US 301 PROJECT
Maryland / Delaware Line to SR1
South of the C&D Canal
New Castle County, Delaware

# US 301 SPUR ROAD MONITORING REPORT


April 2011

DELAWARE DEPARTMENT OF TRANSPORTATION

WILMAPCO

# EXECUTIVE SUMMARY

The US301 Spur Road, the subject of this traffic monitoring report, is part of Delaware Department of Transportation's (DelDOT's) US 301 Project (see Figure 1). In November 2007, after nearly four decades of study, a preferred alternative was selected, as described in the US 301 Final Environmental Impact Statement. The Federal Highway Administration subsequently approved the Record of Decision on April 30, 2008 which authorized DelDOT to begin final design on the preferred alternative, known as the "Green North + Spur" alternative. In January 2010, the 145th General Assembly of Delaware passed House Resolution No. 35 directing the Delaware Department of Transportation to "*sit down over the next 6 weeks to develop and negotiate to final resolution a bill to amend the existing epilogue language, with such bill mandating certain trigger mechanisms for the Spur Road*." As a result of that coordination the US 301 Spur Road Monitoring Program was developed to monitor growth in traffic and land use development, and to evaluate the operational characteristics of key roads and intersections. This monitoring program will provide decision makers with data to make an informed decision on the appropriate timing for the construction of the US 301 Spur Road.

The monitoring program consists of the annual collection and analysis of daily traffic volumes on select roadways, peak period intersection volumes, vehicular delay at unsignalized intersections, crash data, and land use development data. Each year, the data will be analyzed and compared with data and results from prior years. This report represents a summary of the first year of the monitoring program based on data collected in 2010, and serves as a basis for comparison with data collected in future years. The key findings and data from the report are summarized below:

**Land Development:**

- There were over 15,200 new housing units in various stages of planning in the study area. New Castle County has approved approximately 8,700 of these housing units, of which approximately 1,550 (18%) were completed by the end of 2010 and an additional 6,100 housing units are still pending approval. In addition, approximately 400 housing units were proposed in developments in New Castle County for which approval had expired by the end of 2010.
- There are sixteen (16) residential developments in various stages of completion within the Town of Middletown. Seven of these developments were essentially complete by the end of 2007, with an eighth (Middletown Village) essentially completed by the end of 2010. The 16 developments include a total of 7,728 housing units, including approximately 4,100 single-family detached homes, 500 duplexes, 1,900 townhouses, and 1,200 apartments / condos.
- A total of 2,179 of the proposed 7,728 housing units within the Town of Middletown had been constructed by the end of 2008 and a total of 2,951 of the proposed 7,728 housing units within the Town of Middletown had been constructed by the end of 2010. This represents an increase of 772 housing units over the three year period between 2007 and 2010, or an annual increase of approximately 255 units per year.
- The ongoing commercial development within the study area consists of various uses, including office space, retail, and light industrial development (including warehouse space). By the end of 2010, developers had submitted plans for over 6.8 million square feet of commercial space in Southern New Castle County. New Castle County had previously approved approximately 4.5 million square feet of commercial space, with another 2.3 million square feet of commercial space pending approval. Of the approved development, at least 500,000SF (11%) had been constructed by the end of 2010.

**Traffic:**

- Roadway volumes at seven (7) locations are being monitored and recorded annually.
- Five (5) signalized intersections along the existing US301 Corridor between the Summit Bridge and SR 299 will be counted and analyzed annually to monitor the degradation (or improvement) in operation of each intersection. Based on the results from capacity analyses, all of the signalized intersections were operating at LOS D or better in 2010.
- Three (3) unsignalized intersections will be counted and analyzed annually to monitor the degradation (or improvement) in operation of each intersection. Based on the results from delay studies, all of the unsignalized intersections operated at LOS D or better in 2010.

**Highway Safety:**

- Average Accident Rates were calculated for eight (8) roadway segments in the vicinity of the US301 Corridor to provide a relative measure of comparison to the Statewide and New Castle County average crash rates. According to the comparison, seven (7) of the eight roadway segments being monitored had a higher crash rate than the Statewide and New Castle County average in 2010.
- In addition, roadway segments in the project area that are reported by DelDOT's Hazard Elimination Program (HEP) and High Risk rural Roads Program (HRRRP) will be monitored each year during construction.

**Incident Management:**

- DelDOT will track the number of significant incidents that occur each year on several key roads in the Middletown region south of the C&D Canal, and on SR 1 between the Roth Bridge and I-95. Specifically, the monitoring program will identify any incidents that resulted in detours that could have been accommodated more safely and efficiently on the Spur Road rather than on the local road network.
- Since 2004, there have been 46 incidents resulting in 129 or more hours of detours that could have utilized the Spur Road as an alternate detour route.

**Construction Projects:**

- DelDOT and the Town of Middletown will likely have several other active maintenance and construction projects occurring at various times during the duration of the US 301 Spur Monitoring Program that could affect the traffic data being collected. DelDOT identified eight (8) active construction projects in the US 301 project area in 2010. As part of the monitoring program, DelDOT will continue to monitor all active roadway construction projects in the US 301 project area from south of Middletown to approximately the Chesapeake and Delaware Canal.

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# INTRODUCTION

The US301 Spur Road, the subject of this traffic monitoring report, is part of Delaware Department of Transportation's (DelDOT's) US 301 Project (see Figure 1). US 301 is a 1,100 mile interstate route stretching between Sarasota, Florida and New Castle County, Delaware. The tolls and congestion on I-95 combined with the comparatively low traffic volumes on US 301, have made US 301 an attractive alternative route for vehicles, including trucks, traveling between Washington D.C. and Wilmington Delaware. The Delaware Department of Transportation has been studying the US 301 corridor since the 1960's. The need for improved capacity and safety has been heightened over the past two decades by the rapid pace of development throughout the Middletown-Odessa-Townsend area and the resulting transformation of Southern New Castle County from rural farmland to growing suburbia.

In November 2007, after nearly four decades of study, a preferred alternative was selected, as described in the US 301 Final Environmental Impact Statement. The Federal Highway Administration subsequently approved the Record of Decision on April 30, 2008 which authorized DelDOT to begin final design on the preferred alternative, known as the "Green North + Spur" alternative. In January 2010, the 145th General Assembly of Delaware passed House Resolution No. 35 directing the Delaware Department of Transportation to "*sit down over the next 6 weeks to develop and negotiate to final resolution a bill to amend the existing epilogue language, with such bill mandating certain trigger mechanisms for the Spur Road*." As a result of that coordination the US 301 Spur Road Monitoring Program was developed to monitor growth in traffic and land use development, and to evaluate the operational characteristics of key roads and intersections. This monitoring program will provide decision makers with data to make an informed decision on the appropriate timing for the construction of the US 301 Spur Road.

This report represents a summary of the first year of the monitoring program based on data collected in 2010, and serves as a basis for comparison with data collected in future years.

## US 301 Project History

In the mid-1960's, recognition of the regional significance of the US 301 corridor led the Delaware Department of Transportation (DelDOT) to investigate opportunities to improve mobility in the corridor. An earlier study resulted in the location selection and subsequent construction of the existing Summit Bridge by the US Army Corps of Engineers (ACOE) in the 1950's. Since that time, southern New Castle County has been transformed from a rural and largely agricultural area to a suburban residential area for commuters employed in Newark, Wilmington, Philadelphia, and throughout the I-95 corridor in Delaware, northern Maryland, southern Philadelphia, and Southern New Jersey. The Levels, southwest of Middletown, once known as Delaware's most productive agricultural area, is currently evolving into the Westown community of Middletown, and job growth is expanding with a full range of commercial and professional employers supporting the influx of new residents in southern New Castle County. As southern New Castle County continued to develop, the solution to improving mobility in the growing region remained elusive.

In 2004, a new phase of the US 301 project planning effort was initiated, which was focused on addressing the safety and mobility needs of the region with consideration of the findings of a prior study conducted in 2000, the *Greater Route 301 Major Investment Study.* A traffic survey conducted in October 2004 showed that approximately sixty-five percent (65%) of all northbound traffic originating south of the C&D Canal is destined for the northeast to Wilmington, Philadelphia, New Jersey, and points beyond. Thirty-Five percent (35%) of the traffic has destinations to the north towards Newark and Pennsylvania. However, the traffic survey, which asked motorists to document their actual travel routes, showed that despite the majority of northbound destinations being to the northeast, approximately sixty percent (60%) of motorists currently continue north on US 301/SR 896 and then east on I-95, rather than using a more direct east-west route south of the canal.

With careful consideration of the local and regional travel patterns, projected land use growth of the region, a wide range of other social and environmental resources, and significant public input (5 rounds of public workshops and more than 100 community meetings with concerned parties), DelDOT performed a detailed evaluation of several alternatives, including a no-build option and a variety of capacity improvement options. Those efforts resulted in the publication of a DEIS and a recommended alternative in November 2006. One year later, in November 2007, after nearly four decades of study, a preferred alternative was selected, as described in the *US 301 Project Development Final Environmental Impact Statement* (FEIS). The Federal Highway Administration subsequently approved the Record of Decision on April 30, 2008 which authorized DelDOT to begin final design on the preferred alternative, known as the “Green North + Spur” alternative.

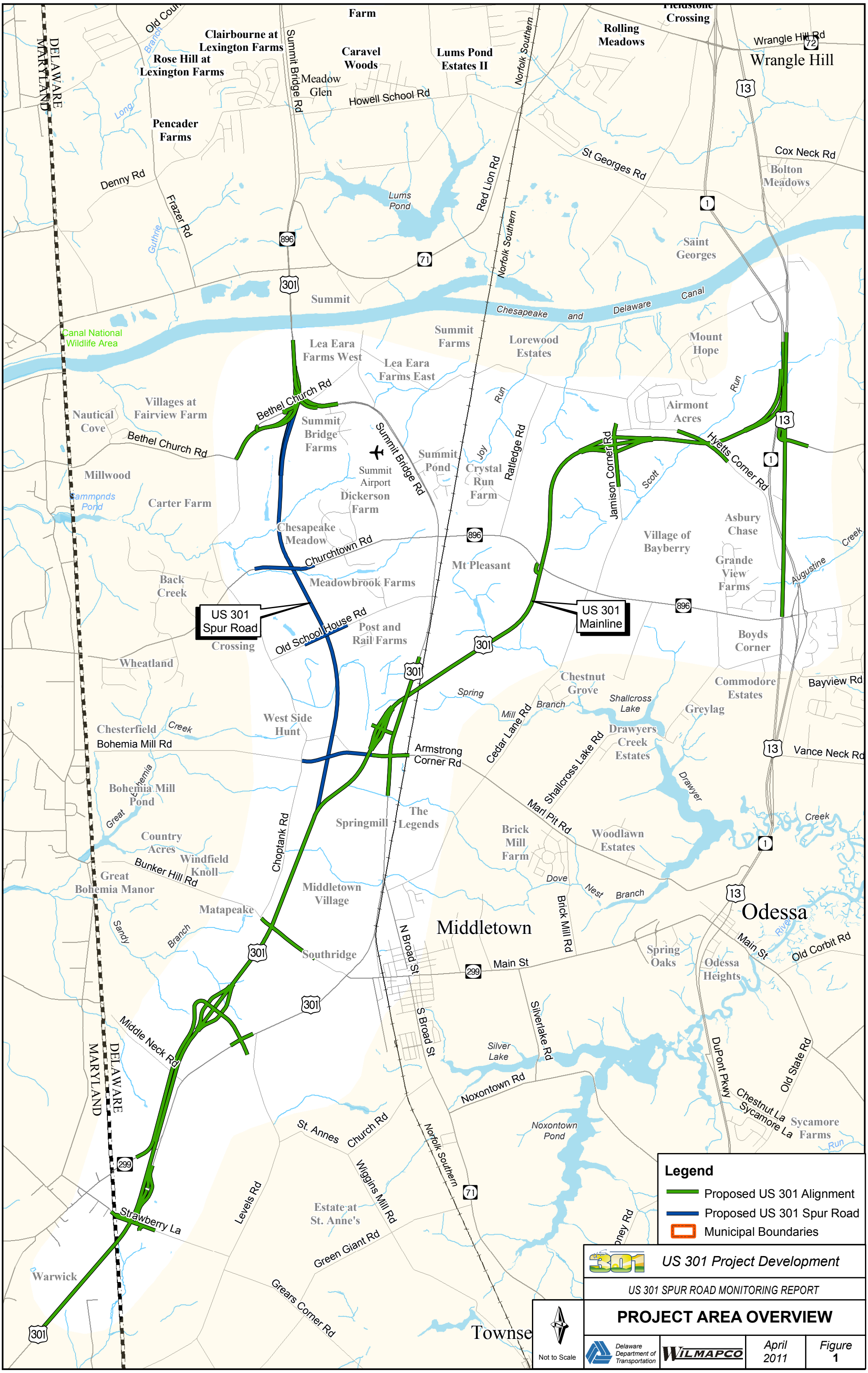
## Monitoring Program

In January 2010, the 145th General Assembly of Delaware passed House Resolution No. 35 directing the Delaware Department of Transportation to “sit down over the next 6 weeks to develop and negotiate to final resolution a bill to amend the existing epilogue language, with such bill mandating certain trigger mechanisms for the Spur Road.” As a result of that coordination the US 301 Spur Road Monitoring Program was developed to monitor growth in traffic and land use development, and to evaluate the operational characteristics of key roads and intersections. This monitoring program will provide decision makers with data to make an informed decision on the appropriate timing for the construction of the US 301 Spur Road.

The US 301 Spur Road Monitoring Program consists of three (3) primary components: an Annual Monitoring Program, Public Involvement and the publication of an Annual Summary Report.

### Annual Monitoring Program

The US 301 Monitoring Program was created to monitor transportation and land use growth patterns before, during and after construction of the US 301 Mainline Project, as applicable. The monitoring program consists of the annual collection and analysis of daily traffic volumes on select roadways, peak period intersection volumes, vehicular delay at unsignalized intersections, crash data, and land use development data. Each year, the data will be analyzed and compared with data and results from prior years.


Farm
Clairbourne at Lexington Farms
Rose Hill at Lexington Farms
Caravel Woods
Lums Pond Estates II
Rolling Meadows
Fieldstone Crossing
Wrangle Hill Rd
72
Wrangle Hill
Summit Bridge Rd
Meadow Glen
Howell School Rd
Norfolk Southern
13
DELAWARE
MARYLAND
Long Branch
Pencader Farms
Denny Rd
Frazer Rd
Guthrie
Lums Pond
Red Lion Rd
St Georges Rd
Cox Neck Rd
Bolton Meadows
1
896
71
301
Saint Georges
Summit
Chesapeake and Delaware Canal
Canal National Wildlife Area
Lea Eara Farms West
Lea Eara Farms East
Summit Farms
Lorewood Estates
Mount Hope
Bethel Church Rd
Villages at Fairview Farm
Nautical Cove
Summit Bridge Farms
Summit Airport
Summit Pond
Joy
Crystal Run Farm
Ratledge Rd
Airmont Acres
Hyetts Corner Rd
Jamison Corner Rd
Scott
Millwood
Sammonds Pond
Carter Farm
Dickerson Farm
Chesapeake Meadow
Churchtown Rd
Mt Pleasant
Asbury Chase
Village of Bayberry
Grande View Farms
Augustine Creek
Back Creek
Meadowbrook Farms
US 301 Spur Road
Crossing
Old School House Rd
Post and Rail Farms
US 301 Mainline
Boyds Corner
Wheatland
Chestnut Grove
Commodore Estates
Bayview Rd
Spring
Mill Branch
Shallcross Lake
Greylag
Cedar Lane Rd
Drawyers Creek Estates
Chesterfield Creek
Bohemia Mill Rd
West Side Hunt
Armstrong Corner Rd
Shallcross Lake Rd
Vance Neck Rd
Bohemia Mill Pond
Great Bohemia Creek
Choptank Rd
Springmill
The Legends
Drawyer Creek
Marl Pit Rd
Brick Mill Farm
Woodlawn Estates
Country Acres
Windfield Knoll
Bunker Hill Rd
Great Bohemia Manor
Matapeake
Middletown Village
Middletown
Dove Nest Branch
Brick Mill Rd
Odessa
Main St
Old Corbit Rd
Spring Oaks
Odessa Heights
N Broad St
S Broad St
Silverlake Rd
Silver Lake
DuPont Pkwy
Old State Rd
Middle Neck Rd
Noxontown Rd
Chestnut La
Sycamore La
Sycamore Farms
Noxontown Pond
St. Annes Church Rd
Levels Rd
Wiggins Mill Rd
Estate at St. Anne's
Green Giant Rd
Strawberry La
Warwick
Grears Corner Rd
Legend
Proposed US 301 Alignment
Proposed US 301 Spur Road
Municipal Boundaries
US 301 Project Development
US 301 SPUR ROAD MONITORING REPORT
PROJECT AREA OVERVIEW
Not to Scale
Delaware Department of Transportation
WILMAPCO
April 2011
Figure 1

## Public Involvement

Public involvement has been and continues to be an important part of the US 301 Project. For the US 301 Spur Road Monitoring Program, the annual report will be made publicly available each year, and the updates on the Monitoring Program will be presented annually at a WILMAPCO public meeting. Public Involvement will also be solicited at key decision making points, such as the Secretary of Transportation's decision to recommend that construction of the US 301 Spur Road should begin.

