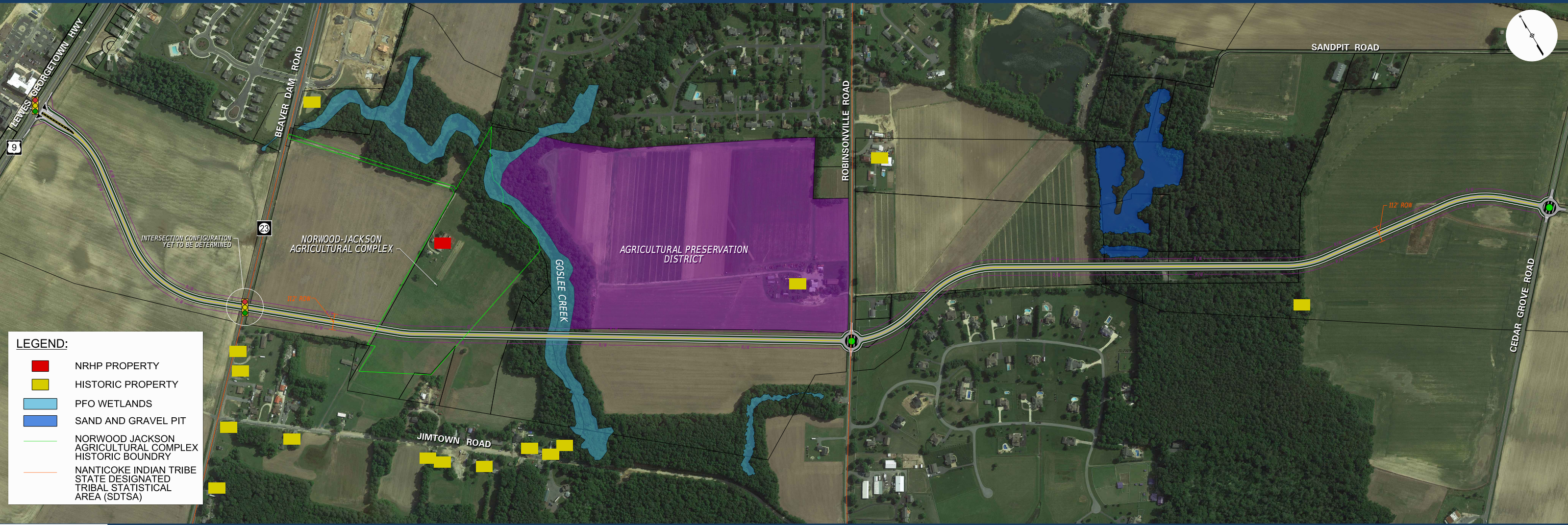
CONCEPT A

JUNE 2022

MULBERRY KNOLL ROAD EXTENSION STUDY

CONTRACT NO. T202166001
SUSSEX COUNTY

SCALE
0 200 400 600
FEET



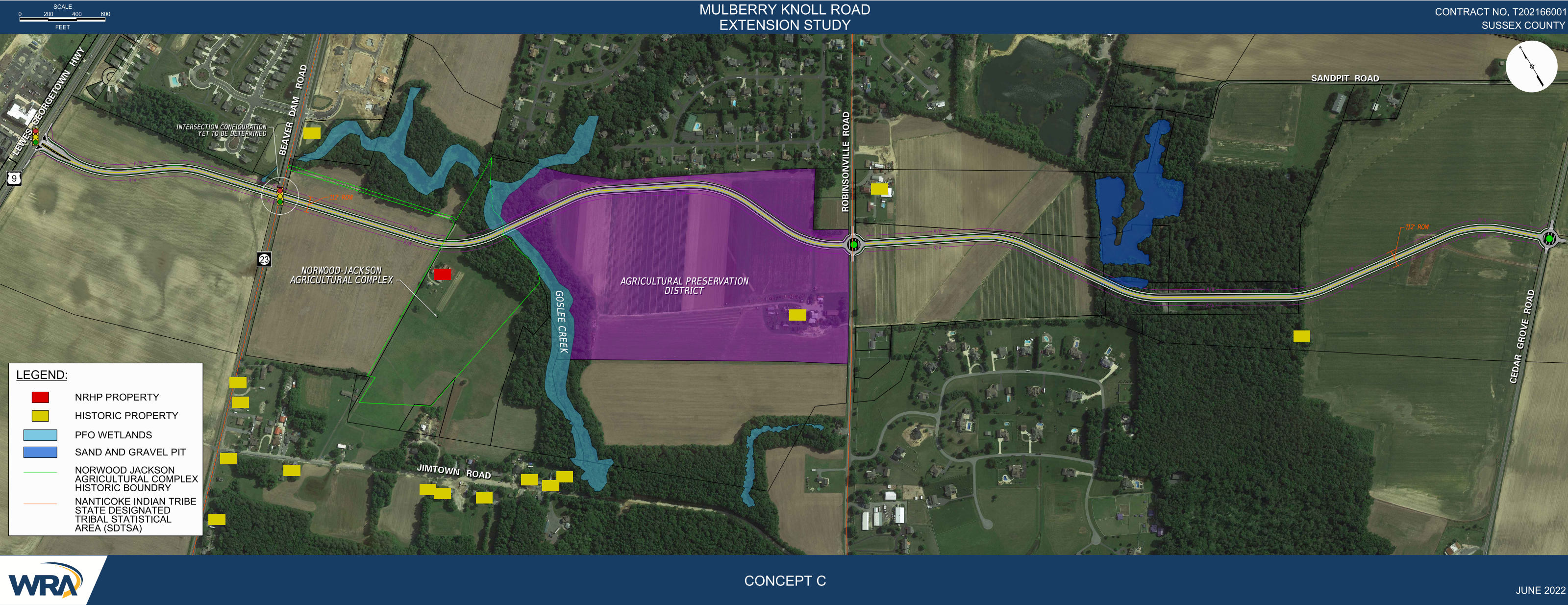
- LEGEND:**
- NRHP PROPERTY
 - HISTORIC PROPERTY
 - PFO WETLANDS
 - SAND AND GRAVEL PIT
 - NORWOOD JACKSON AGRICULTURAL COMPLEX HISTORIC BOUNDRY
 - NANTICOKE INDIAN TRIBE STATE DESIGNATED TRIBAL STATISTICAL AREA (SDTSA)



CONCEPT B

JUNE 2022

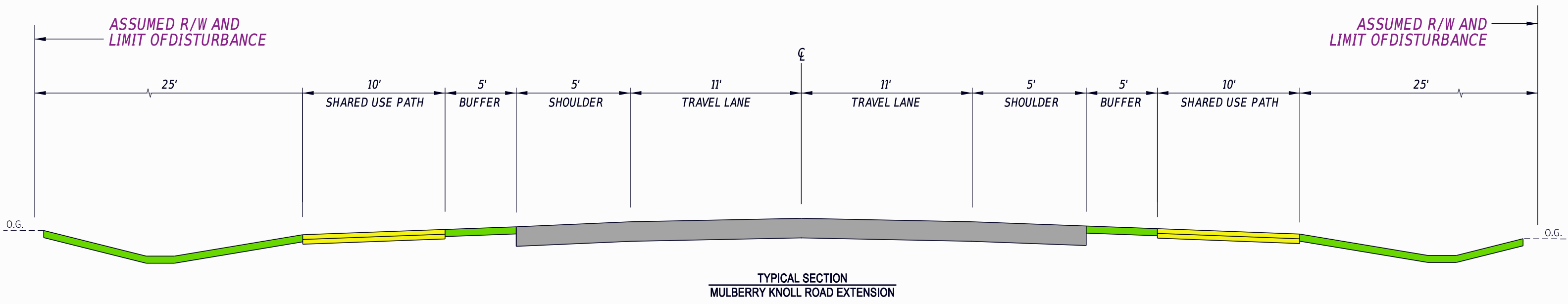
Note: Concept C is not recommended to move forward for further evaluation.