The US 301 Spur Road Monitoring Program was presented at the FY2012 – FY2015 Transportation Improvement Program (TIP) Public Workshop on February 28, 2011 at WILMAPCO, attended by DelDOT staff. The Spur Monitoring Program information was summarized on a large display board that provided an overview of the program including the goals and purpose, and details on the initial data collected on Land Development, Safety, and Traffic.

## Annual Report

This report contains a summary of the most recent data collected and analyzed as part of the US 301 Spur Road Monitoring Program. These reports will be developed on an annual basis before, during and after the construction of the US 301 mainline. DelDOT will present these reports to the General Assembly in April of each year. The reports will provide decision makers, including the Secretary of Transportation, with data to make an informed decision on the appropriate timing for the construction of the Spur Road.

# MONITORING PROGRAM

## Land Development

The explosive growth in housing and retail in southern New Castle County over the past 10 to 15 years has led to increasing congestion on the local road network, including US 301, SR 299, and SR 896. A number of new residential and retail developments have been completed and many others are in varying stages of construction or planning. As these other planned developments come on line, additional demands will be placed on the transportation infrastructure in the Middletown area.

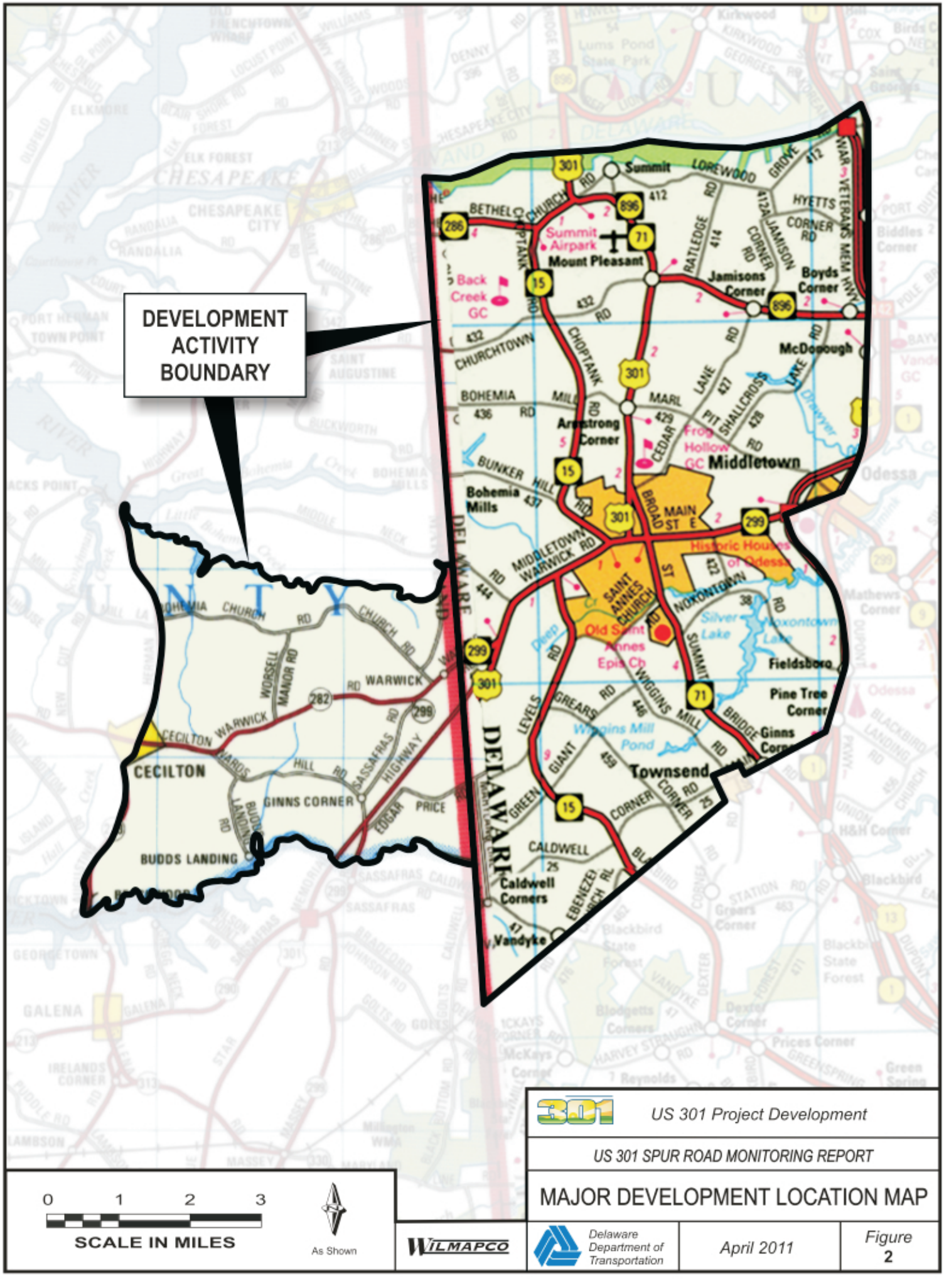
Additional development in this area may occur due to the ongoing Base Realignment and Closure (BRAC) activities at the Aberdeen Proving Grounds (APG) in Harford County, Maryland. These BRAC activities are projected to result in approximately 10,000 new jobs at APG; additional development to support the influx of new employees to this area may also impact the US 301 project area.

Development activity in New Castle County is monitored by the New Castle County Department of Land Use, the Wilmington Area Planning Council (WILMAPCO), and DelDOT. Development activity in Middletown is monitored by the Town of Middletown, WILMAPCO, and DelDOT. WILMAPCO is also tasked with developing short and long-term land use projections for New Castle County. These projections are constrained on a statewide and countywide basis by the population and employment forecasts provided by the Delaware Population Consortium; WILMAPCO is responsible for projecting how much of that growth will occur in different parts of the county. The primary geographic unit for these projections is the Traffic Analysis Zone (TAZ).

DelDOT and WILMAPCO have committed to tracking the land development activities in a portion southern New Castle County and an adjoining portion of Cecil County, Maryland as part of this Monitoring Report. The specific area where development will be tracked annually is depicted in Figure 2. This area represents a total of 34 TAZs in Southern New Castle County and two (2) TAZs in Cecil County, Maryland. Development activity will be monitored in this area for the length of the project to determine when the surrounding roadway infrastructure may need to be improved based on past, present and near-term development trends.

### Summary of Development Activity in Southern New Castle (DE) and Cecil (MD) Counties

WILMAPCO took the lead in coordinating with the various jurisdictions and compiling the land use data for this report. In 2010, a total of 66 ongoing commercial and residential developments were in various stages of the planning or building process within the study areas of Southern New Castle and Cecil Counties. Fifty-four (54) of these developments are located in Southern New Castle County and twelve (12) developments are located in Cecil County, Maryland. For each development, a description of the development proposal, the current status of the development in the planning process, and what portions (if any) were constructed by the end of 2010 were provided. A full list of the developments can be found in Appendix A. The residential developments range from small subdivision developments with less than 10 homes to major developments with over 1,500 households units planned. The proposed commercial developments range from smaller properties with 15,000 to 20,000 SF to the major commercial centers, such as the 1.7 million SF Scott Run Business Park. A number of proposals call for mixed-use development, combining residential and commercial activities at one site.


DEVELOPMENT ACTIVITY BOUNDARY
Summit
LOREWOOD GROVE
BETHEL CHURCH
Summit Airpark
Mount Pleasant
RATLEDGE
JAMISON CORNER RD
HYETTS CORNER RD
Jamisons Corner
Boyds Corner
Back Creek GC
CHOPTANK
CHURCHTOWN
BOHEMIA MILL RD
Armstrong Corner
MARL LANE
SHALLCROSS LAKE
McDonough
CEDAR
Frog Hollow GC
Middletown
BUNKER HILL RD
Bohemia Mills
BROAD
MAIN ST E
MIDDLETOWN WARWICK RD
Historic Houses of Odessa
SAINT ANNES CHURCH
Old Saint Annes Epis Ch
NORTONTOWN
Silver Lake
Noxontown Lake
Fieldsboro
Pine Tree Corner
Ginns Corner
WIGGINS MILL
Wiggins Mill Pond
GREARS
LEVELS
GIANT
Townsend
GREEN
CORNER
CALDWELL
Caldwell Corners
EBENEZER
Vandyke
DELAWARE
CHURCH RD
WORSELL MANOR RD
WARWICK
CECILTON
HARDS
HILL RD
SASSAFRAS
HIGHWAY
GINNS CORNER
PRICE
EDGAR
BUDDS LANDING
BUDDS LANDING RD
0 1 2 3
SCALE IN MILES
As Shown
US 301 Project Development
US 301 SPUR ROAD MONITORING REPORT
MAJOR DEVELOPMENT LOCATION MAP
WILMAPCO
Delaware Department of Transportation
April 2011
Figure 2

## Residential Development Summary

The ongoing residential development within the study area consists of a variety of housing types, including single-family detached dwellings, townhomes, and apartments. The various residential developments were classified in differing stages of completion: Built, Approved but Unbuilt, or Pending (includes Exploratory and Expired Proposals). Figure 3 depicts the number of housing units built, approved but unbuilt, and pending at the end 2010.

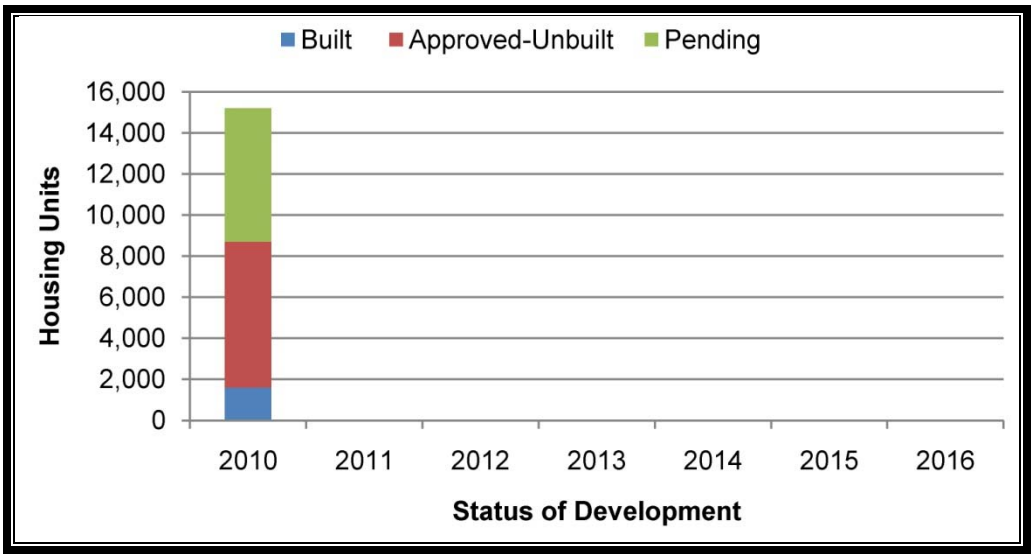



Figure 3: Residential Development in Study Area

As shown in Figure 3, at the end of 2010, there were over 15,200 new housing units in various stages of planning in the study area. New Castle County has approved approximately 8,700 of these housing units, of which approximately 1,550 (18%) were completed by the end of 2010. An additional 6,100 housing units, including approximately 350 units in Cecil County, MD, are part of developments which are still in the earlier planning stages (pending approval). Lastly, approximately 400 more housing units were proposed in developments in New Castle County for which approval had expired by the end of 2010.

**Snapshot - Residential Construction in the Town of Middletown**: There are sixteen (16) residential developments in various stages of completion within the Town of Middletown. Seven of these developments were essentially complete by the end of 2007, with an eighth (Middletown Village) essentially completed by the end of 2010. The 16 developments include a total of 7,728 housing units, including approximately 4,100 single-family detached homes, 500 duplexes, 1,900 townhouses, and 1,200 apartments / condos. WILMAPCO was able to provide data on the number of units built within each of these residential developments between 2007 and 2010:

- By the end of 2007, a total of 2,179 (28%) of the proposed 7,728 housing units within the Town of Middletown had been constructed.
- By the end of 2010, a total of 2,951 (38%) of the proposed 7,728 housing units within the Town of Middletown had been constructed.
- This represents an increase of 772 housing units over the three year period between 2007 and 2010, or an **annual increase of approximately 255 units per year.**

Appendix B lists respectively the number of apartments, duplexes, townhouses, and single family homes that have been built and remain to be built in the Town of Middletown.

## Commercial (Non-Residential) Development

The ongoing commercial development within the study area consists of various uses, including office space, retail, and light industrial development (including warehouse space). The commercial developments were divided into Approved and Pending (Exploratory) categories. By the end of 2010, developers had submitted plans for over 6.8 million square feet of non-residential space in Southern New Castle County. The County had previously approved approximately 4.5 million square feet, with another 2.3 million square feet pending approval. Of the approved development, at least 500,000SF (11%) had been constructed by the end of 2010. Currently, no non-residential developments are proposed in the two (2) TAZs in Cecil County that are included in the study area. Figure 4 depicts and approved and pending commercial development in the study area.

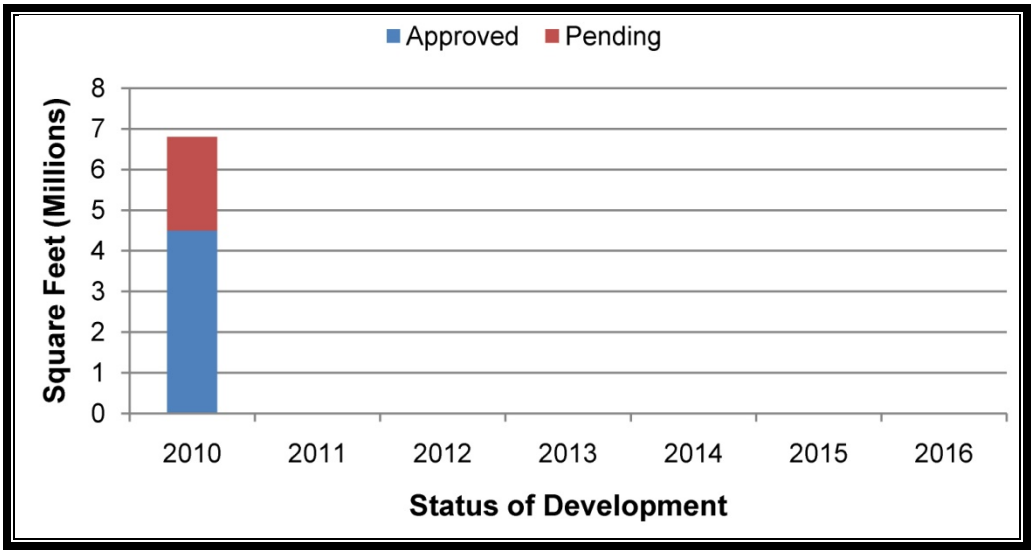
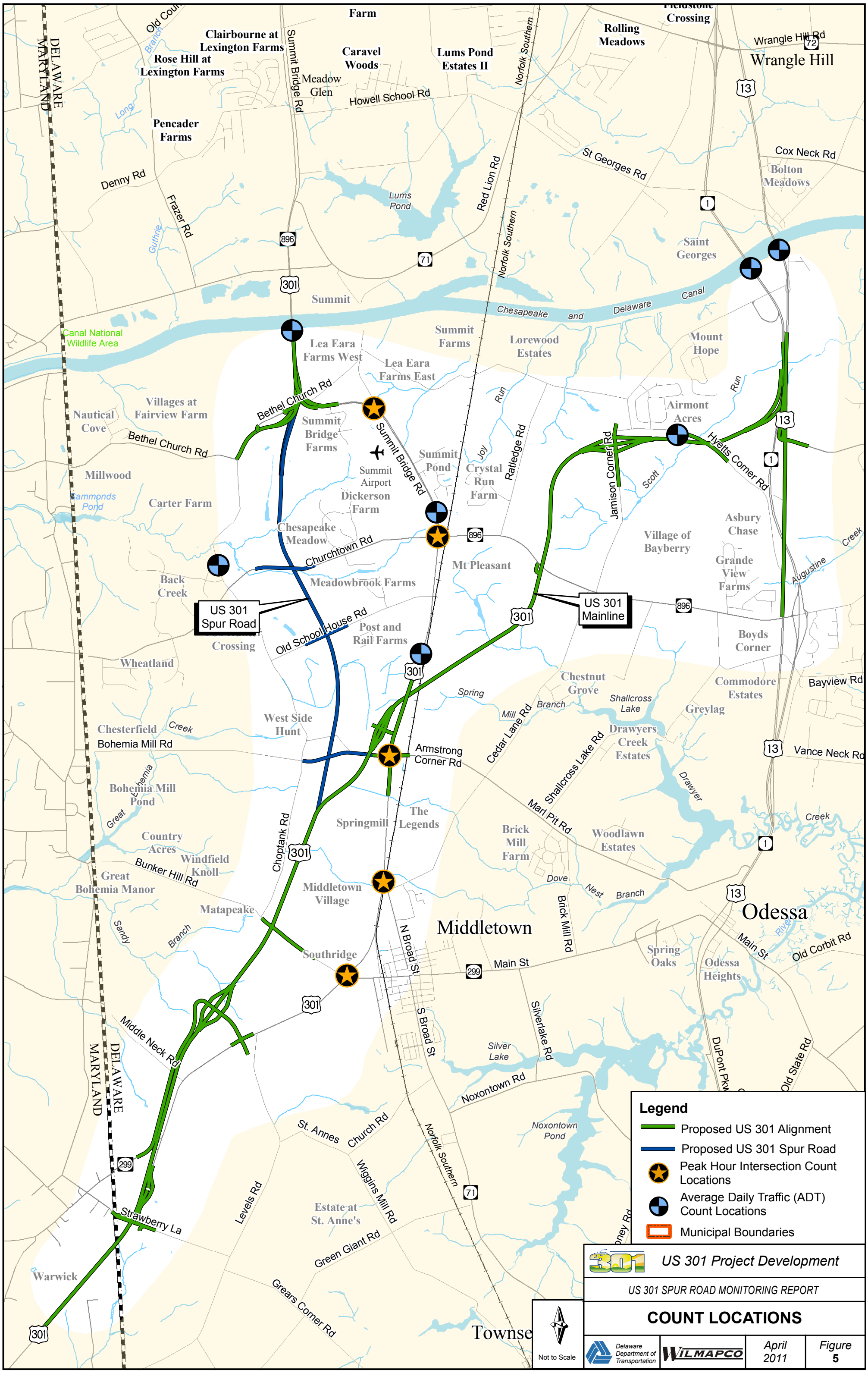



Figure 4: Non-Residential Development in Study Area


DELAWARE
MARYLAND
Old County Line Branch
Clairbourne at Lexington Farms
Rose Hill at Lexington Farms
Summit Bridge Rd
Meadow Glen
Caravel Woods
Lums Pond Estates II
Norfolk Southern
Rolling Meadows
Fieldstone Crossing
Wrangle Hill Rd
72
Wrangle Hill
13
Howell School Rd
Long Branch
Pencader Farms
Denny Rd
Frazer Rd
Guthrie
896
71
301
Lums Pond
Red Lion Rd
St Georges Rd
Cox Neck Rd
Bolton Meadows
1
Saint Georges
Summit
Chesapeake and Delaware Canal
Canal National Wildlife Area
Lea Eara Farms West
Lea Eara Farms East
Summit Farms
Lorewood Estates
Mount Hope
Bethel Church Rd
Villages at Fairview Farm
Nautical Cove
Summit Bridge Farms
Summit Bridge Rd
Summit Airport
Summit Pond
Joy
Crystal Run Farm
Ratledge Rd
Airmont Acres
Hyetts Corner Rd
Jamison Corner Rd
Scott
Millwood
Sammonds Pond
Carter Farm
Dickerson Farm
Asbury Chase
Village of Bayberry
Grande View Farms
Augustine Creek
Chesapeake Meadow
Churchtown Rd
Mt Pleasant
Back Creek
Meadowbrook Farms
US 301 Spur Road
US 301 Mainline
Old School House Rd
Post and Rail Farms
Crossing
Boyds Corner
Wheatland
Chestnut Grove
Commodore Estates
Bayview Rd
Spring
Mill Branch
Shallcross Lake
Greylag
West Side Hunt
Chesterfield Creek
Bohemia Mill Rd
Cedar Lane Rd
Drawyers Creek Estates
Shallcross Lake Rd
Vance Neck Rd
Armstrong Corner Rd
Bohemia Mill Pond
Great Bohemia Creek
Drawyer Creek
Choptank Rd
Springmill
The Legends
Marl Pit Rd
Brick Mill Farm
Woodlawn Estates
Country Acres
Windfield Knoll
Bunker Hill Rd
Great Bohemia Manor
Middletown Village
Dove Nest Branch
Brick Mill Rd
Odessa
Matapeake
Sandy Branch
Southridge
N Broad St
Middletown
Main St
299
Spring Oaks
Odessa Heights
Old Corbit Rd
Old State Rd
Middle Neck Rd
Silver Lake
Silverlake Rd
DuPont Pkwy
Noxontown Rd
Noxontown Pond
St. Annes Church Rd
Wiggins Mill Rd
Levels Rd
Estate at St. Anne's
Strawberry La
Green Giant Rd
Grears Corner Rd
Warwick
Townsend
Legend
Proposed US 301 Alignment
Proposed US 301 Spur Road
Peak Hour Intersection Count Locations
Average Daily Traffic (ADT) Count Locations
Municipal Boundaries
US 301 Project Development
US 301 SPUR ROAD MONITORING REPORT
COUNT LOCATIONS
Not to Scale
Delaware Department of Transportation
WILMAPCO
April 2011
Figure 5

## Traffic

Traffic is an important part of the US 301 Spur Road Monitoring Program. The US 301 project team will gather a variety of traffic data annually on key roads within the project corridor to determine the current level of traffic on these roads and to track growth trends throughout the region. Specifically, the following traffic data is being collected each year: mainline roadway volume counts, intersection turning movement counts, and vehicular delays at unsignalized intersections. The data collected in 2010 serve as the base year data for the US 301 Spur Road Monitoring Program. Intersection turning movement counts and mainline volume counts will be performed at each location shown in Figure 5 every year during the construction of the new US 301 alignment from the MD/DE state line to SR 1. This annual traffic monitoring will show how traffic volumes change over time as new development continues to occur.

### Roadway Volumes

Mainline volume counts were collected along six (6) key roadways within the US 301 project area during October and November 2010 (see Figure 5). Automatic traffic recording equipment, commonly called "tube counters", were used to record the volume and classification of vehicles that pass over the equipment in each direction. This data is used to determine the Average Daily Traffic (ADT) and percentage of trucks travelling on each roadway segment (see Tables 1 and 2).

US 301 Spur Road
2010 Monitoring Report
April 2011

**Table 1:**
**Average Daily Traffic for Select Roadway Segments along US 301**

| Roadway Link | 2010 ADT* | 2011 ADT | 2012 ADT | 2013 ADT | 2014 ADT | 2015 ADT | 2016 ADT |
|---|---|---|---|---|---|---|---|
| Summit Bridge (US 301) | 27,655 | | | | | | |
| Choptank Rd, North of Churchtown Rd | 3,990 | | | | | | |
| SR 1 at Roth Bridge | 73,690 | | | | | | |
| US 13 at St. Georges Bridge | 10,600 | | | | | | |
| US 301/SR 896, North of Mt. Pleasant | 23,450 | | | | | | |
| US 301, between Armstrong Corner Rd and Mt. Pleasant | 21,830 | | | | | | |
| US 301 Bypass | N/A | | | | | | |

*Data was collected for a seven (7) day period in October/November 2010. Seasonal Adjustments were not made to these volumes because: a) October/November volumes are typically representative of the annual average volumes, and b) because volumes will be collected during the same months in subsequent years.

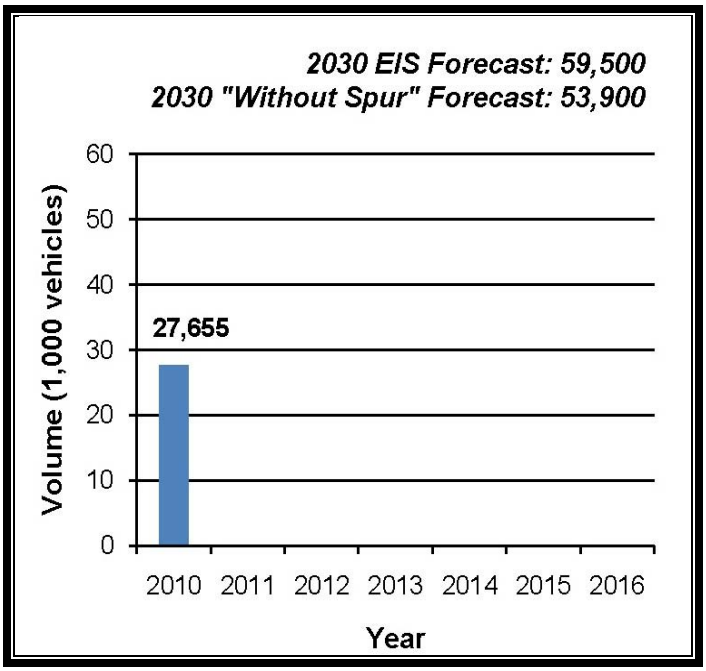



Figure 6: Average Daily Traffic (ADT) for Summit Bridge (US 301)

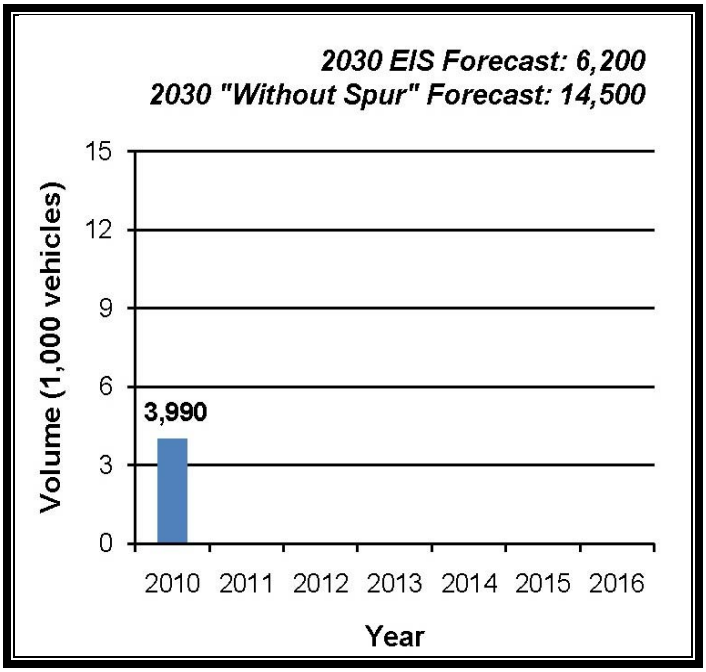



Figure 7: Average Daily Traffic (ADT) for Choptank Rd, North of Churchtown Rd

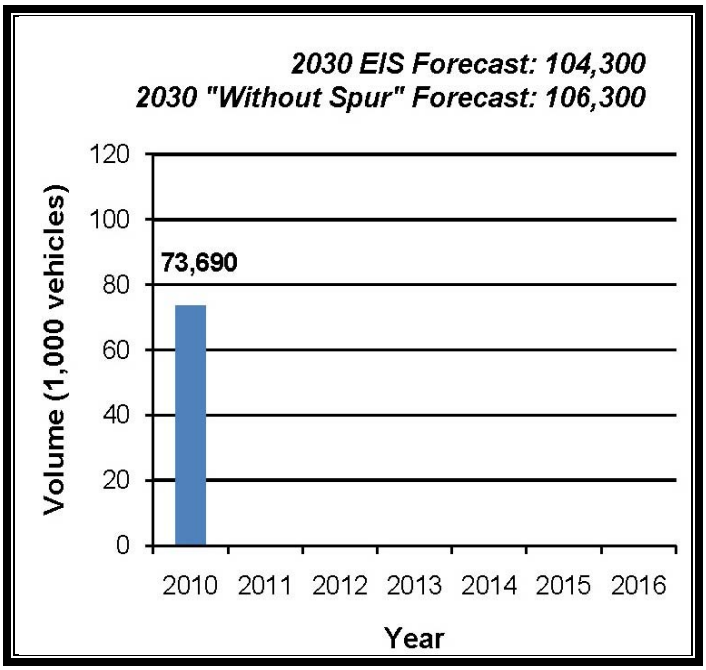



Figure 8: Average Daily Traffic (ADT) for Roth Bridge (SR 1)

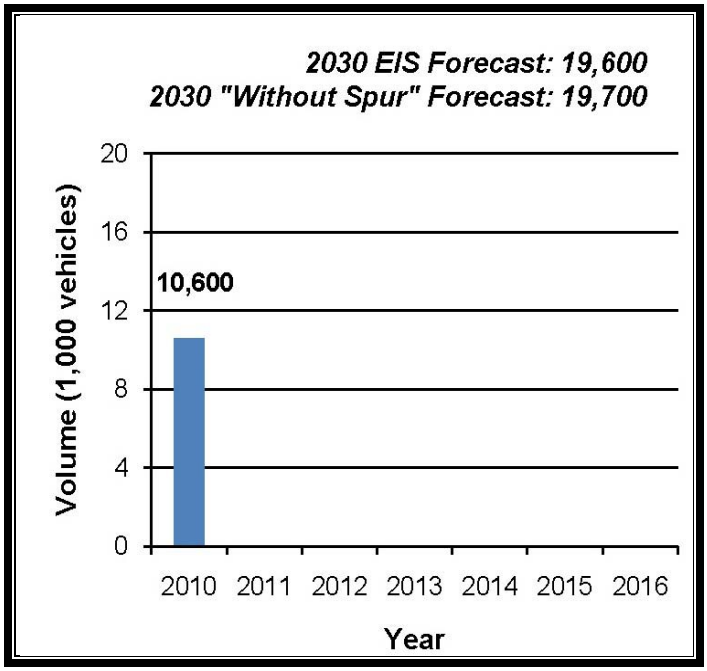



Figure 9: Average Daily Traffic (ADT) for St. George's Bridge (US 13)

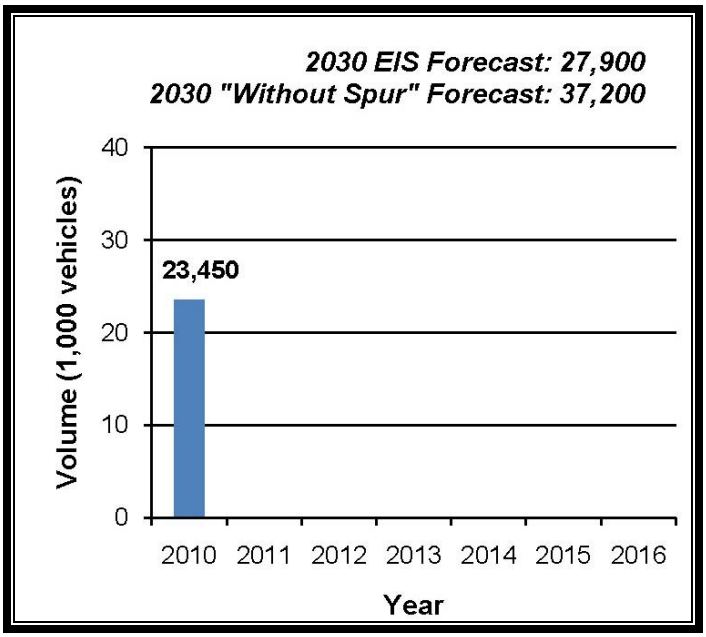



Figure 10: Average Daily Traffic (ADT) for Existing US 301 North of Mt. Pleasant

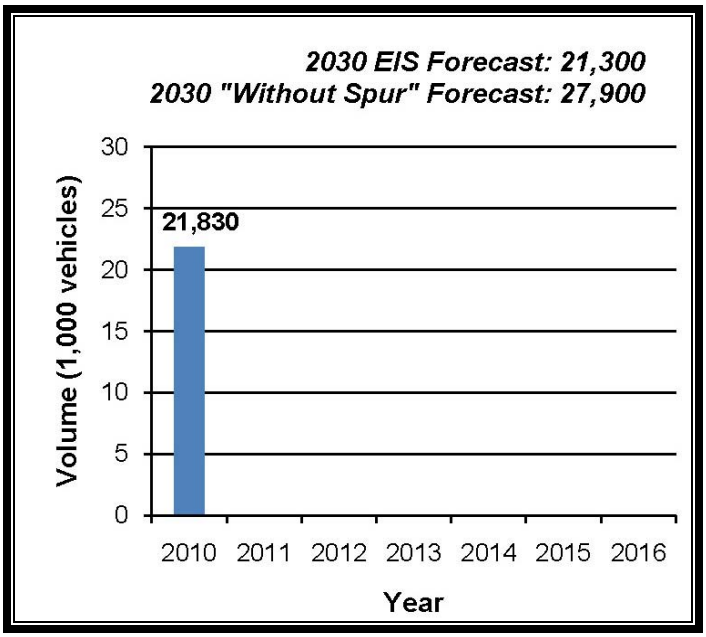



Figure 11: Average Daily Traffic (ADT) for Existing US 301, between Armstrong Corner Rd and Mt. Pleasant

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**Table 2: Average Daily Truck Volume and Average Daily Truck Percentage* on Select Roadway Segments along US 301**

| Roadway Link | 2010 | | 2011 | | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Volume | % Trucks | Volume | % Trucks | Volume | % Trucks | Volume | % Trucks | Volume | % Trucks | Volume | % Trucks | Volume | % Trucks |
| Summit Bridge (US 301) | 2,210 | 8 | | | | | | | | | | | | |
| Choptank Rd, North of Churchtown Rd | 490 | 12 | | | | | | | | | | | | |
| SR 1 at Roth Bridge | 7,860 | 11 | | | | | | | | | | | | |
| US 13 at St. Georges Bridge | 565 | 5 | | | | | | | | | | | | |
| US 301/SR 896, North of Mt. Pleasant | 1,970 | 8 | | | | | | | | | | | | |
| US 301, between Armstrong Corner Rd and Mt. Pleasant | 2,910 | 13 | | | | | | | | | | | | |
| US 301 Bypass | n/a | n/a | | | | | | | | | | | | |

*Trucks include FHWA Class 5-13, representing all trucks larger than and including two-axle single unit trucks, such as UPS delivery trucks and DART Paratransit buses.