MULBERRY KNOLL ROAD EXTENSION STUDY

CONTRACT NO. T202166001
SUSSEX COUNTY

NOT TO SCALE



TYPICAL SECTION

APPENDIX C:
Cost Estimate

CAPITAL TRANSPORTATION PROJECT COST ESTIMATE

1. NAME OF PROJECT Mulberry Knoll Road Sussex County
Subdivision or Road Name County

2. LIMITS

Street Name or Road Number	From	To	Length
<u>Mulberry Knoll Road (New Alg)</u>	<u>Cedar Grove Road</u>	<u>US 9</u>	<u>2.2 miles</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

3. ESTIMATE REQUESTED BY: Jennifer Cinelli for (check one) Project initiation Planning
Name Estimate only Section or Legis. Dist.

4. DESCRIPTION OF IMPROVEMENT:

Proposed N/S two-lane collector roadway along 2.2-miles of new alignment to accommodate projected development and traffic growth in accordance with the Henlopen Area TID. Project also includes two roundabouts and a signalized intersection.

4. PROJECT IN C.I.P. Yes No If "Yes", indicate year F.Y. _____

5. TYPICAL SECTION

Open section roadway with 11-ft travel lanes, 5-ft shoulders, a 5-ft grass buffer, and 10-ft shared-use path along both sides

6. STATE MAINTAINED CITY MAINTAINED PRIVATE OTHER (specify) _____

7. COST ESTIMATE:

	from C.I.P. estimate form	Estimate prepared by:	Date:
a. Location and Environmental Studies (Part I to be included only for class "I" and "III" projects)	<u>\$288,200</u>	Part I _____	_____
b. Preliminary Engineering	<u>\$2,436,500</u>	Part II _____	_____
c. Real Estate	<u>\$17,160,000</u>	Part III _____	_____
d. Construction *	<u>\$20,287,040</u>	Part IV _____	_____
e. TOTAL ESTIMATED PROJECT COST	<u>\$40,171,740</u>		

* Includes Utilities, Traffic, and C.E.

APPROVED

Valid thru _____ Date _____ Assistant Director, M&O/Transportation Solutions/Planning _____ Date _____

CAPITAL TRANSPORTATION PROJECT COST ESTIMATE

(Current Dollars)

Part I of V

Contract No. _____

Project Title: Mulberry Knoll Road

PART I - LOCATION & ENVIRONMENTAL STUDIES (N/A)
(Part I to be included only for class "I" & "III" projects)

A. ENGINEERING	<u>\$50,000</u>	E. HISTORIC	<u>\$30,000</u>
(Includes NEPA)			
B. ARCHAEOLOGY	<u>\$40,000</u>	1. Phase 1 (study)	<u>\$30,000</u>
1. Phase I (study)	<u>\$10,000</u>	2. Phase 2 (study)	<u> </u>
2. Phase 2 (study)	<u>\$30,000</u>	3. Mitigation (by loc./env.)	<u> </u>
3. Phase 3 (mitigation)	<u> </u>	4. Mitigation (by design)	yes <input type="checkbox"/> no <input type="checkbox"/>
C. WETLANDS	<u>\$82,000</u>	F. NOISE	<u>\$40,000</u>
1. Delineation (study)	<u>\$12,000</u>	1. Studies	<u>\$40,000</u>
2. Permit preparation	<u>\$20,000</u>	2. Mitigation (by design)	yes <input type="checkbox"/> no <input type="checkbox"/>
3. Mitigation (design)	<u>\$50,000</u>	G. OTHER	<u>\$0</u>
D. HAZARDOUS MATERIAL	<u>\$20,000</u>	1. _____	<u> </u>
1. Phase 1 (study)	<u>\$20,000</u>	2. _____	<u> </u>
2. Phase 2 (study)	<u> </u>		
3. Phase 3 (remediation)	<u> </u>		

TOTAL COSTS FOR PART I (A thru G) ROUNDED \$262,000

CONTINGENCY COSTS 10% \$26,200
(normally 5% for large projects and 10% for small projects - to be approved by section head) (% used)

TOTAL LOCATION AND ENVIRONMENTAL STUDIES COSTS \$288,200
(also total for Construction Project Estimate form line 7a)

Estimator: _____

Date: _____

CAPITAL TRANSPORTATION PROJECT COST ESTIMATE

(Current Dollars)

Part II of V

Contract No. _____

Project Title: Mulberry Knoll Road

PART II - PRELIMINARY ENGINEERING

A. SURVEYS

\$300,000

- 1. Inhouse
- 2. Consultant

\$300,000

B. DESIGN ENGINEERING

\$1,915,000

- 1. Design
 - a. Inhouse
 - b. Consultant

\$1,500,000
\$1,500,000

- 2. Traffic
 - a. Inhouse
 - b. Consultant

\$0

- 3. Real Estate Plan Preparation
 - a. Inhouse
 - b. Consultant

\$150,000
\$150,000

- 4. Utilities
 - a. Inhouse
 - b. Consultant
 - c. Test Holes
 - d. Utility Company

\$150,000

\$100,000
\$50,000

- 5. Materials & Research

\$15,000

- 6. Borings

\$100,000

- 7. Pile Load Tests

- 8. Subdivision

\$0

- a. Inhouse
- b. Consultant
- c. Railroad P.E.