## Signalized Intersections

Peak period turning movement counts are being collected on an annual basis at five (5) key signalized intersections in the project area. These five (5) locations, which are all located along the existing US 301 Corridor between Middletown (SR 299) and the Summit Bridge, will be analyzed annually to monitor the degradation (or improvement) in operation of each intersection. The five (5) locations, summarized in Figure 5, and Table 3, are the signalized intersections of existing US 301/SR 896 at Old Summit Bridge Road, Boyds Corner Road, Armstrong Corner Road, North Broad Street, and Bunker Hill Road. Peak hour turning movement counts were performed at these intersections during the first two weeks of October 2010. This data was used to create a model of the corridor using Synchro, version 7, a traffic engineering software program used to evaluate the operational performance characteristics of signalized and unsignalized intersections. The results of these analyses are summarized in Table 3 and Figures 12 and 13.

For this monitoring report, the operational performance of signalized intersections is presented in terms of average delay per vehicle and a corresponding letter grade, typically referred to as “Level of Service” (LOS). Level of Service “A” (delay ≤ 10 sec/vehicle) represents the best possible operating conditions, whereas LOS “F” (delay > 80 sec/veh) represents congested conditions corresponding with traffic that has reached or exceeded available intersection capacity, resulting in relatively high average delay per vehicle and higher likelihood that vehicles will take more than one signal cycle to clear the intersection.

The results of the 2010 intersection analyses are summarized below. All of the intersections operated at LOS D or better in 2010:

- The intersection of US 301 and Old Summit Bridge Road currently operates at LOS A during the AM and the PM peak hours.
- The intersection of US 301 and Boyds Corner Road currently operates at LOS D during the AM and PM peak hours.
- The intersection of US 301 and Armstrong Corner Road currently operates at LOS D during the AM peak hour and LOS C during the PM peak hour.
- The intersection of US 301 and North Broad Street currently operates at LOS C during the AM and PM peak hours.
- The intersection of US 301 and SR 299 currently operates at LOS C during the AM peak hour and LOS D during the PM peak hour.

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**Table 3:**
**Peak Hour LOS at Selected Signalized Intersections along US 301**

| Site | 2010 | | 2011 | | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM |
| US 301 at Old Summit Bridge Rd | A | A | | | | | | | | | | | | |
| US 301 at SR 896 | D | D | | | | | | | | | | | | |
| US 301 at Armstrong Corner Rd | D | C | | | | | | | | | | | | |
| Existing US 301 at SR 71 | C | C | | | | | | | | | | | | |
| Existing US 301 at SR 299 | C | D | | | | | | | | | | | | |

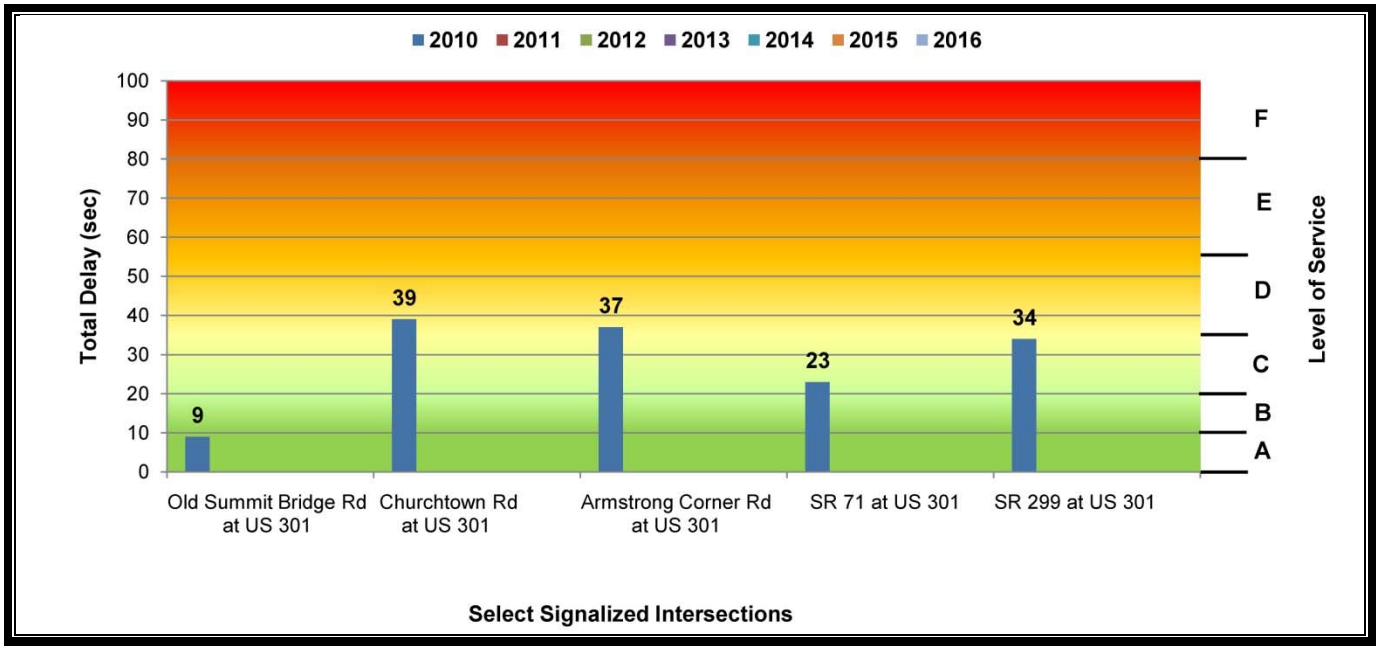


**Figure 12: Total Delay and Corresponding Level of Service (LOS) at Select Signalized Intersections along US 301 during the AM Peak Hour**

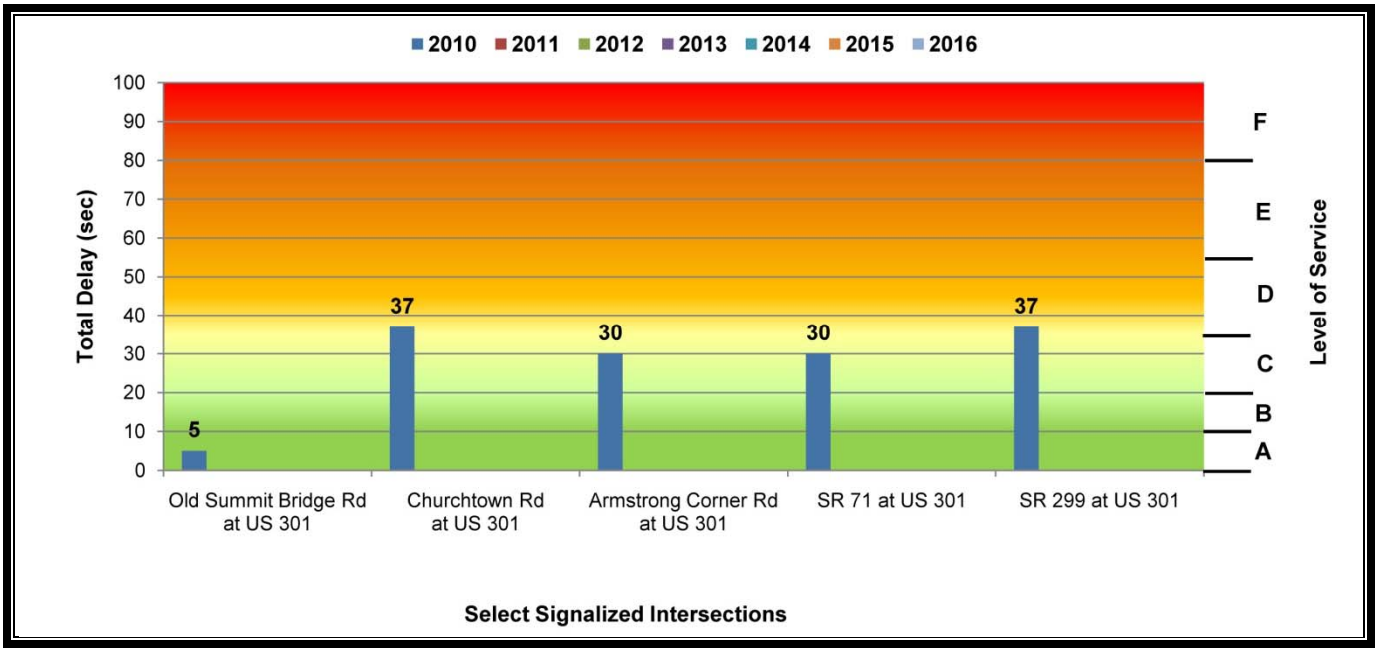


**Figure 13: Total Delay and Corresponding Level of Service (LOS) at Select Signalized Intersections along US 301 during the PM Peak Hour**

## Unsignalized Intersections

Delay studies were performed at three unsignalized intersections along the existing US 301/SR 896 (Summit Bridge Road) Corridor and Choptank Road, specifically, the intersections of Choptank Road at Clayton Manor Drive, US 301 at Old School House Road, and US 301 at Keenan Autobody. These three (3) locations were selected to represent the typical operation of unsignalized access points along the Choptank Road and US 301/SR 896 (Summit Bridge Road) corridors, both of which are likely to be impacted by construction of the Spur Road. Similar to the signalized intersections, the operational performance of unsignalized intersections is presented in terms of average delay per vehicle and a corresponding Level of Service (LOS). For unsignalized intersections, the Level of Service thresholds are somewhat lower than for signalized intersections, with LOS F representing conditions where vehicles experience 50 or more seconds of delay.

The number of vehicles stopping at the stop sign and the length of each stop was recorded at each of the three (3) study intersections during the PM peak hour. The PM peak hour was selected since it represents the period that vehicles typically experience the highest level of delay making turns from minor street approaches onto Choptank Road and US 301. The average delay per stopped vehicle was determined for each location (see Figure 14). In 2010, the average delay ranged from 13 seconds per vehicle at the intersection of Choptank Road/Clayton Manor Drive to 28 seconds per vehicle at the intersection of US 301/SR 896 (Summit Bridge Road)/Old School House Road. All 3 of the intersections had minor street approaches that operated at LOS D or better in the PM peak hour.

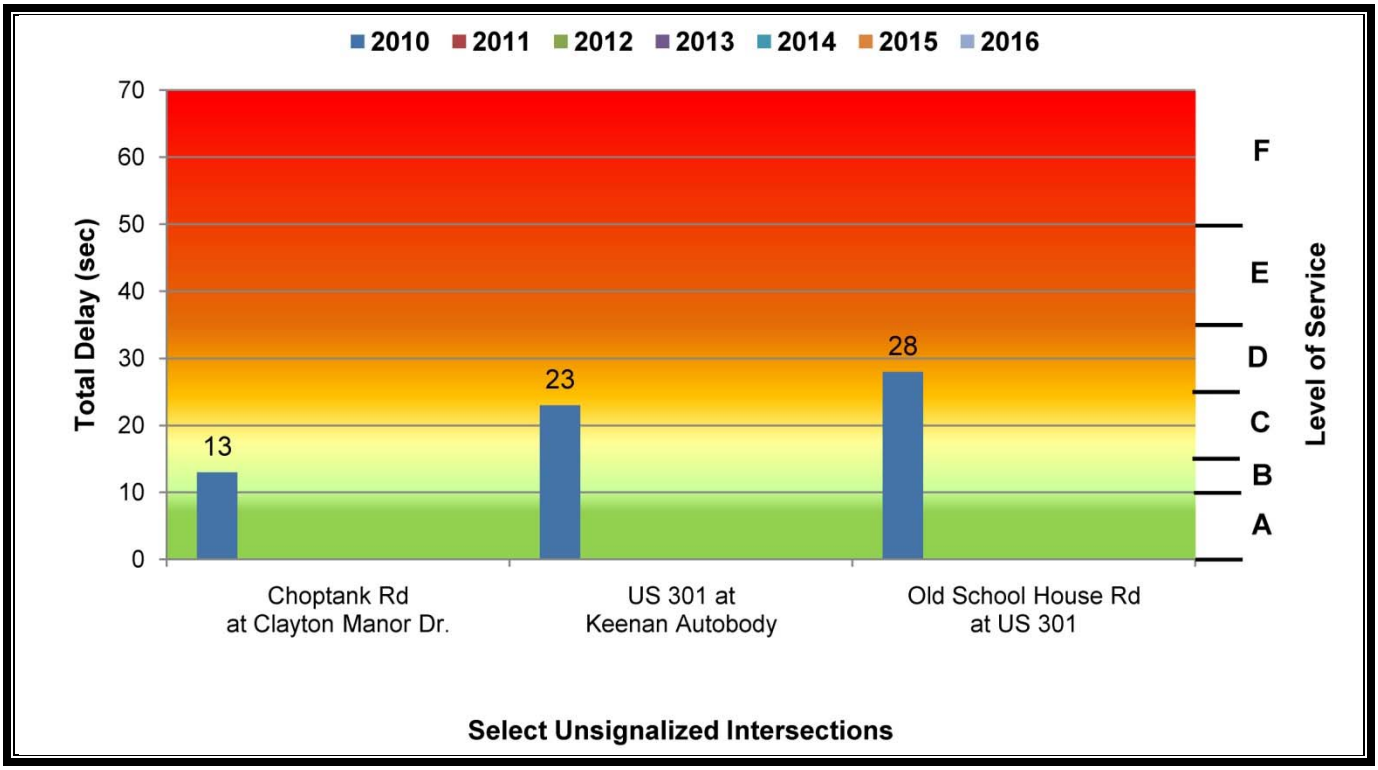


**Figure 14: Total Delay and Corresponding Level of Service (LOS) at Select Unsignalized Intersections along US 301 during the PM Peak Hour**

## Highway Safety

The goal of this annual monitoring report with respect to safety is to monitor the number of crashes occurring on local roads throughout the US 301 Project Area. The number of crashes will be documented each year to determine if any road segments experience a significant increase in crashes.

The number of reported crashes occurring on each key road segment in 2010 is shown in Table 4 and on Figure 15. Crash data for prior years, while available, was not included in this summary for two reasons: First, there was a considerable amount of roadway construction activity ongoing during 2007 and 2008 throughout the project area that would likely skew the crash data for those years, including long-term lane reductions and temporary closures of US 301, construction along Choptank Road, etc. Second, data will be collected each year for several years into the future, providing a basis for comparison of several year's worth of crash data, including the identification of crash trends over time.

Average Accident Rates have been calculated for each road segment to provide a relative measure of comparison of each roadway segment, factoring in traffic volumes, with other similar roads throughout Delaware and New Castle County (see Table 4). The Statewide and New Castle County crash rates for similar road segments are also included in Table 4. Additional detail for these crashes, including the specific location, type and severity of each crash are summarized in Appendix C. According to the comparison, seven (7) of the eight roadway segments being monitored had higher crash rate than the Statewide and New Castle County average.