- 9. Other (specify)

\$0

- a. _____
- b. _____

C. ENVIRON. ASSESSMENT

\$0

(use for class "II" projects only)

- 1. Wetlands
- 2. Hazardous Materials
- 3. Noise
- 4. Historic
- 5. Archaeology
- 6. Other

- a. _____
- b. _____

Loc/Environ

Estimator: _____ Date: _____

D. CONTRACT ADMINISTRATION

Cont/Admin

Estimator: _____ Date: _____

TOTAL COSTS FOR PART II (A thru D) ROUNDED

\$2,215,000

CONTINGENCY COSTS

(normally 5% for large projects and 10% for small projects - to be approved by section head)

10% \$221,500
(% used)

TOTAL PRELIMINARY ENGINEERING

(also total for Construction Project Estimate form line 7b)

\$2,436,500

Estimator: _____

Date: _____

CAPITAL TRANSPORTATION PROJECT COST ESTIMATE

(Current Dollars)

Part III of V

Contract No. _____

Project Title: Mulberry Knoll Road

PART III - REAL ESTATE

A. REAL PROPERTY	<u>\$15,600,000</u>	C. ASBESTOS PROGRAM	<u>\$0</u>
1. Total acquisitions	_____	1. Testing	_____
2. Partial acquisitions	<u>\$12,000,000</u>	2. Abatement	_____
3. Permanent easements	<u>\$2,400,000</u>	D. DEMOLITION	_____
4. Temporary easements	<u>\$1,200,000</u>	E. APPRAISAL FEES	_____
5. Wetland mitigation	_____	F. STAFF	_____
Other (specify)	_____	G. SETTLEMENT	_____
6. _____	_____	H. REAL ESTATE ENG.	<u>\$0</u>
7. _____	_____	1. Consultant survey	_____
B. RELOCATION	<u>\$0</u>	2. As acquired plans	_____
1. Residential	_____	I. CONDEMNATION	_____
2. Business	_____	J. OTHER (specify)	<u>\$0</u>
Other (specify)	_____	1. _____	_____
3. _____	_____	2. _____	_____
4. _____	_____		

TOTAL COSTS FOR PART III (A thru J) ROUNDED \$15,600,000

CONTINGENCY COSTS 10% \$1,560,000
(normally 5% for large projects and 10% for small projects - to be approved by section head) (% used)

TOTAL REAL ESTATE COSTS \$17,160,000
(also total for Construction Project Estimate form line 7c)

Estimator: _____

Date: _____

CAPITAL TRANSPORTATION PROJECT COST ESTIMATE

(Current Dollars)

Part IV-A of V

Contract No. _____

Project Title Mulberry Knoll Road

PART IV -CONSTRUCTION

A. ROADWAY/APPROACH CONSTRUCTION

\$8,608,000

1. Grading

a. Excavation
(includes SWM pond)

\$578,000

b. Borrow

\$350,000

2. Drainage

\$2,100,000

3. Pavement

a. Surface

\$1,100,000

b. Base

\$1,700,000

c. Subbase

\$1,200,000

4. Erosion/Sed. Cont.

\$250,000

5. Miscellaneous

a. Curb/Gutter

\$180,000

b. Sidewalk

\$450,000

c. Guardrail

d. C.P.M. Schedule

e. Clear/Grubb

\$200,000

f. Field Office

Other (specify)

g. Topsoil

\$500,000

h. _____

i. _____

j. _____

k. _____

l. _____

m. _____

B. STRUCTURE CONSTRUCTION

\$150,000

1. New Bridge

a. Type

b. Size

c. \$/s.f.

2. Old Structure Rem.

a. Type

b. Size

c. \$/c.y.

3. Retaining Wall

a. Type

b. Size

c. \$/c.y.

4. Box Culvert

\$150,000

a. Type

b. Size

c. \$/s.f.

C. LANDSCAPING

\$250,000

1. Beautification

\$250,000

2. Noise Mitigation

3. Visual Mitigation

4. Tree Mitigation

D. MAINTENANCE OF TRAFFIC

\$2,000,000

(refer to Capital Improvement Project form, Part IV - Continued)

CAPITAL TRANSPORTATION PROJECT COST ESTIMATE

(Current Dollars)

Part IV-B of V

Contract No. _____

Project Title Mulberry Knoll Road

PART IV -CONSTRUCTION (CONTINUED)

E. PROJECT TRAFFIC ITEMS \$520,000

- 1. Signing Structures
 - a. Overhead Bridges _____
 - b. Cantilever Supports _____
- 2. Roadway Lighting \$300,000
- 3. Pavement Markings \$120,000
- Other (specify)
- 4. Signing \$100,000

F. WETLAND MITIGATION _____

G. UTILITY RELOC. IN CONTRACT \$250,000

- 1. Water _____
- 2. Sanitary Sewer _____
- Other (specify)
- 3. Contingency \$250,000

H. SUBTOTAL (A thru G) ROUNDED \$11,778,000

I. MISC. ITEMS \$2,355,600

(15% of H for large projects and 20% for small)
(At SF submission use 10% and 5%)

20%
(% used)

J. CONTRACTOR'S CONST. ENG. \$588,900

(normally 5% of H) 5%
(% used)

K. INITIAL EXPENSE \$588,900

(normally 5% of H) 5%
(% used)

L. CONSTRUCTION CONTINGENCY \$1,177,800

(normally 10% of H) 10%
(% used)

M. TOTAL CONSTRUCTION COSTS (H thru L) \$16,489,200

(Enter on PNR funding line 5)

N. CONSTRUCTION ENGINEERING (normally 15% of construction costs) 20% \$3,297,840

(Enter on PNR funding line 4) (% used)

O. TOTAL CONSTRUCTION COSTS (Construction Costs + Construction Engineering) \$19,787,040

(use this total + Q + P for Construction Project Estimate from line 7d)

P. REIMBURSABLE UTILITY \$0

RELOCATIONS BY OTHERS

(Enter on PNR funding line 7)

- 1. Water _____
- 2. Sanitary Sewer _____
- 3. Electric _____
- 4. Telephone _____
- 5. Gas _____
- 6. CATV _____
- Other (specify)
- 7. _____
- 8. _____

Utilities

Estimator: _____

Date: _____

Q. TRAFFIC SECTION ITEMS \$500,000

(Enter on PNR funding line 6)

- 1. Signing _____
- 2. Signals \$500,000
- 3. Detour Signing _____
- 4. DelTrac _____
- Other (specify)
- 5. _____

Traffic

Estimator: _____

Date: _____

Estimator: _____

Date: _____

CAPITAL TRANSPORTATION PROJECT COST ESTIMATE

(Current Dollars)

Part V of V

Contract No. _____

Project Title: Mulberry Knoll Road

SUMMARY

PART I - LOCATION AND ENVIRONMENTAL STUDIES (Part I to be included only for class "I" and "III" projects)	<u>\$288,200</u>
PART II - PRELIMINARY ENGINEERING	<u>\$2,436,500</u>
PART III - REAL ESTATE	<u>\$17,160,000</u>
PART IV - CONSTRUCTION	<u>\$20,287,040</u>
TOTAL ESTIMATED PROJECT COSTS (also total for Construction Project Estimate from line 7c)	<u>\$40,171,740</u>

Project Manager

Date: _____

REVIEWED & CONCURRED IN:

Section Head

Date: _____

NOTE: Concurring section heads are to forward the original estimate copy to the Director of Transportation Solutions with one estimate copy each to the Assistant Director of Project Development, Assistant Director of Design Support, and the Cost Estimate Engineer.

APPENDIX D:
Public Questions & Comments
from October 26, 2021, Virtual Public Meeting

Virtual Public Meeting 10/26/21 Comments, Questions, and Answers via Phone and Zoom's Q&A Function (transcribed from the recorded PowerPoint Presentation; view the recorded meeting at: <https://deldot.gov/projects/Studies/mulberry-knoll/>)

**Note: questions and comments related to the SR 24 project were redirected to DeIDOT's SR 24 website and Project Manager contact information provided; and are not included in the list of questions below.*

1. After the connection from SR 24 to US 9 is completed, what happens to the additional traffic that then goes to Five Points?
 - a. DeIDOT has many projects happening in this area. Projects that will be coming online in the next couple years include Plantation Road Phase 1, Minos Conaway grade-separated intersection, and realignment of Old Orchard Road. Once those have been completed, DeIDOT will reassess the travel patterns in the area. Additionally, traffic using the potential Mulberry Knoll Extension is not necessarily new traffic. Instead, Mulberry Knoll Extension will allow for redistribution of existing local and through traffic that would already be going to and through Five Points.
2. We have seen where failure to plan for four lanes on Plantation Road in the past is now becoming an issue. Can DeIDOT plan for four lanes on Mulberry Knoll Road from US 9 to SR 24 to avoid future regrets?
 - a. DeIDOT is not currently considering a four-lane section for Mulberry Knoll Road.
3. What will DeIDOT be doing to improve the existing Mulberry Knoll Road?
 - a. Existing Mulberry Knoll Road will be improved by realigning the curves and improving all intersections with either roundabouts or turn lanes and traffic signals. Type of intersection improvement will be determined based on public input.
4. Is a Traffic Impact Study to be done for the broader area? Traffic issues are countywide.
 - a. Henlopen Transportation Improvement District (TID) covered a large area, so it assessed broader impacts of development. Additionally, DeIDOT is conducting other studies in the area, such as Coastal Corridor Study.
5. Given the growth in our area, does the study believe that a two-lane road will be sufficient? What impact does this have on the widening of Plantation Road?
 - a. One of the goals of developing a two-lane concept for the Mulberry Knoll Extension is to eliminate the need for a four-lane section along the entire length of Plantation Road project area, because this would have significant property impacts – both to existing residents and to DeIDOT in terms of costs to purchase property and relocate residents. Phase 1 of Plantation Road will include a four-lane portion and a three-lane portion. We do not currently know what Phase 2 of Plantation Road project will look like, but we will likely not need to be four lanes if the two-lane Mulberry Knoll Road extension is not provided. DeIDOT is not considering widening Mulberry Knoll Road to wider than two lanes.
6. It was mentioned that DeIDOT does not anticipate any impacts on Environmental Justice Communities. What is the definition of an impact to EJ Community? One of the concept options passes somewhat closely to Jimtown.
 - a. This study used Census Block Group data, which is not very fine-grained, to determine the presence of EJ communities and none of the Census Block Groups met the criteria of EJ Communities. However, DeIDOT can use additional data to determine communities that we want to protect. All of Belltown, including Jimtown, is considered an EJ Community that could be affected. Limits of

- construction for each concept do not overlap with any of the properties along Jimtown Road, so we would not consider them to have a direct impact on EJ Communities. DeIDOT has not evaluated indirect impacts yet.
7. What zoning restrictions would be applied to the Mulberry Knoll Road Extension? Will land use guidelines maintain the properties in a non-mixed-use designation?
 - a. The Henlopen TID analysis modelled Sussex County's future land use plan. If future development is expected to generate more traffic than what was modelled, the developer will need to do a Traffic Impact Study. Proposed developments must be consistent with the future land use plan. Other than near SR 24, most of the lots are designated for single-family residential.
 8. On Slide 6, there was a map showing recommendations for new connectors. Can you speak to the impact of these connector roads on existing houses and farmland?
 - a. If the parcels in this area are to be developed, DeIDOT would want there to be new connector roads to collect and connect traffic from new developments to State Roads, to reduce the number of access points onto State Roads.
 9. Is the Agricultural Preservation District shown on the maps the Freeman Farm?
 - a. Yes, and the property owner is aware of this project. Impacts to this type of environmental area would be evaluated during National Environmental Protection Act (NEPA) review.
 10. Does the proposed road have to be approved by the federal government first?
 - a. Yes, through the NEPA review. Any federally-funded project requires federal review.
 11. Does the proposed road need to be 92' wide?
 - a. Typical section drawing does not show open section drainage facilities, or roadside ditches, that will need to be installed to handle surface drainage. These ditches may be 15' wide at the surface, so the 92' width includes the space needed for these ditches.
 12. When does DeIDOT estimate that work on this project will begin? What is the approximate timeframe for construction?
 - a. Work cannot begin until NEPA approval. Additionally, because the project is currently at a very preliminary stage, it is difficult to estimate a time frame. However, design work would not begin until at least 2027. 2027 is estimated based on a draft Capital Transportation Plan (CTP) that has not been approved by the FHWA yet. It may then be another five years before construction begins.
 13. What is the estimated cost of this project?
 - a. This answer was not supplied during the meeting; however, the current estimate is approximately \$40 Million.
 14. Will any other roads, such as Cedar Grove Road, be improved to the same standards as Mulberry Knoll?
 - a. Almost all of the roads in the Henlopen TID are planned for upgrading to local road standards based on their functional classification. This will include Cedar Grove Road, existing Mulberry Knoll Road, Robinsonville Road, and Beaver Dam Road. To access the Henlopen TID Agreement and other documents, please go to <https://deldot.gov/Programs/transportation-improvement-districts/index.shtml?dc=tids>.
 15. Do any of the projected routes bisect Welches Pond, the proposed community on Cedar Grove Road?

- a. If Welches Pond is on south side of Cedar Grove Road, the project will not bisect it.
16. How will this project affect Goslee Mill Pond, and its tributaries and wildlife?
 - a. Potential impacts will be studied during NEPA review. The PEL is just studying initial concepts.
17. Why is the Plantation Road Phase 2 on hold?
 - a. It is on hold while Mulberry Knoll Road Extension is under consideration. One of the Five Points Working Group's priorities was to study an extension at Mulberry Knoll Road, due to the amount of money required for Plantation Road Phase 2. The Working Group is hoping that the Mulberry Knoll Road Extension will alleviate the need for Plantation Road Phase 2 for quite some time.
18. How many traffic lights are projected to be installed along the Mulberry Knoll Road Extension between US 9 and SR 24??
 - a. A signal is already planned at SR 24. The Henlopen TID identified need for signals at US 9 and Beaver Dam Road. Cedar Grove Road and Robinsonville Road are proposed for roundabouts, but DeIDOT will solicit public comments on these ideas before moving to design phase.
19. Who pays for the roundabouts?
 - a. If the roundabout is part of the TID, the TID would fund the improvement. If it is just for the entrance to a development, the developer would normally be required to build it; it would not be identified in the TID.
20. Phase 1 of Plantation Road project appears to dump traffic onto Beaver Dam Road. Will that have traffic impacts on Beaver Dam Road?
 - a. Please contact DeIDOT outside of this workshop for questions about road segments addressed in other studies.
21. Is the land that is acquired for roundabouts typically on the developing property, or will other people's land be taken as well?
 - a. Typically, DeIDOT works with property owners and developers who are coming in to choose a design that will be least impactful to existing houses or commercial entities.
22. If the TID pays for the roundabouts, who pays for the TID?
 - a. In the case of the Henlopen TID, developer fees are expected to contribute about 23% of development costs. The remaining costs will be paid for with DeIDOT funding.
23. What is the rationale for the rise in the use of roundabouts? Don't they slow down traffic?
 - a. Roundabouts are considered an effective alternative to a traffic signal in many instances where the four legs of an intersection have similar traffic volumes. They have a significant safety benefit because they eliminate higher-speed angle crashes that typically result in more severe injuries and fatalities. They eliminate the potential for red light running, high-speed impacts, and provide an efficient way for the balanced traffic volumes to get through the intersection without the conflict points of a signalized four-leg intersection. Vehicles are in a yield position to the traffic in the roundabout, so when there is high traffic, there will still be delays like with a signalized intersection. So, roundabouts are not a perfect solution, but they have been proven to be effective and efficient at safely allowing traffic to proceed through an intersection. Additionally, roundabouts are not the