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**Table 4:**
**Average Accident Rate for Road Type (AART)**
**(Accidents/ Million Vehicle Miles Traveled)**

| Site | 2010 | | | | 2011 | | | | 2012 | | | | 2013 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of Crashes | Crash Rate | Delaware Crash Rate | NCC Crash Rate | Number of Crashes | Crash Rate | Delaware Crash Rate | NCC Crash Rate | Number of Crashes | Crash Rate | Delaware Crash Rate | NCC Crash Rate | Number of Crashes | Crash Rate | Delaware Crash Rate | NCC Crash Rate |
| US 301 between Summit Bridge and SR 896 (Boyds Corner Rd) | 32 | 1.44 | 0.60 | 0.41 | | | | | | | | | | | | |
| The "curve" between Summit Bridge and Bethel Church Rd | 2 | | | | | | | | | | | | | | | |
| The intersection of US 301 and Bethel Church Rd | 3 | | | | | | | | | | | | | | | |
| US 301 between SR 896 and Peterson Rd | 50 | 1.78 | 1.14 | 1.17 | | | | | | | | | | | | |
| US 301 between Peterson Rd and Levels Rd | 22 | 3.06 | 2.37 | 2.54 | | | | | | | | | | | | |
| US 301 between Levels Rd and DE/MD State Line | 19 | 1.42 | 1.14 | 1.17 | | | | | | | | | | | | |
| Bethel Church Rd between US 301 and Choptank Rd | 6 | 6.05 | 1.58 | 2.37 | | | | | | | | | | | | |
| Choptank Rd between Bethel Church Rd and Bunker Hill Rd | 8 | 3.32 | 1.58 | 2.37 | | | | | | | | | | | | |
| Bunker Hill Rd between Choptank Rd and US 301 | 5 | 8.83 | 1.58 | 2.37 | | | | | | | | | | | | |
| SR 1 between Roth Bridge and US 13/SR 1 Split (Tybouts Corner) | 53 | 0.41 | 0.90 | 0.90 | | | | | | | | | | | | |

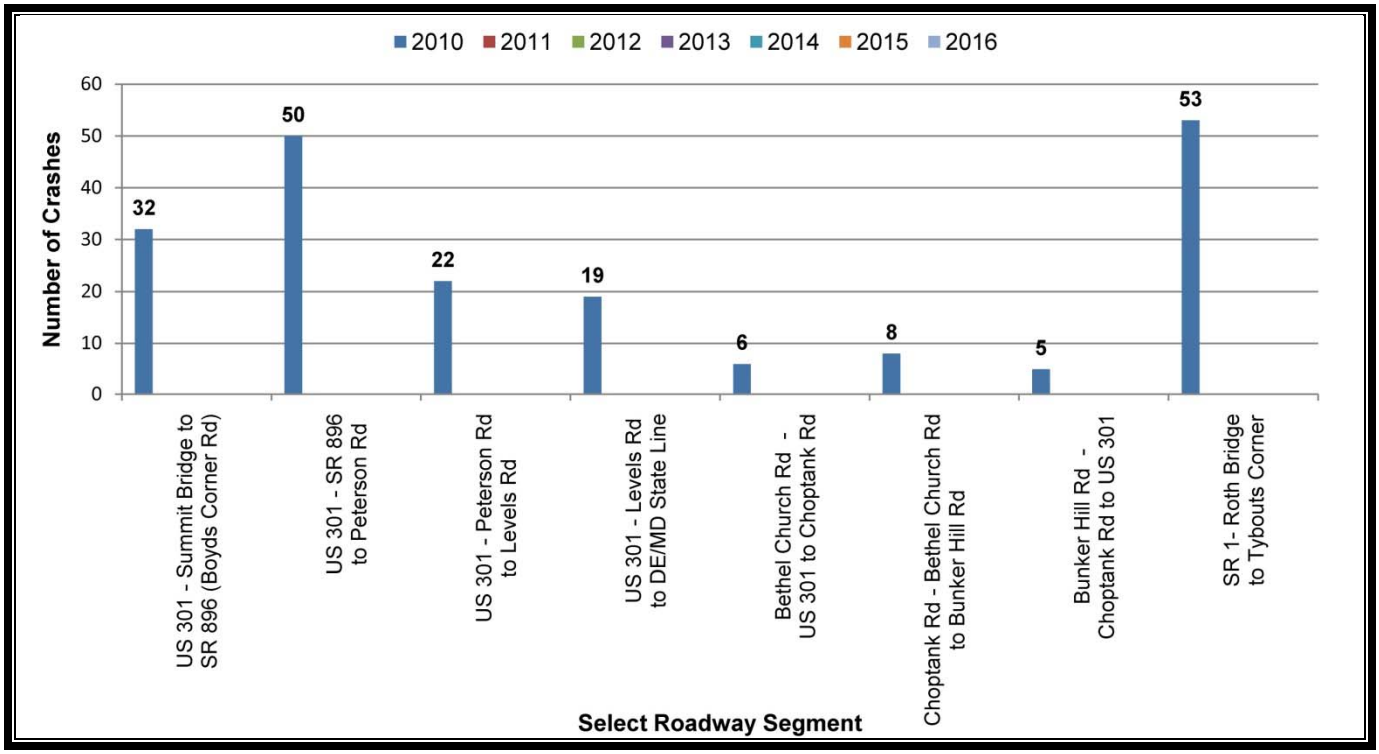


**Figure 15: Comparison of Crashes for Select Roadways in the US 301 Corridor**

## Hazard Elimination Program

Roadway segments in the project area that are reported within DelDOT's Hazard Elimination Program (HEP) and High Risk Rural Roads Program (HRRRP) will be identified each year during the construction of US 301. These programs seek improvements focused on reducing the number of crashes at each location. A list of the 2010 HEP and HRRRP locations, and the years the locations were under review, can be found in Tables 5 and 6.

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**Table 5:**
**2010 Hazard Elimination Program Locations**

| Site | Start Milepost | End Milepost | Year |
|---|---|---|---|
| SR 299/Main Street | Intersection of US 301 and SR/299 | 0.11 miles East of Silver Lake Rd | 2006, 2007, 2009, 2010 |
| US 301/SR 896 Summit Bridge Rd | 0.44 miles North of Beaston Rd | 0.56 miles South of Bethel Church Rd | 2007 |
| US 13 | 0.19 miles South of Greylag Rd | 0.24 miles North of Boyds Corner Rd | 2006 |
| SR 299/ Main Street | 0.25 miles West of Brick Mill Rd | 0.24 miles East of Brick Mill Rd | 2007 |

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|---|---|---|---|
| Table 6:<br>2010 High Risk Rural Roads Program Locations | | | |
| **Site** | **Start Milepost** | **End Milepost** | **Year** |
| Churchtown Rd | 0.11 miles East of Dickerson Lane | 0.33 miles West of SR 896/ Summit Bridge Rd | 2006, 2007, 2009, 2010 |

### Incident Management

One of the regional benefits identified with the Spur Road is that it will provide an alternative north-south route for traffic should there be an incident that occurs on the following road segments:

- Existing US 301 between SR 299 and Bethel Church Road
- SR 896 (Boyds Corner Road) between US 301 and US 13
- Bethel Church Road between US 301 and Choptank Road
- SR 1 between Roth Bridge and I-95

For this monitoring program, DelDOT will track the number of significant incidents that occur each year on these roads which result in detours that could have been accommodated more safely and efficiently on the Spur Road rather than on the local road network. Since 2004, there have been 46 incidents resulting in 129 or more hours of detours that could have utilized the Spur Road as an alternate detour route. Additional detail for each significant incident that has occurred since 2004 are summarized in Appendix D.

## Construction Projects

DelDOT and the Town of Middletown will likely have several other active maintenance and construction projects occurring at various times during the duration of the US 301 Spur Monitoring Program that could affect the traffic data being collected. DelDOT identified eight (8) active construction projects in the US 301 project area in 2010, as shown in Table 8. In addition, as part of the monitoring program, DelDOT will continue to monitor all active roadway construction projects in the US 301 project area from south of Middletown to approximately the Chesapeake and Delaware Canal.

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**Table 7:**
**Construction Activity in the US 301 Project Area**

| Contract Number | Project Title | Start/End | Project Description |
|---|---|---|---|
| T200212001 | SR15, Choptank Rd., Bunker Hill Rd. to Bethel Church Road | 6/14/2007 – 5/25/2010 | Complete realignment and roadway reconstruction. |
| T200504104 | Boyd's Corner Intersection Improvement | 8/5/2009 – 11/8/2010 | Widening of all intersection legs; turn-lane additions, and repaving of entire intersection including approaches. |
| T200512804 | US 301; Middleneck Rd to Peterson Rd. | 7/28/2008 – 12/20/2010 | Repaving and widening of US 301; overlay and improvements on SR 299 approaching US 301. |
| T200512805 | St Annes Church Rd, Levels Rd to East of Wiggins Mill Rd. | 6/1/2009 – 7/1/2010 | Complete reconstruction including repaving and roundabout construction. |
| T200906103 | Pave and Rehab, North III 2009; Warwick Rd from MD State Line to US 301 | 1/18/2010 – 1/19/2010 | Hotmix Roadway Patching |
| T200906103 | Pave and Rehab, North III, 2009; Broad Street in Middletown from SR 299 to Cedar Lane Rd | 1/1/2010 – 1/26/2010 | Hotmix Roadway Patching |
| T201006101 | Pave and Rehab, North I, 2010; Summit Bridge Rd from Churchtown Rd to Bethel Church Rd | 1/18/2010 – 1/19/2010 | Hotmix Roadway Patching |
| T201006102 | Pave and Rehab, North II, 2010; Boyds Corner Rd from 1300 feet East of US 301 to US 13 | 8/10/2010 – 9/20/2010 | Profile Milling and Warm Mix Asphalt overlay |

# Appendix A

# Proposed Development for Southern New Castle County

# Proposed Developments within the US 301 Spur Road Monitoring and Triggering Program Study Area

| Plan Name | Plan Status | TAZ | HH_UNITS | SQ_FT_NRES | COMMENTS | UNBUILT Units 2010 | Built Units 2010 | % Resdiential Units Complete | Built SF | Unbuilt SF | % Built | Edit Data Date | County |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPRING ARBOR AT South Ridge | APPROVED | 190 | 521 | 0.00 | | 195 | 326 | 63% | | | | | New Castle |
| THE PARKWAY AT SOUTH RIDGE | APPROVED | 190 | 446 | 0.00 | | 208 | 238 | 53% | | | | | New Castle |
| Kohl Properties | APPROVED | 190 | 0 | 0.00 | Future Target, other Retail | 0 | 0 | N/A | | | | | New Castle |
| Merrimac Commons | APPROVED | 190 | 78 | 0.00 | 55+ Community | 78 | 0 | 0% | | | | | New Castle |
| PARKSIDE | APPROVED | 191 | 492 | 0.00 | | 326 | 166 | 34% | | | | | New Castle |
| SHANNON COVE | APPROVED | 192 | 410 | 0.00 | FORMERLY CROMWELL | 311 | 99 | 24% | | | | | New Castle |
| BIGGS FARM | APPROVED | 193 | 20 | 0.00 | OPEN SPACE OPTION 1 | 20 | 0 | 0% | | | | | New Castle |
| CANALVIEW AT CROSSLAND (Sout | APPROVED | 194 | 195 | 0.00 | RZ TO ST, RESUB CROSSLAND | 164 | 31 | 16% | | | | | New Castle |
| WILLOW GROVE MILL Phase II | APPROVED | 197 | 192 | 58700.00 | Shopping Center | 87 | 105 | 55% | | | | | New Castle |
| The Highlands | APPROVED | 210 | 1250 | 0.00 | | 1250 | 0 | 0% | | | | | New Castle |
| Northside Shopping Center | Approved | 211 | 0 | 190100.00 | | 0 | 0 | N/A | 0.00 | 190100.00 | 0% | | |
| Westown Commercial | APPROVED | 212 | 0 | 1284700.00 | | 0 | 0 | N/A | 110700.00 | 1174000.00 | | | New Castle |
| Middletown Auto Mall | APPROVED | 212 | 0 | 160200.00 | Home Depot + 38.16 acres shopping center | 0 | 0 | N/A | 140000.00 | 20200.00 | 87% | | New Castle |
| The Highlands @ Backcreek | Approved | 213 | 50 | 0.00 | CONSERVATION OPT 1 | 42 | 8 | 16% | | | | 1/2010 | New Castle |
| CEDAR LANE | APPROVED | 216 | 81 | 0.00 | | 77 | 4 | 5% | | | | | New Castle |
| Promedade at Middletown | APPROVED | 266 | 273 | 145000.00 | 273 Condos plus retail/ movie theatre | 273 | 0 | 0% | | | | | New Castle |
| BOHEMIA MILL POND | APPROVED | 268 | 50 | 0.00 | | 22 | 28 | 56% | | | | | New Castle |
| COUNTRY ACRES II | APPROVED | 268 | 6 | 0.00 | | 6 | 0 | 0% | | | | | New Castle |
| BAYBERRY SOUTH | APPROVED | 274 | 1186 | 0.00 | | 1186 | 0 | 0% | | | | | New Castle |
| ASBURY CHASE II | APPROVED | 279 | 40 | 0.00 | ALSO 1301320179 | 9 | 31 | 78% | | | | | New Castle |
| HYETTS CORNER | APPROVED | 280 | 143 | 0.00 | | 109 | 34 | 24% | | | | | New Castle |
| LOREWOOD ESTATES | APPROVED | 281 | 10 | 0.00 | | 4 | 6 | 60% | | | | | New Castle |
| CANALVIEW AT CROSSLAND 9Nort | APPROVED | 281 | 237 | 0.00 | RZ TO ST, RESUB CROSSLAND | 214 | 23 | 10% | | | | | New Castle |
| TOWNSEND VILLAGE | APPROVED | 289 | 242 | 0.00 | | 147 | 95 | 39% | | | | | New Castle |
| Westown (Levels) | APPROVED | 291 | 1800 | 0.00 | | 1800 | 0 | 0% | | | | | New Castle |
| ESTATES AT ST ANDREWS | APPROVED | 292 | 466 | 0.00 | | 302 | 164 | 35% | | | | | New Castle |
| TOWNSEND VILLAGE | APPROVED | 300 | 336 | 0.00 | | 162 | 174 | 52% | | | | | New Castle |
| Gander Hill | Approved | 301 | 80 | 0.00 | 0 | 48 | 32 | 40% | | | | 1/2010 | New Castle |
| Dove Run | Approved | 307 | 0 | 253825.00 | | 0 | 0 | N/A | 115485.00 | 138340.00 | 45% | | |
| Levels Bus. Park | APPROVED | 308 | 0 | 700000.00 | 0 | 0 | 0 | N/A | 175000.00 | 525000.00 | 25% | | New Castle |
| SUMMIT CROSSING PH 2 | APPROVED | 310 | 0 | 5500.00 | REZONING APPROVED | 0 | 0 | N/A | | | | | New Castle |
| ROTHWELL VILLAGE | APPROVED | 310 | 150 | 0.00 | OPSP OPTION 2 | 150 | 0 | 0% | | | | | New Castle |
| SCOTT RUN BUSINESS PK | APPROVED | 335 | 1 | 1700000.00 | | 0 | 1 | 100% | | | | 9-2009 | New Castle |
| ESTATES AT RIDGEFIELD | EXPIRED | 213 | 16 | 0.00 | CONSERVATION DESIGN OPT | 16 | 0 | 0% | | | | | New Castle |
| WOODGRIFF FARMS | EXPIRED | 214 | 4 | 0.00 | | 4 | 0 | 0% | | | | | New Castle |
| CHURCHTOWN MANOR | Expired | 312 | 378 | 0.00 | WF housing Detached, attached and TH | 378 | 0 | 0% | | | | 9-2009 | New Castle |
| Isaacs Subdivision | EXPLORATORY | 289 | 87 | 0.00 | Exploratory | 87 | 0 | 0% | | | | | New Castle |
| Poole Property | Exploratory-PLUS | 267 | 385 | 420000.00 | 240: Office, 90K Retail, 9oK Warehouse | 385 | 0 | 0% | | | | 12-2009 | New Castle |
| CARTER FARM | PENDING | 193 | 578 | 0.00 | S ZONING | 578 | 0 | 0% | | | | | New Castle |
| VILLAGE OF SCOTT RUN | PENDING | 194 | 273 | 0.00 | AGE RESTRICTED COMMUNITY/In path of US 301 | 273 | 0 | 0% | | | | | New Castle |
| Middletown Corp. Center | Pending | 211 | 0 | 126300.00 | | 0 | 0 | N/A | 13500.00 | 112800.00 | 11% | | |
| 449 ARMSTRONG CORNER | PENDING | 214 | 0 | 24000.00 | 0 | 0 | 0 | N/A | | | | 9-2009 | New Castle |
| PLEASANTON | PENDING | 216 | 429 | 0.00 | OPEN SPACE PLANNED OPTION | 429 | 0 | 0% | | | | | New Castle |
| Boyd's Corner Farm | PENDING | 274 | 287 | 0.00 | Mixed use, apts. and townhomes | 287 | 0 | 0% | | | | 9-2009 | New Castle |
| COUNTRY CLUB ESTS | PENDING | 277 | 407 | 0.00 | OPEN SPACE OPTION | 407 | 0 | 0% | | | | 9-2009 | New Castle |
| BAYBERRY TOWN CENTER | PENDING | 279 | 0 | 558844.00 | PART REZONED FROM S TO CR | 0 | 0 | N/A | | | | | New Castle |
| WINCHELSEA | PENDING | 280 | 593 | 0.00 | REZONING S to ST Mix of Detached, attached, TH and Apt | 593 | 0 | 0% | | | | 9-2009 | New Castle |
| Windsor Commons at Hyetts Corn | PENDING | 280 | 316 | 0.00 | | 316 | 0 | 0% | | | | | New Castle |
| BAYBERRY NORTH | PENDING | 280 | 949 | 0.00 | OSP, TDR | 949 | 0 | 0% | | | | 9-2009 | New Castle |
| Gateway | PENDING | 294 | 0 | 0.00 | Hospital Site? | 0 | 0 | N/A | | | | 3/2010 | New Castle |
| DEATS FARM | PENDING | 309 | 1381 | 867000.00 | Mixed-Use; 267K Comm, 600K Office | 1381 | 0 | 0% | | | | 9-2009 | New Castle |
| TSAGANOS | PENDING | 313 | 0 | 17000.00 | REZONING TO CN | 0 | 0 | N/A | | | | | New Castle |
| OASIS AT CYPRESS RIDGE | PENDING | 337 | 29 | 0.00 | 0 | 29 | 0 | 0% | | | | 9-2009 | New Castle |
| Shoppes at Middletown (Pederser | PENDING | | | 314100.00 | | 0 | 0 | N/A | 0.00 | 314100.00 | 0% | | New Castle |
| Browning Creek | UNKNOWN | 960 | 47 | | | 47 | 0 | | | | | | Cecil |
| John Harrison | UNKNOWN | 960 | 2 | | | 2 | 0 | | | | | | Cecil |
| John Curtis | UNKNOWN | 960 | 3 | | | 3 | 0 | | | | | | Cecil |
| Edgardo Nieves | UNKNOWN | 960 | 41 | | | 41 | 0 | | | | | | Cecil |
| Blossom View | UNKNOWN | 960 | 28 | | | 28 | 0 | | | | | | Cecil |
| Fulton Hills | UNKNOWN | 960 | 17 | | | 17 | 0 | | | | | | Cecil |
| Horse Trails at Worsell Manor | UNKNOWN | 960 | 27 | | | 27 | 0 | | | | | | Cecil |
| Sycamore Lane Nursery | UNKNOWN | 960 | 90 | | | 90 | 0 | | | | | | Cecil |
| Frisby Meadows | UNKNOWN | 960 | 79 | | | 79 | 0 | | | | | | Cecil |
| Glenn Maple | UNKNOWN | 970 | 7 | | | 7 | 0 | | | | | | Cecil |
| Butlers Crossing | UNKNOWN | 970 | 18 | | | 18 | 0 | | | | | | Cecil |
| Spirit Airpark | UNKNOWN | 970 | 5 | | | 5 | 0 | | | | | | Cecil |
| | | TOTAL | 15231 | 6825269 | | 13666 | 1565 | | 554685 | 2474540 | | | |