- same as traffic circles. Roundabouts have a smaller inscribed diameter and more direct and efficient route through the intersection.
24. With the new communities being built along Mulberry Knoll Road, it is now difficult in the summer to make a left-hand turn into or out of the communities. If you increase the traffic on Mulberry Knoll to benefit Plantation Road, how are you going to alleviate that issue?
 - a. DeIDOT would evaluate impacts on adjoining intersections to ensure necessary improvements are made. That is not to say that the project is going to eliminate congestion in the summer. However, the extension will provide an additional route for north-south traffic.
 25. What is the Norwood property?
 - a. The Norwood-Jackson Agricultural Complex is a historic property that is eligible to be listed on the National Register of Historic Preservation.
 26. Will the proposed roads have bike lanes, as well as existing Mulberry Knoll and Cedar Grove Roads? Currently, it is quite dangerous for bikers as there are no bike lanes or shoulders.
 - a. Delaware follows Complete Streets principles, and this project does identify a shared use path. As part of DeIDOT's PLUS [Preliminary Land Use Service] reviews, we have been able to work with developments as they come online to ensure that they are also installing shared use paths. Sidewalks or shared use paths and shoulders were identified for all roadways within the Henlopen TID. So, developer fees will go towards bicycle and pedestrian improvements.
 27. When was the 2045 Forecast done and was land preserved in agriculture considered?
 - a. The 2045 Land Use Forecast was done in 2018. DeIDOT will be starting an update to the forecast in 2022.
 28. Are there any road improvement proposed between Cedar Grove Road and SR 24? Can there at least be turn lanes into the Four Seasons at Belle Terre development?
 - a. Please email DeIDOT's public information office to receive more information on that.
 29. What are characteristics of a bridge over Goslee Creek, e.g., will it be high enough to permit boating underneath?
 - a. DeIDOT's Bridge Section is aware of the current preliminary work, but will be involved in the final study and assessments that are needed prior to beginning design on the extension?
 30. Will this road have central water and sewer and drainage ponds?
 - a. DeIDOT will have to convey any roadway runoff within the right-of-way that is generated by this project. Any proposed improvements that increase impervious surface will need to be designed such that there is no increase in the ultimate drainage downstream of the outfalls for the subject road section. Will do this by using low points and natural outfalls to feed drainage to a stormwater facility. Runoff will also be treated before being discharged to surrounding outfalls.
 31. Is there a way to build an alternate road that will utilize the new developments and not existing developments?
 - a. This is part of what this project is considering. DeIDOT will be working with proposed developments. The concepts are mostly going through open land.
 32. Why can't the road run through the common property of Bridle Ridge instead of the Cross property?

- a. There is very little space to place a roadway alignment in this area without going through the Cross property or affecting existing residences. Additionally, Bridle Ridge's common parcel contains a stormwater facility (a dry pond). Although Concept B does go through one of the Cross parcels, all concepts have been designed to minimize residential impacts.
33. Will the outcome of this study delay Plantation Road Phase 1 project?
- a. No, Phase 1 is moving forward. Utility construction is planned to begin in early 2022.
34. Is the roundabout at Beaver Dam Road/Plantation Road still planned to be a two-lane circle?
- a. The proposed roundabout concept has not changed.
35. Instead of designing a new road through farmland, has DelDOT considered using existing roads and widening them?
- a. Sussex County has identified adding new roads to this area as a priority. It is not feasible to use existing roads. DelDOT has looked at other options to widen existing roads, including Plantation Road Phase 2. However, the Mulberry Knoll Road Extension would be significantly cheaper to taxpayers than Plantation Road Phase 2.
36. Should development in this area be slowed down since existing roads are already failing?
- a. DelDOT has no control over land use. This control lies with the County.
37. Will a video of last night's Five Points meeting be posted online?
- a. Yes.
38. Why is the developer contribution so low for the TID? It would make sense for the developers to cover 100% or at least 50% of the costs, since developers are making these changes necessary?
- a. The total cost for all the needed transportation improvements identified in the TID is about \$285M. Of that, about \$95M is already programmed in the previous Capital Transportation Program (CTP). So, some of the improvements in the TID are already needed rather than being needed for future traffic. Additionally, not all the increased traffic is from development within the TID. Finally, one of the goals of the TID is to not discourage development in the TID.
39. With almost every car having navigation features, southbound traffic on SR 1 looks for backroad shortcuts. Mulberry Knoll Road at SR 24 has backed up almost all the way to Cedar Grove Road. How will the proposed two-lane road alleviate the current volume? Believe that two traffic studies would need to be done: one during the school year and one during the summer months.
- a. DelDOT studies always consider traffic during the school year and the summer. Additionally, this study is very preliminary – more studies will be done. If, when the design team picks up the project down the road, if they see that there have been drastic changes in the area, they will do a new study to decide on the best option.
40. Where is Gosling Creek Purchase on the concept map?
- a. It is not shown on the concept map, but it is to the east of the Agricultural Preserve District.
41. Will there be any impact to stormwater at the Robinsonville Road intersection and will there be a bridge installed over Goslee Creek?