# Proposed Developments in Southern NCC outside the US 301 Spur Road Monitoring and Triggering Program Study Area

| Plan Name | Plan Status | TAZ | HH_UNITS | SQ_FT_NRES | COMMENTS | UNBUILT Units 2010 | Built Units 2010 | % Resdiential Units Complete | Built SF | Unbuilt SF | % Built | Edit Data Date | County |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WARREN TRACT | PENDING | 195 | 126 | 0.00 | OPEN SPACE OPTION I | 126 | 0 | 0% | | | | 9-2009 | |
| ROBERTS FARM | EXPIRED | 199 | 208 | 0.00 | | 208 | 0 | 0% | | | | 9-2009 | |
| EAGLES NEST (EAST) | EXPIRED | 200 | 14 | 0.00 | OPEN SPACE SUBDIVISION | 14 | 0 | 0% | | | | | |
| SILVER MAPLE FARM | APPROVED | 271 | 204 | 0.00 | OSP OPTION 2 | 204 | 0 | 0% | | | | | |
| TIDES AT SILVER RUN | EXPIRED | 272 | 241 | 0.00 | OPSP | 241 | 0 | 0% | | | | 9-2009 | |
| PONDS AT ODESSA | PENDING | 272 | 280 | 0.00 | OPEN SPACE PLANNED DEV | 178 | 102 | 36% | | | | 9-2009 | |
| AUGUSTINE CREEK, PHASE II | APPROVED | 275 | 177 | 0.00 | | 39 | 138 | 78% | | | | | |
| ASHBY'S PLACE | PENDING | 275 | 54 | 0.00 | OPSP OPTION 2 | 54 | 0 | 0% | | | | | |
| HUBERS CROSSING | PENDING | 275 | 0 | 119596.00 | CR Zoning | 0 | 0 | N/A | | | | 9-2009 | |
| PENFIELD/LESTER PROPERTY | EXPIRED | 278 | 140 | 0.00 | | 140 | 0 | 0% | | | | 9-2009 | |
| LIGHTHOUSE FARM | PENDING | 283 | 54 | 0.00 | S ZONING | 54 | 0 | 0% | | | | | |
| PRESERVE | EXPIRED | 284 | 264 | 0.00 | SF DETACHED & TOWNHOMES | 264 | 0 | 0% | | | | 9-2009 | |
| PORT PENN ASSEMBLAGE | PENDING | 284 | 505 | 0.00 | OPSP OPTION | 505 | 0 | 0% | | | | | |
| AUGUSTINE PRESERVE | EXPIRED | 288 | 72 | 0.00 | PRE-X | 72 | 0 | 0% | | | | 9-2009 | |
| Odessa Commons | EXPLORATORY | 296 | 240 | 0.00 | Exploratory | 240 | 0 | 0% | | | | | |
| SPRING OAKS | PENDING | 336 | 242 | 0.00 | Townhouses | 242 | 0 | 0% | | | | 9-2009 | |
| ENCLAVE AT ODESSA | APPROVED | 302 | 205 | 0.00 | | 127 | 78 | 38% | | | | | |
| ROBINSON CROSSING | APPROVED | 302 | 81 | 0.00 | | 81 | 0 | 0% | | | | | |
| ODESSA NATIONAL | APPROVED | 302 | 761 | 0.00 | | 280 | 481 | 63% | | | | | |
| FAIRWAYS AT ODESSA NAT'L | APPROVED | 303 | 70 | 0.00 | | 62 | 8 | 11% | | | | | |
| SMITH FARM | EXPIRED | 303 | 328 | 0.00 | PRE-X | 328 | 0 | 0% | | | | 9-2009 | |
| Robinson Farms | PENDING | 303 | 341 | 0.00 | Housing Change- Workforce | 69 | 272 | 80% | | | | | |
| GOLDSBOROUGH FARM | PENDING | 303 | 144 | 0.00 | | 79 | 65 | 45% | | | | 9-2009 | |
| Appoquinimink School Dist | PENDING | 304 | 0 | 0.00 | 4 School Complex; ELC and Aquatic Cntr. | 0 | 0 | N/A | | | | 12-2009 | |
| BAYMONT FARMS | APPROVED | 321 | 157 | 0.00 | OPEN SPACE OPTION 1 | 157 | 0 | 0% | | | | 9-2009 | |
| SUGAR LOAF FARMS | APPROVED | 321 | 28 | 0.00 | RESUBDIVISION OF OLD PLA | 7 | 21 | 75% | | | | | |
| HIGH HOOK FARMS | PENDING | 321 | 390 | 0.00 | | 390 | 0 | 0% | | | | 9-2009 | |
| CLAYBOURNE | APPROVED | 322 | 25 | 0.00 | | 13 | 12 | 48% | | | | | |
| BROOKMILL ESTATES | APPROVED | 339 | 7 | 0.00 | | 7 | 0 | 0% | | | | | |
| EAGLES NEST WEST | EXPIRED | 339 | 25 | 0.00 | | 25 | 0 | 0% | | | | | |
| TOWNSEND MINI-STORAGE | PENDING | 339 | 0 | 50855.00 | | 0 | 0 | N/A | | | | | |
| Watson Subdivision | PENDING | 339 | 800 | 0.00 | | 800 | 0 | 0% | | | | | |
| KRM Investments | PENDING | 339 | 200 | 0.00 | | 200 | 0 | 0% | | | | | |
| CRANBERRY COVE | Withdrawn | 339 | 15 | 0.00 | SR ZONING | 15 | 0 | 0% | | | | | |
| | | TOTAL | 26384 | 8902964 | | 23642 | 2742 | | 568185 | 2901440 | | | |

# Appendix B

# Residential Construction in the Town of Middletown

**US 301 Spur Road** **April 2011**
**2010 Monitoring and Triggering Report**

**Appendix B:**
**Apartment Complex Construction in the Town of Middletown**

| Site | 2010 | | 2011 | | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt |
| Highlands | 0 | 336 | | | | | | | | | | | | |
| Middletown Village | 300 | 0 | | | | | | | | | | | | |
| Parkway at South Ridge | 0 | 204 | | | | | | | | | | | | |
| Promenade/Middletown Condos | 0 | 273 | | | | | | | | | | | | |
| Westown Levels Ph 1 | 0 | 108 | | | | | | | | | | | | |
| **Total** | 300 | 921 | | | | | | | | | | | | |

**US 301 Spur Road** **April 2011**
**2010 Monitoring and Triggering Report**

**Appendix B:**
**Duplex construction in the Town of Middletown**

| Site | 2010 | | 2011 | | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt |
| Highlands | 0 | 206 | | | | | | | | | | | | |
| Spring Arbor at South Ridge | 8 | 4 | | | | | | | | | | | | |
| The Parkway at South Ridge | 0 | 16 | | | | | | | | | | | | |
| Westown Levels | 0 | 260 | | | | | | | | | | | | |
| **Total** | 8 | 486 | | | | | | | | | | | | |

**US 301 Spur Road** **April 2011**
**2010 Monitoring and Triggering Report**

## Appendix B:
## Townhouse construction in the Town of Middletown

| Site | 2010 | | 2011 | | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt |
| Highlands | 0 | 700 | | | | | | | | | | | | |
| Spring Arbor at South Ridge | 48 | 75 | | | | | | | | | | | | |
| The Parkway at South Ridge | 33 | 193 | | | | | | | | | | | | |
| Westown Levels | 0 | 403 | | | | | | | | | | | | |
| Westown Levels Phase 1 | 0 | 131 | | | | | | | | | | | | |
| Willow Grove Mill II | 105 | 87 | | | | | | | | | | | | |
| **Total** | 186 | 1,589 | | | | | | | | | | | | |

**US 301 Spur Road** **April 2011**
**2010 Monitoring and Triggering Report**

**Appendix B:**
**Single Family House Construction in the Town Middletown**

| Site | 2010 | | 2011 | | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt | Built | Unbuilt |
| Estates at St. Andrews | 157 | 309 | | | | | | | | | | | | |
| Lakeside | 184 | 1 | | | | | | | | | | | | |
| Legends | 377 | 1 | | | | | | | | | | | | |
| Longmeadown | 239 | 4 | | | | | | | | | | | | |
| Merrimac Commons | 0 | 78 | | | | | | | | | | | | |
| Middletown Crossing | 125 | 9 | | | | | | | | | | | | |
| Middletown Village | 253 | 9 | | | | | | | | | | | | |
| Parkside | 166 | 326 | | | | | | | | | | | | |
| Springmill | 361 | 0 | | | | | | | | | | | | |
| Spring Arbor at South Ridge | 55 | 127 | | | | | | | | | | | | |
| Westown Levels | 0 | 759 | | | | | | | | | | | | |
| Westown Levels P 1 | 0 | 232 | | | | | | | | | | | | |
| Willow Grove Mill | 338 | 1 | | | | | | | | | | | | |
| **Total** | 2,255 | 1,856 | | | | | | | | | | | | |

# Appendix C

# US 301 Corridor Crash Reports

**Crash Reports Summary** **US301 between Summit Bridge and SR896** **3/10/2011**

| | Date | Time | Milepoint | Type | Severity | Direction |
|---|---|---|---|---|---|---|
| **1** | 7/10/2010 | 18:41 | 1.29 | Animal | PDO | SB |
| **2** | 4/10/2010 | 15:06 | 2.71 | Sideswipe - same | PDO | SB/SB |
| **3** | 5/27/2010 | 8:58 | 0 | Rear-end | PDO | WB/WB |
| **4** | 7/10/2010 | 23:40 | 2.06 | Angle - Sideswipe | PDO | SB/SB |
| **5** | 8/24/2010 | 14:01 | 1.98 | Sideswipe - same | PDO | SB/SB |
| **6** | 1/14/2010 | 7:49 | 0.01 | Angle - Sideswipe | PDO | EB/SB |
| **7** | 2/23/2010 | 6:36 | 3.82 | Angle | PDO | SB/WB |
| **8** | 9/2/2010 | 5:01 | 1.83 | Other - ROR | PDO | NB |
| **9** | 4/20/2010 | 16:28 | 0.05 | Angle - LT | PDO | SB/NB |
| **10** | 9/30/2010 | 12:30 | 3.82 | Angle | Injury | SB/WB |
| **11** | 9/3/2010 | 14:28 | 3.58 | Rear-end | PDO | SB/SB |
| **12** | 1/23/2010 | 7:35 | Unknown | ROR / DUI | PDO | NB |
| **13** | 11/4/2010 | 22:21 | 3.82 | Sideswipe - same | PDO | SB/SB |
| **14** | 10/5/2010 | 10:05 | 3.81 | Rear-end | PDO | SB/SB |
| **15** | 4/27/2010 | 10:05 | 3.79 | Angle | PDO | EB/SB |
| **16** | 11/7/2010 | 15:00 | 0 | Rear-end | PDO | WB/WB |
| **17** | 6/14/2010 | 7:05 | 2.14 | Rear-end | PDO | NB/NB |
| **18** | 1/27/2010 | 15:40 | 0.54 | Rear-end | PDO | NB/NB |
| **19** | 7/30/2010 | 8:33 | 1.46 | Rear-end | Injury | NB/NB |
| **20** | 4/27/2010 | 21:19 | 2.71 | Rear-end | PDO | SB/SB |
| **21** | 1/28/2010 | 15:10 | 0.42 | Rear-end | PDO | NB/NB |
| **22** | 10/8/2010 | 19:42 | 0.72 | Angle - LT | Injury | NB/SB |
| **23** | 3/26/2010 | 6:39 | 0.09 | Rear-end | PDO | SB/SB |
| **24** | 11/9/2010 | 11:43 | 2.69 | Rear-end | PDO | SB/SB |
| **25** | 11/9/2010 | 16:46 | Unknown | ROR | Injury | NB |
| **26** | 3/30/2010 | 13:31 | 0.03 | Rear-end | PDO | SB/SB |
| **27** | 5/1/2010 | 10:36 | 0.11 | Angle | Injury | EB/SB |
| **28** | 5/3/2010 | 8:38 | 0 | Angle | Injury | EB/SB |
| **29** | 10/20/2010 | 5:45 | 0 | Rear-end | PDO | WB/WB |
| **30** | 5/15/2010 | 18:44 | 0 | Rear-end | PDO | SB/SB |
| **31** | 8/19/2010 | 15:20 | 0.02 | Rear-end | PDO | SB/SB |
| **32** | 12/4/2010 | 20:00 | 1.46 | Angle | PDO | WB/NB |

ROR: Run-off the Road

PDO: Property Damage Only

**US301 between Summit Bridge and SR896**

A total of thirty-two (32) crashes were reported in 2010, and the following trends were identified:

- Six (19 percent) of the thirty-two reported crashes resulted in personal injury.
- Twenty-six (81 percent) of the thirty-two reported crashes resulted in property damage only.
- Fifteen (47 percent) of the reported crashes were rear-end crashes.
- Six (19 percent) of the reported crashes were angle crashes.
- Five (16 percent) of the reported crashes were sideswipe crashes.
- Three (9 percent) of the reported crashes were runoff-the-road type crashes.
- Two (6 percent) of the reported crashes were left-turn crashes.