- a. DeIDOT's bridge team is aware of this initial concept study. Once the NEPA process has proceeded, the bridge team will work with the design team, and further public workshops will be held.
42. Who runs the Henlopen TID and when do they meet?
 - a. Henlopen TID is a partnership between DeIDOT and Sussex County and was developed over a few years. The TID Agreement was reviewed by Sussex County Council before it was adopted.
43. What will be happening to Plantation Road in Phase 2, specifically near Plantations East development?
 - a. This has not been determined yet.
44. When will the circle be closed to Salt Marsh Boulevard into Henlopen Landing development to stop traffic from using Salt Marsh Boulevard as a short cut between Plantation and Beaver Dam Roads?
 - a. DeIDOT intends to work with the contractor once construction starts to identify closing off Salt Marsh Boulevard as an early action item in the phasing so that access from Beaver Dam Road can be closed prior to completion of the roundabout. A date for closing Salt Marsh Boulevard has not been determined, but DeIDOT anticipates that Plantation Road Phase 1 will take about two years to construct.
45. There appears to be at least two Nanticoke Indian Tribe areas shown on Concept B. What are these and how do they affect the potential design?
 - a. The Nanticoke Indian State Designated Tribal Statistical Area (SDTSA) is a census term that identifies an area with a large percentage of Nanticoke Indians. There is no way to design the project so that it avoids the SDTSA, but DeIDOT will communicate with Nanticoke community as project progresses.
46. Can DeIDOT expedite the project given the rate of development?
 - a. Sussex County has created the Funding Accelerating Safety in Transportation (FAST) Track program, which allows them to help fund projects in the CTP that they identify as a high priority. This funding helps expedite the project's schedule, and DeIDOT reimburses Sussex County with the federal funding that is received according to the original project schedule. So, Sussex County may decide to use the FAST Track program to expedite this project.
47. Will there be time for new traffic volume studies to be conducted and taken into consideration for this project?
 - a. Most of DeIDOT's big projects in this area are starting in 2022 and continuing until around 2025 or 2026. So, there is going to be enough time to reevaluate how traffic is moving through this area as these big projects are completed.
48. Is there a more recent graphic for the environmental constraints than what was provided in the presentation? Outer Banks, a recent development, is not shown.
 - a. DeIDOT used the most recent available aerial images but will make sure to identify all recent developments in next set of maps.
49. Have you considered where all the new southbound traffic on Mulberry Knoll will eventually funnel into?
 - a. DeIDOT will be looking at impacts of both northbound and southbound traffic. DeIDOT is aware of incoming developments and will continue to do studies as needed to stay current on what is happening in the area. The Five Points Working Group has been very helpful with providing recommendations.

50. When will the traffic light and lane expansion be completed at the intersection of Rt 24 & Mulberry Knoll?
- Most of the big impactful projects are starting in 2022 and run until about 2025/2026, will have time to reevaluate how traffic is moving through this area. For specific questions, please contact the Project Manager, John Gaines, from Project Development South; he can better address the Rt 24 questions. The project website shows the signal at Rt 24 and Mulberry Knoll is part of Phase 2, construction of Phase 1 is planned to start in 2022.
51. Earlier, it was mentioned that the typical section requires a 92-foot right-of-way. My calculations indicate a total of 112 feet. Who would own the right-of way? Is this also an impact of the property owner?
- Anything shown in the typical section right-of-way would be owned and maintained by the State.
52. Why does it take so long for road projects to be completed once construction starts? For the SR 24 project, it seemed like there was a flurry of activity, and then no one on site for weeks. If they worked every day, it seems that these constructions could be done sooner. Can you comment on construction phase timeline determinations?
- Project designers will typically develop a Critical Path Method schedule, which identifies which items are the most important to be constructed so that the contractors can work throughout the duration of construction. This schedule is used in Maintenance of Traffic plans, which may be the biggest contributor to the length of time required for construction. Maintaining safe passage for traffic on existing roads being improved takes time because we must ensure that construction occurring adjacent to traveling vehicles is being done safely. There are a lot of variables that go into the determination of the construction duration and there are always surprises that come up during construction.
53. Why does Concept C veer north once it crosses Robinsonville Road and enters the Agricultural Preservation District? Why wouldn't there be a larger buffer between the proposed road and the Goslee Creek development to the east?
- It veers north to minimize its impact on the Agricultural Preservation District.
54. Has DeIDOT ranked the concepts in terms of preference?
- No. We are gathering public feedback first to make sure we are not missing any information.
55. Is there any benefit to routing the extension through the Agricultural Preservation District?
- The three concepts that were presented at this workshop are only meant to solicit public feedback. It is not always clear how heavily weighted a particular environmental impact will be during the NEPA process, so it is important to study project alternatives with differing environmental impacts to determine which alternatives have the smallest overall environmental impact.

Virtual Public Meeting 10/26/21 Comments Received After Meeting Via Email

Comment #1 from Rita M Regan

As a 30 year resident of Gosling Creek I have serious concerns about the impact of this project on my property. My home backs up to the Freeman farm. The traffic on Robinsville Road has increased dramatically and I am wondering what the plans are to address this?

Response: Thank you for attending the Public Workshop and providing us with your feedback. We will use everyone's input to help inform the project as it moves through the federal approval process. At this time, I don't see any projects occurring on Robinsville Road. I am including the Sussex County Development Coordination engineer on this email who may know if any incoming developments might be making improvements on Robinsville Road. We do have a Beaver Dam Road widening project programed in the current Capital Transportation Plan which can be found here: ctp.deldot.gov. Please let us know if you have any questions or wish to provide additional information.

Comment #2 from Brenda Jones

After last night's workshop meeting, I have a couple additional questions.

1. Will private residences be able to access their properties from this new road...(private driveways)?
2. As I asked last night, but only got the answer to storm water management...will there be central water and central sewer lines (services) built into this project? I know the central sewer is currently on Mulberry Knoll Road at the Police Barracks...will this tie into that service?
3. What are the possibilities of this project being "fast Tracked"? And if so, how does that affect the timeline?
4. At what point does del dot approach owners of properties that will be significantly impacted?
5. How is the final decision made as to which choice, A B or C is chosen? What is the timeline on when that will occur?

Thank you in advance for answering these questions.
Brenda Jones

Response:

Thank you for attending the Public Workshop and providing us with your feedback. We will use everyone's input to help inform the project as it moves through the federal approval process. We appreciate your questions, but at this stage there is no way to estimate timelines with any certainty. The Study team will compile all of the information we have and provide a final report early next year. It will then move into the NEPA process. The full NEPA process is involved and will have several opportunities for public input as that process takes place, over the next several years. As was pointed out during the workshop on Tuesday, October 26th, this is just the beginning stages of the public outreach process; you and others in the area will have multiple opportunities to provide comments and feedback through meetings and virtual workshops, as the concept evaluation and preliminary design phases take place over the next few years. To your point, should sewer systems be identified as a need in the future, the process of connecting to those systems would need coordination with the Sussex County.

Comment #3 from Fran Edge

After attending last night's Mulberry Knoll Road Extension web seminar, I wanted to express some of my opinions.

My family owns and lives on 2 properties in The Gosling Creek Purchase. Their homes literally back up to the Friedman Farm. I live on Beaver Dam Rd. Obviously, this road extension will impact us greatly.

Other than these obvious impacts, our other concerns lie on the impact this roadway will have on the, already over used, Robinsonville and Beaver Dam roads. These roads are now being very heavily developed. A cross road to these roads will only add even more traffic to them.. Traffic regularly backs up on RT24 and RT9 well past the connection points of this proposed road extension. When this happens, vehicles will have no other choice but to leave this road extension and travel onto the Beaver Dam and Robinsonville roads. Therefore defeating the original purpose of this road extension.

Please use your recourses to improve the existing intersections in this area.