**Crash Reports Summary** **US301 between SR896 and Peterson Road** **3/10/2011**

| | Date | Time | Milepoint | Type | Severity | Direction |
|---|---|---|---|---|---|---|
| **1** | 5/24/2010 | 7:03 | 4.04 | Sideswipe - same | PDO | SB/SB |
| **2** | 4/5/2010 | 14:05 | 0 | Angle | PDO | SB/WB |
| **3** | 8/27/2010 | 21:24 | 2.07 | Sideswipe - ROR | PDO | NB |
| **4** | 8/28/2010 | 9:00 | 3.41 | Other - ROR | PDO | NB |
| **5** | 4/9/2010 | 19:04 | 3.43 | Other - ROR | PDO | NB |
| **6** | 10/8/2010 | 8:35 | 3.82 | Rear-end | PDO | NB/NB |
| **7** | 2/22/2010 | 8:55 | 2.12 | Rear-end | PDO | SB/SB |
| **8** | 2/22/2010 | 10:02 | 4.06 | Rear-end | PDO | SB/SB |
| **9** | 1/18/2010 | 16:56 | 3.9 | Angle - LT | PDO | EB/WB |
| **10** | 7/26/2010 | 17:54 | 2.68 | Sideswipe - same | PDO | NB/NB |
| **11** | 6/5/2010 | 2:39 | 4.3 | Rear-end - HFO | Injury | SB |
| **12** | 11/4/2010 | 15:46 | 2.93 | Rear-end | Injury | SB/SB |
| **13** | 3/4/2010 | 10:50 | 1.59 | Rear-end | PDO | NB/NB |
| **14** | 11/10/2010 | 19:33 | 0.01 | Rear-end | PDO | WB/WB |
| **15** | 4/28/2010 | 20:28 | 2.44 | Other- Deer | PDO | NB |
| **16** | 4/30/2010 | 3:40 | 3.84 | Other - Deer | PDO | SB |
| **17** | 12/18/2010 | 4:42 | 3.31 | Rear-end | Injury | SB/SB |
| **18** | 10/23/2010 | 19:04 | 3.73 | Angle - LT | PDO | SB/NB |
| **19** | 3/19/2010 | 19:24 | 4.31 | Rear-end | PDO | NB/NB |
| **20** | 8/13/2010 | 6:47 | 2.87 | Angle - LT | PDO | NB/SB |
| **21** | 5/3/2010 | 13:50 | 2.18 | Other - ROR | Injury | SB |
| **22** | 3/23/2010 | 5:23 | 0 | Rear-end | PDO | WB/WB |
| **23** | 11/24/2010 | 16:34 | 1.83 | Rear-end | Injury | SB/SB |
| **24** | 12/27/2010 | 13:09 | 2.46 | Angle - Sideswipe | PDO | NB/SB |
| **25** | 12/27/2010 | 14:32 | 2.25 | Rear-End | PDO | SB/SB |
| **26** | 5/18/2010 | 13:06 | 0 | Sideswipe - Same | PDO | SB/NB |
| **27** | 1/30/2010 | 17:20 | 2.14 | Sideswipe - ROR | PDO | SB |
| **28** | 1/16/2010 | 17:28 | 1.73 | Rear-end | PDO | SB/SB |
| **29** | 12/24/2010 | 19:00 | 4.35 | Angle | Injury | NB/WB |
| **30** | 1/24/2010 | 15:55 | 0.98 | Rear-end | PDO | SB/SB |
| **31** | 8/18/2010 | 7:50 | 0.99 | Rear-end | PDO | NB/NB |
| **32** | 12/30/2010 | 18:15 | 4.33 | Rear-end | PDO | NB/NB |
| **33** | 9/26/2010 | 8:10 | 4.32 | Rear-end | PDO | NB/NB |
| **34** | 4/28/2010 | 9:15 | 4.33 | Sideswipe -Same | PDO | NB/NB |
| **35** | 10/6/2010 | 6:10 | 4.34 | Rear-end | PDO | NB/NB |
| **36** | 10/20/2010 | 15:58 | 0.98 | Rear-end | PDO | SB/SB |
| **37** | 5/28/2010 | 18:56 | 1.59 | Rear-end | PDO | NB/NB |
| **38** | 5/29/2010 | 12:00 | 0.99 | Rear-end | PDO | SB/SB |
| **39** | 11/1/2010 | 14:54 | 1.1 | Rear-end | PDO | SB/SB |
| **40** | 11/1/2010 | 15:15 | 4.35 | Rear-end | Injury | SB/SB/SB |
| **41** | 6/25/2010 | 8:56 | 1 | Rear-end | Injury | SB/SB |
| **42** | 5/22/2010 | 22:13 | 3.87 | Rear-End | Injury | EB/EB |
| **43** | 6/8/2010 | 17:42 | 3.87 | Angle | Injury | SB/EB |
| **44** | 7/2/2010 | 7:40 | 3.94 | Rear-end | PDO | NB/NB |
| **45** | 7/17/2010 | 12:15 | 3.87 | Angle | PDO | NB/EB |

| | | | | | | |
|---|---|---|---|---|---|---|
| **46** | 8/21/2010 | 12:30 | 3.87 | Angle | PDO | SB/EB |
| **47** | 8/26/2010 | 7:25 | 3.87 | Rear-end | PDO | NB/NB |
| **48** | 9/17/2010 | 23:10 | 0 | Angle - LT | Injury | SB/NB |
| **49** | 12/29/2010 | 16:50 | 3.57 | Angle | PDO | NB/SB |
| **50** | 12/20/2010 | 3:05 | 0.93 | Other - ROR | PDO | NB |

ROR: Run-off the Road

PDO: Property Damage Only

**US301 between SR896 and Peterson Road**

A total of fifty (50) crashes were reported in 2010, and the following trends were observed:

- Eleven (22 percent) of the fifty reported crashes resulted in personal injury.
- Thirty-nine (78 percent) of the fifty reported crashes resulted in property damage only.
- Twenty-seven (54 percent) of the reported crashes were rear-end crashes.
- Seven (14 percent) of the reported crashes were sideswipe crashes.
- Six (12 percent) of the reported crashes were angle crashes.
- Four (8 percent) of the reported crashes were left-turn crashes.
- Four (8 percent) of the reported crashes were runoff-the-road type crashes.
- Two (4 percent) of the reported crashes involved a deer and a motor vehicle.

**Crash Reports Summary** **US301 between** **3/10/2011**

**Peterson Road and Levels Road**

| | Date | Time | Milepoint | Type | Severity | Direction |
|---|---|---|---|---|---|---|
| 1 | 1/1/2010 | 16:04 | 3.21 | Angle | PDO | SB/EB |
| 2 | 12/11/2010 | 19:53 | 2.88 | Angle | PDO | WB/NB |
| 3 | 12/13/2010 | 8:41 | 0 | Rear-end | Injury | WB/WB |
| 4 | 8/3/2010 | 9:00 | 2.88 | Rear-end | PDO | SB/SB |
| 5 | 1/20/2010 | 16:50 | 3.13 | Angle - LT | Injury | SB/NB |
| 6 | 8/6/2010 | 15:10 | 0 | Angle - LT | Injury | EB/WB |
| 7 | 12/19/2010 | 16:08 | 2.89 | Rear-end | PDO | Unknown |
| 8 | 1/29/2010 | 21:06 | 3.13 | Other - Angle | PDO | WB/SB |
| 9 | 1/30/2010 | 15:45 | 0 | Rear-end | PDO | WB/WB |
| 10 | 2/19/2010 | 10:35 | 3.1 | Rear-end | Injury | SB/SB/SB |
| 11 | 3/1/2010 | 13:58 | 3.33 | Angle - LT | Injury | BN/SB |
| 12 | 10/21/2010 | 21:35 | 2.88 | Angle | PDO | NB/WB |
| 13 | 3/29/2010 | 13:40 | 0 | Angle - LT | Injury | SB/NB |
| 14 | 10/31/2010 | 16:00 | 2.88 | Sideswipe - HFO | PDO | NB |
| 15 | 4/1/2010 | 17:14 | 2.65 | Rear-end | PDO | NB/NB |
| 16 | 4/5/2010 | 13:05 | 0 | Rear-end H&R | PDO | EB/WB |
| 17 | 11/8/2010 | 6:30 | 3.13 | Rear-end | PDO | EB/EB |
| 18 | 4/16/2010 | 21:01 | 3.33 | Sideswipe - opp | Injury | NB/SB |
| 19 | 11/16/2010 | 17:56 | 2.38 | hit fallen sign | PDO | NB |
| 20 | 6/9/2010 | 18:05 | 2.4 | Rear-end | PDO | NB |
| 21 | 6/19/2010 | 10:15 | 3.13 | Rear-end | PDO | SB/SB |
| 22 | 6/26/2010 | 15:30 | 2.38 | Rear-End | Injury | NB/NB |

ROR: Run-off the Road

PDO: Property Damage Only

**US301 between Peterson Road and Levels Road**

A total of twenty-two (22) crashes were reported in 2010, and the following trends were identified:

- Eight (36 percent) of the twenty-two reported crashes resulted in personal injury.
- Fourteen (64 percent) of the twenty-two reported crashes resulted in property damage only.
- Eleven (50 percent) of the reported crashes were rear-end crashes.
- Four (18 percent) of the reported crashes were angle crashes.
- Four (18 percent) of the reported crashes were left-turn crashes.
- Two (9 percent) of the reported crashes were sideswipe crashes.

**Crash Reports Summary** **US301 between** **3/10/2011**

**Levels Road and DE / MD State Line**

| | Date | Time | Milepoint | Type | Severity | Direction |
|---|---|---|---|---|---|---|
| **1** | 5/30/2010 | 10:59 | 0.52 | Angle | Injury | NB/EB |
| **2** | 9/5/2010 | 17:09 | 1.06 | Rear-end | Injury | SB/SB |
| **3** | 10/20/2010 | 7:00 | 0.94 | Sideswipe | PDO | NB/SB |
| **4** | 3/17/2010 | 1:47 | 0.52 | Sideswipe - same | PDO | NB/NB |
| **5** | 10/20/2010 | 8:30 | 1.2 | Sideswipe - opp | PDO | NB/SB |
| **6** | 11/7/2010 | 21:41 | 1.28 | Other - Deer | PDO | NB |
| **7** | 12/16/2010 | 13:35 | 0.92 | Other - ROR | PDO | SB/SB |
| **8** | 9/29/2010 | 23:51 | 1.14 | Other - Deer | Injury | SB |
| **9** | 7/25/2010 | 1:25 | 2.02 | Other - ROR | Injury | NB |
| **10** | 10/7/2010 | 8:01 | 3.97 | Rear-end | Injury | SB/SB |
| **11** | 9/27/2010 | 15:40 | 1.6 | Head-on | Injury | SB/NB |
| **12** | 4/17/2010 | 14:20 | 1.86 | Other - ROR | Injury | SB |
| **13** | 6/4/2010 | 20:00 | 2.08 | Rear-end | PDO | NB/NB |
| **14** | 7/1/2010 | 14:51 | 1.01 | Angle - LT | Injury | SB/NB |
| **15** | 10/11/2010 | 12:46 | 1.01 | Angle | Injury | BN/WB |
| **16** | 10/17/2010 | 20:30 | 0.01 | Other - Deer | PDO | SB |
| **17** | 12/26/2010 | 18:05 | 0.98 | Head-on | PDO | SB/NB |
| **18** | 11/27/2010 | 19:47 | 0.23 | Other - Deer | PDO | NB |
| **19** | 12/30/2010 | 20:03 | 1.01 | Angle | Injury | SB/EB |

ROR: Run-off the Road

PDO: Property Damage Only

**US301 between Levels Road and DE-MD State Line**

A total of nineteen (19) crashes were reported in 2010, and the following trends were identified:

- Ten (53 percent) of the nineteen reported crashes resulted in personal injury.
- Nine (47 percent) of the nineteen reported crashes resulted in property damage only.
- Three (16 percent) of the reported crashes were rear-end crashes.
- Three (16 percent) of the reported crashes were sideswipe crashes.
- Three (16 percent) of the reported crashes were runoff-the-road type crashes.
- Three (16 percent) of the reported crashes were angle crashes.
- Four (21 percent) of the reported crashes involved a deer and a motor vehicle.

**Crash Reports Summary** **Bethel Church Road between US301 and Choptank Road** **3/10/2011**

| | Date | Time | Milepoint | Type | Severity | Direction |
|---|---|---|---|---|---|---|
| 1 | 1/11/2010 | 23:56 | 2.03 | Other - ROR | PDO | EB |
| 2 | 9/1/2010 | 20:19 | 2.27 | Other - ROR | Injury | WB |
| 3 | 5/3/2010 | 6:28 | 2.29 | Other - ROR | PDO | EB |
| 4 | 2/1/2010 | 9:27 | 1.96 | U-turn | Injury | EB |
| 5 | 5/28/2010 | 9:00 | 1.92 | Other - ROR | Injury | WB |
| 6 | 11/17/2010 | 12:28 | 2.12 | Rear-end | Injury | WB/WB |

ROR: Run-off the Road

PDO: Property Damage Only

**Bethel Church Road between US301 and Choptank Road**

A total of six (6) crashes were reported in 2010, and the following trends were identified:

- Four (67 percent) of the six reported crashes resulted in personal injury.
- Two (33 percent) of the six reported crashes resulted in property damage only.
- Four (67 percent) of the reported crashes were runoff-the-road (ROR) type crashes. Two (2) ROR crashes involved eastbound vehicles and two (2) ROR crashes involved westbound vehicles.
- One (17 percent) of the reported crashes was an U-turn crash.
- One (17 percent) of the reported crashes was a rear-end crash

**Crash Reports Summary** **Choptank Road between Bethel Church Road and Bunker Hill Road** **3/10/2011**

| | Date | Time | Milepoint | Type | Severity | Direction |
|---|---|---|---|---|---|---|
| **1** | 4/16/2010 | 14:40 | 4.79 | Angle - School bus | Injury | NB/WB |
| **2** | 2/4/2010 | 7:17 | 1.78 | Angle | PDO | SB/WB |
| **3** | 5/7/2010 | 0:41 | Unknown | ROR | PDO | NB |
| **4** | 6/26/2010 | 10:40 | 3.47 | ROR | PDO | EB |
| **5** | 11/5/2010 | 18:17 | 2.3 | Deer | PDO | SB/WB |
| **6** | 10/21/2010 | 7:23 | 1.78 | Angle | Injury | NB/WB |
| **7** | 12/27/2010 | 21:07 | 1.05 | ROR | PDO | SB |
| **8** | 5/26/2010 | 18:54 | 2.83 | Rear-end | PDO | NB |

ROR: Run-off the Road

PDO: Property Damage Only

**Choptank Rd between Bethel Church Rd and Bunker Hill Rd**

A total of eight (8) crashes were reported in 2010, and the following trends were identified:

- Two (25 percent) of the eight reported crashes resulted in personal injury.
- Six (75 percent) of the eight reported crashes resulted in property damage only.
- Three (38 percent) of the reported crashes were angle crashes. All three angle crashes occurred at the Armstrong Corner Road intersection.
- Three (38 percent) of the reported crashes were runoff-the-road type crashes.
- One (13 percent) of the reported crashes was a rear-end crash. The crash occurred at the Earnest Drive intersection
- One (13 percent) of the crashes involved a deer and a motor vehicle.

**Crash Reports Summary** **Bunker Hill Road between Choptank Road and US301** **3/10/2011**

| | Date | Time | Milepoint | Type | Severity | Direction |
|---|---|---|---|---|---|---|
| **1** | 2/16/2010 | 22:25 | 2.27 | Angle | Injury | WB/SB |
| **2** | 3/8/2010 | 16:36 | 2.54 | Angle | PDO | EB/SB |
| **3** | 10/27/2010 | 16:09 | 2.54 | Head-on | Injury | EB/SB |
| **4** | 4/2/2010 | 10:40 | 2.54 | Angle | Injury | EB/SB |
| **5** | 6/12/2010 | 12:59 | 2.54 | Rear-end | PDO | WB/WB |

ROR: Run-off the Road

PDO: Property Damage Only

**Bunker Hill Rd between Choptank Rd and US 301**

A total of five (5) crashes were reported in 2010, and the following trends were identified:

- Three (60 percent) of the five reported crashes resulted in personal injury.
- Two (40 percent) of the five reported crashes resulted in property damage only
- Three (60 percent) of the reported crashes were angle crashes. Two of the angle crashes occurred at the Sand Hill Drive intersection and one angle crash occurred at the Merrimac Avenue intersection.
- One (1) of the reported crashes was a head-on crash. The crash occurred on Bunker Hill Road at the Sand Hill Drive intersection.
- One (1) of the reported crashes was a rear-end crash. The crash occurred on Bunker Hill Road near the Sand Hill Drive intersection.

**Crash Reports Summary** **SR1 between** **3/10/2011**

**Roth Bridge and Tybouts Corner**

| | Date | Time | Milepoint | Type | Severity | Direction |
|---|---|---|---|---|---|---|
| 1 | 1/2/2010 | 8:00 | 0.56 | ROR/HFO | Injury | NB |
| 2 | 2/19/2012 | 11:16 | 2.18 | U-turn/Rear-end | PDO | SB |
| 3 | 5/21/2010 | 12:46 | 1.22 | Sideswipe-same | PDO | SB |
| 4 | 1/6/2010 | 8:06 | 14.92 | ROR/HFO | PDO | SB |
| 5 | 8/25/2010 | 16:58 | 3.95 | ROR/HFO | PDO | SB |
| 6 | 9/30/2010 | 4:49 | 5.34 | ROR/HFO | Injury | SB |
| 7 | 5/21/2010 | 13:13 | 4.28 | ROR/HFO | PDO | SB |
| 8 | 7/16/2010 | 13:28 | 0.9 | Object in Roadway | PDO | NB |
| 9 | 4/22/2010 | 7:45 | 3.66 | Sideswipe-same | Injury | NB |
| 10 | 1/8/2008 | 10:06 | 4.89 | ROR/HFO | Injury | NB |
| 11 | 8/30/2010 | 6:25 | 2.88 | Sideswipe-same/ROR | PDO | NB |
| 12 | 2/26/2010 | 7:50 | 3.84 | Rear-end | Injury | NB |
| 13 | 10/4/2010 | 8:40 | 4.7 | Sideswipe-same/HFO | PDO | SB |
| 14 | 7/19/2010 | 2:41 | 1.17 | Rear-end | PDO | SB |
| 15 | 4/23/2010 | 14:24 | 0.88 | Object in Roadway | PDO | NB |
| 16 | 1/12/2010 | 9:51 | 3.3 | Sideswipe-same | Injury | NB/NB |
| 17 | 6/11/2010 | 11:06 | 0.97 | Sideswipe-same | Injury | NB/NB |
| 18 | 3/6/2010 | 23:45 | 4.32 | Object in Roadway | PDO | SB |
| 19 | 4/24/2010 | 21:41 | 2.37 | Hit Deer | PDO | NB |
| 20 | 10/8/2010 | 21:14 | 1.11 | ROR/HFO | Injury | SB |
| 21 | 1/16/2010 | 16:13 | 16.05 | ROR/HFO | Injury | SB |
| 22 | 9/17/2010 | 22:30 | 6.49 | Rear-end | PDO | SB/SB |
| 23 | 11/5/2010 | 14:17 | 7.84 | Rear-end | PDO | SB/SB |
| 24 | 1/27/2010 | 14:22 | 7.1 | Rear-end | PDO | NB/NB |
| 25 | 12/11/2010 | 5:31 | 1.09 | ROR/HFO | Injury | NB |
| 26 | 3/16/2010 | 2:31 | 3.25 | Hit Deer | Injury | NB |
| 27 | 1/30/2010 | 16:37 | 5.32 | Sideswipe - opposite | PDO | Unknown |
| 28 | 12/11/2010 | 6:40 | 1.18 | ROR/HFO | PDO | NB |
| 29 | 5/7/2010 | 6:37 | 0.78 | Sideswipe-same | Injury | NB/NB |
| 30 | 5/14/2010 | 18:04 | 1.4 | ROR/HFO | PDO | NB |
| 31 | 11/8/2010 | 5:38 | 7.08 | Hit Deer | PDO | SB |
| 32 | 12/26/2010 | 22:12 | 5.52 | Rear-end | PDO | SB/SB |
| 33 | 5/20/2010 | 6:22 | 1.73 | ROR/HFO | Injury | NB |
| 34 | 10/11/2010 | 17:04 | 1.9 | Unknown | Injury | Unknown |
| 35 | 11/10/2010 | 19:24 | 2.38 | Hit Deer | PDO | NB |
| 36 | 9/20/2010 | 11:06 | 5.49 | ROR/HFO | Injury | NB |
| 37 | 11/14/2010 | 12:36 | 2.2 | Sideswipe-same | PDO | NB |
| 38 | 6/26/2010 | 13:44 | 5.44 | Sideswipe-same | PDO | NB/NB |
| 39 | 10/11/2010 | 19:15 | 4.76 | Sideswipe-same | Injury | SB/SB |
| 40 | 9/23/2010 | 1:01 | 4.47 | Sideswipe-same | PDO | NB/NB |
| 41 | 11/17/2010 | 17:56 | 5.12 | ROR/HFO | PDO | SB |
| 42 | 11/18/2010 | 16:20 | 2.8 | Unknown | Unknown | Unknown |
| 43 | 7/3/2010 | 11:41 | 1.02 | Rear-end | PDO | SB/SB |
| 44 | 11/19/2010 | 22:30 | 1.93 | Hit Deer | PDO | NB |
| 45 | 10/21/2010 | 18:42 | 8.02 | ROR/HFO | PDO | NB |

| | | | | | | |
|---|---|---|---|---|---|---|
| 46 | 11/1/2010 | 16:02 | 8.81 | Sideswipe-same | PDO | SB/SB |
| 47 | 10/26/10 | 17:29 | 2.27 | ROR/HFO | PDO | NB |
| 48 | 10/28/10 | 15:12 | 5.1 | ROR/HFO-guardrail | Fatality | NB |
| 49 | 10/28/10 | 18:05 | 2.13 | Rear-end/ROR/HFO | PDO | NB |
| 50 | 10/28/10 | 19:19 | 2.83 | Rear-end | PDO | NB |
| 51 | 7/31/10 | 22:06 | 6.11 | Rear-end | Injury | SB |
| 52 | 11/2/10 | 22:07 | 4.86 | Rear-end/ROR/HFO | Injury | SB |
| 53 | 8/7/10 | 16:48 | 1.43 | ROR/HFO | PDO | NB |

ROR: Run-off the Road

PDO: Property Damage Only

**SR1 between Roth Bridge and Tybouts Corner**

A total of fifty-three (53) crashes were reported in 2010, and the following trends were observed:

- One (2 percent) of the fifty-three crashes resulted in fatality.
- Eighteen (34 percent) of the fifty-three reported crashes resulted in personal injury.
- Twenty (38 percent) of the reported crashes were runoff-the-road (ROR) type crashes. Twelve (12) ROR crashes involved northbound vehicles and eight (8) crashes involved southbound vehicles.
- Thirteen (25 percent) of the reported crashes were sideswipe crashes. Seven (7) sideswipe crashes involved northbound vehicles and six (6) sideswipe crashes involved southbound vehicles.
- Ten (19 percent) of the reported crashes were rear-end crashes.
- Five (9 percent) of the reported crashes involved a deer and a motor vehicle.
- Three (6 percent) of the reported crashes involved road debris and a motor vehicle.

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**Crash Reports Summary** **US301 Between** **3/10/2011**

**Summit Bridge and Bethel Church Road**

| | Date | Time | MP | Type | Severity | Direction |
|---|---|---|---|---|---|---|
| 1 | 7/10/2010 | 18:41 | 1.29 | Hit Deer | PDO | SB |
| 2 | 9/2/2010 | 5:01 | 1.83 | ROR/HFO | PDO | NB |

ROR: Run-off the Road

PDO: Property Damage Only

**US301 between Summit Bridge and Bethel Church Road**

A total of two (2) crashes were reported in 2010, and the following trends were observed:

- Both of the reported crashes resulted in property-damage-only.
- One (1) of the reported crashes was a runoff-the-road type crash.
- One (1) of the reported crashes involved a deer and a motor vehicle.

**Crash Reports Summary** **US301 @ Bethel Church Road** **3/10/2011**

| | Date | Time | Milepoint | Severity | Type | Direction |
|---|---|---|---|---|---|---|
| 1 | 7/10/2010 | 23:40 | 2.06 | PDO | Sideswipe - same | SB/SB |
| 2 | 8/24/2010 | 14:01 | 1.98 | PDO | U-Turn | SB/SB |
| 3 | 6/14/2010 | 7:05 | 2.14 | PDO | Rear-end | NB/NB |

ROR: Run-off the Road

PDO: Property Damage Only

**US301 at Bethel Church Road**

A total of three (3) crashes were reported in 2010, and the following trends were identified:

- All three (3) crashes resulted in property damage only.
- One (1) of the reported crashes was a sideswipe crash. The crash involved two southbound vehicles.
- One (1) of the reported crashes was a rear-end crash.
- One (1) of the reported crashes was a U-turn crash.

# Appendix D

# Significant Incidents on SR 1 and Other Roadways in the Middletown Region

| Significant Incidents on SR 1 that Could have Utilized the Spur Road to Accommodate Detoured Traffic – 2004 through present | | | | |
|---|---|---|---|---|
| **Date** | **Location** | **Event** | **Duration** | **Roads used for Detour** |
| 5/14/2004 | SR 1 at SR 273 | Property Damage Crash - SB SR 1 Left Lane Closed | 1.5 Hours | Unknown |
| 9/24/2004 | SR 1 South of SR 273 | Personal Injury Crash - SB SR 1 Closed | 1 Hours | Unknown |
| 4/3/2005 | SR 1 at SR 72 | Personal Injury Crash - Right and Center Lane Closed on SB SR 1 | 0.5 Hour | Unknown |
| 4/14/2005 | SR 1 South of US 40 | Dump Truck Rolled Over – SB SR 1 Closed | 3 Hours | Unknown |
| 5/16/2005 | NB SR 1 at Christiana Mall Ramp | Vehicle Fire - NB SR 1 Closed | 1 Hour | Unknown |
| 7/1/2005 | SB SR 1 South of SR 273 | Possible Fatal Crash / Entrapment - SB SR 1 Closed | 2 Hours | Unknown |
| 8/7/2006 | SB SR 1 at Christiana Mall Ramp | Tractor Trailer Rolled Over - SB SR 1 Closed | 7.5 Hours | Unknown |
| 11/30/2006 | NB SR 1 at Tybouts Corner | Personal Injury Crash - NB SR 1 Closed | 1 Hour | Unknown |
| 1/31/2007 | SB SR 1 North of School House Road | Property Damage Crash – SB Left and Center Lane and NB Left Lane on SR 1 Closed | 1.5 Hours | Unknown |
| 2/14/2007 | NB SR 1 South of SR 72 | Tractor Trailer Rolled Over - NB SR 1 Closed at SR 896 | 6.5 Hours | Unknown |
| 3/7/2007 | NB SR 1 at Christiana Mall | Multiple (6) Vehicle Personal Injury Crash - NB SR 1 Closed | 1.5 Hours | US 13, SR 72, SR273 and I-95 |
| 5/14/2007 | SB SR 1 on Roth Bridge | Personal Injury Crash - SB SR 1 Closed | 1 Hour | Unknown |
| 6/27/2007 | SB SR 1 North of Roth Bridge | Tractor Trailer Rolled Over – SB SR 1 Closed | 3 Hours | US 13 and SR 72 |
| 9/2/2007 | NB SR 1 near Hyetts Corner Road | Personal Injury Crash - NB SR 1 Closed | 2 Hours | Unknown |
| 9/7/2007 | SR 1 at SR 72 | Vehicle Fire & Clean-up – SR 1 Closed at SR 72 | 3 Hours | SR 72 |
| 11/29/2007 | SB SR 1 North of Roth Bridge | Fluid Spilled on Road - SB SR 1 Right Lane and Shoulder Closed | 1 Hour | Unknown |
| 1/29/2008 | SB SR 1, South of SR 273 | Property Damage Crash/ Rollover – SB SR 1 Left Lane Closed | 1.5 Hours | Unknown |
| 2/10/2008 | SB SR 1 at Christiana Mall Ramp | Personal Injury Crash - Left Lanes Closed on NB & SB SR 1 s/o I-95 | 3 Hours | Unknown |
| 2/12/2008 | SR 1 near I-95 | DSP Fatal Accident Reconstruction – Partial Closure | 9.5 Hours | Unknown |
| 2/12/2008 | SR 1 between US 40 and SR 273 | DSP Fatal Accident Reconstruction - Partial Closure | 12 Hours | Unknown |
| 4/2/2008 | SR 1 at SR 273 | Possible Fatal Crash involving 3 vehicles - NB SR 1 and SB SR 1 Ramp to SR 273 Closed | 3 Hours | US 13 |
| 6/17/2008 | NB SR 1 at SR 273 | Possible Fatal Crash / damaged bridge – NB SR 1 Closed | 3 Hours | Unknown |
| 3/30/2009 | NB SR 1 North of SR 72 | Personal Injury Crash involving 4 vehicles – Partial closure | 2 Hours | US 13 |
| 4/5/2009 | SB SR 1 Ramp at Lorewood Grove Road | Tractor Trailer Rolled Over - SB SR 1 Closed | 9 Hours | SR 9, US13 and SR 72 |

| Significant Incidents on SR 1 that Could have Utilized the Spur Road to Accommodate Detoured Traffic – 2004 through present (Continued) | | | | |
|---|---|---|---|---|
| **Date** | **Location** | **Event** | **Duration** | **Roads used for Detour** |
| 6/29/2009 | SR 1 at SR 273 | Truck Rolled Over - SB SR 1 Closed | 2.5 Hours | Unknown |
| 8/2/2009 | SR 1 at SR 273 | Personal Injury Crash - SB SR 1 Closed at SR 273 | 2.5 Hours | Unknown |
| 8/6/2009 | SR 1 on Roth Bridge | Fatal Crash/ Vehicle Fire – SB SR 1 Closed | Unknown | Unknown |
| 4/5/2010 | SB SR 1, South of SR 71 | Personal Injury Crash - SB SR 1 Closed | Unknown | Unknown |
| 4/5/2010 | NB SR 1 at Christiana Mall | Personal Injury Crash – Partial Closure on NB SR 1 | Unknown | Unknown |
| 5/27/2010 | NB SR 1, North of US 40 | Personal Injury Crash – NB SR 1 at US 40 Closed | Unknown | Unknown |
| **Total** | | | **85 Hours** | |

| Significant Incidents in the Middletown Region that Could have Utilized the Spur Road to Accommodate Detoured Traffic – 2004 through present | | | | |
|---|---|---|---|---|
| **Date** | **Location** | **Event** | **Duration** | **Roads used for Detour** |
| 11/29/2004 | Bethel Church Rd\oad | Personal Injury Crash - SB US 301 Left Lane and Left-turn Lane Closed | 1 Hour | Right lane and shoulder on US 301 |
| 9/3/2005 | US 301 at SR 71 | Property Damage Crash - US 301 SB and SR 71 NB Left-turn Lane Closed | 1 Hour | Access to Middletown Village back on to US 301 |
| 1/30/2006 | SB US 301 at Bethel Church Road | Property Damage Crash & Fuel Spill - SB US 301 Closed | 7 Hours | Bethel Church Road, Choptank Road and Churchtown Road |
| 8/24/2006 | US 301 North of Churchtown Road | Property Damage Crash – US 301 Closed | 1 Hour | Unknown |
| 12/25/2006 | SB US 301 South of Summit Bridge | Personal Injury Crash - SB US 301 Closed | 1 Hour | Shoulder Lane on SB US 301 |
| 7/26/2007 | US 301 South of Summit Bridge | Fatal Crash – US 301 Closed | 3 Hours | SR 1 and US 13 |
| 10/20/2007 | Bethel Church Road | Fatal Crash – Bethel Church Road Closed at US 301 | 3.5 Hours | Unknown |
| 11/2/2007 | US 301 at Bethel Church Road | Damaged Pole - Bethel Church Road Closed | 7 Hours | Unknown |
| 1/5/2008 | US 301 at Bethel Church Road | Damaged Pole - Bethel Church Road Closed | 5 Hours | Unknown |
| 5/30/2008 | SB US 301 at SR 71 | Personal Injury Crash - SB US 301 Closed | 1 Hour | SR 71 |
| 6/16/2008 | SR 896 East of Jamisons Corner Road | Barn Fire – SR 896 Closed | 3.5 Hours | Unknown |
| 9/30/2008 | Old School House Road and US 301 | Personal Injury Crash – Old School House Road Closed at US 301 | 1.5 Hours | Unknown |
| 12/1/2009 | US 301 and Churchtown Road | Personal Injury Crash – Details Unknown | 1 Hour | Unknown |
| 12/3/2009 | US 301 at SR 71 | Roadway Flooding - Details Unknown | Unknown | Unknown |
| 12/11/2009 | SB US 301 near Summit Bridge | Fatal Crash - Full Closure | 3 Hours | Unknown |
| 12/28/2009 | US 301 North of SR 299 | Property Damage Crash – US 301 Closed between SR 299 & SR 71 | 5 Hours | Unknown |
| **Total** | | | **44.5 Hours** | |