Response: Thank you for attending the Public Workshop and providing us with your feedback. We will use everyone's input to help inform the project as it moves through the federal approval process. I understand your concerns but I want to make sure you understand that the concepts that were provided were not final. We never know how long the federal NEPA approval process will take. That being said, there are many projects coming online in the area that will dramatically improve the current traffic issues. Additionally, Beaver Dam Road is in our current CTP for widening. More information on other projects can be found on the CTP website in the implementation document: ctp.delDOT.gov. We will continue to monitor the area as improvements are completed and will make necessary adjustments to ensure the safety of the traveling public. Thank you again.

Comment #4 from Mark Moore

I had one comment about the planned Mulberry Knoll Rd extension from Cedar Grove Rd to US 9/DE 404. Are there any plans to make this corridor a DE route? (Replacing DE 1D, becoming a new number like DE 23A, etc.)

Response: I believe it would remain Mulberry Knoll Road from the south end to the north. All of the roads in Sussex are State maintained roads which means it will retain a state road inventory number. I hope this answers your question.

Comment #5 from Jason Vick

I was unable to attend the virtual meeting regarding the Mulberry Knoll Extension, but have reviewed the plan. My feedback would be that concept B is probably the most logical.

I do have a few questions.

1. There is a new Grocery store being built on Route 9 very close to where your conceptual intersection is. How will the additional traffic created by the Super Market impact this intersection?



2. Would like to confirm the road will have bike lanes on each side. If so, how do we eventually ensure safe cyclist passage to the rails to trails which is fairly close by to route 9 (the entrance to the bike trail is at the senior center not too far away). There are a lot of cyclists crossing route 9 in this area and it is becoming dangerous. This is important as local residents are becoming increasingly more dependent on bicycles as a mode of transportation in the prime summer months because driving with the out-of-staters is also very dangerous as many of them are on vacation and drinking and driving.

3. Why is the intersection on 23 not a roundabout?

Response: Thank you for providing us with your feedback. We will use everyone's input to help inform the project as it moves through the federal approval process. I have uploaded the Public Workshop video to the study website should you want to watch the presentation and the Q & A that followed. It is inside the blue box under Meetings/Workshops.

<https://deldot.gov/projects/Studies/mulberry-knoll/>

Regarding your first two questions, US 9 has been programmed to be widened in this area as well. Our federally funded projects typically have what is known as Complete Streets which means they will be bike/pedestrian friendly, transit oriented and aim to include public space where there are opportunities. You can find more information on Complete Streets in Delaware here: <https://www.completecommunitiesde.org/planning/complete-streets/>

Your final question relates to the Henlopen Transportation Improvement District (TID): <https://deldot.gov/Programs/transportation-improvement-districts/index.shtml?dc=tidsunderoperation>.

I have included Sarah Coakley, Principal Planner for DeIDOT for a response.

Please let us know if you have any additional questions. Thank you again for participating in your area's transportation future!

Comment #6 from Sam Duklewski

I missed your planning meeting on the 26th but reviewed the material on the DelDot website and was very pleased with the concept and thoroughness of the project. I also commend the advanced planning from the Delaware Department of Transportation. Everyone is concerned about future growth in Sussex County and whether the appropriate planning is taking place to accommodate the development. That's why I was glad to see this project being initiated and wanted to extend my thanks and appreciation.

I hope most of the feedback was positive at your meeting and look for to seeing this project come to fruition. Hopefully with the new infrastructure plans taking place in DC you will be able to move up the timetable!

PS: We have a special interest in this project living in the Coastal Club development since it's nearly impossible to travel into Rehoboth during the summer months.

Response: Thank you for providing us with your feedback. We will use everyone's input to help inform the project as it moves through the federal approval process. I have uploaded the Public Workshop to the study website should you want to watch the presentation and the Q & A that followed. It is inside the blue box under Meetings/Workshops.



<https://deldot.gov/projects/Studies/mulberry-knoll/>

We also appreciate your support and understanding of the need for advanced planning in this area. I hope you are able to stay connected to the project as it moves through the NEPA process and other Public Workshops are conducted.

Comment #7 from Carol Conroy

I'm a former resident of Plantations/West and know very well what's happened to Rte 1-D, also known as Plantations Blvd. The idea of making it a 4 lane road is an absolute non-starter! I can understand that residents to the west might be upset about a new connector near their communities, but the new extension is ABSOLUTELY necessary to take pressure off other roadways. At least those folks will not get the full brunt of the increasing traffic, as have communities along Plantations Rd. until this new roadway is built.

Most of the development pressure is now west of Rte 1, and new north-south connectors are really important to do now.

At present, I live in the Breakwater community off Gills Neck, near the high school. We too understand the increasing traffic pressure!

Thank you for your attention

Response: Thank you for providing us with your feedback. We will use everyone's input to help inform the project as it moves through the federal approval process.

Comment #8 from Gregory Sherman

I watched most of the Mulberry Knoll workshop online and wanted to make some comments concerning this project. I am a resident of the Estates at Bridle Ridge adjacent to where the proposed road would be placed. Option A and B both have the road coming right through our development common area and adjacent to my property in particular. The road is proposed to squeeze between our property and another property on Robinsonville road. Additionally, the road is being proposed to cut across a common area that our neighborhood has that serves as drainage for the development. When we have heavy rain, this area fills with water from our neighborhood and often gets quite high. There is substantial concern that this road in this location will severely impact our neighborhood's drainage capabilities. During the workshop there was a brief discussion of this. I have seen many times when this area was very full of water. Putting a road through here looks like a big concern. There is no question that concept A and B significantly impact my property with a road right up to the property line along with that of my neighbors. These 2 concepts according to the chart provided shows that impacts more parcels (I assume this is essentially mine and those near me). The proposed road is almost as close to my home as the road I live on. These 2 concepts A & B, are very concerning on their face with the tight squeeze through the Bridle Ridge drain area and close brush with our property line.

What are the next steps in the process for which additional concerns can be raised?

Response: Thank you for viewing the Public Workshop and providing us with your feedback. We will use everyone's input to help inform the project as it moves through the



federal approval process. Based on the location of your property I understand your concerns, but those preliminary concepts are not the final product. As this project moves through the federal process and into design, more public workshops will be conducted and the concerns you have expressed would be addressed through our project development process. Please let me know if you have any additional questions.

Comment #9 from Ann Rodgers

I saw a PDF of the possible plan for the Mulberry Knoll extension.

Don't understand Concept C; why would you create an Agricultural Preservation District and then cut a road through it?

So much farm land is being developed in Sussex County these days so I was very happy to see some being preserved; then extremely disappointed to see that a road might cut through it.

Response: I am the Project Manager for the Mulberry Knoll Road Extension PEL Study. I was wrapping up the public comments from last fall's Public Workshop and could not find a response to your email below. I am pleased to report that Concept C will not be forwarded as a potential concept. That was our determination based on all of the information collected and we agree that the Freeman Farm is an important part of this area. Please understand that we will still need to submit our findings to our Federal partners for final NEPA approval. As always, thank you for participating in our public process. We value the input and feedback we receive from our residents.

Comment #10 from Margaretta Dorey

I would like to go on record about the Mulberry Knoll extension Plan C. Not only would a roadway right next to our community devalue our Gosling Creek Preserve neighborhood but would create increased noise, traffic and congestion. This should be off the table as an option.

Response: I am the Project Manager for the Mulberry Knoll Road Extension PEL Study. I was wrapping up the public comments from last fall's Public Workshop and could not find a response to your email below. I am pleased to report that Concept C will not be forwarded as a potential concept. That was our determination based on all of the information collected in this area. Please understand that we will still need to submit our findings to our Federal partners for final NEPA approval. As always, thank you for participating in our public process. We value the input and feedback we receive from our residents.

APPENDIX E:
Resource Agency Review and Comments



MEMORANDUM of MEETING

Date: October 14, 2021

Date of Meeting: Thursday, October 7, 2021
Time of Meeting: 9:30 AM
Meeting Location: Virtual (Microsoft Teams)
Meeting Description: DeIDOT Fall Resource Agency Meeting

Work Order Number: 32171-022
Contract Number: 1902-22
Project: T202266001 – Mulberry Knoll Road Extension PEL Study, FY 22

Participants:

Surname	Name	Agency	Email
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I. Mulberry Knoll Extension PEL, Introduction

Presenters: Jennifer Cinelli (DeIDOT), Sarah Coakley (DeIDOT), Kim Glinkin (WRA), Caleb Parks (WRA)

Project Background: The study was initiated as a result of the Five Points Transportation Study, which is currently examining and implementing improvements to the area around the intersection located at Routes 1 and 9 in Lewes (known as Five Points). The Five Points Working Group identified a number of recommendations for the area, among them was a new connection between Cedar Grove Road (Route 24) and Lewes Georgetown Highway (Route 9). The Henlopen Transportation Improvement District (TID), which covers southwest of Route 1, north of Herring Creek and Chapel Branch, and east of Beaver Dam Rd. and Bundicks Branch, has also identified a need for a identified need for a north-south corridor between Route 24 and Route 9.

The goal of this PEL study is to identify a conceptual alignment to be used for the TID program and to establish the groundwork for future study under the National Environmental Policy Act of 1969 (NEPA), should the project advance to preliminary design and implementation. The PEL considers benefits and impacts of proposed transportation system improvements to the environment, community, and economy during the transportation planning process. The PEL also informs the environmental review process, ideally when projects get funding the NEPA document will reference the PEL study.

Project Status: The purpose and need for the transportation improvements under evaluation has been identified to reduce congestion for local and regional traffic and increase system linkages, and improve access for designated development areas to support economic vitality and sustained growth.

An environmental inventory has been conducted along the corridor, which included a field delineation of wetlands and streams, and a desktop identification of floodplains, properties dedicated to Agricultural Lands Preservation, and resources that are either eligible for or listed on the National Register of Historic Places (NRHP). The study is also informed by previous evaluations of the area that have identified the area of Jimtown as one of cultural and socioeconomic importance.

Three conceptual alignments have been developed for evaluation and consideration. Each conceptual alignment assumes approximately two miles of new two-lane roadway with an adjacent 10-foot shared-use path. Each concept includes new roundabouts at the intersections of Cedar Knoll Road and Robinsonville Road, in addition to an assumed at-grade signalized intersection at Beaver Dam Road and Route 9.

Schedule:

- Public Workshop/Information Meeting – October 26, 2021 4:00 PM (Virtual)
- Identification of recommended conceptual alignment – Late 2021
- Submit PEL study report – Early 2022

COMMENT(S):

(1) GILLIAM (FHWA): Noted that all three conceptual alignment crossings incorporate a stream crossing. She asked if any consideration had been made to conducting a hydrologic and hydraulic study to determine structural crossing requirements. CINELLI (DeIDOT) noted that consultation with DeIDOT's bridge division would occur to discuss possible crossing requirements and considerations.

Subsequent to the meeting a preliminary hydrologic investigation of the upstream watershed revealed that the total drainage area contributing runoff to this point on Goslee Creek is approximately 570 acres. The 100-year flooding event flow produced by this drainage area is about 100 cubic feet per second. The classification of the proposed roadway is a local rural road. Per the Road Design Manual (Figure 6-1) the return period



frequency for the crossing is the 25-year design storm, which produces a flow of 70 cubic feet per second. Based on this preliminary investigation, it is anticipated that a culvert crossing will effectively convey runoff beneath the proposed roadway, but specific crossing structures would be determined should the project advance to design.

- (2) GILLIAM (FHWA): Asked why signalized intersections were assumed at Beaver Dam Road and the intersecting terminus with Lewes Georgetown Highway (Route 9). COAKLEY (DeIDOT) explained that the TID study looked at safety considerations and anticipated intersection Levels of Service to determine recommended intersection treatments; the assumptions from the TID have been carried forward into the Mulberry Knoll Road Extension PEL Study. CINELLI (DeIDOT) noted that developers along Route 9 currently have signal agreements with DeIDOT, but that future design could consider other possible intersection treatments if warranted.
- (3) GILLIAM (FHWA): Recommended including a discussion of safety in the PEL study and noted support of the buffer and shared-use path.
- (4) O'DONOGHUE (FHWA): Asked why all the concepts focused on new location corridor between Routes 24 and 9, without consideration of connecting neighborhoods or other alternatives. CINELLI (DeIDOT) explained that existing Plantation Road is currently planned for future widening but would likely be considered in comparison to the potential cost, private property impacts, and other resources affected identified through the Mulberry Knoll Road Extension PEL Study. She also explained that neighborhood developments and connections would require Sussex County comprehensive plan updates and negotiations amongst private developers. KROFFT (DeIDOT) reiterated that should the project enter into the NEPA phase, additional alternatives would be brought in and considered. She expected an Environmental Assessment would likely be required under NEPA, which could include documentation and discussion of multiple alternatives.
- (5) YOST (USACE): Explained that the stream crossing of Goslee Creek would need to be considered for potential secondary downstream effects to Goslee Pond.
- (6) DAVIS (DHCA – SHPO): Asked if the mapping showed during the presentation was based on the publicly available data on Delaware's Cultural and Historical Resource Information System (CHRIS). GLINKIN (WRA) explained that it was public data and not obtained through a CHRIS subscription. DAVIS noted that she appreciated continued consideration of Jimtown as an important community resource regardless of the NRHP eligibility status. DAVIS recommended adding reference to the Nanticoke State Designated Tribal Statistical Area to the figures. McCOY (DeIDOT) noted that she would be providing a report for architectural eligibility recommendations. DAVIS asked if the new Mulberry Knoll Road Extension would be limited access. CINELLI (DeIDOT) noted that it would likely not be access controlled.
- (7) WARA (DNREC): Suggested that any improvements along the conceptual alignments would need to be reviewed and approved by the Sussex County floodplain manager.

Action Items:

- Update figures per USACE and SHPO comments
- Coordinate with DeIDOT Bridge Section regarding crossing of Goslee Creek

